UNIVERSITY OF TURKU

Maantieteen päivät

Geography Days

30.10.2024 – 1.11.2024

Maantieteen päivät / Geography Days – Next 100 years

Geography at the University of Turku is celebrating its 100th anniversary and welcomes Finnish Geography Days 2024 to join the jubilee.

History takes us to the future. The next 100 years form a crucial period as we are facing major global challenges. Climate change and species extinction are taking place at an unprecedented speed. Geopolitical, economic, and social instabilities are evolving. The consequences and opportunities to cope with these challenges are unevenly distributed. Building the future depends on what we can learn from the past, and what we teach our children about the world we live in.

Research in geography has the potential to integrate diverse perspectives on societies and nature. Geography can play a key role in helping us to find more sustainable and just futures in a comprehensive manner. Despite the perhaps gloomy state of the world, envisioning the future can be an empowering exercise and an opportunity to imagine even radical alternatives. Therefore, we invite the whole geography community to courageously envision what the future can hold for us and what opportunities geographical research can offer.

Geography can bridge understanding of space and time, of human and natural sciences. Thus, we hope to see integrative discussions across (sub)disciplinary boundaries. This will be promoted by integrative parallel sessions and poster presentations. Hopefully such an approach will provide the participants new opportunities for networking and getting familiar with the great setting of geographical research and activities in Finland and to promote new initiatives and collaboration.

Thursday 30.11. Parallel sessions 1, 10:45-12

Cave	Putous	Koski	Workshop
1.1. Urban Planning and Participatory technologies (Klonner & Fagerholm)	**1.2. Rural Development and Communities (Albrecht & Rantanen)**	**1.3. Technologies in Environmental Management (Gonzales-Inca & Käyhkö)**	**1.4. Culture and Identity (Kotila & Roose)**
Klonner et al.: Usability of 3D tools developed for communicative urban planning	Horlu: Impacts of crop and income diversification on poverty and inequality among rural farm households in Ghana	Gonzales-Inca: Advances in AI and GeoAI applications in geographical and environmental modeling	Pekkarinen & Reust: Cultural voyage in East Greenland connecting two indigenous peoples from opposite ends of the world
Fagerholm et al.: 3D digital environments for transformative landscape and urban planning	Kafle & Panta: Compatibility of Agriculture Development Policy of Nepal to Sustainable Agriculture Development Principles	Alho et al.: Digital Water Flagship – digital solutions for hydrosphere processes and river management	Marjanen et al.: Generational Shifts in Fashion Consciousness: Implications for Retailers and City Planners
Malekzadeh et al.: Urban Attractiveness According to ChatGPT: Contrasting AI and Human Insights	Strandén & Rantanen: Exploring Rural Policy Through Text Mining: A Finnish Case Study	Käyhkö et al.: Digital social innovations fostering transformation of education and learning in the universities – lessons learnt from the GeoICT4e and the Tanzania Resilience Academy	Jämsä et al.: Eudaimonic wellbeing and nature - outlining possibilities for collaboration in urban planning
Klein et al.: Access to travel greenery and its temporal variations across large European cities	Rantanen: How housing policy is perceived in municipalities losing population?	Msilanga et al.: Climate Risk Database (CRD) - a model for collaborative geospatial data ecosystem supporting transformative climate actions in Sub-Saharan African cities	Kotila: Moving out of the childhood home: Emotions, embodiment, and young adults' home-making practices
Aaltonen et al.: Developing novel geospatial and community-based methods for climate risk mapping and management in complex urban socio-ecological systems	Albrecht & Kortelainen: The place strikes back: Visionary planning, local translations and materialization realities of urbanism in small town planning		Ruez: Queer migrations and (dis)placing pride in Helsinki and Copenhagen

Thursday 30.11. Parallel sessions 2, 13-14:45

Cave	Putous	Koski	Workshop
2.1. Natural Resources and Environmental Policies (Pratiwi & Leino)	**2.2.Geodiversity and Ecosystems (Mäkinen & Alibakhshi)**	**2.3. Sustainability and Circular Economy (Oinas & Kiviaho)**	**2.4. Urban Economy, Innovations and Knowledge (Hautala & Kalliomäki)**
Leino: Understanding multiscalar justice claims, accelerating a just transition – an example of contested critical minerals	Mäkinen et al.: Societal impact of murtoos	Hynni: Miksi Varsinais-Suomen maatilat eivät siirry kiertotalouteen? Esteet ja ratkaisut	Wingström: Exploring XR Technologies in Knowledge Creation: Enhancing Urban Planning and Citizen Engagement through Virtual Reality
Pratiwi et al.: Stakeholders' interest, networks and power in Indonesian palm oil governance and responses to EU Deforestation Regulation	Blåfield: Insights on sediment connectivity under changing hydroclimatic conditions	Savolainen et al.: Mahdoton kiertotalousmurros? Rakentamisen kiertotalouspolitiikan toimeenpano suomalaisissa kaupungeissa	Hautala et al.: Being(s) There(s): Geographies of knowledge creation as and through avatars, telepresence robots, and holograms
Kettunen-Matilainen: The palm oil debate: European NGOs as stakeholders in the policy dialogue	Alibakhshi: Are we missing the full picture of forest climate regulation? The critical microclimate effects of deforestation beneath the canopy	Oinas & Ilola: Kyläkansalaisuus ja kylän tulevaisuus: Kollektiivinen toiminta ja sen haasteet Kemijärven Tapionniemessä	Inkinen: Spatial Creativity in Helsinki: The Dance House as a Model for Urban Renewal
Järvi & Joronen: Breathing the atmospheres of failure: generators, pollution and negligence in Beirut	Ylönen: Digitalizing catchment scale snow monitoring in boreal landscapes	Kiviaho & Hyyryläinen Maaseutumaisten kuntien mahdollisuudet kestävyyssiirtymässä	Kalliomäki et al.: Why and how scale matters in mission-oriented innovation policy? Role of cities in systemic policy implementation

Friday 1.11. Parallel sessions 3, 10:30-12

Cave	Putous	Koski
3.1. Geography education and Learning (He & Tani)	**3.2. Economic and Political Transformations (Hooli & Lehtonen)**	**3.3. Social justice (Lyytinen & Gadd)**
Mäntyoja: Possibilities and Limitations of Learning in Zoom, On-Campus, and VR – Students' Experiences of Hybrid Learning Spaces	Gómez: The emergence of investment hubs in emerging economies: Insights from the ICT sector in Medellín, Colombia	Lyytinen: Aging in exile - Methodological and ethical reflections
Tani: The role of knowledge in geography education?	Hooli & Humalisto: Subordinating development co-operation to private sector investments: Insight from Finnish development policy	Gadd & Ubeis: 'I must care about the reputation of my family. This is very important to me': An exploration of factors affecting Iraqi women's access to justice
Hilander: Visuaaliset aineistot lukion maantieteen oppikirjoissa	Lehtonen et al.: Measuring Municipal Resilience: A Comparative Analysis of Crisis Impacts Using Monthly Data	Marucco Al-Mimar: Ending refugeehood? Lived experiences, relationality and the role(s) of geographers
He: The role of Visual Representations in Developing Powerful Knowledge through Upper Secondary Geography Textbooks	Humalisto et al.: Efficiency in climate finance: empirical insights from civil society climate action	Kuusisto: Nyt riitti! Radikaalin hoivan etiikan puolustus
Pellikka et al.: Insights into students' essay-writing skills based on sentiment analysis (Artificial Intelligence) with large-scale national geography exams		Vainikka: Attitudinal landscapes of climate; roadmaps to manage equitable decarbonisation of housing
Vainikka & Kallio: Empathy in climate mobility education: Methodological reflections from Greek and Finnish primary schools		

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Keynote speakers

Mining the Mekong: The physical and human consequences of sand extraction
Steve Darby & Julian Leyland

The world's insatiable thirst for sand is growing. Global demand for sand is predicted to rise from 30-40 Gt/yr (twice the amount of sediment transported globally by rivers) in 2020 to 60-80 Gt/yr by 2060. Here we focus on sand extraction within one of the world's largest river basins and delta systems – the Mekong. Drawing on over a decade of research on the Mekong, we paint a picture of an anthropogenically stressed river and delta as a result of climate change, upstream damming, anthropogenic subsidence, and – especially – intensive sand mining. Through the use of a suite of flow, sedimentological and channel morphological field measurements, coupled with geotechnical modelling, we present results linking severe sediment deficits to intense river-bed erosion and a substantially increased risk of dangerous riverbank failure.

We have also combined model predictions and satellite-based observations of riverbank erosion with asset value maps to determine the economic losses associated with mining-induced erosion, providing a way to constrain one of the key 'externalities' associated with mining the Mekong. Our risk analyses are now being used to determine the extent to which currently stable banks are close to reaching an instability threshold, to help define safe limits for future sand mining. Finally, we'll draw our research together with a preview of how we hope to use the various strands presented within a novel Digital Twin framework to identify and better understand the hidden physical, cultural and economic value of sand within a typical Mekong riverside community.

1.1 Urban Planning and Participatory technologies

Explores urban planning strategies, innovative technologies, and citizen engagement in shaping sustainable urban environments.

Usability of 3D tools developed for communicative urban planning
Carolin Klonner, Salla Eilola and Nora Fagerholm

Place-based digital participatory tools are increasingly used for communication and participation in urban planning. At the same time, there is a lack of information about the usability of such tools. We present our outcomes from studies within the GreenPlace project, which focused on 3D participatory tools. We depict how to conceptualize and evaluate the usability of the applied tools and give some insights into the results of our studies about the usability evaluation of online 3D mapping surveys in Turku, Finland and Bochum, Germany. The first includes a city block view in 3D with a planned building proposal and the second investigates the usage of urban green spaces on a city level. Further, we evaluate differences in 2D and 3D mapping based on a comparison to a previous study in Bochum. We conclude that the usability evaluation gives important insights into the limitations as well as advantages of the 3D participatory tools. Our results also point at the digital divide and the importance to advance digital participation so that no one is left behind. We highlight that the 3D visualizations are best used as supportive tools in communication and joint planning.

3D digital environments for transformative landscape and urban planning
Nora Fagerholm, Salla Eilola, Hannu Linkola, Adrienne Grêt-Regamey

The expansion of digital technologies has led to an increase in the development and application of 3D digital environments for landscape and urban planning in the past two decades. Digital 3D tools and approaches attract attention in their capacity to support stakeholder engagement as public participation and collaboration are requirement for democratic planning processes at different levels. However, considering the significant challenges in guiding human societies towards sustainability, these technologies must not only assist decision-makers in adapting to changes but promote fast, transformative shifts. In this presentation, we will discuss three discursive spaces that evolve around these technologies (representational, experiential, institutional). In addition, we outline

six key factors that can enhance efficacy of 3D digital environments to guide knowledge-informed landscape and urban planning.   We conclude by recommending the establishment of a collaborative knowledge platform that unites researchers, developers, and stakeholders for stimulating social-ecological-technological system thinking in the development of 3D digital environments and harnessing the technological advancements to accelerate transformative change.

Urban Attractiveness According to ChatGPT: Contrasting AI and Human Insights

Milad Malekzadeh, Elias Willberg, Jussi Torkko, Tuuli Toivonen

The attractiveness of urban environments greatly influences residents' satisfaction with their living spaces and overall mood, which impacts their health and well-being. Since gathering data on urban attractiveness through surveys is resource-intensive, there is a growing demand for automated solutions to assist in spatial planning. In this study, we used an off-the-shelf AI model to automate the analysis of urban attractiveness by evaluating over 1,800 Google Street View images of Helsinki, Finland. We applied the GPT-4 model, using three criteria-based prompts to assess the images. Additionally, 24 participants, both residents and non-residents, rated the same images. Semantic segmentation was used to understand GPT-4's decision-making process. The results showed strong alignment between GPT-4 and participant ratings, though geographic differences emerged. GPT-4 favored suburban areas with greenery, while participants found them less appealing. In contrast, GPT-4 rated densely populated areas lower than participants did. The analysis indicated GPT-4 focused on features like vegetation, buildings, and sidewalks. While AI models can streamline urban planning, human perspectives remain essential, and future AI tools should be tailored to local contexts.

