

# Maritime Modernities: Formats of Oceanic Knowledge (MaMo)

## State of the art, knowledge needs and project objectives

How does knowledge condition humans' impact on the oceans of the world? Today, evidence mounts that marine ecologies are facing life-threatening crises following human exploitation. Mitigation has been sought through a series of high profile efforts, such as the ongoing United Nations Decade of Ocean Science for Sustainable Development. This initiative highlights the importance of science and engineering for the health of the seas, and is actively seeking public understanding through a number of "ocean literacy" measures (<http://www.oceandecade.org/>). However praiseworthy the intentions, this promotes a determinedly presentist approach rooted in notions of the troubled oceans as something only recently understood. Moreover, the long-term dynamics of knowledge and conflict of interests that are at the heart of the precarious state of the maritime world are neglected.

This project addresses the need for a historical approach to the realities of the current ecological crisis and the urgency of a historically informed ocean literacy. Building on the broad competences of an interdisciplinary and international group of scholars, the project proposes to study how activities and practices of mercantile and maritime interests have shaped and formed what can be deemed as *maritime modernities*, a distinctive period and process of the last four centuries where human activities at sea have expanded. We develop *formats of oceanic knowledge* as a new conceptual tool for studying how inscribing, arranging and transporting knowledges of the seas have underpinned and preconditioned human-oceanic interactions and the crises "in-the-making". More specifically, we will investigate how various types of records, maps and models have shaped how oceans have been perceived, used and appropriated over a period of four centuries. Furthermore, we will study how these epistemic formats have conditioned awareness and care in past and contemporary societies, with the aim of using history to provide a more informed ocean literacy.

Rather than explaining how conditions of modernity have reshaped the oceans, this project asks how the oceans have shaped and become entangled with other institutionalized patterns of modernity. Based on new empirical research on private and public archives and collections of maritime records, maps and models, we will study how these formats have constituted the oceans as sets of "variegated spaces", thriving with hybridity of politics, law and even science and engineering (Benton 2010). By studying these three formats, we aim at revealing how distinctions between the private and the public, the practical and the theoretical, and between the political, legal, economic and scientific do not appear as plain or self-evident at sea, and how such hybrids eventually became entangled with institutions formed on land. The project aims at analysing how the sea scrambles assumptions we take for granted on land, to the effect that maritime practices, institutions and knowledges have formed hybrids and entanglements. Indeed, the maritime can be considered a prime example of multiple modernities.

In terms of geography, the project focuses on the Atlantic Ocean, and how this basin became an important area of origin of formative knowledges, conceptualisations and institutions of the maritime world. However, by following records, maps and models into their contemporary applications and across different ocean basins, we also propose a transoceanic methodology that investigate how a set of epistemic repertoires were shared, met with resistance and changed as they ventured across the oceans of the world. By emphasizing knowledges and institutions of Atlantic origin, we focus on an area where the awareness of widespread ecological crises holds a particularly long history, as well as a place where approaches to conservation and care about the oceanic environment can be traced to the early modern period (Bolster 2008). The paradoxes of the current crisis warrant this tiered geographical and methodological approach. The choice of geography serves a historiographical argument, as it adds a hitherto strangely absent dimension to the expansive history of "The Atlantic World", where the lack of concern with the ocean itself, is rather evident (Armitage 2017). Our proposed transoceanic outlook redresses a similar shortcoming within the general field of global history, where histories *on* the sea have proven far more frequent to come by than those *of* the sea (Armitage, Bashford, and Sivasundaram 2017; Benton and Perl-Rosenthal 2020). Furthermore, whereas studies of knowledge practices have become a commonplace in imperial history, few have addressed the maritime character or knowledges central to the early modern European empires (PerlRosenthal 2018). This project also addresses some of the shortcomings and limitations of the emerging

social scientific and humanities scholarship investigating the alteration of the seas under the label of “critical ocean studies”, in particular those inherent to the turn to ontologies of the seas (K. Peters and Steinberg 2019). While this “wet ontology” has provided for a rethinking of categories such as space, time, matter, movement and agency, it has also obscured and demobilized epistemological concerns about the oceans.

