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Heritage Words: Exploring Port City Terms

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ABSTRACT

Maritime heritage structures, such as cranes or warehouses, are typical for historical port cities around the world and many of them have received recognition as having Outstanding Universal Value (OUV) and have been listed as UNESCO World Heritage sites. They have often been preserved and revitalized as expressions of former shipping networks and urban power after containerization in the 1960s when modern ports moved out of their historic inner-city locations to urban peripheries. To learn more about the conceptualization of port heritage as part of global flows and local urban systems, we manually checked 1121 abstracts of world heritage sites published on the UNESCO World Heritage Centre website¹, exploring a group of words describing the typology of buildings and structures associated with port functions and activities. We found 107 World Heritage Sites (out of 1121) related to port cities. By analysing the abstracts of the 107 sites, the authors established a series of findings. Firstly, the concepts of port city and port heritage reflected in the abstracts do not align with the definitions given by encyclopaedias or by people interested in port city research. The texts placed on the UNESCO World Heritage Centre website mainly focus on specific heritage types and values, rather than the bigger picture of maritime-related structures. Secondly, the listed port heritage sites appear to emphasize three port city functions: maritime trade, defence and colonial practices. Other functions that include housing, leisure or religion are rarely mentioned in the abstracts. Thirdly, since port cities are places where sea meets the land, nature meets human settlements, they should stress the nature-culture connection. Yet, the listed world heritage sites present a culture-nature dichotomy in the testified OUV.

1 World Heritage Centre, "World Heritage List," <https://whc.unesco.org/en/list/>.

KEYWORDS

Port City Culture; Port Heritage; Outstanding Universal Value; Heritage Word

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Introduction

Port and port heritage have gained more scholarly and professional attention since the 1960s when containerization led to the abandonment of historic inner-city port areas and the development of large container terminals in the urban periphery.¹ Multiple port functions and their spaces—including ships and pipelines, port facilities and warehouses, industrial and logistic structures, headquarters and retail buildings, but also housing and leisure facilities—combine to create a port city culture,² that is rooted not only in places, structures, but also events, traditions, and practices. Historic port structures—cranes, warehouses, and other industrial buildings, have become icons of waterfront renewal projects—often as part of cultural tourism.³ These structures have come to represent port city culture in locations around the world. World heritage sites such as Liverpool, Bremen, Hamburg, Saint Petersburg, or Venice are examples of the prominence of maritime heritage sites with Outstanding Universal Value (OUV). Many of them have been listed as World Heritage sites. The emergence of a particular type of maritime heritage through this port city transformation has come to be reflected in the growing use of the term “port heritage”. According to the Google Book Ngram Viewer, the term emerged in the English-language literature in the 1960s and its use peaked around 2010.⁴

Yet, the question remains: what exactly are the structures that make up “port heritage”? Given the emergence of these sites as part of global maritime networks with a shared typology, we ask: how do the collective texts featured on the UNESCO World Heritage Centre’s website conceptualize port heritage? How does the discussion of port heritage recognize global maritime networks? What parts of maritime heritage does the UNESCO World Heritage Centre website’s list recognize and which ones does it ignore? How can port city culture, based on an understanding of heritage, become a vector of sustainable development in port city territories?

The current operationalization of world heritage nomination, inscription, and management has greatly affected the listing of port heritage sites and the justification of their OUV. Hence, we explore: does the operationalization help enhance and testify the maritime values of the sites from a networked perspective? Given that port cities are places where the sea

1 Carola Hein, “The Port Cityscape: Spatial and Institutional Approaches to Port City Relationships,” *PORTUSplus* 8 (2019); ICOMOS, “New Publication: “Adaptive Strategies for Water Heritage,”” <https://www.icomos.org/en/116-english-categories/resources/publications/64528-new-publication-adaptive-strategies-for-water-heritage>.

2 Hein, “The Port Cityscape: Spatial and Institutional Approaches to Port City Relationships.”

3 José M. Pagés Sánchez and Tom A. Daamen, “Using Heritage to Develop Sustainable Port-City Relationships: Lisbon’s Shift from Object-Based to Landscape Approaches,” in *Adaptive Strategies for Water Heritage: Past, Present and Future*, ed. Carola Hein (Cham: Springer International Publishing, 2020); A. L. Grindlay et al., “Port Heritage in City-Port Transformations: Opportunities or Constraints?,” in *HERITAGE 2018 - 6th International Conference on Heritage and Sustainable Development* (Granada, Spain 2018).