Access to travel greenery and its temporal variations across large European cities

Robert Klein, Elias Willberg, Christoph Fink, Silviya Korpilo, Roope Heinonen and Tuuli Toivonen

With a focus on residential exposure and access to greenery, the literature puts less emphasis on understanding greenery exposure as part of daily mobility. Nature during travel may not only support human wellbeing, but also encourage sustainable travel behavior. However, opportunities for travel greenery exposure are often unevenly available between and within cities.

We present our ongoing research mapping access to travel greenery across Europe. We first compared greenery levels of travel and residential environments in 43 large European cities using monthly NDVI composites. We then looked at walking accessibility in each city using school trips as essential travel need. Finally, we linked school routes with NDVI to understand travel greenery exposure between and within the cities, and estimated spatial disparities.

Our findings show that travel environments are less green than residential areas in the study cities. We reveal a negative relation between walking accessibility and greenery. We also show a large seasonal variation in travel greenery that is especially relevant in Northern latitudes.

Our results provide novel understanding of greenery availability from a mobility perspective to support researchers and planners in bringing nature benefits to more people in cities.

Developing novel geospatial and community-based methods for climate risk mapping and management in complex urban socio-ecological systems
Venla Aaltonen, Nelly Babere, Lukuba Sweya, Msilikale Msilanga, Hilary Mvungi, and Niina Käyhkö

Successful adaptation to climate change in cities around the Globe requires holistic understanding of the complex urban socio-ecological systems, but cannot solely rely on authority- and top-down driven data and information, especially in data scarce areas. Alternative options are needed that bring forth the voices of local knowledge holders – the citizens. We present a concept for a community-based methodology where climate risks, such as extreme heat events, pluvial floods and poor air quality, as well as exacerbating infrastructural factors are mapped by local citizens in neighborhood-level. In addition, information on concrete climate adaptation needs, and existing and possible solutions is also collected. The methodology involves local higher education students who conduct the mapping together with citizens using low-cost mobile data collection tools.

Data, information and knowledge gathered via this integrated community-based and geospatial methodology represents the citizens' worries and needs related to climate change and the already felt effects. It thus provides actionable resources for decision-makers and the citizens themselves for climate intervention with true impact on increased resilience and quality of life on the ground.

1.2 Rural Development and Communities

Focuses on rural sustainability, and development policies affecting rural areas.

Impacts of crop and income diversification on poverty and inequality among rural farm households in Ghana
Godwin Horlu

This research investigates the linkages between differences in agroecological environment, income inequality, and poverty among rural farmers in Ghana. It interrogates the effects of crop and income diversification on income inequality and poverty using countrywide data and different analytical methods. The findings show that a rise in income and crop diversities leads to reduced income inequality. The results indicate that the poorer zones are dominant in diversifying crop production, but the wealthier areas are dominant in diversifying income sources. Also, as smallholders show a greater poverty level, the medium- and large-scale farmers experience lower poverty incidents, and intra-zonal disparities are the main sources of income inequality and poverty distributions. It is recommended that policymakers in an attempt to reduce income inequality must pay attention to diversity in the agroecological locations, gender, as well as changes in crop diversity and differences in income sources among the rural farm households. Finally, crop diversification must be intensified in the poorer agroecological environments, whereas income diversification increases in less poor environments for effective poverty alleviation.

Compatibility of Agriculture Development Policy of Nepal to Sustainable Agriculture Development Principles
Jagannath Kafle & Bhim Prasad Panta

The agricultural sector, on which the majority of the world population below the poverty line depends faces significant challenges due to global warming, climate change, and rising global food insecurity. This study aims to assess the key policy interventions in agricultural compatibility with sustainable agriculture principles within a specific space and time. This paper examines various aspects of agricultural development policy, including governance systems, bureaucratic and institutional structures, supportive policies and programs, and regulatory frameworks, to evaluate their compatibility with sustainable agriculture principles taking the case of Nepal. The study applies a qualitative

descriptive approach employing logical reasoning analysis. The findings indicate a strong orientation of Nepal's agricultural development policy towards sustainability. Legislative, policy, and governance provisions are a foundation for steering the agricultural sector toward sustainable practices. However, despite these positive aspects, significant challenges remain to address in practice, including the prevalence of traditional agricultural systems and constraints such as limited financial resources, technical expertise, and knowledge among farmers and smallholders.

Exploring Rural Policy Through Text Mining: A Finnish Case Study
Max Strandén & Olli Lehtonen

Textual data is abundant but difficult for computers to analyze and process. The advent of Large Language Models (LLMs) has brought natural language closer to computers. LLMs enable us to map unstructured text into semantically meaningful vector representations that are easily understood by computers. This opens up possibilities for processing large amounts of text data without practical limitations on dataset size.

The importance of rural areas in government documents has not previously been comprehensively analyzed using LLMs. Therefore, there is no information that can comprehensively describe the role of rural areas and related content in government documents.

In this paper, we utilize readily available LLMs to study the prevalence of the concept of "rural" in government documents. By analyzing over 16,000 policy documents published by Finnish government agencies, we aim to discover the main topics and themes in rural policy, how they have developed over time, and how they differ from urban policies. This text mining approach presents a unique use case for employing text as data in geographical research.

How housing policy is perceived in municipalities losing population?
Topias Rantanen

Housing policy is a wide-ranging field of decision-making and it's not easy to define it precisely. It still seems that traditional aim of housing policy is strongly related to govern new production in growing cities with growing-city issues. However, there are plenty of housing-related issues also in the regions where population is declining but a clear policymaking in the field of housing is occasionally missing there. These regions are often rural, and the issues are often opposite compared to growing regions. Especially in Finland these regions are common: 77% of municipalities in Mainland Finland have lost population between 2010 and 2022 and 95% of Finland's area is classified as a countryside.

In this study the current image of Finnish rural housing policymaking and the way how is it seen by the authorities of municipalities is researched based on a literature review, a survey targeted to experts in all kinds of municipalities in Finland and some expert interviews. One of the key findings is that among pressure to demolish houses small

municipalities are same time often unable to construct new and accessible one-room flats they need.

The place strikes back: Visionary planning, local translations and materialization realities of urbanism in small town planning
Moritz Albrecht & Jarmo Kortelainen

The revitalization of downtown areas has become one of the primary challenges and goals in recent urban planning. More recently, downtown renewal projects have emerged as a key strategy for small towns undergoing major transitions, such as shrinkage or decline, to confront and adapt to their varied challenges. According to the widely accepted understanding in planning literature, revitalization activities promise future improvements in various local socio-economic parameters, enhancing the town's overall attractiveness. In this way, downtown revitalization operates at the intersection of statutory and strategic planning for local spatial development, where 'the plan' often becomes closely linked to visionary components of planning, often introduced by external planning consultants.

Conversely, planning projects and visions are frequently invigorated by critiques of the placelessness of urban design and branding, particularly in small towns. This contradiction highlights the need for closer scrutiny of the processes unfolding between visionary urban planning approaches, local translations, and the challenges of materialization in small towns. Based on two case studies in Finland, this paper explores the tensions and processes between these three elements in downtown revitalization and raises critique on the suitability of current visionary urban planning practices for addressing particular challenges faced by (declining) small towns.

1.3 Technologies in Environmental Management

Explores the role of advanced technologies in environmental management, focusing on climate, water systems, and sustainability.

Advances in AI and GeoAI applications in geographical and environmental modeling
Carlos Gonzales-Inca

AI and GeoAI applications are rapidly growing in geographical and environmental studies. A wide range of AI/GeoAI methods and tools is currently available such as Large Language Models (LLMs). This provides multiple approaches and techniques that effectively harness the vast amount of spatial and non-spatial data. GeoAI, unlike no spatial AI methods, aims to represent explicitly the spatio-temporal aspect and topological relationships of spatial data. In this study, the advantages and limitations of GeoAI applications from different geographical and environmental modeling will be presented. In general, GeoAI shows advantages in non-linear modeling, integration of multiple data sources, and high accurate prediction capability. A major drawback in most GeoAI models is the challenge of selecting the adequate model architecture and hyperparameters, low interpretability and explainability of the model, and model generalization. This is particularly relevant when applying this approach to causal-inference analysis in geographical studies, which demand more explainable and physics-informed GeoAI methods.

Digital Water Flagship – digital solutions for hydrosphere processes and river management
Petteri Alho, Elina Kasvi, Ville Kankare, Björn Klöve, Hannu Marttila, Pertti Ala-Aho, Eliisa Lotsari, Marko Keskinen, Harri Kaartinen, Juha Oksanen, Cintia Uvo, Jari Silander, Anna Kontu

Re-evaluating past, present and future hydrosphere processes are the crucial basis for the targeted development of new observational systems, modelling and analysis platforms. The processes measured with novel technologies and integrated modelling platforms open new possibilities to observe the hydrosphere in various temporal scales, from the hydrological year to long-term trends and extremities. Especially, remotely sensed data of water flow including in-situ sensors (discharge, water levels, quality etc.) and mobile sensors such as ADCP, sonar, drone images, laser scanning and satellite data

are essential data source in digital revolution of hydrosphere processes studies and river basin management. Further, these digital observational systems provide data for modelling and scenario works that could support digital twin of river system. In Digital Waters Flagship, DIWA (www.digitalwaters.fi 8 y. programme, funded by Research Council of Finland) we aim to develop these approaches and finally build fully functioned digital twin of river system. We integrate processes in natural environments and social systems into digital solutions to simulate reality and provide new avenues to assess global change with rapid climate change.

Digital social innovations fostering transformation of education and learning in the universities – lessons learnt from the GeoICT4e and the Tanzania Resilience Academy
Niina Käyhkö, Antero Järvi, Msilikale Msilanga, Romi Rancken

New generation university students and graduates need to be competent with the novel digital tools and technologies, but equally they need to master the interface between technologies' potential and societies' emerging needs. It is imperative for students to comprehend the challenges facing their respective societies and be prepared to apply their skills in collaboration with local communities and various stakeholders. This calls for a proactive stance, where students' expertise is harnessed to address societal issues through close cooperation and engagement with the broader community. How can universities integrate science, education, and collaboration to meet these demands of the 21st century? We present an overview of the digital social learning innovations co-created during the two projects, GeoICT4e and Resilience Academy in Tanzania and discuss how the opportunities presented by open data, digital technology revolution, community engagement, and youth skills-building can be transformed into contextually smart, actionable, and impactful solutions in society. By closely connecting universities with the emerging innovation ecosystem, we believe there is an opportunity for a more widespread transition in mindset within society. This, in turn, allows universities to revitalise their open science practices to align with the needs of the 21st century.

Climate Risk Database (CRD) - a model for collaborative geospatial data ecosystem supporting transformative climate actions in Sub-Saharan African cities
Msilikale Msilanga, Massoud Hamad, Gideon Marandu, Venla Aaltonen, Khairiya Mudrik Masoud, Niina Käyhkö

Building successful geospatial communities in African nations faces significant obstacles, including political, financial, and institutional challenges. A critical issue is the lack of local context in developing Spatial Data Infrastructures (SDIs), often leading to project-specific initiatives that cease to function after project completion. Research indicates that geospatial databases can significantly impact when communities actively collaborate and

share experiences throughout the implementation process. This paper presents the Climate Risk Database (CRD) as a pioneering community-driven, open geospatial data ecosystem designed to address the pressing issue of insufficient geospatial data in African cities, which hinders effective climate adaptation and decision-making. The CRD facilitates the collection, curation, and dissemination of geospatial information through active community engagement, enhancing local capacities to respond to climate-related challenges. The study reviews the components of the CRD ecosystem, detailing its co-creation process and development phases. The paper assesses the CRD's impact on stakeholders, particularly students, emphasizing the importance of geospatial literacy in fostering a sustainable future and informing policymaking in Africa.

1.4 Culture and identity

This session examines cultural interactions, community development, and how identity is shaped and maintained across different contexts.