*Maritime Modernities* takes some of its cues from emerging scholarship often referred to as “the blue humanities” (Mentz 2009; Gillis 2013; Jue 2020). Within this, historians and literary scholars have already drawn attention to the spaces and lives of the sea (Mentz 2015; Rozwadowski 2018), while more novel fields such as “maritime geography” (Steinberg 2001) and “blue legalities” have addressed challenges of ocean governance (Braverman and Johnson 2020) through distinctly social scientific and humanistic approaches. Nevertheless, the historical dimensions of the present state of the oceans have yet to be substantially interrogated. In particular, we need to know more about the history of knowledge of the oceans, in order to comprehend the present state of the marine world (Helmreich 2009). This project aims to show that the hybridity of maritime knowledges and plurality of maritime modernities in, and outside, the Atlantic provide possibilities for a reconsideration of the cultural conditions underlying the current ecological crises of the oceans. The main objectives of the project are:

- To provide a deeper historical understanding of the current crisis of the oceans, by focusing on the formats of knowledge, the practical epistemological and material media for retrieving and transporting oceanic knowledges developed over the last four centuries.
- To propose “formats of knowledge” as a new conceptual tool for investigating the history of the knowledges of the ocean, beyond those of science, and, more specifically, to use this conceptual tool to bring to light the knowledge conditions that underpin the current ecological crisis of the oceans.
- To investigate how hybrids of maritime practices, institutions and knowledges that formed in the Atlantic have circulated and moved beyond their sea of origin, and shaped conceptions and relationships on a transoceanic level.
- To use original empirical insight into the entangled history of oceanic knowledges in, around and beyond the Atlantic from 1600 until today, in order to enhance crucial historical awareness when addressing ocean research and literacy as means to increase marine sustainability.

### **Research questions and hypotheses, theoretical approach and methodology**

This research project springs from the overarching hypothesis that formats of oceanic knowledge have decisively shaped activities at sea and influenced parameters for ocean use. The project identifies three formats of oceanic knowledge that individually and together hold significant explanatory power regarding our present sense of the oceans: records, maps and models. We propose to study how each have, over four centuries, transformed the oceans into spaces of maritime modernities. Our investigations start with the Atlantic, but follow the three formats trans-oceanically, from their origins to their use and transformations in other seas and at a global level. We reach back to the period of intensified human off shore undertakings in the early modern period, from about 1600, and extend to present-day concerns. We approach our hypothesis by investigating the following research questions:

- What kinds of oceanic knowledges were produced, circulated, retrieved and institutionalized by the three identified formats: records, maps and models?
- How did these formats develop, change, adapt and persist, across time, oceans, cultures, national jurisdictions, technologies and disciplines?
- In what ways have the formats of records, maps and models been constitutive of the plurality and hybridity of the world’s oceans?
- How have formats of oceanic knowledge encouraged excessive exploitation of resources, and how have they limited or stimulated care and awareness?

Theoretically and methodologically, the project draws on developments in environmental history and the history of science and technology, where entanglements of scientific knowledge and technology with commercial activities, political interests, social conflicts and cosmological outlooks have proliferated (Tresch 2014). Recent studies have investigated the centrality of science to whaling, fisheries and the development of

oceanography, intensified in the context of global geopolitics (Rozwadowski and Keuren 2004; Hamblin 2005; Finley 2011; Adler 2019; Burnett 2012). Scholars have also traced the emergence of hydrographical sciences such as tideology, deep-sea sounding and maritime ecology, highlighting the importance of technology and representational practices as well as their reliance on power and politics (Reidy 2008; Reidy and Rozwadowski 2014; Shiga 2013). Yet, there is an urgent need for a new perspective on the history of oceanic knowledges that includes, but also moves beyond, those of science and technology, such as the vernacular knowledge of fishers, that of commercial and maritime interests, engineers, naval architects, sailors, dockyard officials, harbormasters and geologists of private enterprise.

