**CROSSCURRENTS** 

Historical Waterscapes in Crosscultural Perspective

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Towards a political epistemology of space: A framework for comparative hydrology

Matthias Schemmel, Sascha Freyberg

In our contribution we would like to present a framework that offers concrete criteria for a comparison of different historical cases of human-environment interaction. Our framework follows, and reflects the transition, from a historical epistemology of spatial cognition to a political epistemology of spatial practices. We argue that the different models of spatial cognition help to understand different forms of humanenvironment interaction in hydrology. In this transition we need to correlate mental models of space with socio-economical structures, and at the same time integrate the social with the environmental. In a political epistemology of space different forms of space occur not in a developmental sequence but as interfering and interacting realms within a society. We thus suggest the mediation of concrete forms of socio-ecological and

socio-economic factors in terms of a new historical materialism.

Visions and Revisions: Science and Imaginations of Coastal Waterscapes in South India

**Muthuvel Deivendran** 

Colonial irrigation interventions in the deltaic regions of south India in the nineteenth century, also shaped the science of fisheries. By the late 1860s, the irrigation structures built across the flowing rivers of the Godavari, Krishna and the Kaveri alarmed the British, due to reasons of overfishing in the rivers. Initial efforts from the colonial experts were grounded in conservation, which led to state led local regulations, leading up to the Indian Fisheries Act (1897). At the turn of the 20th century, the colonial administration also began attempts to rationalize the fisheries in southern coasts through stocking operations, experimental vessels and zoological investigations. The post independent nation state reoriented the sea as a resource to address the needs of food security, which during subsequent decades became aggressive industrial fisheries for export driven exchange. This presentation will dwell upon these historical shifts to show how the changes in orientation involved the life, labour and the imagination of the working people on the coast. Contemporary conflicts on the coastal and the deltaic landscapes in south India are marked by the growing dissonance between contending visions of science, the state and the people. These resistances call for alternative modes of value-making and imagining the coast, its peoples and resources.

Collecting natural risks: looking for water traces

Corinna Guerra

The "Perrey Archive", a unique historical collection of texts and manuscripts relating to earthquakes and volcanic eruptions, is kept in the "Fondo Sismico" of the library of the Società Napoletana di Storia Patria. The collection is the result of the tireless research of French scientist Alexis Perrey (1807-1882) who is, in fact, considered the founder of seismology. I will illustrate the constitution of the collection, reconstruct the events that brought it to Naples and describe the crucial role that the information archived by Perrey played in the historical seismology. Finally, I will present the reasons for the special interest that this historical collection could have for Venetian, and non-Venetian, waterscapes in an interdisciplinary perspective.

# Historical perspectives on land use changes and natural hazards in the Philippines

#### **Patrick Roberts**

Around 80% of the nation of the Philippines is composed of water and cultural adaptations to, and management of, natural hazards connected to water have played a major role in political, economic, and cultural changes in this region over time. In this paper, I explore how multidisciplinary approaches to precolonial and colonial land use changes in the Philippines can shed light on changing resilience to hazards and contemporary challenges in the 21st century.

#### Aesthetics of water in Venice

## **Heiner Krellig**

Venice and its Lagoon — as the World Heritage-site correctly is called — can be regarded being the historic model for a water culture that formed a human-natural landscape. Venice itself has been regarded to be the most artificial of all cities: even the ground where it was founded would have been to be made by man. Its inhabitants had to develop a specific architect's knowledge about "how to build a city in the mid of the water" and water gave the city its unique aesthetic. The form of the city of Venice, its liminal culture and its architecture are deeply determined by the unique natural ambiance of the lagoon that was inhospitable, but sheltering at the same time. But to conserve the sheltering function that had its origins on the day of the mythical founding of the city for the refugee fleeing the invasions of Italian territories by Huns and Langobards during the medieval "Migration Period", and against potential later aggressive attacks, the ecosystem of the Lagoon, had to be altered profoundly by human invention. This contribution aims to re-think Venice, and its fluid aesthetics in the fragile ecosystem of "its Lagoon" as an example of how human intervention "conserved" the ambiance over hundreds of years by creating an anthropogenically formed cultural landscape, and that now, in the post-industrial age of Global Climate Change is under continuous threads by its waters.