Cultural voyage in East Greenland connecting two indigenous peoples from opposite ends of the world
Annukka Pekkarinen & Isley Reust

Our project started with a slight challenge: how on earth would we get to Greenland? There was a stagnant low-pressure system lingering over Iceland since a week already." This is how it all begun. In the summer 2024 we organized a cultural collaboration sailing voyage funded by Global Greengrants Fund, together with Association Pueblo Kawesqar with two representatives of the small Kawesqar indigenous people, 7 representatives from the Tunumiit people of East Greenland who are speaking the Tunumiit dialect and Traditional Sailors of Helsinki as coordinators of the project. Kawesqar people currently consist of about 500 people disctributed across the southern Chilean coastline, only 6 of whom can speak the traditional language. Tunumiit people who speak the Tunumiit or East Greenlandic language are about 3000, inhabiting the Ammassalik and Ittoqqortoormiit areas in East Greenland. During our voyage taking place in Ammassalik, we were exploring the similarities of the culture and current status of these two indigenous peoples who live in similar environment at two opposite ends of the world. To our current knowledge, this was the first time these two indigenous people interacted regarding their traditions, culture, handicrafts and status of language.

Generational Shifts in Fashion Consciousness: Implications for Retailers and City Planners
Heli Marjanen, Anna-Maija Kohijoki, Kaisa Saastamoinen

A generational cohort refers to a consumer segment consisting of individuals who come of age during a particular period. As each generation is exposed to unique retail innovations during adolescence, these experiences influence their responses to the current retail environment. Every time a new generation enters the market, it is declared to disrupt the established consumption habits and, thus, retailing. As retailing is a

significant space user in our city centres, the changing retail landscape will have far-reaching implications on city planning and the viability of future cities. Fashion is one of the biggest industries in the world, with clothing items and accessories being needed by everyone and bought rather frequently via multiple channels. Moreover, fashion retailers are typically dominant space users in retail agglomerations and are thus vitally important for their viability. On the other hand, fashion industry is one of the world's most polluting and resource-intensive industries. Drawing on our earlier findings and data from 2023 (N=2007), we investigate fashion orientation, responsible/sustainable consumption patterns, shopping destinations (high-street vs. other destinations, e-commerce vs. physical stores) and their shares of wallet.

Eudaimonic wellbeing and nature - outlining possibilities for collaboration in urban planning
Joha Jämsä, Nora Fagerholm, Salla Eilola, Vesa Arki

Eudaimonic wellbeing is long-term, value-based wellbeing that is many times gained via the thought processes and values that go beyond immediate emotional reactions. I have used psychology Dr. Carol Ryff's categorization to six eudaimonic dimensions, to formulate a creative writing workshop to gain more understanding how nature contributes to people's 1) self-acceptance, 2) autonomy, 3) positive relations with others, 4) environmental mastery, 5) personal growth and 6) purpose in life. In this presentation, I combine understanding of the topic gained via my first (data from highschool students and people age 60+) and second (data from people who use mental health association's open services) PhD thesis article. I also outline potential ways of collaborating on this topic with urban planners, based on my initial discussions with the experts on that field. This research highlights the role of nature in human eudaimonic wellbeing and its possibilities in future urban development strategies.

Moving out of the childhood home: Emotions, embodiment, and young adults' home-making practices
Katariina Kotila

I explore the home-making practices of young adults who have recently moved out of their childhood home. My aim is to understand how young adults make and remake their sense of home when they are living independently for the first time, and how diverse emotions and embodied practices intertwine with this process. This is part of my PhD research in which I study young adults' sense of home in different situations in life. My data comes from young adults' video diaries and interviews, and I am still looking for a few more participants for the study. In this paper session, I will discuss the theory and

methods of my research and present some preliminary thoughts based on the data that I have so far. The theoretical frame of my research leans onto the understanding of home as both material and imagined and constantly (re)made. My research, then, seeks to understand young adults' sense of home as continuously constructed in everyday life through different practices such as cleaning, decorating or seeing friends at home; a process that may include embodied doing and being but also feelings from loneliness to safety and belonging.

Queer migrations and (dis)placing pride in Helsinki and Copenhagen
Derek Ruez

In recent years, geographic research on queer spaces, communities, and politics has been marked by important interventions emphasizing the importance of place, context, and specificity, set against both a-contextual narratives of queer recognition and more top-down critiques of normative regimes. At the same time, important strands of work on queer migrations have attended to the translocal character of queer spaces and communities, including attention to both the trajectories of queer migrants, refugees, and exiles, as well as the implication of queer spaces and communities within the broader racial-colonial geographies shaping migration and responses to it. Further bridging these conversations, this paper explores how LGBTQIA+ spaces and communities in Helsinki and Copenhagen are being remade by and in response to the political claims of migrant and minoritized queer and trans people. Focusing on political claims and narratives articulated at and in relation to public pride events in both cities, the paper examines moments where a politics of migration emerges within pride events in both cities and analyzes how migrant and minoritized queer critiques of mainstream pride events contest and reshape the place of pride in Helsinki and Copenhagen.

2.1 Natural Resources and Environmental Policies

Focuses on justice and natural resource management, governance, and the role of stakeholders in shaping policies.

Understanding multiscalar justice claims, accelerating a just transition – an example of contested critical minerals
Johanna Leino

The growing pressures and changing priorities surrounding natural resources underscore the inherent complexities of pursuing low-carbon transitions in a just manner. This is particularly evident in the contested realm of critical minerals, such as lithium, copper, nickel, and cobalt. This research aims to uncover tensions and contradictions between justice claims within the context of low-carbon transitions and the growing demand for critical minerals. This paper explores justice claims mobilized in Finland's Mining Act reform process in 2021—2023, revealing the multiscalar complexities of justice claims made by various stakeholders. Based on qualitative content analysis of document and interview data, the findings highlight that stakeholders mobilize justice claims on micro, meso, and macro scales, thus creating tensions around perceived justice in transitions. These claims illustrate the multiscalar nature of mining and the justice consequences of growing critical minerals demand. The paper emphasizes the need to address justice tensions and contributes to understanding conflicts around critical minerals mining through a systematic analysis of justice claims.

Stakeholders' interest, networks and power in Indonesian palm oil governance and responses to EU Deforestation Regulation
Ayu Pratiwi & Erja Kettunen

How do organizational networks in commodity governance affect responses to external trade measures imposed by importing countries? This research explores stakeholders' interest and power dynamics in Indonesian palm oil policy and governance in response to the EU Deforestation Regulation (EUDR) 2023/1115, which will take effect in late 2024. In the fight against global deforestation, the European Union passed the EUDR, restricting seven commodities linked to deforestation from entering the EU market, including palm oil – Indonesia's main strategic commodity, whose production is linked to smallholders. The reception of the EUDR has been divisive, as it will impact many Indonesian industries

and stakeholders. We conducted in-depth interviews with 27 stakeholder actors and identified their ties to approximately 140 actors involved in palm oil governance in Indonesia. We then conducted a social network analysis (SNA) and analyzed sentiment and emotions on the EUDR based on interview transcripts. Our preliminary results show that, despite smallholders being central to EUDR controversy, they are placed in the periphery of the networks, having the lowest bargaining power. Corporate actors serve as the bridging ties connecting them to national governance. We also found that governmental actors, despite various measures, have weak links to smallholder actors.

The palm oil debate: European NGOs as stakeholders in the policy dialogue
Erja Kettunen-Matilainen

Public debate in Europe has raised concerns about the effects of oil palm monoculture farming in Indonesia on deforestation, biodiversity loss, and violations on the environment, human rights and indigenous land rights. After the EU's plan to restrict palm oil imports for biofuels, Indonesia filed a trade dispute at the WTO where consultations are still ongoing. As most of the world's palm oil is produced in Indonesia where oil palm cultivation provides a livelihood for 16 million people, the issue is highly contested. This paper focuses on the opinions of European NGOs in the context of the multi-scalar debate among the various stakeholders and draws on data from NGO publications and online news. The findings indicate that 1) opinions on palm oil voiced by European NGOs - such as Friends of the Earth Europe, WWF Europe and Climate Action Network Europe - focus on pushing for the EU Deforestation Regulation; and, 2) international NGOs, such as Rainforest Rescue and Grassroots, push for the improvement of sustainability standards of the international Roundtable for Sustainable Palm Oil, in particular. As the EUDR will have significant impacts on Indonesian exports, the current debate essentially aims to balance between sustainability and economic imperatives.

Breathing the atmospheres of failure: generators, pollution and negligence in Beirut
Tiina Järvi & Mikko Joronen

In this presentation, we focus on the embodied failure(s) of Lebanon's electricity infrastructure. Destroyed through intentional and disproportionate targeting (by Israel, the so called 'Dahiya doctrine') as well as chronically neglected, the electricity failure is a clear manifestation of corruption, geopolitics, wasta networks, and economic profiteering that inhibit reform in Lebanon. Suffering from the multiple overlapping crises, Lebanon has been unable to address the shortcomings of the state provider Électricité du Liban, which service has always suffered from outages and unstable voltage. The outages have created a need for supplementing electricity suppliers, and the most common way to address the need is to rely on diesel-powered generators. The generators are currently running for the most part of the day, releasing dangerous amounts of carcinogenic particles to the air. This has created the toxic material atmosphere that encircles the

capital; the air quality in the city has plummeted and cancer cases are on the rise. In the presentation, we consider how the rising pollution levels constitute an atmospheric manifestation of failure that is not only embodied via breathing, but also shows the need to think failure as a lived material condition.

2.2. Geodiversity and Ecosystems

This group explores environmental changes, geodiversity, and the role of ecosystems in regulating climate and biodiversity.

Societal Impact of murtoos
Joni Mäkinen, Juulia Kautto, Kari Kajuutti

MurtooVarat project has investigated habitat types, land-use, the status and need of conservation, geological value and the groundwater resource potential of recently described murtoo landforms within subglacial meltwater routes (SMR) in Finland. The project was based on the national LiDAR DEM, previous data from murtoo fields by the Reward project, GIS analyses and supplementary fieldwork within two SMRs, including machine-dug excavations and ground penetrating radar surveys. Murtoos are commonly situated in remote, forested areas without marked land-use pressure. Murtoo fields represent a distinct habitat type identifiable by similar landform dimensions, pattern and orientation with boulder-rich surfaces and a mosaic of vegetation determined by murtoos and lower-lying, often channel-like wet terrain between them. We identified 24 geologically valuable murtoo fields by considering their potential for protection, education, research and recreation activities. Murtoo fields exhibit relatively good hydraulic conductivity and potential as local aquifers, affecting the boundaries or flow pattern of groundwater areas. We suggest 17 murtoo fields for further groundwater investigations. Due to the shallowness (< 5 m) of SMR deposits, bedrock topography largely limits the groundwater potential as well as the sand and gravel exploitation. Murtoos are scientifically highly important, revealing transition between morainic landforms and glaciofluvial deposits.

Insights on sediment connectivity under changing hydroclimatic conditions
Linnea Blåfield

The changing hydroclimatic conditions affect the geomorphological stability of landscapes and ecosystems. Here we observe these changes at high latitude, boreal-sub artctic region through sediment connectivity which refers to the transfer of sediment through the river landscapes. We can assess the past, present and the future by analyzing long time-series of geomorphological and hydroclimatic variables, by utilizing computational modelling and combinations of field measurements. The resulsts indicate that the ongoing hydroclimatic regime shift has altered erosion, sediment trasnport, and river migration rates in boreal region where as in sub-arctic region the effect is not that

visible, yet. The sediment connectivity was dependent on the individual forms of the geomorphic system to some level but spring flood had the strongest impact on the geomorphological adjustment of the system. Different flood event shapes, however, resulted in very different levels of morphological adjustemnt and sediment connectivity. In addition, these event shapes had strong connection to the prevailing climatic conditions. Thus, understanding these dynamics is key to predicting and managing future landscape transformations in response to climate change.