Analysing the history of modern oceanic knowledges in terms of formats draws explicitly on the emergent interdisciplinary field of history of knowledge, emphasizing the social and cultural conditions for production and circulation of knowledges beyond, but not excluding, those of science (Burke 2016; Heidenblad, Hammar, and Östling 2020; Jordheim and Shaw 2020). However, the retrieval, transport and exploitation of knowledge of the seas, whether of their surfaces or their depths, depends not only on mediating practices and technologies, which are frequently highlighted within the field of history of knowledge. We contend that they also rely on specific formats. Formats can be defined as epistemic genres, “specialized ways of writing down knowledge” (Daston 2011), or as knowledge arrangements that work physically in the world to mediate our effort to know and use it (Siskin 2016). They provide frames to information, but are also inherently results of processes of formatting knowledge. As such, formats are understood as powerful, performative and robust in the way they not only condition specific kinds of knowledge over time but even constitute realities and delineate alternatives for action and governance. Formats are concrete and discernible, still somehow elusive. They are historically emergent forms that are dynamic and adaptable to shifting contexts as well as material substrates and technologies for observation and representation. This notion of formats draws on scholarship in media, information and communication theory that has focused on how the social mediation of information works, on the infrastructural conditions for this mediation (J. D. Peters 2015) and, more specifically, on the ways information is formatted and data given material and practical form, for instance as performative documents (Gitelman 2014) or graphical representation by various media technologies (Drucker 2014).

We propose that the formats inherent to records, maps and models, in particular, have structured, first, the way the Atlantic has been understood as an environment, and subsequently, that these formats have shaped how other oceans, and even the singularized “ocean”, have been used and perceived. As these formats and perceptions eventually circumnavigated the world’s oceans, along their voyages, they were repurposed and changed. Emphasising their formation and alterations moves this project beyond perspectives typically concerned with one-directional diffusion. Furthermore, while the modern concept of the environment itself stems from the 1950s (Warde, Robin, and Sörlin 2018), we believe that records, maps and models constitute technologies and processes of “enviroming” or “environmentalisation” that can be traced through a far longer period of history (Sörlin and Wormbs 2018; Benson 2020). Here, the enviroming of the oceans implies the ability to define and explicate its boundaries, contours and dynamics, at an oceanic scale, as well as the composition of marine ecosystems and the evolution of living species, allowing for transformation of categories and spaces.

Analysing formats constitutive to the enviroming of the oceans also necessitates an understanding of what can be termed *environmental reflexivity*, implying how formats of knowledge have provided ways of conceiving the consequences of human activities on the oceans as well in past societies (Benson 2020; Locher and Fressoz 2012). Allowing for environmental awareness in past societies, this project breaks away from an often-held perception that the present-day period represents a particular turning point, in which we for the first time are able to understand the environmental consequences of our actions, as if reflexivity is something altogether novel (Beck 1986). Rather, we are interested in understanding how awareness and care *have* been a part of the conceptions of the oceans for a long time, while the uses of the sea nevertheless have transformed the oceanic world into an environment of ecological crises. An important concern is to discern how such reflexivity have moved from local concerns, which is well known to the existing literature, to one of Atlantic, and eventually global, scale (Grancher 2018).

In particular, we intend to study how institutions and knowledges at sea often have formed differently than those on shore, as particular maritime modernities. This ties in with how scholars recently have begun to understand the oceans from the early modern period onwards as legally, economically and

politically variegated and hybrid spaces (Benton 2010), contested and often beyond national sovereign control. Processes of modernising activities at sea have already been highlighted in historical work, some explicitly drawing on theories of modernisation (Fulsås 2003). Others have revealed complex histories of industrialisation by examining the environmental history of specific ocean basins and particular resources (Cushman 2013). Explicit attention has also been directed towards how media have constituted these hybrid spaces, such as the centrality of letters in the age of widespread privateering (Perl-Rosenthal 2020), and how mapping registered changing climatic conditions during the “Little Ice Age” (Degroot 2018). Accordingly, new research in the history of maritime knowledge scholarship also highlights plurality and hybridity, messy coexistence of private and public, theory and practice, the traditional and the modern (Schotte 2019).