4 Google Books Ngram Viewer, “Port Heritage,” https://books.google.com/ngrams/graph?content=port+heritage&year_start=1800&year_end=2019&corpus=26&smoothing=3.

meets human settlements, the nature-culture interconnection should form vital parts of the OUV of these sites. We ask: Has the nature-culture linkage been reflected in the statements testifying the OUV? Are the heritage values embodied in natural beauty, geological history, biological diversity and ecosystems emphasized in the abstracts?

According to the existing categorization of world heritage sites, a site should be inscribed as a cultural, or a natural, or a mixed heritage site by assessing heritage either in cultural or natural sectors, following the separate criteria. We would like to know if the complex linkages between natural and cultural port-related resources are undermined in this way. Moreover, as argued by Lynn Meskell, the assessment of OUV is actually affected by certain influential nations and cultures—"excluding the World Heritage Cultural Sites in France, Greece, Italy, and Spain, 31% of the site descriptions of remaining World Heritage Cultural Sites indicated an Italian influence, and 10% were influenced by Spain."⁵ Sites considered to be of OUV are actually ones mainly inspired by Italy, Spain, and France.⁶ These countries are European countries where many important port cities are located. Trading, military, and colonial practices were among the dominant practices ensuring the prosperities of these European nations in history. Does the history of these nations influence how the OUV of listed port heritage is presented?

Understanding and defining the concept of port heritage—both on land and beyond waters—is crucial in several ways. First, it is intimately connected to what citizens and institutions deem valuable and choose to preserve. Developing a shared vocabulary is the foundation for a better understanding of specific values or identities inherent in port cities. It can help stakeholders develop shared strategies on how to identify, treat, utilize and redevelop port city resources and make them an inherent part of balanced and sustainable development in line with SDG 11,⁷ emphasizing the efforts to be strengthened to protect and safeguard the world's cultural and natural heritage. Second, discussions on port heritage, including port structures, underwater heritages, natural sites outside the port, and marine sites, can also effectively connect both cultural and natural heritage sites. The coverage of such diverse heritage types makes a new challenge for the nature-culture dichotomy in world heritage inscription,

5 L. Meskell, *A Future in Ruins: Unesco, World Heritage, and the Dream of Peace* (New York:Oxford University Press, 2018).

6 Victoria Reyes, "The Production of Cultural and Natural Wealth: An Examination of World Heritage Sites," *Poetics* 44 (2014): 42–63.

7 The Sustainable Development Goal (SDG) 11, adopted by all United Nations Member, aims to renew and plan cities and other human settlements in a way that offers opportunities for all, with access to basic services, energy, housing, transportation and green public spaces, while reducing resource use and environmental impact.

which has long been criticized by many researchers.⁸ Third, such an understanding of port heritage that recognizes both global linkages and port city networks within a port city territory is also in line with the 2011 Historic Urban Landscape (HUL) approach⁹ that has shifted heritage debates from its earlier object-based approach to one that places heritage in a larger spatial and societal context. At a time when climate change and sea-level rise threaten coastal areas and urban deltas with important heritage sites around the world, understanding the interconnectedness of these sites can also help in the development of strategies for heritage protection on a shared basis.

To address these questions, we developed a methodology as a first step towards a shared and comprehensive understanding of networked port heritage. Exploring heritage sites as part of a larger story through narratives can help us overcome the fragmentation related to the use of single words and to contextualize words in different languages, cultural contexts, and disciplines. Therefore, the narrative-descriptive approach was employed in our research of port heritage terms. We have focused on English terminology of port heritage in abstracts published on the World Heritage Centre website (<https://whc.unesco.org/en/list/>). These abstracts were written up by state parties, approved and published by the World Heritage Centre, to briefly introduce the background, the OUV, authenticity, integrity, protection and management requirements of every World Heritage Site, following the Operational Guidelines. Through textual data analysis, we aim to understand the degree to which port heritage is presented as both globally or regionally networked and locally complex; facilitate the development of shared strategies towards conservation of heritage sites that are part of larger systems; help identify shared challenges and opportunities and develop visions for preserving, protecting and sustainably developing this group of heritage as part of sustainable port city territory development.

