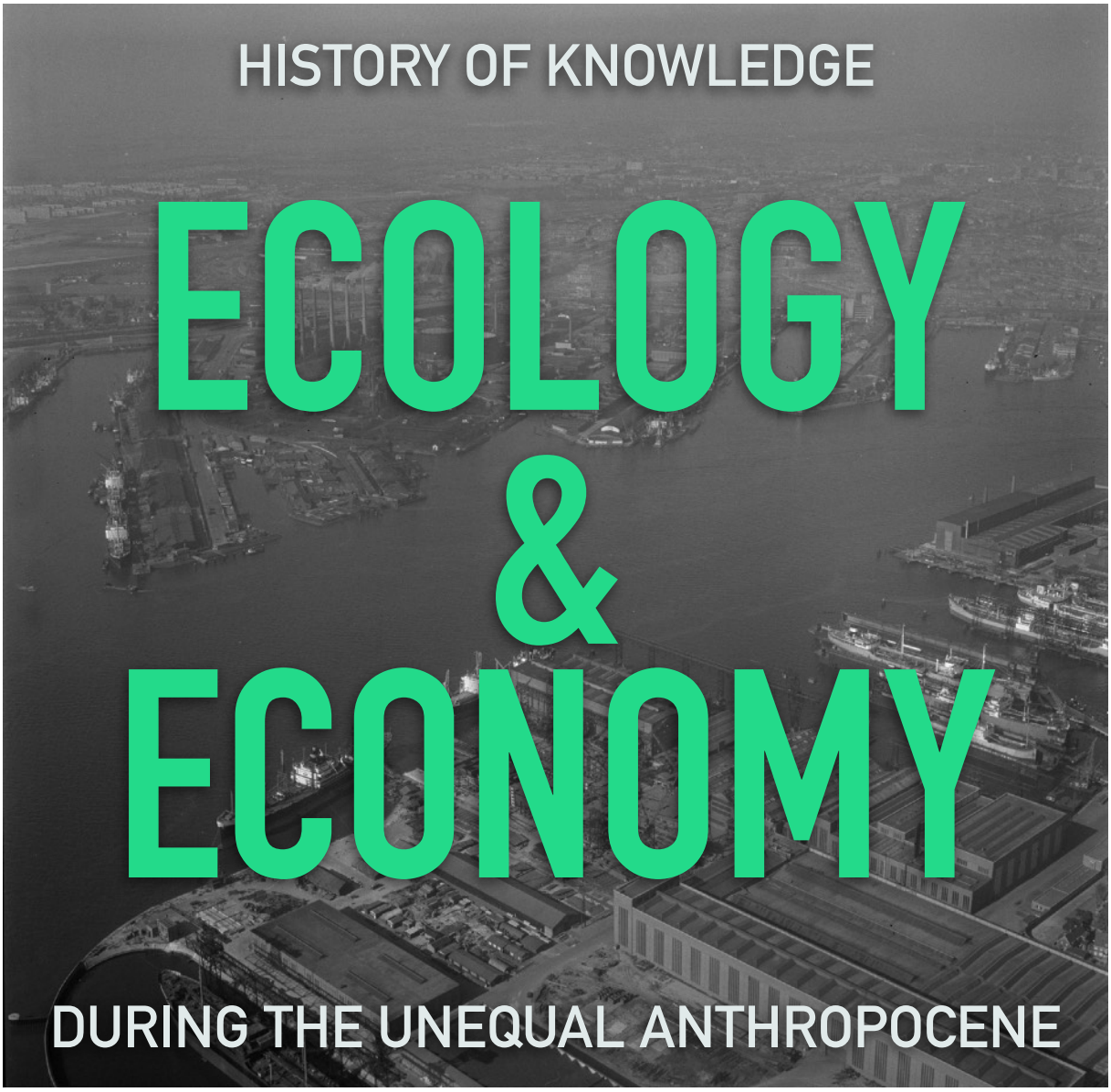

10th Gewina Woudschoten Conference

Zeist, 21-22 June 2024

Gewina

Belgisch-Nederlands genootschap
voor wetenschaps- en universiteitsgeschiedenis
Société Belgo-Néerlandaise
pour l'histoire des sciences et des universités
Belgian-Dutch Society
for the History of Science and Universities

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10th Gewina Woudschoten Conference

Ecology & Economy: History of knowledge during the Unequal Anthropocene

Zeist, 21-22 June 2024

Organising Committee:
Timo Bolt, Daniel Curtis, Ralf Futselaar, Floor Haalboom, Sandra Manickam, Martijn van der Meer & Ruben Verwaal (Erasmus University & Erasmus MC, Rotterdam)

Conference Address:
Woudschoten Hotel & Conferentiecentrum
Woudenbergseweg 54
3707 HX Zeist
T 0343 492492
info@woudschoten.nl

Sponsors:

huygens instituut

BRILL

BREPOLS

Vossius Centre

Programme Overview

Friday June 21, 2024

8:45 – 9:15	Arrival, registration, coffee
9:15 – 9:30	Opening by conference organizers
9:30 – 11:00	**Session 1**
	1A Making the Anthropocene Tangible: Collections as Source Material
	1B Knowledge, Power, and Interests
	1C Imaginaries of Industrialisation
11:00 – 11:30	Break
11:30 – 12:45	**Keynote**
	Liesbeth van de Grift: The Politics of Expertise
12:45 – 14:00	Lunch
14:00 – 15:30	**Session 2**
	2A *Panel* Fossil Fuelled Ecologies: the Environment, Fossil Fuel Industry and the Shaping of the Anthropocene during the Long 1970s
	2B Human Bodies and Body Materials
	2C Ecological and Economic Concepts
15:30 – 16:00	Break
16:00 – 17:30	**Session 3**
	3A Challenging the Unequal Anthropocene – Global Dependencies
	3B Science Internationalism and the Environment I
	3C The Nature of Knowledge and the Knowledge of Nature
17:30 – 18:30	Drinks
18.30 – 20:30	Dinner
21:00 – 22:30	Walk in the Zeist Forest

Saturday June 22, 2024

8:45 – 9:00	Registration, coffee
9:00 – 11:00	**Session 4**
	4A The Ecology of Public Health
	4B Socio-Ecological Knowledge Politics
	4C Representing Reality? Paintings, Maps, and Forecasts
11:00 – 11:30	Break
11:30 – 12:45	**Keynote**
	Daniel Curtis: Epidemic Disease and Society in the Premodern Low Countries: Inequality, Community, and Gender
12:45 –14:00	Lunch
14:00 – 15:30	**Session 5**
	5A *Panel* Knowledge and Economic History in the Unequal Anthropocene
	5B Science Internationalism and the Environment II
	5C The Economy of Knowledge and the Knowledge of Economy
15:30 – 16:00	Break
16:00 – 17:30	**Closing Session**
	The great master-thesis show

Detailed programme

Friday 21 June

8:45-9:15 Arrival, registration, coffee

9:15-9.30: Welcome and opening by conference organisers

9:30-11:00 Session 1

Session 1A: Making the Anthropocene Tangible: Collections as Source Material

- Didi van Trijp, *Knock on wood: Colonial wood samples as educational objects*
- Ruben Verwaal, *Choking on 'foreign bodies'*
- Ad Maas, *Adventure, technology and guilt: Oil samples from the Bataafse Petroleum Maatschappij*
- Chair: Marieke Hendriksen

Session 1B: Knowledge, Power, and Interests

- Evelien de Hoop & Erik van der Vleuten, *Knowledge politics of socio-ecological change: reflections on transregional histories of palm oil and soybean sustainability science*
- Larissa Schulte Nordholt, *The (post)colonial university. Wageningen University across The Netherlands, Suriname and Indonesia, 1876-2020*
- Abel Streefland, *"Drenched in oil": The entanglement of Delft University of Technology with fossil industries*
- Chair: tbd

Session 1C: Imaginaries of Industrialization

- Amber Striekwold, *Bigger means better? The entanglement and contested nature of economies of scale in livestock farming in the Netherlands 1955-1990*
- Henrik Jochum, *How industrialisation processes influenced agricultural imaginations. OPTIGAL's impact on the Swiss poultry sector and chicken meat consumption*
- Jane Tynan, *Affording dryness: Weatherproofing and the business of comfort*
- Chair: tbd

11:00-11:30 Break

11:30-12:45 **Keynote**

Liesbeth van de Grift, *The Politics of Expertise*

12:45–14:00 Lunch

14:00-15:30 Session 2

Session 2A: *Panel:* Fossiel Fuelled Ecologies: the Environment, Fossil Fuel Industry and the Shaping of the Anthrpopocene during the Long 1970s

- Geert Buelens, *The Caribbean oil industry and the unequal Anthropocene*
- Peter van Dam, *Restraining affluent society: The car-free sunday and the limits of oil Consumption, 1939-2023*
- Afra de Mars, *The making of a 'no mine's land'? The effect of spatial planning and its discourse on the Limburg landscape after the mine closure (1965 Limburg landscape after the mine closure (1965 - present)*
- Michiel Bron, *Oil's Nuclear Frames: The oil industry's attempts to shape 'the environment' with innovative nuclear technologies during the long 1970s*
- Moderator: Cyrus Mody

Session 2B: Human Bodies and Bodily Materials

- Lisa Vanderheyden, *Different humans, different bodies: The role of infant and stillborn bodies in the anatomical laboratory in Amsterdam (1880-1920)*
- Florian van der Zee & Noortje Jacobs, *The Dutch don't sell their blood! A history of moral change in twentieth century medicine*
- Hieke Huistra, *What should we do with the bodies? Handling donated bodies in Dutch academic hospitals, 1970–2020*
- Chair: tbd