Are we missing the full picture of forest climate regulation? The critical microclimate effects of deforestation beneath the canopy
Sara Alibakhshi, Jonas Lembrechts, Ali Ismaeel, Temesgen Abera, José Luís Camargo, Katerina Sam, Radim Matula, Roman Plichta, Paulo de Jesus Feitosa Paes do Nascimento, Darlene Gris, Carolina Castilho, Zhimin Ma, Eduardo Eji Maeda

Deforestation alters the local climate conditions (i.e., microclimate) experienced by most terrestrial organisms habiting tropical regions, thus impacting the growth, distribution and survival of species. However, accurately assessing the impacts of deforestation on microclimate across the extensive tropical regions remains a challenge, complicating predictions of future changes and hindering the development of effective conservation and management strategies. In this study, we leveraged over four million in-situ measurements to quantify the impact of deforestation on microclimate temperatures at a pan-tropical scale, with spatial resolutions of 1 km. We employed a random forest model to explore the relationships between below-canopy air temperatures (15 cm above the ground) and environmental factors such as forest structure, topography, and climatological variables. By presenting a map of the gradient of air temperature changes across the tropical region due to deforestation, this study enhances our understanding of how deforestation influences microclimates and supports climate adaptation initiatives.

Digitalizing catchment scale snow monitoring in boreal landscapes
Maiju Ylönen

Snow forms the biggest part of Earth's cryosphere and critically regulates the energy balance between Earth's surface and atmosphere. Snow also notably impacts ecological processes such as the nutritional cycle and plant growth and as a habitat and resource for many species. Accurate information on spatiotemporal changes in snow cover, dynamics and snow water equivalent (SWE) is critical for managing water resources, improving hydrological models, and modelling and predicting global climate change. Therefore, precise, and reliable techniques at the catchment scale are needed to improve our understanding of snow processes and better control the impact of climate change in cold regions.

My research aims to develop innovative methods for monitoring and digitising snowpack characteristics, such as snow depth and its water equivalent at the catchment scale. The aim is to improve traditional snow line measurements based on manual measurements. The study will also analyse factors influencing snow characteristics, such as different vegetation types, and assess the potential of the equipment used for snow monitoring. The study will use currently little-used technologies such as a drone-mounted laser scanner and a distributed temperature sensing (DTS) fibre optic cable to achieve the forementioned objectives.

2.3 Sustainability and Circular Economy

Examines challenges and opportunities related to sustainable practices, particularly in agriculture, construction, and the circular economy.

Miksi Varsinais-Suomen maatilat eivät siirry kiertotalouteen? Esteet ja ratkaisut
Antti Hynni

Uusiutumattomiin resursseihin tukeutuvaa maataloutta vaivaa tehottomuus, josta koituu ympäristöhaittaa usealla mittakaavatasolla. Siirtymä kiertotalouteen tarjoaa ratkaisun tähän ongelmaan optimoimalla resurssien käyttöä ja edistämällä kestävyyttä ravinteiden kierrätyksellä ja uusiutuvilla tuotantopanoksilla. Siirtymää kuitenkin hidastavat esteet, jotka vaikeuttavat parhaiden käytäntöjen laajamittaista käyttöönottoa.

Tutkimuksemme analysoi kiertotaloussiirtymän esteitä Varsinais-Suomen maataloudessa, etsii syitä, miksi toiset tilat ovat edellä muita ja tunnistaa keinoja esteiden ylittämiseksi. Käyttämällä kuiluanalyysiä perehdymme laadullisiin viljelijäkyselyn tuloksiin paljastaaksemme toiminnallisia tekijöitä, jotka pitävät viljelijät lineaaritalouden toimintatavoissa. Määrällisiä tuloksia analysoimme tilastollisesti tilojen ominaisuuksien ja viljelijöiden asenteiden vaikutusten selvittämiseksi.

Tulokset osoittavat, että siirtymää estävät ensisijaisesti taloudelliset tekijät, teknologiset haasteet, sääntelymekanismit ja lineaaritalouden toimitusketjut. Siirtymän onnistumiseksi tarvitaan kohdennettuja toimia, kuten paikallisten viljelyolosuhteiden huomioimista maataloustukijärjestelmässä, tiedonsiirron parantamista ja kiertotalouskoulutuksia erityisesti pienviljelijöille.

Mahdoton kiertotalousmurros? Rakentamisen kiertotalouspolitiikan toimeenpano suomalaisissa kaupungeissa
Varpu Savolainen, Erkki-Jussi Nylén, Joni Vainikka, Pia Bäcklund

Rakennusteollisuus on yksi merkittävimmistä kasvihuonekaasupäästöjen ja jätteen tuottajista. Rakennusteollisuus sekä siihen liittyvät käytännöt, liiketoimintamallit ja lainsäädäntö ovat rakentuneet lineaarisen talouden pohjalta. Kestämättömän talousmallin korvaajaksi tavoitellaan kiertotaloutta, joka perustuu arvon säilyttämiseen.

Rakentamisen kiertotalouden edistämisen kanssa riitelee kuitenkin uusliberalistinen purkutrendi, jota perustellaan energiatehokkuudella ja maan arvon maksimoinnilla.

Tarkastelemme artikkelissamme, miten rakentamisen kiertotalous toimii neljässä suomalaisessa kaupungissa ja kysymme millaisia haasteita kiertotalouden parissa työskentelevät toimijat siinä näkevät. Katsomme erityisesti, miten kiertotalouden tavoitteet näyttäytyvät strategisella tasolla ja millaisia laajempia kaupunkien toimintapolitiikkaan liittyviä tekijöitä kiertotalouden toteutumiseen liittyy. Tutkimusaineistona on käytetty ajankohtaisimpia kaupunkistrategioita, kaupunkien virallisia rakentamisen kiertotaloutta ohjaavia politiikan dokumentteja sekä asiantuntijahaastatteluita kuntien ja rakennusteollisuuden edustajien kanssa. Aineisto on analysoitu sisällönanalyysiä käyttäen. Tutkielma on osa monitieteistä DeCarbon-Home -tutkimus- ja kehittämishanketta, joka edistää asumisen ja rakentamisen oikeudenmukaista kestävyysmurrosta.

Tulokset osoittavat, että ymmärrys kiertotaloudesta ja sen tavoitteista vaihtelevat kaupunkien välillä ja niiden sisällä. Kaupungit ovat eri vaiheissa kiertotalousmurrosta, mutta jaettuja haasteita yhdistää lukkiutuminen lineaarisiin käytäntöihin, joita lujittavat esim. rakentamisen kilpailusääntely ja esimerkkien puute. Toimijoiden verkostomaisuus korostuu kiertotalouden arvoketjuissa.

Kyläkansalaisuus ja kylän tulevaisuus: Kollektiivinen toiminta ja sen haasteet Kemijärven Tapionniemessä
Päivi Oinas & Heli Ilola

Maaseutuasuminen tulevaisuuden yhdyskuntarakenteessa herättää uudenlaista keskustelua tilanteessa, jossa maaseudun roolia hiljalleen käynnistyvässä kestävyyssiirtymässä jäsennetään uudelleen. Kylät maaseutujen elinympäristöinä ja paikallisyhteisöinä ovat vahvasti oman onnensa nojassa. Kylien tulevaisuus lepää paikallisesti eletyn aktiivisen kansalaisuuden ja siitä kumpuavan kollektiivisen toiminnan varassa. Se edellyttää tunnettujen ja piilevien resurssien tunnistamista ja koordinoimista. Tarkastelemme kyläkansalaisuutta ja yhteistoimintaa kylien elinvoiman ehtona Kemijärven Tapionniemen tapaustutkimuksen inspiroimina. Tapionniemen kylä oli elämäntäyteinen vielä 1990-luvulla. Kylän kuihtuminen ja lama veivät palvelut, kyläkoulu lakkautettiin. Tunnelma muuttui apaattiseksi, kyläläiset passivoituivat. Vuonna 2017 kylä aktivoitui kylän koulurakennusta pelastamaan. Tavoitteena oli kulttuurihistoriallisesti arvokkaan kyläkoulun kunnostaminen monipalvelukeskukseksi. Hankkeen myötä yhteistoiminta on herännyt henkiin. Yhteinen tavoite ja yhdessä tekeminen on herätellyt yhteisöllisyyttä ja tuottanut kylän kehittämiseen sitoutunutta toimintaa. Mikä mahdollisti kunnianhimoisen tavoitteellisen toiminnan käynnistymisen ja onnistumisen kyläkontekstissa? Jäsennämme tarkastelua viitekehyksellä, joka luo resurssinäkökulman kyläkansalaisuuteen, kollektiiviseen toimintaan ja kylien tulevaisuuden luomiseen. Aineistomme ovat kylää koskeva historia- ja muu taustatieto, kylätoiminnan arkistoaineisto ja kyläläisten haastattelut. Analysoimme kollektiivisen toiminnan

mahdollistaneita resursseja ja niiden koordinoitumista, toiminnan jatkumisen haasteita ja kylän tulevaisuudennäkymiä. Vedämme johtopäätöksiä kylien säilymisestä ja siihen liittyvistä haasteista.

Maaseutumaisten kuntien mahdollisuudet kestävyyssiirtymässä
Annamari Kiviaho & Torsti Hyyryläinen

Miten pienet kunnat voivat vastata kestävyyssiirtymän edellyttämiin yhteiskunnallisiin muutoksiin? Tässä tutkimuksessa tarkastellaan Etelä-Savon kuntapäättäjien, kuntajohtajien ja kuntien hallitusten puheenjohtajien näkemyksiä siitä, millaisia mahdollisuuksia kestävyyssiirtymä voi tarjota väestöltään väheneville maaseutumaisille alueille. Haastattelimme yhteensä 24 kuntapäättäjää kahdestatoista eri kunnasta luodaksemme syvällisemmän ymmärryksen heidän näkemyksistään kuntien roolista kestävyyssiirtymän edistämisessä. Lähestyimme kestävyyssiirtymää laaja-alaisesti, käsittäen kestävyyden eri ulottuvuudet – ympäristölliset, taloudelliset ja sosiaaliset näkökulmat – ja annoimme haastateltavien vapaasti käsitellä erilaisia teemoja. Haastattelujen myötä esiin nousi useita erilaisia mahdollisuuksia, joita kestävyyssiirtymä kohdealueelle voisi tarjota, mutta erityisesti uusiutuvaan energiaan sekä luontomatkailuun liittyvät teemat korostuivat. Haastattelujen eräs mielenkiintoinen havainto oli se, että samat teemat, joita pääosin kuvattiin mahdollisuuksina, niihin liitettiin myös monia uhkia ja negatiivisia odotuksia. Esityksessämme tuomme esille näitä haastatteluista nousseita teemoja ja näkemyksiä.

2.4 Urban Economy, Innovations and Knowledge

Explores role of innovations and knowledge in shaping economy.

Exploring XR Technologies in Knowledge Creation: Enhancing Urban Planning and Citizen Engagement through Virtual Reality
Roosa Wingström

With the advancement of high-end technology, we are increasingly using extended realities (XR), such as virtual realities, telepresence robots, and avatars, to create knowledge. These technologies provide new ways to leverage tacit and embodied knowledge in various areas, from organization and management to education and urban planning. It is essential to study the impact of XR on knowledge creation processes to understand how XR can be used to generate and share new knowledge. In this presentation, I introduce a planned case study on the use of XR in urban planning, where I explore how virtual reality can help facilitate sustainable urban development and citizen participation. The case study will provide insights into the practical use of XR in people-centric and data-driven urban planning. This case study is part of the BETH [Being(s) There(s)] project being carried out at the University of Vaasa and funded by the Academy of Finland.

Being(s) There(s): Geographies of knowledge creation as and through avatars, telepresence robots, and holograms
Johanna Hautala, Julius Repo, Marianne Mäntyoja

New geographies of knowledge creation processes are currently emerging with new technologies and teleworking practices. Virtual avatars, holograms and telepresence robots allow us to be in more than one place at the same time. We may be able to share embodied and tacit knowledge in ways that were not possible before. Through new technology we can access and operate in virtual and augmented realities, which can support creativity and innovation in interesting ways. In BETH project we explore new ways of creating knowledge as and through virtual avatars, telepresence robots and holograms.