Methodologically, the project is made up of three longitudinal studies of the identified “formats of oceanic knowledge”: records, maps and models. Each study is in turn made up of diachronic approaches with contextualised case studies that highlights the logics and dynamics specific to each format. Together, the three longitudinal studies are designed to investigate how the formats have been scaled up into larger systems and infrastructures, but also how they have been braided together, how they have interacted and changed, and which consequences these dynamics have held for the understanding of the oceans over an extensive historical period. The long range temporality allows for identifying the transoceanic dynamics, and is deliberately aimed at transcending histories of more specific ways of knowing (Armitage 2012). This approach also allows us to move beyond the typical idea of a chained set of input-output relationships, moving along from observations, modelling and graphical outputs. Instead, dynamic interrelationship between the formats will be emphasized by attending to oceanic features captured by records, models as well as maps of different kinds: of living species and tides, waves and salinity, ice cover and the geological features of the continental shelves. A brief presentation of each of these studies is provided below. By following records, maps and models into their contemporary applications and across different ocean basins, we also propose a second-order transoceanic methodology that investigates how epistemic repertoires come to be shared across the Atlantic, Pacific, Indian, Antarctic and Arctic oceans. In particular, we emphasize how these formats have moved outside the Atlantic when we recognize the contemporary convergence of formats in global oceanic monitoring and observing programs, such as the Argo program, which today spans a global array of almost 4000 robotic profiling floats measuring the upper layers of the global ocean, and soon the deeper parts as well.

## **Records**

Scientific modernity is not all about abstract theories and great scientists. Recent historical scholarship has highlighted artisanal, bodily knowledge (Smith 2004), information management procedures (Blair 2010), collective epistemic ideals and practices (Daston and Galison 2007; Daston 2011), and the importance of print culture and practical education, as in the early modern craft and science of navigation (Schotte 2019). We will add to this by investigating records as a format of knowledge vital to the production, circulation and use of a wide range of oceanic knowledges. We will study how records, alongside maps and models, have structured the way the Atlantic has been understood as an environment, shaped how it has been used and perceived, and how records came to be a transoceanic format of knowledge over time.

From the 16th century until today, commercial and military as well as scientific activities at sea have been accompanied by huge amounts of paper, including contracts, listings of cargo and passengers, passports (Siegert 2006), and by on board paperwork, registering and displaying observations about positions, winds and weather, currents, waves and depths, and dead and living beings and objects in the sea as well as on board ships. We are particularly interested in records made and stored at sea, such as journals, logs, contracts and data registers of different kinds. The single most resistant and adaptable form of onboard record-keeping throughout the last 400 years has been the nautical logbook, an early standardized genre with uniformed grids for daily records, often doubled by the more personal ship’s journal containing narrative and visual accounts. Contracts, lists, journals and logbooks are still vital to maritime activities across the globe today, holding important documentary and regulatory functions, although the format no longer depends on pen and paper but rather on electronics.

We will investigate how complex and composite types of record-keeping at sea over time became standardized, codified (in education, textbooks and laws) and archived. We will study how records have conveyed knowledges based on observation and registering techniques, thus conditioning modes of ocean

use, literacy and environmental reflexivity, from the early modern logs, journals and narrative accounts of scientific and mercantile explorations to records of fisheries gathered on board as well as at markets. We will also study how the development of ocean wave data records have influenced ship design, and in offshore and coastal installations. We will also follow the format out of the Atlantic and into present transoceanic environmental data aggregation projects, including a study of how vernacular knowledge about fisheries was transformed into international data gathering through the Food and Agricultural Organization (FAO) of the UN, and how the Argo program, initiated in the 1990s (Argo Science Team 1998), use thousands of floats to register temperature, salinity, currents and, recently, biogeochemical properties of the oceans.