8 Philippe Descola and Gísli Pálsson, *Nature and Society: Anthropological Perspectives* (London: Taylor & Francis, 1996). Larwood and Sarah France, "Culturally Natural or Naturally Cultural? Exploring the Relationship between Nature and Culture through World Heritage," in *Culturally Natural or Naturally Cultural?*, ed. Jonathan Larwood, Sarah France, and Chris Mahon (United Kingdom: IUCN National Committee UK, 2017).

9 UNESCO, "Recommendation on the Historic Urban Landscape Adopted by the General Conference at Its 36th Session," (Paris: UNESCO, 2011).

2. Theoretical Background

2.1 Reconceptualization of port heritage as practice of port city culture

Port cities are a particular type of city located at the edge of sea and land. They have grown as part of far-flung maritime networks and their spaces and institutions often reflect practices in faraway places more than those in nearby land-bound areas. Collective features of port cities include structures such as cranes, docks, and mooring facilities as well as housing, leisure spaces or even religious structures; they also include institutions, practices and local knowledge that form what Hein calls a port-cityscape.¹⁰ Through constant deliberation, often over centuries, many port cities have developed particular shared values. This is what we call a maritime mindset, or port city culture. A port city culture is more than a mentality, or a set of maritime artefacts, heritage objects or museum objects. It is a shared mindset of port city actors formed through the location and century-old investments. The presence—or absence—of such a maritime mindset characterizes port city conditions around the world and it shapes future development in port-city-regions. This complexity of inter-linked spatial forms and social practices is seldomly recognized as port heritage by national or global heritage institutions. Instead, many institutions focus on select spaces or practices, such as historic warehouses or cranes, on maritime objects or museums. Understood as a particular attitude towards maritime practices, a shared desire to facilitate port related activities, port city culture is an approach that is not only directed at the past, but also concerns the future. It influences the preservation and reuse of historic structures; it also helps connect past and present to the development of future port city practices.

The relevance of port city culture has been recognized by some professional institutions. For instance, the 2030 agenda of AIVP has been designed to guide the actions and projects of the port city to ensure sustainable relations between the city and the port.¹¹ AIVP's Goal 6 entitled "Port culture and identity" for sustainable port cities is to "promote and capitalize on the specific culture and identity of port cities and allow residents to develop a sense of pride and flourish as part of a city port community of interest."¹²

Even though port city culture starts to gain more academic and professional attention in different fields—as evidenced in this two-volume special issue of CPCL, ways to recognize or tag cultural heritage of this particular

10 Hein, "The Port Cityscape: Spatial and Institutional Approaches to Port City Relationships."

11 Hermeline Delepouve, "Aivp 2030 Agenda Gains New Signatories!," AIVP, <http://www.aivp.org/en/2019/11/21/aivp-2030-agenda-gains-new-signatories/#:~:text=What%20is%20the%20AIVP%202030,to%20be%20achieved%20by%202030>.

12 AIVP, "06 Port Culture & Identity," AIVP, <https://www.aivpagenda2030.com/06-port-culture-identity>.

kind for shared discussions, interventions or protection are still lacking. We argue that conceptualizing port heritage as a particular heritage group will help increase the understanding of the related OUV from the historical, aesthetic, scientific, ethnological or anthropological point of view and facilitate its use as part of the Historic Urban Landscape approach (HUL).

2.2 Why words matter for heritage

Understanding the conceptualization of port heritage starts with a close reading of words. Words can play an essential role in identifying, describing, and promoting port heritage from a disciplinary perspective. Words also evolve through time, changing meanings or expanding their definitions. We use different terms when we talk about ports through the lens of economy, logistics and technology, or when we talk about port cities acknowledging the importance of society and culture. The way people describe a port city is based on the very paradigms that underlie societal choices and approaches to culture. The systematic analysis of words can help understand, guide change and identify strategies to imagine and make the future of port city culture.