## Reading Riverscapes in the Jordan River

## **Rachel Gottesman**

The Jordan River runs from north to south along 251 km at the boundaries of Israel, southwest Syria, Jordan, and the Palestinian-occupied West Bank. It has a long and celebrated history holds great religious significance

in Judaism, Christianity, and Islam. Within the last 100 years, the river was subject to significant environmental, ideological, political, and economic transformations, radically reshaping landscapes, environments, and long-lasting cultural traditions. The presentation introduces an interdisciplinary research project which applies spatial, ecological, cultural, and historical analysis to the territory. It treats the river as a physical entity, a historical force, and a mythological being to review the long-lasting reciprocal relations between human civilization and the environment.

## What is the 'geo' in a delta? agrarian pasts to developmental and environmental futures

# **Aditya Ramesh**

Travelling in the Thanjavur delta in the 1960s, the American economist and key architect of the Intensive Agricultural Development Programme of the Ford Foundation, observed that '[the outstanding impression was one of rich soil, and rich country where farmers are relatively well off, certainly better off than in Pujnab'. Immersed in the techno-political dream of a future of plentiful food through fertilizer, what Ladejinsky hardly noticed were the agrarian conflicts that were playing out between upper caste landlords and labourers who had long been denied land, economic rights, and political dignity. Yet, even more marginal to the agrarian promise of the delta, both as a harbinger of plenty and promises of social justice, were its marginal economies. Focusing on salt and hydrocarbons, I show how the delta was being re-envisioned, equally through an intertwining of technology and politics. Salt economies were on the high from the 1950s, particularly to power a bourgeoning fertiliser industry. and amidst an oil and energy crisis in the 1960s, the delta was a new arena for geological investigations for hydrocarbon. The geo assumes three dimensions: geocapitalist, geo-spatial, and geo-graphical.

# Towards an anti-caste political ecology: Brahmanism, Racialization and the Production of geographies of difference

# Sahitya Venkatesan

My research seeks to analyze how historically marginalized Dalit caste groups located on vulnerable coastal landscapes navigate the threats posed by climate change and related economic and infrastructural development. Nagapattinam, in the coastal plains of the Cauvery delta in South India, is extremely vulnerable to the adverse impacts of climate change. This coastal wetland region, however, is also home to a high proportion of Dalit caste groups, a result of the historical pattern of spatial segregation of Dalits to "uninhabitable" places called *cheri*. In this paper, I trace how caste mediates the differential production of space and its implications for climate change. I offer two preliminary claims. First, I argue that we need to reorient our analytical focus from the potentially essentializing category of "Dalit" difference to instead a critical focus on Brahmanism as an ideology. Moving away from a lens of viewing caste in its particularistic identities, I argue that a reframing through Brahmanical ideology allows one to trace caste formation as an ongoing process, articulating with situated histories of colonialism and present-day impulses of climate capitalism. To this, I add, in my second claim, that Brahmanism provides the rationale for not just the hierarchical valuation of people, but also the hierarchical valuation of places. I provisionally offer *cheri* as a spatial analytic to refer not only to preexisting uninhabitable landscapes emerging from the Brahmanical

order but to also think through how such devalued places are also produced relationally and *made uninhabitable* through ongoing projects of infrastructure development.

Labour, Energy, and Information as Historical Configurations: Notes for a Political Metrology of the Anthropocene

## Matteo Pasquinelli

The paper contributes to the debate on the role of metrics in geoanthropology. It argues that the use of the energy metric in the study of the Anthropocene among other phenomena should be seen in its relation to the metrology of labour and productivity that originated in the industrial age. In order to clarify this genealogical question, the essay extends the method of 'historical metrology' (Kula) to the notion of energy and, in addition, to the notion of information, that can be understood in its own as a metric of knowledge, mental labour, communication and cooperation.

Bronze Age southern Iberia: a historical perspective on water management and urban complexification

### **Ricardo Fernandes**

Abstract: Southern Iberia, the most arid region in Europe, sustained the largest urban centres on the European mainland during the Bronze Age. To investigate this phenomenon, archaeological and isotopic evidence was employed to trace the historical development of water and agricultural management practices in the region from the Neolithic to the Iron Age. I will discuss the relevance of observed historical patterns and their legacies and how these support the development of novel modelling methodologies aimed at present and future water management challenges.

Expedient Obedience: Water Management and Natural Order in Early 18th-Century Italy

## Francesco Luzzini

Throughout the seventeenth and early eighteenth centuries, water management in Italy was affected by the idea – typical of the *new science* – that human intervention should "support natural inclinations" in order to succeed. Moving from some significant case studies, I shall attempt a preliminary discussion of this concept of an "art supportive of nature," its actual influence on the evolution of the early modern debate on water management, and the particular reasons behind its popularity in the Italian context.