Spatial Creativity in Helsinki: The Dance House as a Model for Urban Renewal
Tommi Inkinen

This study explores the intersection of creativity and the built environment through a case study of a dance house in Helsinki, Finland. The research focuses on spatial theory and examines the creative location from three perspectives: the building itself, its immediate surroundings, and the broader urban context. The dance house, originally a cable factory completed in 1954 and renovated with a new structure in 2022, serves as an example of integrating state-of-the-art interior design and building technology with historical architecture. The study employs a qualitative classification framework that considers three spatial elements: material (architectural), social (interactive), and experienced (emotional) spaces. It discusses the temporal renewal of urban space and the implications of freely usable public spaces versus closed spaces designed for professional creative purposes. The findings highlight the importance of high-quality architectural design in fostering culturally and socially active urban environments.

Why and how scale matters in mission-oriented innovation policy? Role of cities in systemic policy implementation
Helka Kalliomäki, H. Hämäläinen, J. Kalliokoski, L. Kunttu

Numerous meanings are attached to the concept of scale in contemporary debates about public policy. It's relevance in today's interconnected world has been at the hearth of geographers' debates for decades. Scales of organizing human activity are also topical in the context of mission-oriented innovation policies (MOIPs), as "in some sense 'hierarchical' forms of organization are needed to address large-scale problems" (Harvey 2012, 69). In this paper we argue that the concept of scale – by nature horizontal when understood as a "level" of organization, yet fundamentally entangled in vertical and hierarchical theorizing – offers both conceptual and practical value for the increasingly debated implementation gap in MOIP literature. We illustrate why systemic STI policies need to be aware of the scalar aspects in policy implementation by focusing on the role of cities as everyday environments of citizens and users. We explore whether, and how, the concept of scale, and improved understanding of scalarity, could contribute to the debates on implementation challenges. With a case concerning the Mobility as a Service (MaaS) concept implementation in Finland, we shed light on the crucial role of policymakers in cities in navigating in multiscalar and multiactor governance environment.

3.1 Geography Education

Possibilities and Limitations of Learning in Zoom, On-Campus, and VR – Students' Experiences of Hybrid Learning Spaces
Marianne Mäntyoja

This study addresses the need for empirical research comparing students' experiences of learning in different hybrid spaces in higher education that blend digital, material, and social spaces. We focus on hybrid spaces formed around Zoom, non-immersive virtual reality (VR), and on-campus learning with a telepresence robot (TPR) tested on a course in regional studies. Our aim is to understand the possibilities and limitations of hybrid spaces for collaborative learning, knowledge sharing, and group-based communication. Based on four student surveys and the instructor's diary throughout the course, we discuss the possibilities and limitations of hybrid spaces of home/Zoom, actual/virtual reality, and classroom/TPR. Even though students believe that f2f on-campus meeting best supports collaborative learning, they need place-flexible learning possibilities and are curious about new technologies and hybrid learning spaces. We advance the theorization of hybrid learning spaces by identifying a posthuman learner (i.e., a human) through, for instance, an avatar or TPR, which is required to enter, interact with, and learn in hybrid spaces.

Insights into students' essay-writing skills based on sentiment analysis (Artificial Intelligence) with large-scale national geography exams
Anne Pellikka, Tua Nylèn, Hanna Roinisto, Petteri Muukkonen

This study explores the possibilities of Artificial Intelligence (AI) in drawing new insights on the students' essay-writing skills. We applied sentiment analysis on the Finnish geography matriculation exam essays from spring 2020 to find out: 1) What are the main linguistic characteristics and differences in the essays? 2) What kinds of emotions are expressed in the essays? 3) Can existing AI analysis tools be used to examine the manifestation of critical thinking in the essays? The preliminary results show that the highest-scoring essays deal with the essay topic more deeply and comprehensively, whereas the lower-scoring essays are more straightforward and superficial. The highest-scoring essays are generally written in a neutral style. They include more neutral and positive expressions and less negative expressions than the lower-scoring essays. Critical thinking is more strongly manifested in the highest-scoring essays, as they handle the topic analytically, justifying the arguments carefully. In contrast, critical thinking is generally not expressed in the lower-scoring essays. The results can help understand the

students' characteristic response styles and thinking, thereby supporting the development of learning assessment.

Empathy in climate mobility education: Methodological reflections from Greek and Finnish primary schools
Vilhelmiina Vainikka, Kirsi Pauliina Kallio

Climate change and climate mobility may worry and frighten children, but they are part of the reality in which we live. In Environmental education teachers need to learn with children to live with changing conditions and with each other, but also to imagine possible liveable futures. We have created an empathic climate mobility education with decolonising pedagogy where co-learning takes place with arts-based methods. Inclusivity for the diversity within the classroom, from multicultural to neurodiverse characteristics, serve as an important consideration.

In this paper, we present and discuss methodological findings from participatory action research interventions in Finnish and Greek primary schools, part of the HUMANE-CLIMATE project. During the spring of 2024 we worked in Athens and Tampere with about 70 students from the 4th grade and their teachers. Most of them had no direct experience or connection with climate mobilities. This presentation is based on the fieldwork notes and observations made by the researchers and research assistants, as well as the participants' artwork and photographs of the intervention. Intuition, improvisation and sensitive reacting to the unfolding situations and atmospheres was crucial.

The role of Visual Representations in Developing Powerful Knowledge through Upper Secondary Geography Textbooks
Xueying He

In this presentation, I will introduce the research plan for my doctoral dissertation about the role of visual representations in upper secondary geography textbooks (e.g. maps, drawings, photographs and diagrams) in transforming disciplinary geography knowledge into powerful geography knowledge. In the competency-based framework, knowledge retreats from schools. Young and Muller argue that powerful knowledge is critical to promoting social justice and educational equity, empowering students to influence society. While the importance of the curriculum and teachers in helping students develop powerful knowledge has been recognised, the contribution of textbooks, as the most accessible resource for teachers and students, particularly their visual materials, remains largely unexplored. Using Bernstein's concept of recontextualisation and Rose's critical visual methodology, this study explores how visual representations in upper secondary geography textbooks enhance or hinder students' ability to access and engage with powerful knowledge through textbook content analysis, interviews with textbook authors and teachers, and photo-elicitation focus groups with students.

The role of knowledge in geography education?
Sirpa Tani

This presentation is based on the research project "Envisaging Sustainable Futures via Powerful Knowledge" funded by the Research Council of Finland. The theoretical aim of the project is to critically develop the concept of powerful knowledge to better recognize how the roles of disciplinary, cross-disciplinary and everyday knowledge intertwine, while thinking about the possible futures in practice. In the project, powerful knowledge is studied in the contexts of geography, history and social studies education. Knowledge is seen as not fixed but something that can be changed through the rules of the disciplines. By separating it from pure opinion, powerful knowledge can provide students with tools that help them become more critical and to think beyond the immediate context.
The project has started with conceptual development and analysis of curricula and policy texts. Next, the focus will be moved to school settings to explore the role of disciplinary, cross-disciplinary and everyday knowledge in studying complex issues (e.g. sustainability, climate change). In this presentation, some preliminary ideas of methodological choices will be pondered. I will ask: How can we access students' and teachers' ideas of different knowledges?

Visuaaliset aineistot lukion maantieteen oppikirjoissa
Markus Hilander

Aiempien tutkimusten mukaan maantieteen opiskelijat kiinnittävät usein enemmän huomiota oppikirjojen leipätekstiin kuin kuvitukseen. Tämän takia päätin selvittää, minkä tyyppisiä ja kuinka monipuolisia lukion maantieteen oppikirjojen visuaaliset aineistot ovat. Aineistona on Otavan ja Sanoma Pron painetut oppikirjat kullekin pakolliselle ja valinnaiselle lukion maantieteen moduulille eli yhteensä kahdeksan oppikirjaa. Luokittelin yhteensä 1706 visuaalista elementtiä kolmeen pääkategoriaan ja yhteentoista alakategoriaan sen mukaan, kuinka abstraktilla tasolla ne esittävät maantieteellisiä ilmiöitä ja aiheita. Eniten oppikirjoissa oli "suoriin visuaalisiin esityksiin" kuuluvia valokuvia, jotka esittävät aihettaan hyvin konkreettisesti. Toiseksi eniten oli "epäsuoriin visuaalisiin esityksiin" kuuluvia karttoja, jotka esittävät maailmaa välillisesti. Kahteen edelliseen pääkategoriaan verrattuna vähemmän oli "symbolisiin visuaalisiin esityksiin" kuuluvia diagrammeja ja taulukoita, jotka esittävät sisältönsä kaikista abstraktimmalla tasolla. Tutkimukseni perusteella lukion maantieteen oppikirjoissa on paljon visuaalisia aineistoja, jotka ovat abstraktiuden tasoltaan vaihtelevia ja monipuolisia.

3.2 Economic and Political Transformations

Explores societal and economic shifts driven by global policy changes, resilience, and investment strategies.

The emergence of investment hubs in emerging economies: Insights from the ICT sector in Medellín, Colombia
Lucía Gómez

Foreign direct investment (FDI) is increasingly global and knowledge-intensive, yet research often centres on advanced economies and large multinational enterprises (MNEs). This oversight neglects the diverse economies of the Global South and limits understanding of how smaller MNEs and less technologically advanced cities participate in global FDI flows and technological advancement.
This article addresses these gaps by examining how less resource-rich cities of emerging economies transform into investment hubs. It investigates the drivers of FDI from countries at various stages of development into emerging economies, with a particular focus on Medellín's evolution into an information and communication technologies (ICT) investment hub. The study employs mixed methods to integrate insights from macro-level country attractiveness with local impacts of MNE activities and global policy and planning trends. It provides a multiple-perspective analysis of how cities in emerging economies attract knowledge-intensive MNEs and, drawing on Medellín's experience, proposes a conceptual model that identifies key strategic activities for the emergence of investment hubs. This model provides a framework for exploring city-specific strategies fostering similar transformations in other emerging economies.

Subordinating development co-operation to private sector investments: Insight from Finnish development policy
Lauri Hooli & Niko Humalisto

Finnish development policy is undergoing significant transformation. The government is set to cut over one billion euros from the development budget during its term, while newly approved reports on International Economic Relations and Development Cooperation emphasize reciprocity and national strategic interests in Finland's relationships with the Global South. In practice, these ambitions are pursued by channeling development cooperation increasingly through Finnish businesses.

This study critically examines the shift in development cooperation towards prioritizing private sector interests and financialization. Our analysis draws on long-term participatory observation of policy preparations, a review of independent evaluations of contemporary development cooperation, and interviews with 24 CEOs engaged in these initiatives.

We reveal the key drivers and operational practices behind this shift, and the structural barriers to achieving results aligned with Finland's long-standing development priorities of equality, justice, and human rights. Additionally, we discuss the (unintended) development impacts of this trajectory on traditional development actors, the private sector, and, most crucially, the recipients in the Global South

Measuring Municipal Resilience: A Comparative Analysis of Crisis Impacts Using Monthly Data
Olli Lehtonen, Teemu Makkonen, Maija Halonen, Heli Kurikka

This paper explores the concept of regional resilience, defined as a region's capacity to withstand, adapt to, and recover from external shocks such as natural disasters, economic downturns, and social disruptions. While there are established methods for measuring regional economic resilience, a universally accepted approach for operationalizing territorial resilience remains elusive. Territorial resilience, a parallel concept, extends beyond regional boundaries to include localities and nations.

The study focuses on the distinct impacts of the 2008 Financial Crisis, COVID-19 pandemic, and the Ukraine conflict on Finnish municipalities. It aims to develop innovative methods for measuring resilience at the municipal level using monthly data. Traditional studies often rely on annual or quarterly data at broader regional levels (e.g., NUTS 2 or NUTS 3 regions in Europe), potentially overlooking critical local developments. By employing monthly data, this research provides a more granular analysis of resilience over time, capturing short-term dynamics in job development, net migration, and open job positions. The findings reveal that crises affect municipalities in diverse ways, with resilience varying significantly across different crises.