Words construct realities: The way in which we conceptualize things shapes the way we live and build as well as how we conceive the past. Through words, people communicate visual, auditory, and haptic experiences, as well as feelings, beliefs, and theories. The symbolic system of language not only facilitates communication between oneself and the outside world, aiding with interpreting and sharing experiences in the world, it also acts as a tool for the mental manipulation of information,¹³ for the understanding of space and its design past, present and future. Wolff and Malt poignantly write

“Only humans have the added capacity of language, allowing them to selectively capture some of this richness in words and thereby receive and transmit information about the world through a symbolic system.” — Phillip Wolff and Barbara C. Malt, 2010¹⁴

In order to smooth out the problems in communication on port heritage, we need to pay attention to wording so that researchers, authorities, and practitioners can get a better grasp on port city culture based on a shared understanding. A better understanding of words used to build port city culture can help us get a better knowledge of potential bias and foci in

13 P. Wolff and B. Malt, “The Language – Thought Interface: An Introduction,” in *Words and the Mind: How Words Capture Human Experience*, ed. B. Malt and P. Wolff (Oxford University Press, 2010); Walter J. Ong, “Some Psychodynamics of Orality,” in *Orality and Literacy* (Taylor & Francis, 2003).

14 P. Wolff and B. Malt, “The Language – Thought Interface: An Introduction,” in *Words and the Mind: How Words Capture Human Experience*, ed. B. Malt and P. Wolff (Oxford University Press, 2010).

official documents, announcements, and presentations, so as to, in the long-term, improve port city relations and help heritage decision-making. Through textual data processing, we hope to build up a maritime corpus, and reflect on the conceptualization of port heritage.

3. Methodology

Port city culture is generated by numerous tangible structures and intangible phenomena, activities, therefore, a deep understanding of this complex notion is closely related to narratives and descriptions. As Tuan argued, “places are made by means of place-names, informal conversation and written texts. Speech is thus an integral part of the construction of places.”¹⁵ The action of naming makes a place familiar to us, and story-telling converts objects “out there” into real presences. In modern societies, written text has largely substituted oral story-telling. The written texts stem from the individuals’ motives to “describe, recount, and narrate a particular stream of thought that is situated within, or impacted by, a place or series of places.”¹⁶ We therefore employed a narrative-descriptive approach in our research of port heritage terms to testify whether the listed port heritage sites are perceived as parts of a larger system.¹⁷

3.1 Data collection

To answer the research questions, we modelled a systematic approach to decode and analyze textual data. We downloaded the short abstracts of totally 1121 World Heritage Sites from the website of the World Heritage Centre (<https://whc.unesco.org/en/list/>). For most of the short abstracts, each of them consists of a brief synthesis, a statement of cultural / natural significance corresponding to the criteria assessing the OUV, authenticity, integrity, protection and management requirements (see webpage <https://whc.unesco.org/en/list/1192> as an example). For a few short abstracts, the part explaining the authenticity, or integrity, or protection and management requirements is not published. We established a list of building types and structures associated with port functions and activities, such as crane, wharf, warehouse, and lighthouse. We then used this list to manually filter out the short abstracts of the sites not relevant to port or port city. When searching the phrase “port city” in the world heritage list on the website (<https://whc.unesco.org/en/list/>), only 17 sites appeared as search results. However, once we had a close look at the short abstracts and checked all the geo-locations of the World Heritage Sites, we found

15 Yi-Fu Tuan, “Language and the Making of Place: A Narrative-Descriptive Approach,” *Annals of the Association of American Geographers* 81, no. 4 (1991).

16 Trevor M. Harris, “Deep Geography—Deep Mapping—Spatial Storytelling and a Sense of Place,” in *Deep Maps and Spatial Narratives*, ed. David J. Bodenhamer, John Corrigan, and Trevor M. Harris (Indiana, US: Indiana University Press, 2015).

17 Tuan, “Language and the Making of Place: A Narrative-Descriptive Approach.”

in-total 107 sites related to port city (see Appendix A). Hence within the general database of 1121 abstracts of World Heritage Sites, we created a subset of port heritage. By analyzing this subset and comparatively analyzing this subset within the context of the entire dataset, we can better understand how the abstracts published on the UNESCO World Heritage Centre's website conceptualize port heritage and the relevant issues in this conceptualization.