While historical archives of ship's logs and fisheries records today serve environmentally concerned investigations into climate history as well as the dynamics of fish stocks within maritime historical ecology, we intend to investigate what these records can tell us about the history of environmental reflexivity itself (Jackson and Alexander 2011; Engelhard et al. 2016; Degroot 2018). Archives holding historical journals and logbooks, including Archives Nationales de France, The National Archives of the UK and the Norwegian Polar Institute, all partly digitized, as well as the Norwegian Oil and Gas Archive, the historical archives of the FAO and a series of private archives of key FAO officials, and the archives of the Argo program held at Scripps Institution of Oceanography, will provide crucial sources for studying how records served as the basis for the production, circulation, upscaling and use of knowledges of the oceanic world, adapting to a variety of independent and often conflicting commercial, political and scientific purposes.

## Maps

Maps and nautical charts have been integral to human use and exploration of the surfaces and depths of the ocean for centuries. During recent decades, media history, material semiotics and critical cartography scholarship have seen mapping primarily as a cultural technique for actively mobilizing and constructing space, inscribed with values, identities, interests and power claims (Callon 1986; Harley 2001; Siegart 2007). Therefore, maps and charts are studied as deeply ideological visual representations (Steinberg 2001), involved in ontological politics that legitimize commercial, political and scientific as well as environmental interests, which are often conflicting (Steinberg, Kristoffersen, and Shake 2020). However, in order to better understand how sea maps and charts have structured the way that the oceans historically has been understood as an environment, we need to study maps as a format of knowledge.

We propose a diachronic study of how the malleable, dynamic and resistant format of maps has inscribed, combined, standardized and circulated contested oceanic knowledges over time, within and beyond the Atlantic. An empirical focus on maps of the northern parts of the Atlantic gives ample opportunities to investigate transnational circulation of maps as well as the hybridity of the knowledges they conveyed, from the earliest Dano-Norwegian import and use of Dutch and French cartographic works, through the first publicly-commissioned printed charts of the entire Norwegian shoreline in the late 18<sup>th</sup> century to more recent interactive electronic nautical charts provided by national hydrographical authorities as well as private, commercial actors.

We aim at exploring how the development and use of the format attest to a messy coexistence of theory and practice, public and private, traditional and modern, textual and visual representation across time, ocean spaces and media technologies. Rather than constructing a tamed and rationalized ocean space, we will study how sea maps, and the even more pragmatic, interactive and hybrid nautical charts (Gil 2008), historically have conveyed knowledge of the instability and composite space of the oceanic world, how they have framed various maritime activities and how they have even provided ways of conceiving the consequences of human actions on the oceans.

To this aim, three lines of inquiry will be followed: One will profit particularly from the National Library of Norway and its Map Centre's unique, partly digitized collection of historical sea maps (including Ginsberg's collection). As this remarkable collection has not been the subject of extensive research, the project can provide new empirical insight into the import, circulation, use and behavioral consequences of specific maps and nautical charts, especially in Denmark and Norway. Based on the collection, we will study how the format of maps has been embedded in textual and practical contexts, as when they originally appeared in manuals, pilots or textbooks, or in actual practices in navigation education or on ship's decks. This line of inquiry is also interested in practices and institutions for archiving and producing nautical charts, and will include a comparative study of French and Dano-Norwegian eighteenth-century public archiving

projects (Le Dépôt des cartes et plans 1720 and Det danske Søekart Archive 1784), shifting the focus usually directed towards more well-researched places of cartographic practice of the Dutch and the British in the history of cartography.