Efficiency in climate finance: empirical insights from civil society climate action
Niko Humalisto & Ada Virnes

This novel study examines the previously uncharted role of non-governmental organizations (NGOs) in Finland's international climate finance that is an integral element to the implementation of the Paris Agreement. It asks how climate-focused projects managed by Finnish NGOs differ from those funded through other channels and how they align with Finland's broader development policy goals that are relevant for advancing just transition. In the light of significant budget cuts to all other climate finance instruments except NGOs, their growing absolute and relative importance amplifies the relevance of this analysis in evidence-based policy formulation.

Methodologically, the research employs comprehensive statistical data analysis (Chi-squared test), complemented by qualitative examples from NGO projects. A key statistically significant finding is that Finnish NGOs are more likely than other funding channels to integrate Finland's cross-cutting development policy goals, focus on the least developed countries, and prioritize a just transition instead of solely focusing on climate action. The analysis sparks a discussion on how to evaluate the effectiveness and impact of climate finance and offers avenues to improve the evidence-based guidance and outcomes of climate funding.

3.3. Social Justice

These papers explore migration and refugeehood and issues of justice.

Aging in exile - Methodological and ethical reflections
Eveliina Lyytinen

Elderly refugees are under-researched, partly because they are a minority among refugees, with migration-related debate consequently tending to give the youth and working-age populations priority over them. In this presentation, I will approach the end of life from the perspectives of the elderly and dying in exile. In particular, I will investigate how elderly people with a forced migration background experience their past, present, and future, alongside how they reflect on the impending end to life. Moreover, I will analyze their intergenerational experiences of integration and belonging in Finland. This presentation is based on my on-going research with "Mobile Futures - Diversity, Trust and Two-Way Integration" and "Endings - Refuge, Time, and Space" projects. I will begin my qualitative data collection in early 2025, so in this presentation I will focus on my research plan and developing the methodological and ethical approach.

'I must care about the reputation of my family. This is very important to me': An exploration of factors affecting Iraqi women's access to justice
Katri Gadd & Faleha Ubeis

Women in many parts of the world are protesting to gain or maintain rights. However, they often face barriers to accessing justice, which are linked to relentlessly changing spatiotemporal settings and legal/normative spaces. In this presentation, I discuss the findings of our ongoing research on Iraqi women's lives in Iraq. I explore the factors affecting women's access to justice in Iraq based on a review of the relevant literature and in-depth interviews with 16 Iraqi women living in different parts of the country. I highlight the importance of exploring barriers to accessing justice as an agglomeration of various spatiotemporal settings and diverse legal/normative orders of different scales. The examples given in this presentation illustrate the cumulative effect of factors affecting access to justice, including past legislation, sociopolitical events, family dynamics and internalised customs, education and place of residence. I argue that a deficient understanding of the situational spatiotemporal dynamics within legal spaces and the

intertwined factors constraining people's lives makes it challenging to propose interventions for overcoming barriers to accessing justice.

Ending refugeehood? Lived experiences, relationality and the role(s) of geographers
Camilla Marucco Al-Mimar

According to the UNHCR, at the end of 2023, 117 million people worldwide were living in forced displacement due to, among other factors, persecution, violence and human rights violations. Looking into the next 100 years, every day offers the opportunity and calls for the necessity to put an end to the phenomena at the roots of refugeehood – or, at least, to humanise refugeehood. Can refugeehood ever end? This contribution, part of my work for the project "Endings: refuge, time, and space" (Kone Foundation, 2023-2026), addresses refugeehood as lived experience, focusing on the entangled temporalities of the people who navigate refugeehood in the first person. The data that I have collected suggest that refugeehood as lived experience is deeply relational. Building on this idea, I discuss some theoretical, epistemological, ethical and practical entanglements of doing geography in ways that participate in ending and/or humanising refugeehood.

Nyt riitti! Radikaalin hoivan etiikan puolustus
Anna-Kaisa Kuusisto

Eettiset periaatteet ovat olleet yhteiskuntatieteellisessä tutkimuksessa keskeinen keskustelunaihe viime vuosikymmeninä. Monet kriittiset ja feministiset tutkijat ovat esittäneet, että pakolais- ja maahanmuuttotutkimuksen olisi luotava uudenlainen onto-episteeminen lähestymistapa. Yksi tällainen lähestymistapa on radikaali hoivan etiikka, johon esityksessäni nojaudun. Clark-Kazak (2022) on esittänyt, että radikaali hoivan etiikka voisi tarjota kokonaisvaltaisen lähestymistavan maahanmuuttotutkimuksen moraalisille ja käytännöllisille lähtökohdille. Hän esittää kolme perusperiaatetta. Ensinnäkin kaikki ihmiset ovat toisistaan riippuvaisia (relational interdependency). Tämä pätee myös tilanteisiin, joissa vallitsee epätasa-arvoisia valtasuhteita. Toiseksi tämän hetken eettisten periaatteiden lähtökohta minimoida tai vähentää tutkimuksen haittoja osallistujille on täysin riittämätön. Sen sijaan hoivan etiikka edellyttää ennakoivaa lähestymistapaa haittojen syntymiseen. Kolmanneksi on välttämätöntä, että maahanmuuttotutkimuksessa tunnustetaan tunteiden (emotions) tuottava rooli. Tämä tarkoittaa, että tutkijoiden on ryhdyttävä kriittisesti pohtimaan asioita, joihin he reagoivat, joista he välittävät, ja miten tällainen kehollinen tieto vaikuttaa tutkimukseen. Tämä pitää sisällään myös ajatuksen itseen kohdistuvasta hoivasta tutkimuskentällä, jossa tutkija kohtaa toisten ihmisten surua, tuskaa ja epätoivoa (Clark-Kazak 2022). Esitelmäni on akateeminen puolustuspuhe radikaalille hoivan etiikalle. Keskustelen, mitä hoivan etiikka on tarkoittanut viimeisen kymmenen vuoden aikana yksin tulleiden maahanmuuttajanuorten kanssa toteuttamieni tutkimushankkeiden osalta. Päädyn tässä reflektiossani yhden tutkimusaikakauden päätökseen: Nyt riitti!

Attitudinal landscapes of climate; roadmaps to manage equitable decarbonisation of housing
Joni Vainikka

People perceive the climate crisis in varied ways, and efforts to decarbonize housing and household consumption must account for vulnerabilities, living standards, and attitudinal landscapes. Housing is a societal issue, yet for some groups, it becomes an expression of values centered on ownership rather than the logic of state planning. This paper draws on a latent class analysis of a climate attitudes survey (n=1446) that categorized Finnish residents into five groups: Engaged, Aware, Cautious, Unsure, and Divergent. By understanding spatial and socioeconomic differences, we can advocate for more effective policies that incentivize housing decarbonization. The findings highlight significant variations in education, mobility, and age, which shape the spectrum of attitudes. However, the most significant divide stems from communal versus individualistic tendencies, often tied to ideological perspectives. The paper also notes that, regardless of attitudes, households may reduce consumption in ways that are difficult for those more anxious about the climate. To plan for a more just and sustainable future in housing, three key factors must be considered: 1) the attitudinal landscape shaping climate practices and policies, 2) the capacity of households to navigate decarbonization, and 3) strategies to address regional disparities while providing socially equitable support.

4 Picos and posters

1. Near-bed flow turbulence under varying ice covers in 2016-2024
Karoliina Lintunen, Eliisa Lotsari, Essi Vilhonen, Tuure Takala, Elina Kasvi, Linnea Blåfield, Petteri Alho

In the northern hemisphere, high-latitude rivers typically experience annual ice cover, but climate change is causing this to shift, resulting in later ice formation and earlier ice breakup. These alterations impact river flow, sediment transport, nutrient dynamics, and aquatic habitats. Despite more field studies in recent years, the effect of ice cover on flow dynamics, particularly near the riverbed, remains insufficiently explored due to the challenges of data collection.

Ice cover adds roughness to the riverbed, modifying flow dynamics and creating asymmetrical flow patterns. Under ice, flow velocities can increase and exceed those found in open channels, leading to significant differences in flow gradient near the bed. This study aims to: 1) evaluate the impact of ice cover on near-bed flow turbulence, and 2) investigate how various riverbed roughnesses influence these flow conditions. The goal is to understand how changes in ice cover and riverbed roughness affect flow characteristics and to assess their implications for river environments.

Conducted at a meander bend of the Pulmanki River in Northern Finland—where ice covers the river from October to May—field measurements were taken from 2016 to 2024 using ADCP and ADV devices. The research examines near-bed turbulence and the effects of ice conditions and riverbed forms on flow dynamics, aiming to improve river management in the context of climate change.

2. Forecasting water flow and nutrient load of rivers in ungauged catchments using Graph Neural Networks
Iiro Seppä

Graph neural networks have emerged as a potential method for hydrological modelling. However, current implementations focus usually on one watershed, and cannot adapt to other rivers or changes in observation network. Thus the goal of my thesis is to create a graph neural network, that can make hydrological predictions for any small or medium sized rivers given properties of the catchment, weather and current state of the river. More specifically, the model should be able to make predictions even for rivers that were not included in the training data.

The thesis is divided into three articles.

The goal of article one is to create a graph neural network (GNN) that can learn to predict the water level of a river 24 hours ahead. The goal of article two is to add uncertainty estimates to the model using Bayesian variational approach, and to analyze the importance of different variables based on attention mechanisms. The goal of article three is to expand the model created in article one to predict water quality and nutrient load of rivers.

3. *Remote sensing and morphodynamic modelling in hydromorphological and sediment connectivity analysis*
Temitope Akinyemi

4. *Restoring River Ecosystems: Evaluating the Impact of Dam Halt on Downstream Flow Dynamics and Ecological Functioning in the Kuusinkijoki River, Northern Finland*
Amin Sadeqi

The environmental impacts of damming rivers have led to efforts to halt or remove dams to restore natural river systems. This study investigates the effects of halting the Myllykoski Hydropower Dam on downstream flow characteristics and the ecological health of the Kuusinkijoki River in northern Finland. Advanced field-based data collection methods were utilized, including an Acoustic Doppler Current Profiler (ADCP) for flow measurements, water level loggers for continuous water level data, a multibeam sonar system for detailed bathymetric surveys, and aerial scanning with a helicopter for mapping the previously unused channel. These data sources were integrated to create a highly accurate Digital Terrain Model (DTM). The study aims to evaluate the spatio-temporal variability of downstream flow in both natural and man-made channels, analyze the impact of different flow scenarios (peak, normal, drought) on river characteristics, and assess how the restoration of the natural channel influences ecological functioning. A primary goal is to restore habitat connectivity for threatened brown trout, providing them with renewed access to extensive watercourses and lake areas. Hydraulic and fish habitat modelling will be employed to determine how varying flow scenarios post-dam removal affect fish habitats, offering valuable insights for river management and conservation strategies.

5. *Nature-Based Solutions in Water Retention and Climate Change Adaptation in an Agricultural Watershed: A Combined Approach of Watershed Modelling and Stakeholder Engagement*
Aino Saarinen

Climate change causes frequent extreme weather events, including droughts and heavy rainfall. These changes in the local water balance pose a significant challenge for agriculture by reducing crop yields and causing floods and nutrient runoff from agricultural fields, contributing to the eutrophication of receiving waterbodies. Nature-

based solutions (NBS) are recognized as a potential solution for climate change adaptation (CCA), and multiple benefits of these solutions for water management extend from water retention and detention to nutrient capture. While NBS are increasingly promoted, mainstreaming the use of these solutions requires more evaluation of their impacts and effectiveness across various environments, along with efforts to visualize and demonstrate these benefits to stakeholders and policymakers.

Watershed modelling provides a method for evaluating the impacts and benefits of NBS, but it can also facilitate stakeholder engagement and support informed decision making through visualization of the modelling results. In this study, different climate change scenarios and NBS were modelled using the Soil & Water Assessment Tool (SWAT+) in an agriculture-dominated watershed located in Southwest Finland. The model aims to assess local climate resilience by locating current and future problem areas and the role of NBS in supporting climate resilience and CCA. Modelling is done as part of the watershed planning process with participatory events, ultimately leading to the official Watershed Plan provided by local authorities. The results provide valuable insights into how this type of environment can benefit from the use of NBS in water management and provide information for local authorities and stakeholders to support informed decision making.