Session 2C: Ecological and Economic Concepts

- Bart Kartsens, *Economic principles in the explanation of language change*
- Thomas Kayzel, *How economic growth became progressive: The temporalisation and secularisation of nature in British political economy*
- Johannes Müller, *Economies of nature: Mathematising growth in early twentieth century physiology*
- Chair: tbd

15:30-16:00 Break

16:00-17:30 Session 3

Session 3A: Challenging the Unequal Anthropocene – Global Dependencies

- Carl Pierer, *The problem of labour and its obscured dependencies: Wages, sources of energy, and the international order*
- Floor Haalboom & Anna Teijero Fokkema, *Feeding factory farms in the unequal Anthropocene: Political discourse on feeding farm animals global south crops in the Netherlands (1962-1995)*
- Stephen Snelders, *Ecocentric knowledge systems and the rise of direct environmental activism in the 1970s: Saving the oceans with Greenpeace and Sea Shepherd*
- Chair: tbd

Session 3B: Science Internationalism and the Environment I

- Max Bautista Perpinya, *Databases, catalan nationalism and European scientific in the Spanish transition (1988-2004)*
- Robert-Jan Wille, *Airship diplomacy. Atmospheric physics, Weimar politics and the leverage of war, 1919-1933*
- Geert Somsen, *The Empire strikes back: The scramble for Africa in H.G. Wells's scientific internationalism*
- Chair: tbd

Session 3C: The Nature of Knowledge and the Knowledge of Nature

- Demetrios Parachios, *Historiography vs natural philosophy: Seneca's reinterpretation in the early modern Anthropocene*
- Jonathan Kirn, *Hans Jenny's cymatics: Practices of knowing human and nature in the visualisation of waves*
- Frans van Lunteren, *Science as religion*
- Elske de Waal, *The many faces of mathematics education: How Realistic Mathematics became contested knowledge in the Netherlands around the turn of the 20th century*
- Chair: tbd

17:30-18:30 Drinks

18:30-20:30 Dinner

ca. 21:00-22:30 Walk in the Zeist Forest

Saturday 22 June

8:45-9:00 Registration, coffee

9:00-11:00 Session 4

Session 4A: <u>The Ecology of Public Health</u>

- Samuël Coghe, *Anthrax at the cattle frontier: The politics of disease control and ecology in colonial Madagascar (1895-1960)*
- Núria Pujol Furelos, *Sociology of science meets public health: An ecological perspective*
- Martijn van der Meer, *An ecology of preventive child health care*
- Hannah de Korte, *Colonial healthcare and economic exploitation: (Re)negotiating (more-than-)human claims to space*
- Chair: tbd

Session 4B: <u>Socio-Ecological Knowledge Politics</u>

- Valentine Delrue, *Botanico-meteorology: Correlating weather, health, and agriculture in the French Enlightenment*
- Sjoerd Kompier & Henrike Vellinga, *Contentious careers: Environmental expertise and the hidden labor of colonial science in the Dutch East-Indies (1890-1962)*
- Stephan Strunz, *Knowledge at an impasse: Hygiene and built environment in Brussels and Liège, 1889–1914*
- Peter van Wingerden, *Shared language and the exchange of knowledge: A meeting in New Guinea in 1828*
- Chair: tbd

Session 4C: <u>Representing Reality? Paintings, Maps, and Forecasts</u>

- Lisa Wiersma, *Depicting summer in years of winter: Painting flowers, fruits and vegetables, and horticultural reality during the Little Ice Age*
- Jip van Besouw & Maarten Kleinhans, *Misconceptions of flow and riverbeds on the map, from 1700 to the present*
- Marieke Gelderblom, *Disease maps and mortality lines: The graphic method in medical statistics*
- David Baneke, *Domesticating the weather: How weather forecasts entered households, 1930-1950*
- Chair: tbd

11:00-11.30 Break

11:30-12:45 **Keynote**

Daniel Curtis, *Epidemic Disease and Society in the Premodern Low Countries: Inequality, Community, and Gender*

12:45-14:00 Lunch

14:00-15:30 Session 5

Session 5A: *Panel:* Knowledge and Economic History in the Unequal Anthropocene: Methodological and Historiographical Opportunities

- Panel members: Amber Striekwold, Anna Teijeiro Fokkema, Floor Haalboom, Larissa Schulte Nordholt, Michiel de Haas, Ralf Futselaar
- Chair: Martijn van der Meer

Session 5B: Science Internationalism and the Environment II

- David Skogerboe, *The ESRO origin story of the European Environmental Satellite Infrastructure, 1967-1975*
- Raf de Bont, *Constructing the International Species Information System (ISIS): On computers, endangered species and the Global Zoo*
- Tom Quick, *Laboratory animals science and the preservationist turn amongst zoo professionals*
- Chair: tbd

Session 5C: The Economy of Knowledge and the Knowledge of Economy

- Anna Bruins, '*Authori-tea': The VOC and the vulnerabilities of natural knowledge production in East Asia*
- Werner Scheltjens & Christoph Schlieder, *Entrepreneurs in practical commercial knowledge in the nineteenth century*
- Gerhard Wiesenfeld, *Nepotism or epistemic networks? Knowledge in the family economy of early modern universities*
- Chair: tbd

15:30-16:00 Break

16:00-17:30 Closing session

The Great Master Thesis Show

- Chair / organizer: David Baneke

ABSTRACTS

Ordered per session

SESSION 1

Session 1A: Making the Anthropocene Tangible: Collections as Source Material

Session abstract

How to make the Anthropocene tangible? This term is now broadly used to understand the unprecedented changes to global ecology caused by humans. Historians of science, technology and medicine have adopted it too, though their scholarship has tended to neglect material objects in favour of textual and theoretical considerations. This panel brings objects to the fore. It highlights materials that played a role in the production of knowledge about energy, botany, and medicine. We argue that using concrete objects to elucidate complex processes that work on a global scale, spanning decades or even centuries, helps us to get to grips with the Anthropocene.

Didi van Trijp, Museon-Omniversum

Knock on wood: Colonial wood samples as educational objects

The wood samples stored in various museum depots throughout the Netherlands have long been overlooked as objects of colonial significance. They are often regarded as timeless (a-historical) representatives of the tree species from which they were culled, rather than as cultural historical objects that played a vital role in ever-expanding colonial exploitation. This talk examines how, through these wood samples, students and pupils in The Netherlands developed a "material literacy" of the resources that could be found in Suriname and the Dutch East Indies. The samples in the Museum ten Bate van het Onderwijs [Museum for the Benefit of Education (now: Museon-Omniversum)] in the first half of the 20th century serve as case study.

Ruben Verwaal, Erasmus MC

Choking on 'foreign bodies'

Scholars of the Anthropocene investigate the complex ways in which human activity deeply influences climate and environment. Yet this paper asks what the changes to the globe have impacted the human body. Medical objects are a useful entry to answer that question, because medicine has always been concerned with the healthy and unhealthy interactions between body and environment. I present a remarkable object from the Erasmus MC heritage collection: two wooden panels with glass test tubes showing knobs, buttons, coins, safety pins, nails, fish bones, and other "foreign bodies" (corpora aliena), all of which were excavated by ENT-surgeons from their patients' ear canals, nostrils, and oesophagi. The object from the 1960s points towards various practices: social customs of ingesting or inserting non-food items, medical interventions removing them again, and finally their museological collecting and displaying without explicit consent. In exploring the entanglements between body and world, I argue that objects like this help us to consider how changes to the planet have been affecting our bodies and how they have led to new cultural practices.

Ad Maas, Rijksmuseum Boerhaave

Adventure, technology and guilt: Oil samples from the Bataafse Petroleum Maatschappij

Thanks to the ingenuity of laboratory engineers, oil extracted by Koninklijke Olie and Shell in Borneo and Perlak shortly after 1900 became usable at an industrial scale. Samples of different fractions of Borneo-oil from these early days were kept meticulously in the KSLA (Koninklijke/ Shell Laboratorium Amsterdam) and later handed over to Rijksmuseum Boerhaave. In museum-displays they represented the early days of the Royal Dutch Shell oil company and the fossil-fuel era as such. Nowadays, however, they are increasingly considered as a symbol for the harm done to the planet by fossil fuels. Material heritage of the Anthropocene, then, can serve not only to depict actual ecological and economic developments, but also how these have been appreciated.

Session 1B: Knowledge, Power, and Interests

Evelien de Hoop, Athena Institute, VU Amsterdam

Erik van der Vleuten, History Lab, TU Eindhoven

Knowledge politics of socio-ecological change: Reflections on transregional histories of palm oil and soybean sustainability science

This presentation reflects on an existing publication1, almost 5 years after the paper's original conception. Based on quantitative database queries (2,500+ sources) and close reading, the paper investigated how scientific research on palm oil sustainability, when defining sustainability problems and solutions, came to enact a (post)colonial politics of difference between Southeast Asia and Europe. The paper brought to the fore how regionally specific situated constellations of science and socio-ecological change emerged, and how inequitable transnational and postcolonial relations mattered to those situated histories.