The colonization of a watershed. The triumph of the city over the lakes in the Valley of Mexico

**Omar Rodriguez** 

One of the first, but generally forgotten, examples of the human impact on the environment in its modern form was the rise of Ibero-America. The inception of the New World involved not only a mixture of cultures but also of natures, which would shape the world as we know it, including imperialism and colonial practices. In this way, this process was not impartial and innocuous, but rather transformed local worldviews, practices, and environments at once to adjust them to European conceptions. One of the most dramatic examples of these changes is the Basin-Valley of Mexico. Originally the Mexica promised land located between lakes, it became a place of struggle between the city and the waters. With Spanish rule, new water policies were developed trying to dry the lakes to keep the city safe from flooding. This urban vision not only went against the needs of life linked to the lakes, but also encouraged their transformation into reclaimed land in favour of the expansion of the city. Due to the scope of the task which was a longue durée process similar to geological changes, this transformation was not achieved until the consolidation of the independent nation, and even continues to this day. Therefore, colonization practices have not stopped transforming the watershed into a large metropolitan area, as well as taking water from nearby basins to relieve the thirst of the city's inhabitants, but also of real estate business.

## **Spiral Cosmograms to Fathom Deltaic Time**

### Rebecca Snedekar

I would like to discuss the history of timelines and chronologic knowledge tools related to human water management in the Lower Mississippi River region. I would share both historical and contemporary examples of timelines (some of which fall in the planning and speculative future realms), as well as timelines that I have been making as works on paper and, more recently, as flexible, spiral sculptures that involve "data physification" and integrate cosmological and ecological knowledge. The talk would provide an overview of the region's water management history, via the presentation of these timelines, charts, and models. I would aim to draw out how the timelines serve as frameworks to assimilate and share interdisciplinary and multiphonic knowledge of this place, and place this region's trajectory in temporal relationship to developments on other continents and to the planet and universe. Ultimately, I am interested in the possibility of creating sculptural and transcultural synchronologies that relate three or more river deltas and include deep time history and speculative futures.

# Living Streams: Rivers as More-than-Human Agents in the Ancient World

## **Kresimir Vukovic**

Rivers have played a crucial role in the rise and development of human societies since time immemorial. Current ecological crises call for a serious reconsideration of our relationship to rivers. Several countries (Ecuador, New Zealand, India) have responded to this challenge by granting rivers the legal status of persons. Some of these legislations were grounded in native traditions that regard rivers as living creatures. Similar concepts appear in many ancient cultures that regard rivers as non-human beings. While many have written about economic, geological, hydrological and other aspects of ancient rivers, the conception of rivers as non-human and more-than-human agents remains relatively unexplored. Following Bruno Latour's (2005) call to reconsider the agency of non-human elements in history, this paper stimulates debate on the perception and

role of rivers by studying the variety of ancient conceptions of rivers as more-than-human agents that have actively shaped the world. Analyzing the religious and mythological aspects of river deities in their ancient contexts reveals a plurality of non-human conceptions of rivers, from Egypt and Mesopotamia to Greece and Italy.

Flow of Time: the Khovd River Dam Construction Project in Mongolian Historical Perspective

Mike Fisher

Archaeological investigations of the Khovd River Valley in western Mongolia have produced evidence of occupation dating back to at least the Bronze Age (ca. 4kya), with indications of both ancient and modern funerary, ritual, and habitational usage within the riparian zone. Currently, the Mongolian government is constructing a 90MW hydroelectric dam on the river at Erdeneburen, which will become the country's largest dam and provide much needed energy independence to Mongolia. It will also flood approximately 3,500 km2, submerging at least 350 archaeological and ethnographic features, while endangering, damaging, or destroying another approximately 1,200. The dam will provide energy for five provinces in western Mongolia, especially for the purpose of further development of mining operations in the archaeologically rich Great Lakes Depression, potentially impacting thousands more archaeological features as well as traditional mobile-pastoral lifeways.

The archaeological and ethnographic heritages of Mongolia reflect a multi-millennial continuity of these mobile-pastoral occupations across sparsely populated, environmentally diverse landscapes, and the threats of modernization and industrialization to those heritages are present and substantial. The Mongolian Archaeology Project: Surveying the Steppes (MAPSS), in collaboration with the Mongolian Institute of Archaeology, integrates a variety of digital techniques including GIS, Machine Learning semi-automated site detection, drone mapping, and Structure-from-Motion LiDAR scanning to document the endangered archaeology. This paper presents the findings of the collaborative Khovd River Valley survey and quantifies the impact that the development of the Erdeneburen Hydroelectric Dam is likely to have on the rich cultural heritage of the region. It also considers long-term usage patterns of the valley, human impact on ancient waterways, and balanced approaches to modern development given the resource-intensive demands of the Anthropocene.