6. Seasonal Variability and Climate Change: Implications for Sub-Arctic Rivers
Asfand Tehseen, Petteri Alho, Elina Kasvi

Climate change is reshaping the planet, and the Nordic region stands at the forefront of this transformation. In its higher latitudes, temperature shifts are occurring at three times the global average, driven by polar amplification. This, coupled with a more intense global water cycle, is amplifying extreme events like flooding, which will likely redefine river discharges and fluvial dynamics. Human interventions, such as land use changes, urbanization, and river regulation, are further altering these natural processes. Our research focuses on the Tana River, a transboundary river between Finland and Norway, stretching over 350 km and draining into Tanafjord. We are leveraging cutting-edge hydrological modelling using SWAT+, integrating high-resolution spatial datasets like topography, land use, soil, and slope layer, along with high-resolution temporal data including temperature and precipitation. By incorporating climate data from CMIP-6 scenarios (Historical, SSP245, SSP370, SSP585), we aim to simulate current and future hydrological conditions under various climate scenarios. The next step is using these discharge projections in advanced computational models, powered by hyper-resolution bathymetric data, to offer new insights into the Tana River's evolving fluvial processes.

7. Virtavesiryhmä / Fluvial and Coastal Research Group, University of Turku

The Fluvial and Coastal Research Group (FCRG) studies fluvial and coastal processes in past, present, and future, as well as water protection and nature based solutions. We

explore pristine, agricultural and urban catchments and aquatic environments in changing climate, and how human actions impact flow regimes and water quality, erosion and sedimentation, and flow dynamics. We employ various methodologies with a strong focus on applying and developing remote sensing and modeling applications.

8. Proboscidean post-cranial morphometrics and ecomormorpholology and their utility in reconstructing past environments
Pauline Mbatha

Exploring Proboscidean Postcranial Morphometrics and Ecomorphology. This project aims to differentiate and identify new proboscidean bones, podials, and metapodials, particularly of the genera Elephas, Loxodonta, Mummuthus, and Palaeoloxodon. The study will establish morphometric criteria from extant and fossil skeletal collections in Africa and Europe to identify post-cranial differences between these genera, which can be applied to partial skeletons and isolated specimens. Understanding post-cranial adaptations in proboscideans is crucial for paleo-environmental reconstruction and movement in different environments (e.g., forest vs. savanna elephants). The project will also describe a complete skeleton of c.f Elephas recki from Koobi Fora area 123, comparing it with other elephant fossils from the region. This study lays the foundation for future work on the ecometric value of proboscidean post-cranial bones and could inform conservation efforts by providing insights into the habitat need of extant elephants.

9. Municipality scale Nature Based Solutions (NBS) for Future Climate Resilient Nordic Cities. (Case study at Trelleborg, Sweden)
Adnan Asif Rifat

Changes in rainfall intensity and return periods resulted from climate change and increasing imperviousness due to land use change are enhancing urban flood risk. This study utilized a special nature-based solution (NBS) that can be implemented by municipalities to evaluate their potential capacity to reduce the pluvial and basement flood risks while eliminating the needs of new space for execution. This NBS used existing roads (pedestrian, biking and flexible lane) and parking lots (Gray), which could be multifunctional to either retain or detain stormwater (Blue) and accommodate trees, plants, and vegetation (Green). The hydrological and hydraulic model was done with Mike+. A synthetic 10-year and a real rainfall event equivalent to a 50-year rainfall was used as boundary condition. The results from the study demonstrate its success in reducing urban and basement flood risk, surface runoff, load in existing drainage network, discharge rates, and flow velocity at the outlet of the studied area suggests a future climate resilient solution. Private owned NBS (source control) was also simulated but the result showed more efficiency to reduce surface runoff with municipality based NBS.

10. Assessing Landscape Dynamics of the Tropical Forest of Zanzibar Island Using Landsat Time-series Data
Khairiya Mudrik Masoud, Carlos-Gonzales-Inca, Niina Käyhkö

The tropical coastal region has long been a valuable landscape, but both natural fluctuations and significant human activities have impacted its integrity. Zanzibar, a tropical island in East Africa, is experiencing rapid forest loss and fragmentation, which degrades ecosystems, natural habitats, biodiversity and the landscape resilience due to anthropogenic activities such as cultivation and forest exploitation. To tackle this problem, spatio-temporal information such as the Landsat collection series are needed for comprehensive evaluation. It also requires advanced algorithms to analyse it with better leverage Earth Observation data. In this study, we use the Landtrandr algorithm to perform spatio-temporal segmentation of Landsat time-series data (1990-2024). It will allow us to identify different types of forest change and trends. These results will also be useful to improve the assessment of forest sustainability and integrity.

11. Transitioning towards sustainability in Artisanal and Small-Scale mining: the case of mercury in Tanzania
Oliver Daniel Tomassi

Mercury pollution poses a global threat due to its severe environmental and health impacts, including biodiversity loss, ecosystem degradation, and long-term health risks. Artisanal and small-scale gold mining (ASGM) is the largest single source of mercury emissions, responsible for nearly 40% of global emissions. ASGM is characterised by low capital investment, basic technology, and labour-intensive methods for gold extraction. Mercury remains a widely used solution due to its affordability and accessibility, supporting millions in rural communities worldwide. For over three decades, researchers, governments, and international organisations have sought to reduce or eliminate mercury use in ASGM. In the last decade, cyanide leaching, a more mechanised and capital-intensive alternative, has shown promise and is being supported politically and economically as a substitute for mercury. However, while this transition towards more sustainable mining is essential, it contributes to increasing inequalities in the sector, potentially depriving vulnerable communities of a critical economic lifeline.

12. Spatio-Temporal Evaluation of Atmospheric Teleconnection patterns Impacts on Air Temperature Timing Characteristics
Sadegh Kaboli

Seasonal temperature alternations significantly contribute to natural hydrological events in Nordic regions. Despite significant changes in hydro-climatological factors on both global and regional scales due to global warming, there is still little knowledge assessing the timing characteristics of these seasonal temperature changes.
In this research, we focus on the timing variation of the transition phase from cold to warm weather during the spring season across Finland. The main purpose of this study is

to determine the spatio-temporal variation of this transition phase and examine how it has changed over the past six decades across Finland. Additionally, this study will explore the relationship between possible shifts in this timing characteristics and atmospheric teleconnection patterns.

This research utilizes mean temperature data from the past six decades, with a resolution of 1x1 kilometer, publicly provided by the Finnish Meteorological Institute. We define several indices based on non-fixed thresholds to track both spatial and temporal alternations, and to identify possible trends and correlations using various statistical methods.

The extensive study area across Finland and the long data period offer valuable insights into how these transition phases have shifted and how they relate to other hydro-climatological factors.

13. Morphometry and characteristics of the subglacial meltwater tracts within the Finnish Lake District Ice Lobe (FLDIL) – Implications for subglacial hydrology and ice lobe dynamics
Juulia Kautto, Joni Mäkinen, Antti Ojala

Basal meltwater has an important control on the ice flow of glaciers and ice sheets. The meltwater generation is increasing due to the warming climate, but the basal drainage systems of modern ice sheets are difficult to observe. However, inspecting paleo-ice sheet beds may offer glimpses to the drainage systems which operated beneath them. The availability of high-resolution LiDAR DEMs has enabled the study of subglacial meltwater routes (SMRs), which have been hypothesized to record distributed or transitional drainage systems, offering new perspectives on subglacial hydrology. However, despite recent advances, the ways in which the different basal drainage modes interact with each other is still uncertain. The purpose of this ongoing study is to discuss the properties and genesis of the SMRs in the Finnish Lake District Ice Lobe (FLDIL) region of the Fennoscandian Ice Sheet. By using high-resolution LiDAR DEMs as the primary tool, we aim to describe the morphometry, morphology and pattern of the SMRs and study their interaction with the esker system. Based on the upcoming results, the wider implications for the glacial dynamics of the FLDIL will be discussed.

14. Open data, digital tools and youth engagement in public works for green transition and climate resilience in Africa
Monica Timbuka, Lauri Hooli, Nelly Babere, Nuala Cowan, Niina Käyhkö

Climate risks are complex and vulnerability is multidimensional in African cities, which lack baseline knowledge, digital data, tools and skills to make informed decisions. Cities are the future for African prosperity with increased youths, improved digital technologies and new job opportunities. There is a need to develop innovative youth and especially female engagement and skills-building methods, which complement existing formal modes of learning and provide youths with actionable digital climate resilience skills, competences and opportunities for employment.

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This research aims to diversify the ways particularly female youths can be introduced to and engaged into different digital public works and novel data collection campaigns related to the co-creation of green transition and climate resilience solutions in African cities based on the opportunities of digital revolution, FOSS technologies and participatory methodologies. In this presentation, we will assess the current state and methods of youth engagement in digital and green public works in African cities, considering factors such as youth participation, tools and technologies, learning and development impacts, sustainability and local ownership. A special focus will be given to female empowerment, addressing inequalities and challenges, which females may face.

15. Operationalizing Socio-Ecological-Technological Systems (SETS) framework to integrate Justice in Nature-Based Solutions (NBS) Planning
Arpa Aishwarya

Cities, as complex adaptive systems, are influenced by the interplay of social, ecological, and technological forces. Nature-based solutions (NBS) such as green roofs and wetlands have emerged as sustainable strategies for climate change mitigation in urban environments. However, these solutions often exacerbate inequalities, driving up housing costs and limiting access to green spaces for marginalized communities. This doctoral research investigates how NBS planning can be restructured to foster justice and equity by conceptualizing cities as Socio-Ecological-Technological Systems (SETS). With Finland aiming for carbon neutrality by 2035, there is an urgent need to ensure that NBS implementation supports equitable and sustainable urban transformation. This study explores how integrating diverse human values of nature—intrinsic, instrumental, and relational—can address the limitations of current NBS practices, which frequently overlook marginalized groups and fail to incorporate adequate community participation. Through Participatory Planning GIS (PPGIS) and collaborative knowledge creation with stakeholders, this research aims to bridge gaps in existing planning practices, ensuring that NBS strategies contribute to a more just and inclusive urban environment.

16. Landscape Approach for Sustainable Heritage Management
Akseli Tolvi, Niina Käyhkö, Georg Haggren, Nora Fagerholm

Cultural heritage is generally managed as distinct features, such as sites and monuments. This approach, however, is based on understanding of heritage as physical and static, and has the disadvantage that cultural heritage is treated as an element separate from the rest of the landscape. A landscape approach allows viewing cultural heritage in its broader contexts as a part of a larger human-nature system. It also enables a shift towards more holistic conception of cultural heritage and provides tools for more sustainable planning practices.

Cultural heritage is a knowledge depository and a builder of identities, but current management practices are unable to respond to many of the challenges of the modern world. Management is often centralized and top-down, based on narrow definitions of cultural heritage as physical and static, and views it as an element separate from the rest

of the landscape. This project uses a landscape approach to research managing of cultural heritage in its broader context as a part of a larger, dynamic human-nature system. It utilizes multiple sources of data, from archaeological and historical record to geospatial data and local knowledge of the heritage communities. It will take advantage of participatory mapping and GeoAI methods to develop tools for holistic and sustainable planning and management of cultural heritage.

17. Understanding lived and managed precarity in urban public space
Mia Jaatsi

This poster presents a study on everyday navigations of public space, with a particular focus on marginal spaces and practices. Using ethnographic methods, the study zooms into the micro-geographies of urban space to explore how they are lived, experienced, and practiced in contexts characterized by precarious urban conditions. The study finds that particular urban places, such as the forest pub in Varissuo (Turku), or practices, such as the informal recycling of cans and bottles, emerge as important coping mechanisms providing security amidst precarity. The study shows that vulnerability to precarious life situations in, for example, labour, housing, or health, can drive people to respond to such vulnerability through various tactics and everyday professionalism, rooted in routine, skills, and tacit knowledge. The study concludes that what people do in public space can constitute an important voice for those who are otherwise less heard, and teach us about the active agencies that work to manage and resist precarity on a daily basis. Understanding the role of public space in providing stability, routine, and affinity appears to be central in the strive towards more just and humane cities.