During the session, we would like to constructively discuss some interrelated critical questions that ensued since the papers publication on, and that draw upon ongoing epistemic decolonization debates. These include: 1) the search terms used – i.e. 'sustainability' was crucial to identify literature, yet it made us overlook relevant work that does not deploy this term; 2) the role of geography – i.e. how to understand and analyze the geographical hybridity of both authors and empirical foci in the work that was reviewed to avoid reifying North/South dichotomies; 3) plurality – how to bring the plurality of voices involved more explicitly to the fore when analyzing literatures that tend to reinforce dominant voices' discourses?

Larissa Schulte Nordholt, Wageningen University & Research

The (Post)Colonial University. Wageningen University across The Netherlands, Suriname and Indonesia, 1876-2020

The history of Wageningen University & Research, formerly de 'landbouwhogeschool', is entangled with the history of agricultural exploitation of the Dutch East Indies and the Dutch colony of Suriname. Tropical agricultural arguably formed the central thread around which economic life of the Dutch Empire was spun when the agricultural school in Wageningen first opened its doors in 1876. In the years that followed the school developed into a centre for colonial agricultural science, with around 65% of its students aiming for a career in the Dutch East Indies. Many of its professors had impressive colonial careers. In Wageningen, agricultural knowledge was interpreted and translated between different locations of empire and through intervention from scientists, planters and indigenous populations. That knowledge was subsequently used to support and uphold the Dutch colonial endeavour, primarily in terms of commercial agriculture, while colonial hierarchies and ideas simultaneously also shaped that knowledge.

This paper explores the particular colonial history of the Wageningen agricultural college as part of a broader research project into this history. It asks the question why and how the Wageningen institution founded in 1876 became entangled with colonialism both institutionally and in relation to the production of environmental and agricultural knowledges in the 19th and 20th centuries. As such, it illustrates how the history of knowledge, agricultural economic exploitation and the environment are entangled.

Abel Streefland, TU Delft

"Drenched in oil": The entanglement of Delft University of Technology with fossil industries

"Delft University of Technology seems traditionally drenched in oil", Dutch newspaper De Volkskrant noted in 2023. The influence of the fossil industries on the university was indeed far-reaching. To mention two examples, Delft was the only place in the Netherlands where mining and petroleum extraction could be studied. A more concrete example is that in 1951, a 'pilot plant' for physical and chemical technology was paid for by the oil industries. During the full twentieth century, the relationship between Delft and fossil industries was strong and

multifaceted. Research was financially supported by Shell or others, while education was (partly) aimed at delivering engineers for these companies. During the first two decades of the twenty-first century this changed rapidly, although there are voices within the academic community that argue that this change has not gone – and is not going – fast enough.

In this paper, I will explore the long history of Delft University of Technology with the fossil industries. In what ways were the fossil industries present in the university? When and why has this changed?

Session 1C: Imaginaries of Industrialisation

Amber Striekwold, Utrecht University

Bigger means better? The entanglement and contested nature of economies of scale in livestock farming in the Netherlands 1955-1990

The logic of economies of scale has dictated the evolution of livestock farming in the post-war Netherlands. This economic theory argues that cost reduction occurs when companies increase the scale of their operation. In practice, economies of scale meant more efficient production through, amongst others, specialisation, efficiency and intensification. Historians have shown that research and education institutes played a significant role in developing and disseminating knowledge that enabled and encouraged livestock farmers to scale up their businesses. These studies, however, do not question the economic theory that influenced these ideas and take 'scale enlargement' as a given. This paper shows that scale enlargement was contested within these knowledge institutions. It shows that social and political ideas informed the question of scale on the food system's future.

First, this paper highlights dissident voices in these knowledge institutions. Prominent veterinarian Jan Grashuis, for example, argued for the extensification of animal farming to ensure a sustainable relationship between plants, animals and soil. Second, it shows how ideas on how to balance social, economic and environmental concerns informed knowledge production. In other words, what a sustainable form of livestock farming is. In doing so, this paper explores the entanglement of economic principles and knowledge production, questions the self-evident nature of scale-enlargement livestock farming and contributes to contemporary debates on scale and sustainability in the food system.

Henrik Jochum, Institute for Biomedical Ethics and History of Medicine, University of Zürich

How industrialisation processes influenced agricultural imaginations. OPTIGAL's impact on the Swiss poultry sector and chicken meat consumption

With the developments in the Swiss poultry sector during the 20th century that focused on increasing productivity, efficiency, and health came shifting views on what both farmers and consumers considered traditional and industrialised agriculture as well as products of domestic origin. Especially the industrialisation of the meat production from the early 1960s onwards with its introduction of quasi-vertically integrated production models, the international sourcing of raw materials, technologies, and animals, as well as shifting labour dynamics blurred these lines in the Swiss case.

By examining the first Swiss industrialised poultry production structure by the supermarket Migros, called OPTIGAL, I will be discussing its relationship to the Swiss poultry sector, how it influenced the discussion of what should be considered traditional and industrialised agriculture, and the notion of Swiss meat. The keeping of chickens in the OPTIGAL model was done by subcontracted family farmers, which was then utilised as a key argument why OPTIGAL should still be considered part of traditional agriculture, while mostly employing industrialised methods. At the same time, this contributed to the Swiss-ness of the meat, even though resources, animals, and frequently labour came from abroad. These economic developments thereby crucially influenced dominant ideas in 20th century agriculture.

Jane Tynan, Vrije Universiteit Amsterdam

Affording dryness: Weatherproofing and the business of comfort

Body protection, security, and comfort are central to the design of waterproof clothing, a very modern solution to the problem of porous fabrics and bodies. One of a host of miracle products enlisted to inspire trust in fossil-fuels in the mid-twentieth century, waterproof clothing has been critical to the expansion of the apparel industry. Energy and material flows in the industry, however, suggest that affording dryness to large numbers in the Global North has come at a price. This paper examines cultural imaginaries of (dis)comfort and (in)security that conditioned the development of water-repellent outerwear; its reliance on technology transfer and path dependencies that have locked the apparel industry into unsustainability. It examines knowledge practices associated with the development of 'high performance' materials, how they mobilise fantasies of safety and security, and disclose forms of material agency that drive environmental degradation. This paper uses object biographies to highlight the impact of consumer lifestyles on energy inequalities. Questioning the over-emphasis on comfort, security and resilience in apparel design and marketing offers a distinctive pathway for understanding how socio-technical imaginaries are mobilised to cope with uncertainty and risk. This paper is part of a larger research project on waterproof coatings and breathable laminates that highlights interconnections between political economy, ecology, materials, fashion, and bodies.

KEYNOTE 1

Liesbeth van de Grift, Utrecht University

The Politics of Expertise

Political polarisation around environmental issues, most notably climate change, has increased in the last decades. In particular in the United States, climate science has become enmeshed in the so-called 'culture wars', while the work of writers like Naomi Oreskes has shown how multinational corporations have a history of undermining scientific research and sowing doubt about fossil fuel (and other) dangers.

This keynote focuses on the political and regulatory dimensions of environmental issues, showing how a tension between expertise and representation, between politicisation and depoliticisation, has been a constant and built-in feature of environmental governance. By focusing on the politics of expertise, it seeks to bring together the fields of history of science and technology, environmental history and the history of politics and identify possible avenues for further research.

SESSION 2

Session 2A: *Panel*: Fossiel Fuelled Ecologies: the Environment, Fossil Fuel Industry and the Shaping of the Anthropocene during the Long 1970s

Panel Abstract

Understanding current environmental debates can quickly become difficult. Although scientists and international agencies issue increasingly alarmist reports, and most of the public debates seemingly have moved away from the simple dichotomy between "environmentalists" versus "denialists", discussions about responsibility are more and more suffocated by dense opinions of "energy experts", stake holders and technological optimists. To provide answers historians have increasingly focussed on the environmental debates of the long 1970s as a mirror and a point of origin for our current debates. In this panel we explore the role of the oil-, gas- and coal industries in shaping our understanding of 'the environment', environmental action and the role of fossil fuels in the future economy during the long 1970s. First, Geert Buelens tries to link questions of environmental justice and the environmental crisis by focusing on the oil industry on Aruba and Curacao. Peter van Dam then investigates the history of 'car-free Sundays' in entangling planning discourses with the rhythms of everyday life. Thirdly, Afra de Mars investigates the transition from black to green in the context of the closing of the coal mines in Limburg. Finally, Michiel Bron scrutinises the influence of frames about nuclear technological innovations created by the oil industry on our understanding of 'the environment'.

Geert Buelens, Utrecht University

The Caribbean oil industry and the unequal Anthropocene

The Club of Rome's 'Limits to Growth' report (1972) kickstarted a global debate about what we today call the planetary boundaries. Yet, it was rightly criticised for its lack of geographical differentiation. Indeed, responsibilities and vulnerabilities, profits and losses differ immensely when it comes to the environmental crises. Case in point in this paper is the impact of the oil industry on Aruba (Lago) and Curacao (Isla) during the long 1970s. What did companies like Shell and Esso/Exxon know and do? How did local communities deal with these fossil fuel giants? Using internal communication of the oil companies and the way their activities are described in local novels and poetry, this paper presents different types of knowledge production and distribution about the environmental challenges.