Mississippi: Working River

**Thomas Turnbull** 

In this presentation the author will share his ongoing research project which draws on Élisée Reclus's notion of the 'working river' to understand the Mississippi River system and its relations to both the minor and minute and the macro, or planetary and even interplanetary entities it relates to.

Labour, Water and Crop in Kaveri Delta

#### Shibinandan R

The Kaveri Delta region of south India has witnessed attempts at large scale changes to its land and rivers, over a millenia. Different forms of control over labour and resources marked these transformations in these landscapes. The changing social relations around these changes mediated different regimes of extraction, even though preferences of what can be extracted, kept changing. The labouring people of the Delta and their fields of work carried the traces of these changes. This presentation will trace these changes through the changing relation between canal irrigation, rice cultivation and bondage at three distinct moments of this region – the medieval Chola empire, the British colonial interventional moment, the moments of the nation state and food security and the present-day moment of climate adaptation programmes. Understanding these changes would provide us the resources to reimagine the possibility for justice to nature and labour of these landscapes.

Grounding (ground)water in the Cauvery delta - A care-ful approach to uncovering diversities in understanding and enacting (ground)water

# **Tanvi Agrawal**

Deltas are receiving increasing attention from the development sector, as 'vulnerable geographies' needing special focus in research and practice. This research will study the Cauvery delta, known as the 'rice bowl of southern India' to explore the challenges and possibilities for delta governance. The delta consists of a complex network of distributaries supporting ancient irrigation systems and intensively cultivated regions. Today, it faces numerous anthropogenic and natural threats, like reduced surface flows, saltwater intrusion and high-amplitude cyclones. These environmental changes are coupled with socio-economic issues like the propagation of commercial shrimp farming at the cost of agricultural land, rising unemployment and the continued oppression of landless labourers. Against this background, the delta is witness to both confrontation aiming to resist and reform hegemonic powers (e.g., protesting new development projects), as well as productive efforts to protect and re-invent traditional water management practices (e.g., grassroots tank rejuvenation movements). The project analyses these confrontations and productive efforts through the story of water. Water is determined by the variables that enact it, and thereby this research asks the ontological question "what is the delta's water", as a prerequisite to thinking about how to manage it. In particular, it investigates the processes of the discursive construction and the material production of groundwater and the delta. Using a combination of extensive and intensive methods, the project probes how material, institutional and discursive structures, practices and knowledges on water management maintain and change power relations, and with what effects for whom. Understanding this microcosm of hydrosocial territories makes for opportunities to augment and empower re-imagined water management practices and plan for the future.

Keywords: Cauvery delta, India, water governance, ground water, Science and Technology Studies, water quality

Measures, Models and Flows: Visualizing Labour

**Ganesh Gopal** 

Technocratic models and solutions have shaped socio-economic changes in particular ecologies such as the deltas and the coasts. Even though social sciences have long developed a critique of such hegemonic practices, design thinking is yet to become a creative element in the development of this critique. In this presentation, we will demonstrate how the Coromandel coast and the Kaveri delta in the south of India has been subject to multiple processes of extraction, often justified by practices of measuring and model building. We argue that representations of dynamic processes of flow through mathematical and spatial abstraction have made the relation between work and ecology invisible. Financial profiling of working people's lives in the delta is connected to how hydrological infrastructures operate through seasonality and cultivation in the fields. But measures and information flow mask the connections. The shaping of land and waterscapes by the work and knowledge of the labouring people need to be integrated with creating design thinking for us to develop different ways to contend with technocratic practices.

# **Credit in the Shifting Frontiers of Water**

### **Arunkumar AS**

Coastal-deltaic landscapes are increasingly becoming industrialised, since the 1990s, constantly being subjected to altercations with built structures and enclosures. The accessibility of credit to create infrastructures re-engineered the landscape that are conventionally used by local communities who worked with several possibilities of available resources. Their labour interacted with nature, tamed to extract the resources in a sustainable manner. But now the constant engagement of changes in modality of productions, conceptualised by ideas of nation state such as food security, nation growth have promoted credit inflow, normalised its presence for creation of infrastructures.