A second line of inquiry will look into the historical efforts to map two of today's most contested aspects of the Arctic ocean: the sea ice cover and edge, and the seabed, including the continental shelf. The growing body of literature on these topics focuses on the ontological indeterminacy (Steinberg, Kristoffersen, and Shake 2020) of these multivalent and environmentally fragile "zones" (Gaynor 2020). Our approach is however historical: What can 400 years of efforts to observe and map the northern ice cover and moving ice edge, the bathymetric charts of the 19<sup>th</sup> century and the last century's efforts to map the continental shelf outside Norway, that originated by multinational corporations, tell us about the dynamics of oceanic knowledge and use, and of environmental reflexivity? In particular, we will trace the application of how mapping practices moved, from the private and individual sphere of arctic explorers and American oil exploration in the Mexico Gulf, to that of public administration. This part will profit innovatively from the rich historical archives of the Norwegian Polar Institute and the Norwegian Oil and Gas Archive. A third line of inquiry will follow the format of maps out of the Atlantic. This includes a study of efforts towards standardizing the production and circulation of nautical charts through a series of international maritime conferences that began in the late 19<sup>th</sup> century, and eventually established the International Hydrological Bureau (now the International Hydrological Organization). Furthermore, this part will include a separate case study, based on the archives at the UN that reflect the targets for marine protection under the Convention for Biological Diversity (CBD), analyzing how concerns over standardized formats are present in contemporary area-based management tools, singling out areas of particular environmental interest for marine protection. Area-based marine governance, which dominate current practices for increasing ocean sustainability, is also one example of where the map format interacts dynamically with our two other focus areas, records and models.

## Models

Models have in particular been applied as predictions, testimony, tests or proposals – and as such mediated efforts to know and define oceans. Predicting tides, currents and winds have formed powerful ways of acquiring command of the seas (Reidy 2008), while envisaging geological features of the seabed have provided both private and public enterprises with rich assets and opportunities. Hence, models have significantly influenced the behavior of those who use the oceans, be it planning for the sheer physical strains of the oceanic environment or the possibility of freak accidents. However, rather than attending to models as a set of ideas or solely as representational devices, we propose that understood as a format, models implies a broad category of something that can operate as computer simulations, as artistic miniatures, as analog models of oceanic features, or indirect models embedding oceanic knowledge on paper or in print. At a stretch, models even share features with narrative and other forms of imagination – attending to the hypothetical and the possible.

We propose to study the shifting dynamics and interaction of two rather particular styles of modelling. First, we examine what can be conceptualized as scale or miniaturized models, and second, what typically is considered mathematical systems, which make use of abstractions to test both dynamic and static oceanic features. We are particularly interested in how both these two styles of modelling have been applied to tide prediction and to knowing geophysical features of the ocean. Together, they pertain to the general problem of how models have structured the way oceans have been understood as environments. By tracing the circulation of such models beyond the Atlantic, this longitudinal study also confronts a core concern of the history of science, but expands on this by including models developed by commercial and maritime interests, engineers, naval architects, sailors, local tide table makers, dockyard officials, harbor masters and geologists of private enterprise (van der Heide 2020).

Historically, this study spans a period of four centuries, from the earliest European circulation and application of tide tables on the British Isles in the 1660s, by the success of the "tideology" of the early 19<sup>th</sup> century, the use of physical scale models in computing in the postwar period and the integration of tidal modelling in climate models in the earth system sciences of today (Reidy 2008). We also propose to extend this model-as-format-approach to the application of specific modelling techniques to the estimation of geological features of the seabed. We will also investigate how oil exploration companies and reservoir

engineering have converged upon a set of shared modelling practices – extending the initial study concerned with the mapping of the continental shelves. Furthermore, by understanding models of ship design and naval architecture as repositories of knowledge of the ocean, as vessels incorporated elements of the environment into their design and architecture, we shift the attention from ideas towards formats of knowledge (Law 1986). We will trace the circulation of ship modelling practices among a divergent set of activities; sailors as a way of pastime, classification societies, and within the European network of towing tanks from the interwar period. This part will utilize a set of newly digitalized archival holdings, among others that of the ship plan and survey reports of the historical archives of Lloyds Register and that of the towing tank in Trondheim, Norway.

### **Novelty, ambition and impact**

*Maritime Modernities* (MaMo) aims at providing novel empirical research on the history of knowledge of the Atlantic and beyond, by focusing on the use and circulation of records, maps and models across a 400 year time span. Identifying records, maps and models analytically as formats allows for exploring hitherto unidentified continuities, entanglements and complexities in the long history of oceanic knowledges, in particular by moving beyond those of science. The project contributes to methodological renewal by innovatively comparing features and reflexivity of the oceans across the formats, and by utilizing rich archival sources from a variety of public and private institutions. Furthermore, it ambitiously proposes formats of oceanic knowledge as a novel conceptual tool for studying the history of maritime knowledges, including the environmental reflexivity of past societies. In addition, theorizing maritime modernities will imply an expansion and renewal of several historical fields, including maritime history, history of knowledge and environmental history.