Peter van Dam, University of Amsterdam

Restraining affluent society: The car-free Sunday and the limits of oil Consumption, 1939-2023

Reacting to the oil crisis of 1973, the Dutch government announced a series of 'car-free Sundays' to curb the private consumption of oil. This measure to many signalled the return of scarcity after years of material progress. At the same time, it pointed towards a new environmental discourse which stressed the need for the moderation of consumption to mitigate the damage caused by consumer societies. This paper analyses the history of the car-free Sunday as a pivotal moment in negotiating the limits of the expansion of consumer society. It assesses the history of the 1973 car-free Sundays as part of a longer history of similar initiatives from measures at the start of the Second World War in 1939 to recent attempts to re-introduce car-free Sundays. The car-free Sunday drew on ideas about planning for scarcity as well as traditions of frugality and moderation. In the post-war years, it became a way to address global environmental limits and a

sense of acceleration in social life. In doing so, it highlights how planning discourses and rhythms of everyday life became entangled.

Afra de Mars, Maastricht University

The making of a 'no mine's land'? The effect of spatial planning and its discourse on the Limburg landscape after the mine closure (1965 - present)

After the announcement of the Dutch mine closure in 1965, a spatial reconversion on unforeseen scale began. This reconversion is known under the contemporary slogan 'van zwart naar groen' (from black to green). As a result of the choices made at the time, the Dutch Mijnstreek now seems a kind of 'no-mine's land'. Using publications by planning authorities, this paper analyses the ideas behind the slogan 'from black to green'. What was considered 'black' and what was considered 'green', and why was this transition thought to be necessary in the first place? After a general introduction, the paper focuses on the case of the Willem-terrain of the Domaniale Mijn. The Willem-terrain was the main seat of the Domaniale Mijn, the oldest of the Dutch coal mines, and was located in Kerkrade on the Dutch-German border. What used to be a full-fledged industrial terrain, is nowadays a neighbourhood with little traces of its mining past. The paper situates the ideas of 'from black to green' within broader contemporary debates on heritage, nature and environment.

Michiel Bron, Maastricht University

Oil's Nuclear Frames: The oil industry's attempts to shape 'the environment' with innovative nuclear technologies during the long 1970s

The second half of the Twentieth Century saw a development of various innovative nuclear technologies due to investments of various oil companies. Especially during the long 1970s, oil actors used these technologies to shape the conceptualisation of 'the environment' by enshrining human's superiority over nature and positioning industry as part of the solution to environmental problems. By focussing on oil spillovers in nuclear energy production, like the "green revolution" of In Situ Leaching in uranium mining by Mobil Oil, and innovative research to nuclear fusion by Exxon Nuclear and Shell and Gulf Oil's joint venture in General Atomics, this paper argues that by acknowledging some environmental pollution, and framing both technologies as environmental friendly solutions, the oil industry deliberately produced new changes to the environment .

Session 2B: Human Bodies and Bodily Materials

Lisa Vanderheyden, Utrecht University

Different humans, different bodies: the role of infant and stillborn bodies in the anatomical laboratory in Amsterdam (1880-1920)

There are different types of humans, but there are also different types of bodies. Throughout the nineteenth and early twentieth century, anatomical laboratories in the Netherlands were in want of human bodies. They were supplied via prisons, hospitals and other sources: bodies of unclaimed persons, or bodies whose relatives could not take care of the burial costs, were to be used for anatomical teaching and research. Recent research into the provision of bodies to

anatomy laboratories in the Netherlands gave us insight on the use of adult cadavers. However, there are different types of cadavers that were used, as the following case-study shows.

The anatomical laboratory in Amsterdam was supplied with human cadavers mainly through two municipal hospitals. From these hospitals however, I found that between 1879 and 1919, of the total number of bodies brought in, on average one third were stillbirths or children under the age of three. This means that children's cadavers came to play a much more important role in teaching anatomy than has previously been suggested. In this paper I will discuss the role of infant and stillborn bodies in the teaching of anatomy. I will focus not only on (1) the preservation of this human material, but also on (2) the use of these bodies, for example in dissecting rooms.

Florian van der Zee, Department of Medical Ethics, Philosophy and History, Erasmus MC

Noortje Jacobs, Department of Medical Ethics, Philosophy and History, Erasmus MC

The Dutch don't sell their blood! A history of moral change in twentieth century medicine

In 1930, the first blood transfusion service of the Netherlands was established by internist Henri van Dijk and the Dutch Red Cross at the Catholic Saint Francis Hospital in Rotterdam. Since the late 1910s, Dutch surgeons had started to transfuse blood, but this was the first time that the practice was institutionalised. "Like the English [blood transfusion services]," Van Dijk wrote proudly in 1933, "it is built on completely idealistic ideas." Dutch citizens gave their blood out of "charity" and "agape" and stayed far removed from the much more capitalistic system that had developed in the United States, where professional donors only calculatingly sold their blood. It was proof of the truly altruistic spirit of the Dutch nation.

In this talk, we explore the rise of this moral practice in the Netherlands, including a number of permutations it underwent in the mid-twentieth century. We first show how in the 1930s, backed up by the Dutch Red Cross, a consequentialist ethic of voluntary and non-remunerated donation (VNRD) emerged from an unsettled moral landscape. Secondly, at the eve of the Second World War, mobilisation efforts reconfigured blood as a national resource, simultaneously challenging and nationalising the Red Cross ethic. Finally, after the war, discourse shifted to its presently still popular deontological register: donation of bodily materials should always be voluntary and non-remunerated, regardless of circumstances and consequences. By reconstructing this history, we not only recollect and contextualise different moral meanings of the intersection of market forces and the body. We also reflect on how moral self-evidence may develop as bodily materials come to symbolise the moral conclusions reached about them.

Hieke Huistra, Utrecht University

What should we do with the bodies? Handling donated bodies in Dutch academic hospitals, 1970–2020

Medical institutions have always collected dead bodies for research and teaching. The acquisition of these bodies has received considerable attention in historiography; the handling of bodies after acquisition – the focus of this talk – less so.

Nowadays, bodies are acquired through donors, who have given explicit consent for the use of their bodies 'for science'. But what does 'for science' mean? Is it acceptable to use these bodies in first-year anatomy teaching? Can they be used for forensic research into bodily decay on so-called body farms? If the army asks for dead bodies to experiment with, should that request be granted?

In this talk I explore how Dutch academic hospitals have dealt with such questions in the past 50 years. National regulations or guidelines on what could and could not be done with bodies were, and are, lacking. Thus, decisions had to be made locally, often on a case-by-case basis. In a new research project (collaborators: Marit de Wit, Noortje Jacobs, Laurens de Rooy), I investigate these decision-making practices through oral history interviews with the historical actors involved in handling donated bodies. At Woudschoten, I would like to present the first results from this project.

Session 2C: Ecological and Economic Concepts

Bart Kartsens, Rathenau Institute, The Hague

Economic principles in the explanation of language change

Economy is not just about gaining profit at the expense of human and planetary capital. Economic consideration also involves such things as fruitful innovation, efficient distribution of goods, and minimising costs for society as a whole. Thus there are many forms of economic thinking and it is interesting to explore its manifestations in the history of knowledge-making disciplines.

This contribution will focus on the way economic ideas and principles feature(d) in modern linguistics. In (the study of) language, a tension is always present between on the one hand gaining a maximum of clarity and richness of expression, and on the other hand minimising the effort it takes to convey this (simplicity). An economic solution of this tension must somehow result in an equilibrium.

In the middle of the 19th century a debate took place between two leading German linguists August Schleicher and Georg Curtius about the role that economic principles, such as preference for simple expressions over complex ones and efficiency of communication, played in the change of languages over time. Interestingly this happened against the backdrop of an ecological perspective on language. A language was seen as an organism, its 'life' going through periods of growth and decay.

I will review the debate between Schleicher and Curtius, recapitulate what it tells us about the relation between economy and the life of languages and with that in mind briefly fast forward to more recent 'economic' theories of language such as William Labov's mechanical principle of language change and Noam Chomsky's minimalist program.

Thomas Kayzel, Sciences Po, Paris

How economic growth became progressive: the temporalisation and secularisation of nature in British political economy

Why do we want economic growth? It is common to associate economic growth with improvement in well-being and happiness, but with the debates surrounding post-growth and de-growth, the purpose of growth has become a topic of urgent political discussion. This is not the first time the link between economic prosperity and social progress has been put into question. Early figures in political economy, including Adam Smith, Thomas Malthus, and J.S. Mill, expressed ambiguity or scepticism regarding whether the rise in commercial activity would indeed lead to increased happiness and freedom. This paper explores how the initial ambiguity surrounding economic growth gave way to a prevailing optimism about growth during the

mid-19th century. I will argue that Geological influences played a pivotal role in this re-evaluation of economic growth. Through the temporalisation and secularisation of nature, geology provided a foundation for a novel concept of progress, one that was more contingent yet also more comprehensive. By examining the correspondences and research notes of the economists associated with the English Historical School—T.E. Cliffe Leslie, Walter Bagehot and J.K Ingram—I will argue that these economists used the Earth's history as a model for multiple forms of progress amongst which economic growth. Growth optimism was thus not the result of short-sightedness, or the side-lining of the concept of nature in economics, but rather stemmed from placing economic history within the vast framework of geological timescales.

Johannes Müller, Leiden University Centre for the Arts in Society (LUCAS)

Economies of nature: mathematising growth in early twentieth century physiology

Growth and size are essential traits of biological organisms and other complex systems, and the need to create descriptive and prescriptive models to understand growth was increasingly recognised since the second half of the nineteenth century. Effective mathematisations of such growth models occurred relatively late, and the quest to develop mathematical models united different fields, ranging from theoretical approaches to physiology to practical applications in agricultural and fisheries research, as well as nutritional sciences and paediatrics.