However, credit which is in most cases the public exchequer, routed through state policies for these infrastructure, acquires land or creates enclosures, preventing access to locals from utilising these resources. Alienated from resources, the local communities with not much options left are pushed to the informal credit nexus and sacrifice their everyday labour to serve the debt. Therefore, an effort is made to draw cycles of credit and the extractivist nature of capital expansion through credit, exploring both the landscape and the labour.

# Investigating narratives behind vulnerability framings of deltaic geographies through case studies

#### Neha Khandekar

Climate and Water Infrastructures in South Asia are built on hegemonic and colonial ways of doing water science, with principles and rules of water accounting which treat rivers as economic resources to be governed through command and control approaches. Climate crisis and resistance through social movements on the ground shows that the current regime of water science and practice is shaped by ideas of masculinity and arrogance. Climate justice paradigm for adaptation and loss and damage planning is dealt with within the multilateral frameworks and geopolitics operating between Global North and Global South. Here, politics of knowledge production and dynamics of power unfolding at sub-national (state, private corporations- communities) level at a daily time step do not feature in. Therefore Climate reductive narratives emanating from that scale and simplistic framings of vulnerabilities ignore the socio-economic and socio-

cultural drivers behind issues of unequitable water access. Historically since colonial and post colonial times even the most complex systems models, physics-mathematics, engineering hydrology and civil engineering designs are unable to resolve the water conflicts and issues of inequity in water access and availability across geographic scale. Contrary to the dominant discourses, physical sciences alone has failed to provide definite rules and answers to manage and govern moving waters in constant interaction with labour. Through this component of the action research and advocacy in Kaveri and Sunderbans delta (Bangladesh) I intend to reflect on the current paradigm by asking who is framing the dominant narratives, why and what is missing from the dominant discourses? By bringing in alternative narratives from the field, I am interested in looking at how the different narratives and material aspects interact and how a better understanding of these interactions could shape the future course of water science and practice in making it decolonial, inclusive, plural and equitable.

# Seeing the 'Capitalocene' from the Senegal River Delta Region: land grabbing, pastoralism, and colonial modernity

## Maura Benegiamo

In the Senegal River Delta region, the subaltern position of semi-extensive and itinerant pastoralism is today aggravated by the transformation of an internal colonial frontier into a global commodity frontier. Although these dynamics have accelerated in the last two decades, the logic of this process can be traced back to the historical agrarian transformation of the area, pursued by hydraulic reorganisation and aimed at the development of plantations. This has contributed to the materialisation of new socio-ecological relations and value hierarchies, the contestation of which has spanned the making of 'modernity' and is at the roots of the 'Capitalocene' crisis.

# Intellectual engineering on muddy waters: human intervention and an ever-changing environment on the Venetian-Ferrarese border (1598-1620)

## **Erasmo CASTELLANI**

In early modernity, the relationship between the environment and human actions appears to be a dialogic one: human technical interventions on nature are intrinsically intertwined with economic, territorial and political concerns, either to adapt to the forces of nature that modify the environment, to steer that change for profitable ends, or, conversely, to contain the risks that natural development implies. Moreover, central governments must take into account socio-cultural practices of indigenous populations that define their interaction with the environment – practices whose goals and ends do not necessarily coincide with those of the ruling powers. The Goro inlet, a contested body of water on the Venetian-Ferrarese border on the Po River delta, is a case study that allows us to reflect upon the political discourses, the juridical strategies, and the technical interventions put in place by the Venetian Republic between the late sixteenth and early seventeenth centuries in order to manage that ever-changing territory. What emerges is a picture in which the environment is not just the backdrop upon which societies operate, but epistemologically defines how humans articulate their agency. In particular, Paolo Sarpi, the state theologian and legal expert, to respond to the politico-jurisdictional conflict that emerged over the inlet, conceived his advice for the Venetian senate

like an intellectual engineer, tactically adapting his epistemological response to the muddy, swampy borders between the Venetian Republic and Ferrara.