18. A Public Participation Approach to Identifying Mobility Lifestyle Profiles in Finnish Cities
Felix Hallikainen

While car-dependent mobility is deeply embedded in societies worldwide, transformation to more sustainable urban mobility practices is crucial to enhance human and environmental well-being. Understanding diverse mobility and housing preferences presents an opportunity to identify the potential for shifts into more sustainable mobility practices. Implementing planning and policy actions based on participatory data can increase the share of active mobility, including walking and cycling, and public transit.

In this study, we collected public participation GIS (PPGIS) data through a random sample of citizens in three Finnish cities. We conducted a map-based survey to capture respondents' everyday mobility patterns. Through factor and cluster analysis, we established distinct lifestyles based on mobility and housing preferences.
We identified 4 to 5 lifestyle groups within each city. While some groups highly depend on using private cars, others favor sustainable transport modes and multimodality in everyday mobility. Further, we detected differing preferences towards time- and money-usage, and neighborhood characteristics. Groups also diverged in terms of

sociodemographic characteristics, mobility choices, and how their home locations were sprawled within the urban fabric. The study results offer a novel approach to assessing mobility practices that aim to support planning and policy actions promoting sustainable mobility.

19. Community involvement in urban ecological regeneration – case Urban Biodiversity Parks
Ulrika Stevens, Salla Eilola, Nora Fagerholm

Biodiversity loss is a global challenge, but mitigation actions need to be taken locally. Novel solutions are needed to protect and restore biodiversity in urban areas where habitats are lost due to urbanization. Meanwhile, urban ecological regeneration practices frequently lack citizen engagement in the development and implementation of solutions, leaving citizens outside of decision-making processes.
The Urban Biodiversity Parks project, funded through EU UIA, aims to apply a new approach to tackling biodiversity loss. In addition to the establishment of the main Urban Biodiversity Park in Skanssi, Turku, two sub-urban neighbourhoods have been selected as pilot areas, where the biodiversity park concept is replicated.
We are using PPGIS methods to explore residents' wishes to improve the quality of life in the local neighbourhood by developing green spaces in Halinen and Jyrkkälä. We present the first results of a survey aiming to gain insight into the values people relate to nature, how they use the local greenery and recreational space, and how they view the local sense of community. By targeting diverse groups of urban dwellers, the survey contributes to a better understanding of how to develop nature-based solutions in cities with an emphasis on community involvement.

20. Urban form and economic diversity– How the city structure foster economically diverse neighborhoods?
Jouko Lappalainen & Tommi Inkinen

Proximity-driven knowledge clusters may be considered to maintain high employment rates, and stimulate economic growth, contributing positively to urban development and regional competitiveness. The shift to remote work has questioned the need for physical proximity in innovation. Historically, companies have clustered geographically, benefiting from economies of scale and knowledge spillovers, which has also boosted urban development and regional competitiveness. Diversity models have shown significant links between urban structure, knowledge economy indicators, and economic diversity. We applied and constructed a set of indices to explain these linkages. Among these, the Richness index, focusing on the number of sectors, is the easiest to predict as it indicates high R-squared values. Education level, especially the share of uneducated residents, has most noteworthy impact on knowledge-intensive employment diversities. Also, abundance of commercial spaces and walkability positively influence knowledge employment diversities. In the case of traditional industries and businesses, variable behavior is more influenced by urban form.

21. Laws with the jungle
Tikli Loivaranta

Local understandings of Indigenous Forest rights among Adivasi communities in India are comprised of both informal, customary rights, and formal, official rights. While official laws rely on a dis-placed ontology that abstracts from the people-place -connection, the customary Adivasi governance is centered on materially embedded and place-based understandings of how to live well with the forest, including its nonhuman beings. The Forest Rights Act (FRA), while part of the instrumental management discourse, is set to enable the continuation of locally embedded practices by providing more tenure security. An emerging awareness of the communities' entitlement to the official Community Forest Rights adds new knowledge to the local legal landscape, as the communities learn the language of the FRA, lodge their claims and incorporate their tacit knowledge in the process. The interplay of different knowledges forms a legal-pluralistic landscape with certain conceptual anchors fundamental for the continuation of Indigenous governance. This qualitative, fieldwork -based dissertation adds knowledge on the complexities of land tenure security and diversifies the field of legal geography with its focus on rural, posthuman lawscapes.

22. Neurodiversity and Youth Engagements in the Post-Social City
Fran Trento

This poster summarizes a work package on neurodiversity in the context of the project 'Enchantment in Young People's Technoscientific Urban Landscape: Encounters of Difference and the Opening of Politics in the post-social City'. Mainly, I am interested in discussing the participatory action research technique of Conceptual Speed Dating (CSD) to include the participation of neurodivergent individuals better. The ongoing research project involves understanding the geographies of young people and their opening and foreclosing to the political in Finland through their use of technology. The CSD participatory technique was initially developed at Senselab (Massumi, 2015). To refine CSD as a method in our research on the geographies of young people, we will work with the concept of modularity, developed by the autistic scholar Anna Stenning. Modularity involves how the 'capacities for interaction [are] shaped by the institutions that individuals interact with' and which, beyond any singular structure of symbolic meaning' (Stenning, 2024).

23. Being(s) There(s) [BETH]: Geographies of Knowledge Creation Processes in Extended Spaces and Times
Roosa Wingström, Julius Repo, Johanna Hautala, Marianne Mäntyoja

New geographies of knowledge creation processes are currently emerging with new technologies and teleworking practices. Virtual avatars, holograms and telepresence robots allow us to be in more than one place at the same time. We may be able to share embodied and tacit knowledge in ways that were not possible before. Through new

technology we can access and operate in virtual and augmented realities, which can support creativity and innovation in interesting ways. In BETH project we explore new ways of creating knowledge as and through virtual avatars, telepresence robots and holograms

24. Empowering machine learning and agent-based modeling to explore urban cycling flows
Xiao Cai, Elias Willberg, Tuuli Toivonen

Detailed datasets on urban cycling flows are not well available or limited for planning purposes due to many reasons. These reasons include poor access to data, unfit aggregation levels, lack of spatial and temporal coverage, lack of demographic information, and biases in representation, as well as privacy concerns. This causes a major challenge for urban transport planners to advance cycling as part of sustainable mobility. To this end, we propose a scalable and transferable methodological framework for producing city-wide cycling flow data using various open-source datasets and agent-based modeling. Such a synthetic dataset can provide hourly/daily/weekly/monthly counts of cyclists at the road segment level within the entire urban area, and thus be applicable to various spatio-temporal questions on cycling in urban and transport planning. To support the development, we also present some findings from our previous analyses on mining mobility patterns from large-scale bike-sharing trip records based on an unsupervised machine learning algorithm (i.e., k-means++ clustering). These results can provide important insights into why, where, and when urban cycling takes place, and can thus be applied to build more realistic models for producing synthetic cycling data.

25. Interactive spatial data platform as a digital infrastructure for human history research
Meeli Roose, Tua Nylén, Petro Pesonen, Harri Tolvanen, Outi Vesakoski

Maps simplify complex data and provide a contextual view of multiple attributes, aiding in the interpretation and understanding of the data. Datasets in natural sciences, like biology and geography, are often available in spatial formats, such as satellite image time series. In humanities, the ""spatial turn"" embraces digital approaches like GIS, shifting from desktop to web-based systems. Data visualization plays a significant role in enriching studies, emphasizing the importance of the map view when presenting spatial data. Widespread adoption of a platform requires fundamental usability, influenced by both application and map view elements.

Our test case, the URHIA (Uralic Historical Atlas) spatial data platform, aims to meet the needs of a broad group of end-users, such as historians, linguists, and geographers from the area of North-eastern Europe and Western Siberia. Initially, it was developed by a collaborative team at the University of Turku, Finland, as part of the URKO project, funded by the Academy of Finland). This platform combines information about geography and languages, as well pilot framework for archaeological artefacts, genetics, and the environment. The philosophy of the platform is to serve multidisciplinary research by

being inclusive, i.e. not excluding users based on scientific fields or other background factors. URHIA is a crucial tool for better understanding our human past.

URHIA is a data showroom presenting spatial datasets through interactive maps. Developed with the international research community using a user-centred design, URHIA currently features the Uralic Language Atlas (2022), showcasing speaker areas, and the first version of the Archaeological Artefact Atlas (2024).

26. Big Earth Data, Citizen Science and AI in Co-creation and Deployment of innovative climate risk data products and tools for African cities
Hilary Julius, Mvung Hilary, Tuomas Mäkilä, Thomas Esch, Caroline Gevaert, Niina Käyhkö

Sub Saharan African cities are increasingly suffering from the impacts of climate change. While digital revolution and GeoAI have strengthened climate risk data availability, collection, and analysis for actionable solutions across the world, solutions have failed to operate in local decision-making systems in African cities. This is largely due to overlooking of local needs and knowledge systems, and instead relying on scientific, expert-driven data, methods and knowledge. Co-creation of socially innovative and locally induced climate risk data products is urgently needed. This project aims to develop an integrated and socially innovative digital data and methods, using digital revolution opportunities together with bottom-up community engagement and citizen science approaches for improved mapping and management of climate risks in Sub-Saharan African cities. In this presentation, we will provide an overview of the current GeoAI and citizen science -based methods and geospatial data products for climate risk management in African cities, and discuss what are the essential elements of successful and responsible community engagement, citizen science and GeoAI methods for climate risk data production.

27. LLMs in Geography Education
Jussi S. Jauhiainen & Agustín Garagorry Guerra

Generative AI and Large Language Models (LLMs) have become integrated into geography education at high schools and universities in the 2020s. These technologies are increasingly used for learning and teaching as well as assessing students' performance.

This study analyzes how LLMs can be applied to evaluate open-ended responses in Geography examinations. The LLM used here for evaluation (GPT-4o) operated in a secure mode, ensuring no information was leaked for the model training.

The case study focuses on the 2023 Geography maturity exam, specifically on all participating 1,017 students' responses to one question in Finnish. In this question, students were asked to provide a comprehensive written explanation of the three types of rainfall, their development, and their geographical distribution. Each response was graded on a scale from 0 to 15 points both by official maturity exam

evaluators as well as by the LLM utilized. The evaluation results were then compared between each other.

The results highlight the importance of structured preparation and careful execution to achieve consistent and reliable evaluation results when using LLMs for this purpose. Crafting clear chain-of-thought prompts to execute the evaluation and verifying the model's accurate recall of student responses were critical steps.

Overall, the LLM performed exceptionally well in evaluating and grading the responses.

28. Geography Student Selection in Turmoil
Sanna Mäki, Olli Ruth, Minna Tanskanen, Sanna Varanka

In 2020, geography programs at the Universities of Helsinki, Eastern Finland, Oulu, and Turku adopted a national joint selection process. That same year, student selection was divided into certificate-based admission and entrance exam admission.

The national student admission development project introduced a scoring method for certificate-based admission that favored some subjects (especially mathematics) while diminishing the role of others (such as geography). However, the importance of the geography grade was highlighted in the geography admission. In 2022, a new project was launched to reform both certificate-based admission and entrance exams, with the new scoring method set to be applied from 2026 onwards.

The national digital geography entrance exam was held between 2020 and 2024. However, the new development project recommended merging entrance exams and focusing on assessing skills needed for university studies rather than specific subject knowledge.

Starting in 2025, the geography entrance exam will be combined with exams for biology, geosciences, food sciences, agriculture, forestry, and environmental sciences. The exam will be digital and machine-graded, with a three-part structure: a mandatory task, two selected thematic tasks out of four, and a specialized section for biology.

Ongoing evaluation will be essential to assess the impact of these changes.

29. Turun maantieteen laitoksen tutkimuksen historia
Jussi S. Jauhiainen

30. Turun maantieteen laitoksen opetuksen historia
Jussi S. Jauhiainen

31. ESRI Finland
Kaisa Voipio

32. MUST – Multispecies Transitions of cities and regions
Nora Fagerholm

33. HYDRO-RI-Platform
Freshwater Competence Centre