In this paper, I address the development of early organismic growth models in the context of economic concepts that described the use and the transformation of resources. I focus on the contributions of August Pütter (1879-1929) and Ludwig von Bertalanffy (1901 –1972) and analyse how their mathematical approach to modelling natural processes bridged biological and economic terminologies to describe metabolic processes that depended on limited resource supply. These approaches not only prepared the ground for interdisciplinary systems-theoretical approaches, which conceptualised both organisms and social organisations as (thermodynamically) open systems, but also for generalised growth models that could be applied in different fields from ecology and biology to economics.

SESSION 3

Session 3A: Challenging the Unequal Anthropocene – Global Dependencies

Carl Pierer, University of Cambridge

The problem of labour and its obscured dependencies: Wages, sources of energy, and the international order

If contemporary environmental crises challenge what we consider the sphere of politics, this requires not so much a redefinition of politics to achieve greater epistemic clarity, but rather finding ways to hold open a space for political contestation by highlighting complex entanglements. In this paper, I argue that tracing the complexities of the concept of (industrial) labour and how it obscures its own dependencies can provide a way of doing so. This supports a skepticism with respect to achieving epistemic clarity on the problem of labour. To retrieve this position, this paper focuses on the Wages for Housework movement's contestations in the 1970s of labour, and situates it in the 'problem-space of deindustrialization'. In applying a Third World analysis to questions of feminism, the WfH movement developed a unique critique of the wage, which highlighted the obscured dependencies of labour. The social conflicts of this decade in many places were conflicts over energy, as deindustrialization, notably in Europe, is inseparable from a decline in the importance of coal production. I argue that this story weaves together aspects of the international and the domestic, the private and the public, production and reproduction, thereby shedding a critical light on the intractability of labour.

Floor Haalboom, Erasmus University Medical Centre, Rotterdam

Anna Teijeiro Fokkema, Vrije Universiteit Amsterdam

Feeding factory farms in the unequal Anthropocene: Political discourse on feeding farm animals global south crops in the Netherlands (1962-1995)

In the recent historiographical trend of commodities' histories, one livestock feed commodity gets a lot of attention because of its socio-ecological impact in South America: soy. In order to better understand the rise of industrial livestock farming and its connection to feed production places around the globe, we argue against such a single-commodity focus. A broader political discourse analysis of the feed industry, its experts and its critics is needed in relation to the material changes that enabled the rapid rise of 'factory farms' since the Second World War. We use the Netherlands as a case, because it has always been one of the largest importers of feed commodities in the European Union. American soy was not the only feed ingredient imported: Thai cassava surpassed it in the 1980s. Both the cassava and soy boom were the result of the European-American trade policy compromise 'the Leak of Rotterdam' (1962), created to support trade and industrial interests in the protectionist European Common Agricultural Policy. The massive imports from the global south were criticised by a coalition of environmental NGOs, developmental NGOs and agricultural organisations concerned about the growing power of 'industry', its environmental impact, and its connection to hunger in the 'Third World'. How did Dutch discourse on feed commodities from production places in the global south develop from the 1960s until the 1990s? Who shaped this discourse, what was visible and invisible about the origins of the feed, how did this change over time, for what reasons and interests, and with what consequences?

Stephen Snelders, Utrecht University

Ecocentric knowledge systems and the rise of direct environmental activism in the 1970s: Saving the oceans with Greenpeace and Sea Shepherd

The 1970s witnessed the rise of radical direct environmental action groups fighting ecocide and the extinction of species using forms of civil disobedience and direct vigilante action. These groups were informed by complex knowledge systems. While in today's environmental contestations 'scientific' and 'expert' knowledge is often juxtaposed with 'tacit' and 'lay' knowledge, environmental activists in the seventies were often driven by a complex mixture of scientific and other forms of knowledge. This paper focuses on the early history of Greenpeace and its radical offshoot Sea Shepherd. I discuss how ecological concerns about human causes of environmental degradation combined with more esoteric forms of knowledge, such as psychedelic experiences of one-ness with nature, and what was (often problematically) perceived as indigenous knowledge. The result was a powerful if perhaps not always explicit or consistent ecocentric worldview and knowledge system that made activists question Western society's values and inspired them to direct action. They furthermore used organisational knowledge obtained in sixties activism to organise in anarchist-type affinity groups, and made excellent use of their knowledge of the functioning of society's information and media channels to create a virtual community of sympathisers and donors around the world.

Session 3B: Science Internationalism and the Environment I

Max Bautista Perpinyà, UCLouvain

Databases, Catalan nationalism and European scientific in the Spanish transition (1988-2004)

The Ecological and Forestry Inventory of Catalonia (IEFC) was the flagship project of the newly founded Ecological and Forestry Applications Research Centre (CREAF) in Barcelona. It was Catalunya's first ecological forest inventory, led by ecologists who saw themselves as critically responding to the managerial, centralist, and productivist forest policy of Franco's dictatorship with a socially responsible, democratic science of ecology. Based on archival documentation and a nascent oral history collection, this paper tells the story of the institutional rise of terrestrial ecology and the technical and political difficulties of making the IEFC database: putting it together, making it useful, and integrating it with other databases. The IEFC fed from "new ecologic data" of forests beyond timber and was designed to track the effect of climate change on European forests, and it aimed to provide a "radiography of the Catalan forest's health" by giving a probability of forest fires in the face of drought. CREAF scientists aimed to integrate democratic, Catalan science into the science and nature of Europe, bypassing the Spanish state. Technical terms like root biomass (deprecated by the Spanish state foresters for being not directly related to timber production) became tools to integrate Catalonia's ecology into the construction of an environmentally conscious Europe.

Robert-Jan Wille, Freudenthal Institute, Utrecht University

Airship diplomacy. Atmospheric physics, Weimar politics and the leverage of war, 1919-1933

Traditionally, there are several ways of seeing a direct relationship between science and war: the military-industrial complex finances certain disciplines, creates political opportunities for new experiments, and often start logistical-organisational transformations resulting in jobs for scientists.

However, in my presentation I will focus on the environmental history of a militarised science in times of peace: how did the Arctic create an opportunity for German scientists and (former) military officers to successfully claim transnational airspace? How did they enlist the help of other nations, most of them former enemies? Cooperation between Germany and other nations, and between their scientists, politicians and military officers was greatly facilitated by the collective mission of colonising the transpolar atmosphere for the sake of aviation. Collectively they organised a Zeppelin expedition to the Arctic sea. The participants were mostly meteorologists, geophysicists and journalists from mainly three states: Germany, the US and the Soviet Union.

As I will show, meteorologists played a key role: they were very invested in regaining access to the international community, while at the same time willing to support the national interests of their state. The environmental expertise many German meteorologists had gained during the First World War proved vital.

Geert Somsen, Maastricht University / Vrije Universiteit Amsterdam

The Empire strikes back: The scramble for Africa in H.G. Wells's scientific internationalism

This paper examines how science was linked to colonial expansions in the 19th and 20th centuries – not materially (by enabling resource extraction) or ideologically (through racial biology and the like), but most generally by its conception as a modernising force.

The paper focuses on H.G. Wells (1866-1946), the British science fiction author and political opinion leader. Wells has become famous for his visions of a future unified planet, where humanity at large would come together within one World State. This state would be run by science (finding scientific solutions for all practical problems) and by conferring universal human rights to its global citizenry. Because of these ideas, Wells is still celebrated today as a visionary advocate of internationalism.

On closer scrutiny, however, Wells's ideas did not foreshadow current internationalist principles but continue contemporary imperialist conceptions. More particularly, his views of internationalisation closely resembled the ways in which colonial conquests were represented in the British press during the Scramble for Africa. Winston Churchill's war correspondent reports, for example, also depicted science as a unifying agent – through the elimination of people and practices that could not keep up with its modernising tendencies. This paper explores such connections in order to reveal unexpected imperial legacies.

Session 3C: The Nature of Knowledge and the Knowledge of Nature

Demetrios Paraschos, Vrije Universiteit Brussels

Historiography vs natural philosophy: Seneca's reinterpretation in the early modern Anthropocene

This presentation explores Seneca's contrasting views on Historiography and Natural History/ Philosophy, as elaborated in his work *Natural Questions*, 3.5-18 and the reinterpretation of his ideas during the early Anthropocene. In this passage, Seneca criticises the glorification of rulers and their conquests in historiography, portraying it as a chronicle of human corruption and moral decay. In stark contrast, his Natural Philosophy reveres the divinity of nature and the Stoic logos, advocating for a life aligned with virtue and natural order. While the Historiography of humanity is a story of injustice, Natural History is the narrative of how every human being has

the same perspective on divinity, the connection with Nature. For Seneca, Nature, which portrays the stoic divine logos, is the answer to human injustice, highlighting Stoicism as one of the first environmentalistic economic philosophies of social justice.

The presentation examines the reinterpretation of these ideas during the early modern era, a pivotal time of Renaissance humanism, colonial expansion, the Scientific Revolution, and the starting point of the Anthropocene. It analyses how the revival of Stoicism and the newfound emphasis on scientific inquiry were influenced by the perception of Seneca's dichotomy.

Linking this historical discourse to the concept of the Anthropocene, the presentation argues that Seneca's perspectives offered the base for an early insight into ecological and economic challenges either in the Classical era or the Anthropocene. It examines how the Stoic view of living in harmony with nature and prioritising virtue over power informed the understanding of historical inequality and environmental ethics in the early modern world.