# Sand, Microbes & Machinery: A Technological Landscape of Potable Water in a Manufacturing City at the Turn of the 20th Century

### Ellan F. Spero

This contribution is grounded in the case of Lawrence Massachusetts (USA), situated on the Merrimack River, like many other industrial centers, was, and continues to be, a place intimately tied to water. Built-up as a hydro-powered textile manufacturing center, the city grew quickly into a densely packed production center with residents newly arrived from regional farms, as well as from across the ocean, a melting pot for numerous languages and cultures. Linked to this quite visible role of the river as a power source was also a more hidden role in public health, only made explicit in the typhoid epidemic in the 1890s that impacted cities up and down the river. Although Lawrence shared much in common with other afflicted manufacturing cities, it was uniquely home to a laboratory that was the first of its kind in the United States, the Lawrence Experiment Station (LES). The work on water quality performed in Lawrence was to play an instrumental role not only in the recovery of the city, but also to set the standard for water filtration more broadly in the United States and beyond (Spero and Ortiz 2021). This material-centered approach to waterscape and infrastructure is concerned with the spectrum across scales from properties that arise from chemical, atomic, and molecular structures to the macroscale of the built environment situated within a larger technological landscape where machine systems are co-constructed with narrative and place. The framework of technological landscape addresses technologies and landscape not as opposites or solely objects, but rather entangled processes with embedded material relationships, drawing attention to design choices and functionalities that are enduring or slow to change. It places emphasis on the connections, continuities, and complexities, whether between overlapping older and emerging technologies (Lindqvist, 2011) or the often problematic but nevertheless deep interconnectedness of human and non-human actors in the shaping of place, linked processes of transformative construction and subsequent 'naturalization' over time (Spero, 2013; Spero & Pereira, 2016) and slow structural change accumulation of interconnected practices and artifacts (Bray, 2016; Lindqvist, 2011). Through a focus on water and the relationship with systems of production and sanitation, this projectaddresses the entangled relationship between what is observed, quantified, acted upon, and manifested in the broader technological landscape. Selected References: Cultures. 22, Bray, Flows and Matrices, Landscapes and Icon (2016).Lindqvist, S. Changes in the Technological Landscape: Essays in the History of Science and Technology. (Science Publications, History 2011). Nye, D. E. Technologies of landscape: from reaping to recycling. (University of Massachusetts Press, 1999). Spero, E. F. The Tua River Valley: A Technological Landscape. in Railroads in Historical Context: Construction, Ш 239-248 Costs and Consequences vol. (2013).Spero, E. F. & Ortiz, C. Navigating Dimensions Across Materials and History: Scale as a Lens to Understand Dynamic and Cumulative Sociotechnical Relationships. Diseña (2021)Spero, E. F. & Pereira, H. S. The Tua Valley in Transition, Symbol and Technological Landscape. CEM Cultura, Espaço & Memória: Revista do CITCEM (2016)

# War, Science, and the Reshaping of the Urban (and Water) Space from Renaissance to Modernity: Towards a Political Epistemology of Space

#### Rodolfo Garau

During the Renaissance, the advancement of artillery had a profound impact on both urban and natural landscapes. The introduction of new weapons made cities and strategic resources vulnerable to rapid destruction and conquest, leading to significant social, political, theoretical, and urbanistic transformations. One of the key consequences was a change in the mechanism of conscription, disrupting the social order that had relied on a class monopoly of violence. This, in turn, prompted a reorganization of political alliances and the development of new systems of territorial defense. Furthermore, the transformation of artillery influenced the conceptualization, organization, construction, and defense of space. Under the guidance of political authorities, early modern cities and strategic locations witnessed the emergence of innovative forms of fortification, greatly impacting traditional urbanism. The rise of fortification also gave birth to a new literary genre known as the treatise of fortification. Initially circulated in manuscript form within Italian courts, these treatises quickly spread throughout Europe, the Mediterranean, and overseas colonies. Situated at the intersection of practical and theoretical knowledge, the science of fortification became a defining feature of early modernity. It was initially embraced by inexperienced practitioners and later adopted by architects, mathematics professors, and engineers. Eventually, it became an essential component of the early modern educational curriculum and played a crucial role in the establishment of engineering schools and institutes.

Political power played an active role in this process of knowledge production and institutionalization. Political authorities not only encouraged the generation of theoretical knowledge but also supported the implementation of fortification projects. The organization of society and the control of space were intimately intertwined, as highlighted by Schemmel (2016). Consequently, the rise of fortifications from the Renaissance to early modernity exemplifies a political epistemology of space—a complex interplay between theoretical, practical, geographical, political, and symbolic dimensions (Omodeo 2019).

In this talk, I present a new research project that aims to investigate the reciprocal relationship between these various dimensions of theorization and reorganization of spaces in reaction to the change in warfare that characterized early modernity. It seeks to understand how theoretical knowledge, practical considerations, geographic factors, political motivations, and symbolic meanings influenced the reorganization of spaces in early modernity. When it comes to water, I shall also show the relevance of such practices for the Western colonial enterprise, thus bridging the gap between local and colonial history.