This project is concerned with three scholarly fields in particular; that of maritime history, the history of knowledge and the broader turn towards the “blue humanities”. Accordingly, we address specific problems, questions and pressing research needs within each of these fields. Given the combination of theoretical approaches, detailed empirical investigation, the use of a comparatively long timescale, as well as the international and interdisciplinary composition of the research group, the potential for academic impact within each of the scholarly fields is considerable

Profiting from rich yet understudied archival holdings, particularly in Norway, the UK and France, and novel theoretical approaches, the potential for addressing the field of maritime history is considered significant. Although the Atlantic is where maritime historians typically have turned their attention, as the boom of Atlantic history over the last two decades demonstrates, much of this work dwelt mainly on the surface of the ocean and investigated societies and cultures of its rim. By considering the full depth of the ocean, and its environmental past, a history of how the Atlantic has become known, from below, should add significantly to the scholarship of Atlantic historians. A similar impact in the general field of global history should be achievable, where a stress on of how oceanic formats of knowledge travel and change across the world’s oceans would add to the recurring theme of how oceans connect.

By developing formats of knowledge as a conceptual tool, the project also adds to the emergent field of history of knowledge by focusing on the transnational and trans-disciplinary production and circulation of knowledge, beyond science – which hitherto has been rather terrestrial in its outlook. Considering the more general field of the “blue humanities”, we particularly aim at challenging the predominant ontological approach to the ecologically endangered ocean, by historicizing environmental reflexivity and oceanic knowledge. By mobilizing epistemological concerns about the oceans in modernity, we target programmatic influence on the field in general. Lastly, by creating tools and publicly available digitalized material and databases, the project will facilitate and spur further research.

As *Maritime Modernities* attends to questions of how, by whom and why knowledge about the ocean was created and used, the project addresses important epistemological concerns that underpin the 14<sup>th</sup> Sustainable Development Goal of the UN, aiming at conserving and securing sustainable use of the ocean’s resources. Indeed, by explicating forms of environmental reflexivity, and by taking a long period into consideration, the project attends to questions of how awareness and care historically have been part of the perceptions of the ocean, while the uses of the sea nevertheless have transformed the oceanic world into an environment of ecological crises. Hence, the outcomes of the project could be crucial considering how to

provide for “the science we need for the ocean we want”, an objective for the ongoing UN Decade of Ocean Science for Sustainable Development.

A main objective of the project is to point the agenda of “ocean literacy” towards one not only historically aware, but one recognizing the historicity of oceanic knowledge beyond that of science. Indeed, we aim to put the historicity of oceanic knowledge and environmental reflexivity on the “reading list” of future ocean literacy initiatives. In examining the outcomes of a decade of ocean literacy initiatives, the most prominent being the Sea Change initiative funded as part of the EUs Blue Growth program and the drafting plans for the “ocean decade”, we have found that these initiatives promote an approach that is determinedly presentist and rooted in notions of the seas as undiscovered and hard to know. We want to displace the longstanding myth of oceanic mystery and unfathomability. Following this, we have identified a number of opportunities where this project might have considerable impact: First, by considering how knowledge can conceal as well as foreground specific features of the oceans, we will provide arguments towards a formatoriented and reflexive literacy. Second, by highlighting the historicity of knowledge formats, we aim at providing material that not only proves an argument, but also trains the general public in understanding ocean science and other oceanic knowledges.

By moving beyond programmatic statements and towards providing platforms for engaging ideas, exhibitions and debate, *MaMo* aims to critically engaging ocean scientists and policy makers as well as empowering educational communities and the general public to integrate and promote historicized knowledge about how formats of knowledge have shaped the ocean of today.

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