Jonathan Kirn, Department of Media and Culture Studies, Utrecht University

Hans Jenny's cymatics: Practices of knowing human and nature in the visualisation of waves

Troubling the clear distinction of human and nature, terms like 'Anthropocene' and 'ecology', emphasise that human and nature are facing contemporary ecological crises in an intimately connected situation. Yet, economies of power also determine the relations of human and nature, and practices of knowing are central to them. To address the shared confrontation with ecological crises, it is thus necessary to understand how practices of knowing performatively bring about the distinctions and relations of human and nature and how they can be shifted in the interest of facing these crises together. In my presentation, I will do so by discussing Hans Jenny's research in cymatics. Cymatics concerns itself with the visualisation of wave effects, historically with the aim to produce human knowledge through visualising natural processes. However, looking at cymatics from a new materialist perspective allows to raise the question who visualises whom for whom, and thus, who knows whom. Addressing this question, I will analyse how the distinction between human and nature is made in the research practice of Jenny. Furthermore, I will ask, how taking into account the 'natural' contributions to this practice of knowing allows to shift it towards a practice of a shared knowing-one-another.

Frans van Lunteren, Vrije Universiteit Amsterdam

Science as religion

As the historian Paul Forman pointed out long ago, throughout much of the twentieth century, physicists have cultivated a self-image, marked by a persistent ignoring or even denial of the material – social, industrial, military - contexts that enabled the field to flourish. This habit is best seen in the in the many historical reflections and writings by physicists, where such contexts are usually filtered out, as well as in their use of such concepts as "pure" and "applied" science. To understand this quest for purity, and its concomitant denial of ecology and economy, it may be helpful to turn to Durkheim's social theory of religion. This theory can also shed light on several other quirks of modern physicists, such as their obsession with unification, their frequent use of quasi-religious language, and their strong sense of a calling. More in general, it can tell as something about the nature and role of academic disciplines.

Elske de Waal, Freudenthal Institute, Utrecht University

The many faces of mathematics education: how Realistic Mathematics became contested knowledge in the Netherlands around the turn of the 20th century

The field of education has many deeply invested stakeholders, and educational knowledge is often heavily contested, perhaps even more so than other forms of knowledge. A prime example is Realistic Mathematics Education (RME, *Realistisch Rekenen*), a specific programme for teaching mathematics developed since the 1970s. While the programme was very successful between 1980 and 2000, it has now become heavily contested in public debates.

RME was developed by (predecessors of) the Freudenthal Institute at Utrecht University. After a process of development, in which several stakeholders such as teachers and students were actively involved, RME was gradually adopted in educational practice over the course of the 1980s and 1990s.

In this paper I will discuss RME in educational practice, and how this knowledge circulated and was reproduced, and thereby reshaped by a myriad of actors. I will highlight the role of educational publishers, regional advisory boards and teacher teams in bringing RME to the classroom. With this I show that RME, in its travel to the classroom, had been transformed into a pluriform concept that meant different things to different stakeholders. After 2005, critics could then reframe this heterogenous collection of practices into an easy to attack caricature of the original RME programme.

SESSION 4

Session 4A: The Ecology of Public Health

Samuël Coghe, Ghent University

Anthrax at the cattle frontier: The politics of disease control and ecology in colonial Madagascar (1895-1960)

This paper examines how anthrax shaped, and was shaped by, the capitalist cattle frontier in Madagascar under French colonial rule (1895-1960). During that period, colonial administrators, entrepreneurs and scientists sought to transform Madagascar's immense and allegedly 'underexploited' cattle herds into profitable commodities. One important obstacle, however, was anthrax, an often lethal disease caused by contact with the spores of the bacterium *Bacillus anthracis*. This paper examines the mutual constitution of anthrax and the cattle frontier in Madagascar. Firstly, it examines French veterinary policies towards this disease, which killed cattle and corrupted their hides. It argues that, although anthrax was conceived as a telluric disease tied to particular soils and environments, the response was not ecological in approach. Profoundly influenced by Pastorian modes of conceptualising and dealing with infectious disease, veterinary doctors adopted a more narrow "technopolitical" approach (Aro Velmet) mainly consisting in the mass vaccination of cattle. Accordingly, this paper analyses (trans)imperial networks of anthrax vaccine development and the practicalities of large-scale vaccination campaigns. Secondly and conversely, it also asks to what extent the emerging cattle frontier, for instance through changing range management, new trade routes and the mass production of hides, reshaped the distribution and ecology of the disease.

Núria Pujol Furelos, University of Groningen

Sociology of science meets public health: An ecological perspective

This interdisciplinary paper is at the intersection between Environmental Humanities and Critical Epidemiology. It aims to bring into dialogue two authors from an ecological perspective. I will argue that while coming from very different traditions, Bruno Latour and Nancy Krieger find an antidote in historicising to solve Anthropocene-related problems they face in their respective disciplines. Both authors share an interest in the entanglements between humans and the environments that they inhabit. For example, Latour's concept of ecology considers humans as one more cog of the earth's ecosystem. By the same token, when describing the connection between environmental factors and disease distribution Krieger argues that "the *eco* (…) is not restricted to humans and instead encompasses complex cross-species and cross-level dynamic ecological systems that evolve". Although the two definitions contain the prefix *eco*, I will argue that disentangling their different meanings is crucial for my interdisciplinary project. My project aims to build a humanities-grounded concept of sustainable health, a concern in Critical Epidemiology. Sustainable health is a work-in-progress definition based on three pillars: prevention, universal access to healthcare and planetary health. Planetary health addresses the impacts of human disruption on the Earth, assessing its impacts on both human health and life on Earth. While Krieger's concept of ecology very much fits this definition, I will argue that this concept deserves a humanities-grounded idea of ecology. I will therefore advocate for the Latourian idea of ecology which avoids dichotomies between humans and non-humans and is rooted in ideas of transformation and transference among these actors.

Martijn van der Meer, Erasmus University Rotterdam

An ecology of preventive child health care: How Dutch preventive child health care reconfigured everyday interactions, 1900-1940

In 1901, paediatrician Broer Plantenga opened the first Dutch child health clinic in The Hague. He was deeply concerned about Dutch infant mortality rates, and started a clinic that mothers could visit routinely to weigh their babies, to learn how to breastfeed, and to receive alternative nutrition if breastfeeding did not work. By 1939, more than 900 clinics had been established across the Netherlands.

In the first part of my paper, I will explain why Plantenga's preventive initiative became the national model for child health care during the first decades of the twentieth century. The institution facilitated three preventive practices: parents visited clinics to weigh their babies and receive nutritional advice; courses taught mothers how to take care of newborns; and nurses visited families at home to inspect living conditions and check if parents followed medical advice. In effect, these practices became collective, meaning that many members of Dutch society came to participate in local activities organised with similar "scripts" for social interaction. With the spread of these collective practices, I show in part two of the paper, certain expectations about the appropriate social roles of mothers, housewives, and citizens travelled along. Drawing from dramaturgical sociology, I will show how these expected patterns of behaviour acquired a social status and came to order the daily interactions between parents and health care professionals in the theater of preventive child health care. The third part of my contribution queries why young parents would participate in preventive practices. These three parts together present an ecology of preventive child health care to explore how, historically, normative expectations about social roles could become a part of everyday social interaction.

Hannah de Korte, KU Leuven & Maastricht University

Colonial healthcare and economic exploitation: (Re)negotiating (more-than-)human claims to space

The development of economic exploitation, ecological transformation and colonial medical knowledge and associated healthcare practices were strongly interdependent in the Belgian Congo (1908-1960). In this paper, I will discuss how the development of malaria control in the province of Katanga was influenced by the ways in which human and nonhuman actors (re)negotiated their claims to space in these highly industrialised, yet more-than-human environments. This will be illustrated through a case study on the industrial complexes of the Union Minière du Haut-Katanga (UMHK), one of the biggest mining companies in the Belgian Congo, which thoroughly reshaped human-ecological relations in the Katanga Province. Large-scale landscape alterations resulted in the creation of new disease environments. Mosquitos adapted swiftly to the destruction of their habitats by resettling into newly created urban and industrial landscapes. Their movement prompted colonial administrators and industrialists to respond to the mosquitos' behaviour and associated health risks. Industrial and colonial doctors developed new ideas on how ecological circumstances and malaria morbidity might be interrelated, including racialised explanations on the susceptibility to malaria of employees with different ethnic backgrounds. These new explanations of disease causation and distribution influenced the industry's employment policies and (re)shaped environmental management and disease control measures.

Session 4B: Socio-Ecological Knowledge Politics

Valentine Delrue, Universiteit Gent and Università Ca' Foscari Venezia

Botanico-meteorology: Correlating weather, health, and agriculture in the French Enlightenment

In the mid-eighteenth century, French meteorologists began to collate and correlate standardised series of weather observations with botanical and medical observations. At the Société Royale des Sciences in Montpellier, this search for patterns in the way the atmosphere affected life was particularly prominent. These savants' interest in the weather was driven by political concerns to foster "the good of the state" by maintaining the health of its inhabitants and the quality of its agricultural produce. I argue that their practice of "botanico-meteorology", comparing weather parameters with those of living beings, was stimulated by three developments. First, the presence of a tradition of practical neo-Hippocratic medicine, which focused on improving the health of the local community through the management of environmental factors. Second, the debates of the seventeenth and eighteenth centuries on the rise of sap in plants, which led to a standardisation of vegetative and animal life as permeable bodies dependent on the air for their nourishment. Finally, the parallel development of biological and medical taxonomies made it possible to create categories that could be collated.

Sjoerd Kompier, Leiden University

Henrike Vellinga, Leiden University

Contentious careers: Environmental expertise and the hidden labor of colonial science in the Dutch East-Indies (1890-1962)

In both past and present, research processes of the field sciences often take the form of multi-ethnic ventures which combine differing skill-sets, knowledge systems and environmental outlooks. Especially in colonial contexts, these processes knew highly unequal terms of engagement and acknowledgement.

In our paper, we present the results of our project: "Who did all the work? The hidden labor of colonial science". We introduce our Nodegoat-dataset, containing information about five hundred indigenous contributors to botanical, zoological and anthropological research in the Dutch East-Indies between 1890 and 1962. Our dataset shows that the scholarly fruits of European scientific expeditions were (co-)produced by a wide range of indigenous actors, from professional botanists, anthropological assistants to forced labourers.

In order to illustrate the dataset's value for histories of knowledge we present two vignettes which showcase how indigenous people built contentious careers in colonial science. We focus on indigenous botanists (*mantris*) trained at the botanical gardens of Buitenzorg, as well as indigenous "forest experts" operating for the Forestry Department of the Office of Civic Affairs in Dutch New-Guinea. We show how their environmental knowledge was deemed both indispensable and unauthorative by European scientists, indicative of the complex politics of knowledge at play.

Stephan Strunz, Institut für Geschichte der Medizin, Technische Universität Dresden

Knowledge at an impasse: Hygiene and built environment in Brussels and Liège, 1889–1914

In Belgium, the 1889 housing law set up housing committees (*Comités de patronage des habitations ouvrières*) with the mission to conduct systematic surveys on the sanitary conditions

of Belgian working-class homes. This paper will delve deeper into two particularly active committees. Starting in 1890, the Brussels and Liège Comités de patronage published a series of surveys, assessing hygiene, environmental factors and economic aspects in working-class dwellings. A specific focus was placed on dead ends (French: 'impasses') in between urban housing structures. These 'impasses' were identified as a major contributor to unhealthy living conditions, obstructing daylight and ventilation. Interestingly, the Brussels and Liège committees used different epistemic approaches to understand these morphological elements. The Brussels committee concentrated on the architectural aspects, providing thick descriptions and a plethora of photographs showcasing the most insalubrious impasses. On the flip side, the Liège committee emphasised the economic conditions that led to their formation, with a focus on the fluctuating price of land. Evidently, impasses posed a significant hurdle for the production of hygiene knowledge, opening up differing avenues for public intervention.

Peter van Wingerden,

Shared language and the exchange of knowledge: A meeting in New Guinea in 1828

In 1828, a Dutch military expedition travelled to New Guinea to take possession of the island and found a military fort and a trading post. The expedition was accompanied by members of the Natuurkundige Commissie whose knowledge of the natural world should help in finding a suitable location for the settlement. During the search along the coast, the expedition regularly came into contact with the local population. The ability to communicate was a deciding factor in the exchange of knowledge. Even though they had hired several indigenous translators with trading experience in the region, they still encountered indigenous inhabitants that they were unable to communicate with. When a shared language was present, it was easy to share knowledge, but when this common element was missing, communication broke down and misunderstandings arose. I will zoom in on one specific encounter that led to a skirmish for which we have three textual and two visual representations. Unpacking these will allow us to see how indigenous people quickly became natural curiosities rather than fellow human beings when a shared language was absent.

Session 4C: Representing Reality? Paintings, Maps, and Forecasts

Lisa Wiersma, Utrecht University

Depicting summer in years of winter: Painting flowers, fruits and vegetables, and horticultural reality during the Little Ice Age

Dutch seventeenth-century painters excelled in depicting impressive flowers, fruits and vegetables convincingly: they seem tangible and appetising and look as if it was just a moment ago that they were collected from a botanical garden, orchard or allotment – or perhaps not even picked and harvested yet. In Willem Beurs' treatise on painting, The big world painted small, published in 1692, flowers, fruits, and vegetables are observed attentively and receive special attention: Beurs gives elaborate instructions for picturing their colours from life, instructions that closely correspond with what we know of seventeenth- and eighteenth-century masters painting practices. Because The big world offers a very complete collection of things, it can be used to delve into the seventeenth-century natural world. What did Beurs and his peers see and where did he find his examples? By stating that artists should place a real piece of fruit in front of them, Beurs offers insights into the local environment. But considering an often clouded, wet country that endured very severe winters, one can wonder how these flowers, fruits and

vegetables were grown. Many still lifes show fruits that did not grow in the seventeenth-century Netherlands, a period now known as the Little Ice Age, when temperatures were famously low, with winter storms sometimes still battering fruit trees in July.

The Little Ice Age affected painting in more ways than by urging in the winter scape. In this paper, I will explain the consequences of the Little Ice Age for painting flowers, fruits and vegetables from approximately 1650 until well into the eighteenth century. After analysing Beurs' method for depicting the natural world from life, his painted world is compared to the real world, known from historical climatological research, resulting in an ecological analysis of the relationship between painters and their physical environment. This direct comparison between depictions and contemporary reality builds on research by environmental historians and historical geographers, and on contemporary source material that has not been used in such a context before, such as horticultural treatises and references to climate and weather from letters and reports, as well as trade documentation. It deepens our understanding of the reasoning behind painting luscious flowers, fruit and vegetables in the seventeenth and eighteenth centuries, and it offers a distinct new insight into the real world that surrounded seventeenth- and eighteenth-century people.

Jip van Besouw, University of Seville

Maarten Kleinhans, Utrecht University

Misconceptions of flow and riverbeds on the map, from 1700 to the present

River management of the Rhine and the Meuse was systematised in the eighteenth-century Dutch Republic. This happened at the intersection of political, environmental, technological, and scientific developments. Major infrastructural works exacerbated silting and flooding, and thus major economic and environmental problems. Scholars and surveyors were asked to find solutions. They learned a lot about rivers. Or thought they did.

This talk focusses on the theorisation of erosion and siltation of the riverbed, specifically on a misconception that lives on in modern lay writing and among students. The dominant model of river flow in the eighteenth century, based on the mechanics of free fall, related deeper water to faster flow. It predicted the fastest flow near the riverbed. Engineers hence reasoned that faster flow would lead to erosion of the riverbed. To solve siltation and unequal distribution of flood risk over the Netherlands, engineers attempted to lead more water into shallower channels. Although this appeals to common sense, modern fluvial geomorphology shows they did exactly the wrong thing. The driving factors for siltation are the streamwise gradient in sediment transport and channel meandering, which are not caused by faster flow. Redrawing the river map was an unintended consequence of past interventions.

Marieke Gelderblom, Utrecht University

Disease maps and mortality lines: The graphic method in medical statistics

In the second half of the nineteenth century, statistical graphics created new ways to give meaning to statistical data. In the Netherlands, one of the first fields to adopt visual statistical methods was medical science, especially in the political-scientific programme of the hygienists. These medical professionals increasingly relied on statistical data to gain insight into mortality and disease patterns, their underlying causes, and the corresponding ways to improve public health. Disease maps, mortality 'lines', and mortality atlases were the result. Although medical statistics and medical mapping have been carefully studied by historians, the role of other visual statistics (like charts and diagrams) remains underexposed.

In my talk, I show that for men like Johannes Zeeman and Ali Cohen, medical maps, charts and diagrams were not only a new way of expressing statistics, but also created a new statistical 'thinking tool'. I will analyse statistical graphics, as well as professional debates about them in medical journals and administrative reports, to show how the medical community shaped the graphic method, for what reasons, and what data practices they developed. In the end, I show how medical professionals helped to shape a wider shift towards graphical thinking in the Netherlands in the nineteenth century.

David Baneke, Utrecht University

Domesticating the weather: How weather forecasts entered households, 1930-1950

The first element of nature that we encounter when stepping out of the door is the weather, even for hardened city dwellers. But our relation to the weather has changed fundamentally over the last century. When checking for rain, we now check our phones rather than looking out of the window, and getting wet is a failure of buienradar rather than bad luck. Only the occasional 'weather alarm' reminds us that we are dealing with an uncontrollable force of nature.

Of course farmers and sailors have long tried to read the signs of the atmosphere. Today, however, we rely on specific scientific infrastructures, made accessible through sophisticated communication channels. But when did this change happen? How did the weather become something that is routinely predictable?

In this talk, I will focus on changes in Dutch public weather forecasts between 1930-1950. Based on extensive archive research, I will argue that this was the period in which weather forecasts became 'mass communication of science', aimed at the population in general rather than specific professional sectors. This change involved developments in meteorology as well as the golden age of radio culture.

KEYNOTE 2

Daniel Curtis, Erasmus University Rotterdam

Epidemic Disease and Society in the Premodern Low Countries: Inequality, Community, and Gender

A substantial amount of literature on past epidemics has presented these outbreaks as massive rupture points that pushed societies down new paths—helping establish geographically divergent economic developments, create demographic changes such as new patterns of marriage behaviour, or invoke cultural changes such as new attitudes to health, religion, and death. In this lecture, I present ongoing work from two consecutive NWO projects which form the basis of a new book on the long-term experiences of epidemics in the Low Countries from the fourteenth- to the nineteenth century. Contrary to the literature, I argue for something very different. The interesting phenomenon is not how epidemics caused change but how societies prevented change in face of epidemic-induced pressures.

In the premodern Low Countries, people from all different backgrounds and statuses instead came together to try and preserve the status-quo or "the ordinary" under threat. Communities came to terms with these frequent challenges by employing and reinforcing "old" or "known" structures and frameworks. During epidemics, people protected their customary time-honoured social and cultural practices, sometimes resorting to violent resistance against perceived elites, and discovered different ways to shield economic assets from being redistributed. If economic resources were redistributed, it was often a temporary deviation from the norm, and barely resembled a structural reorganisation of hierarchies and strata within and across communities.

Overall, what the long-term historical experience of the Low Countries with epidemics shows is that rather than stimulators of massive changes within society, "shocks", or "watershed moments", the impact of these recurring diseases tended to be played out incrementally over the long term. That is not to say people did not fear disease outbreaks, nor suffer burdens and hardships—they clearly did. But instead of seeing epidemic diseases as "explanatory variables" capable of causing sharp developmental changes or divergences—one of the hallmarks of positivist and teleological thinking on the subject—the view taken in my book is that these outbreaks can instead be seen as a useful "window" to reveal obscured vulnerabilities within societies and communities. I explicitly compare the epidemic experiences of women with men to help bring that into view further.

Session 5A: Panel: Knowledge and Economic History in the Unequal Anthropocene: Methodological and Historiographical Opportunities

Amber Striekwold, Utrecht University

Anna Teijeiro Fokkema, Vrije Universiteit Amsterdam

Floor Haalboom, Erasmus University MC Rotterdam and Utrecht University

Larissa Schulte Nordholt, Wageningen University & Research

Michiel de Haas, Wageningen University & Research

Ralf Futselaar, Erasmus University Rotterdam

When it comes to studying the unequal Anthropocene, history of knowledge and economic history are often working on similar themes, but from very different disciplinary cultures and approaches. What are the fundamental questions asked in these disciplines? What are the assumptions behind those questions and the methodologies used to answer them? How can these questions, assumptions and methodologies strengthen one another, or is the disciplinary separation between academic conversations warranted?

Panel members with an interest in more methodological and historiographical exchange will discuss these questions with each other and the audience, focusing on issues like:

- Notions of natural and economic reality (like Nature (vs Culture), science, Anthropocene, the market, rationality, natural/economic inevitability) in relation to understanding such notions as cultural phenomena.
- Differences in disciplinary translations of historiographical trends related to the unequal Anthropocene, like global history, colonial history, environmental history/humanities, and non-human animal history.
- Qualitative and quantitative methodologies.
- The role of comparisons, unique contexts and generalisations.

Session 5B: Science Internationalism and the Environment II

David Skogerboe, Utrecht University

The ESRO origin story of the European Environmental Satellite Infrastructure, 1967-1975

The European Space Research Organization (ESRO) was formed in 1964 with a strictly scientific agenda focused on the study of the space environment via satellite. This agenda was soon challenged, as Member States argued for Europe to develop a sovereign capability in 'application satellites' (communications, navigation, meteorology, and remote-sensing). I will analyse ESRO's slow and complex transformation from a scientific to an applications focused organisation, focusing on meteorology and remote-sensing programmes. It was not until ESRO and ELDO merged to form ESA in 1975 that tangible results were achieved, specifically: Earth observation data network Earthnet (1976), meteorological satellite METEOSAT-1 (1977), and remote-sensing satellite ERS-1 (1991).

This paper will argue that deliberations within ESRO between 1967-1975 codified the research agenda that later produced the European environmental satellite data infrastructure and the related economic and industrial ties that made it possible. This process of agenda setting offers a view into how a European context became embedded into its satellite-produced data.

Raf de Bont, Maastricht University

Constructing the International Species Information System (ISIS): On computers, endangered species and the Global Zoo

Anthropogenic change is the major driver of the ongoing 'sixth mass extinction'. With species increasingly threatened in their natural habitats, the last half century has seen a growing popularity of so-called *ex situ* conservation in zoos. This approach has required an overhaul of the traditional functioning of zoological gardens. Up to the 1970s, after all, most zoos relied on a steady influx of wild-caught animals. Becoming conservation institutions, then, implied refocusing on the exchange of captive-bred animals in a (global) exchange circuit of zoos. It was with an eye on enabling such a circuit that, in 1974, the International Species Information System (ISIS) was launched. Developed by a small group of Minneapolis-based individuals, the computerised database of zoo animals is used by over 1300 zoos across the world today. At first sight, ISIS looks like a neutral instrument of universal data collecting. Yet, as historians of information systems know, such a thing does not exist. Analysing the early history of ISIS, my paper will explore the legal, socio-political and scientific contexts in which the system was developed, and highlight how locally rooted ambitions as well as global inequalities and competition shaped its design and operation.

Tom Quick, Maastricht University

Laboratory animals science and the preservationist turn amongst zoo professionals

Zoos have increasingly positioned themselves as potential sites in which threatened species might be preserved. By abstracting them from their environments and breeding them artificially, Zoo professionals hope that the biodiversity-reducing effects of Anthropocene-induced climatic breakdown might be ameliorated. This paper offers an alternative genealogy of such ideas to those proffered by zoo professionals. To do this, it addresses a specific trend in scientific animal management and its broader influence on attitudes towards species preservation.

Starting in the late nineteenth century, biomedical practitioners began emphasising the need for breeding of animals that could be used as research objects. Experimentalists increasingly turned to the enclosure of animals in laboratories as a means of both controlling and ensuring their supply. Through a study of the intensification of these practices after WWII, I will show how this approach began to inform scientists' attitudes to environmental as well as physiological knowledge production. By treating animals as economic 'resources' whose fecundity could be managed, pioneers of Laboratory Animal Science helped constitute a conception of animals as replaceable elements of a vast, natural machine. The assumption that captive breeding is an effective means of species preservation is I suggest a legacy in part of twentieth-century solutions to problems of laboratory animal supply.

Session 5C: The Economy of Knowledge and the Knowledge of Economy

Anna Bruins, Boom Academy / Utrecht University

'Authori-tea': the VOC and the vulnerabilities of natural knowledge production in East Asia

Like tea, knowledge flows – and there is always *someone* in charge of serving. This paper explores the extent to which the Dutch East India Company (VOC) attempted to exert authority over the natural knowledge produced by its long-distance information networks. It will do so using the endeavours of VOC officers to gain natural knowledge of the tea plant as a case study. It will be argued that the Company's administration, apart from being a political, military and colonial enterprise, should also be regarded as a producer of knowledge, with strong ambitions pertaining the authority over this knowledge's content, transmission and security. At the same time, these ambitions were not always achieved. In our particular case, the hodgepodge of VOC employees, Asian officials, local informants, and materials involved with the circulation of tea knowledge uncovers the large variety of inequalities and inefficacies that put their mark on seventeenth- and eighteenth-century scientific and economic activity. As such, the story of tea leads to a more nuanced view of colonial power and its relation to nature and the environment, in which iron-fisted trading companies like the VOC, whose commercial activities deeply impacted local ecologies and cultivation practices, also exhibit epistemological and political vulnerability.

Werner Scheltjens, University of Bamberg

Christoph Schlieder, University of Bamberg

Entrepreneurs in practical commercial knowledge in the nineteenth century

Focusing on the German Noback family, this paper deals with the activities of entrepreneurs in practical commercial knowledge in the context of Europe's global expansion and the breakthrough of the knowledge economy in the nineteenth century.

The Nobacks (Johann Christian and his sons Karl August and Friedrich Eduard) founded and/or directed schools of commerce in Germany throughout the nineteenth century. At the same time, they published numerous reference works, such as the 'Vollständiges Taschenbuch der Münz-, Maß- und Gewichtsverhältnisse' (1850/1851), a 'pocketbook' of almost 2,000 pages containing details about currencies, metrological systems, and commercial practices and institutions across the globe. Although works such as the 'Vollständiges Taschenbuch' are still in use today, their epistemological foundations remain largely unknown.

Using digital methods for detecting text and data reuse in historical reference works for commerce and trade, the paper analyses how the Nobacks harvested the work of others - in Germany and abroad - to produce their own. By tracing the different origins of the "Vollständiges Taschenbuch", the paper contributes to a better understanding of the entrepreneurial practices of borrowing and reusing commercial knowledge, while also highlighting the significance of sharing knowledge for Europe's global commercial expansion.

Gerhard Wiesenfeldt, University of Melbourne

Nepotism or epistemic networks? Knowledge in the family economy of early modern universities

Early modern universities were embedded in the feudal system and functioned according to feudal economic models, especially that given by craft and merchant guilds. As a consequence,

scholars working within the framework of modern, purportedly meritocratic universities have often criticised their predecessors for displaying feudal features - a dominance of oligarchic networks formed by academic families and an apparent neglect of academic excellence. While there may be cases where such criticism is justified, we also need to study more broadly how knowledge production functioned within this feudal economy.

This talk will look at the role of academic families in the production and transmission of knowledge at early modern universities. Following Al-Gazi's argument that the move to allow academics to marry and have families was one of the most important developments in early modern scholarship, I will discuss how the emergence of academic families changed knowledge practices. Family and friendship politics framed academic careers intellectually as well as structurally beyond individual academics. The domestication of academic labour was another important consequence, which made the professor's household an important place of knowledge. The central argument of the talk is that these feudal structures were not as hindering to the advancement of science as often portrayed but could maintain knowledge production more effectively than possible alternatives.