3.2 Data process and findings

For the data process of the set of 1121 World Heritage Site abstracts and the set of 107 port heritage site abstracts, we only focused on the English texts, as they form the main contents of the abstracts. Besides, texts in other languages, such as Arabic, Chinese, Greek, Japanese, in all the abstracts, are translated from the English brief synthesis. Therefore, the English texts cover the most useful information in these abstracts. We adopted three digital methods as a series to help us decode and analyse the large quantity of narratives efficiently.

First, to grasp a general idea of what the abstracts of port heritage discuss, we generated a word cloud demonstrating the words and phrases of high-frequency and collocating relationships between them. As shown in Figure 1, the sizes of the terms represent their frequencies, while the distances between each term denote the strength of collocations, i.e., the closer, the stronger. Appendix B lists the count of each term/phrase and the strength of their relevance to other terms/phrases. In total, the top 50 most-used terms / phrases are selected and shown in Figure 1. We can see the terms most relevant to other words in the abstracts of port heritages are "Outstanding Universal Value", "historic center", "outstanding example", "ancient city", meaning the texts are mainly for stating the cultural significance of the sites that testify their OUV. Among all the criteria, "criterion iii" is most commonly met when the OUV of port heritage are assessed, meaning that most of the port heritage sites "bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared".¹⁸

Many of these sites are the "historic center" of a town or a city. Apart from this type, "rock art", "historical port town", "archaeological site", "small island", "military architecture", and "church" are the most common structural types among all the port heritages. Corresponding to the terms / phrases denoting the typology of heritage sites, there are quite a few names of the inscribed heritage sites, such as "City of Qalhat", "Hanseatic League", "old town Lunenburg", "Levuka historical port", "Fort Jesus Mombasa". The word cloud also demonstrates some crucial geological locations where port heritage concentrate, e.g., "Persian Gulf", "Baltic Sea",

18 UNESCO, "Operational Guidelines for the Implementation of the World Heritage Convention," (Paris: UNESCO World Heritage Centre, 2019).

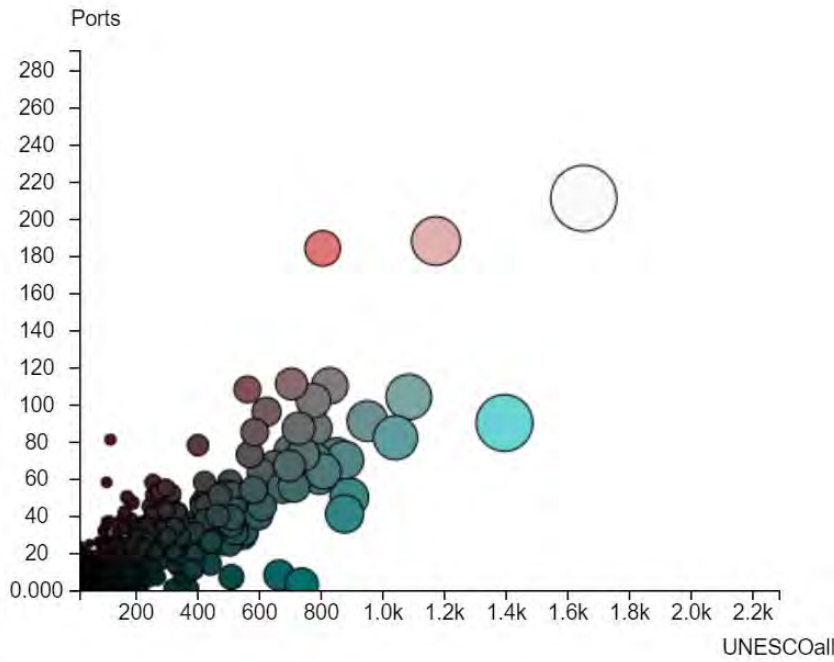


FIG. 4 Screenshots of scattered diagram with dots indicating the frequency of each word used both in the data set of abstracts of 1121 World Heritage Sites, and in the subset of abstracts of 107 port (city) heritages sites

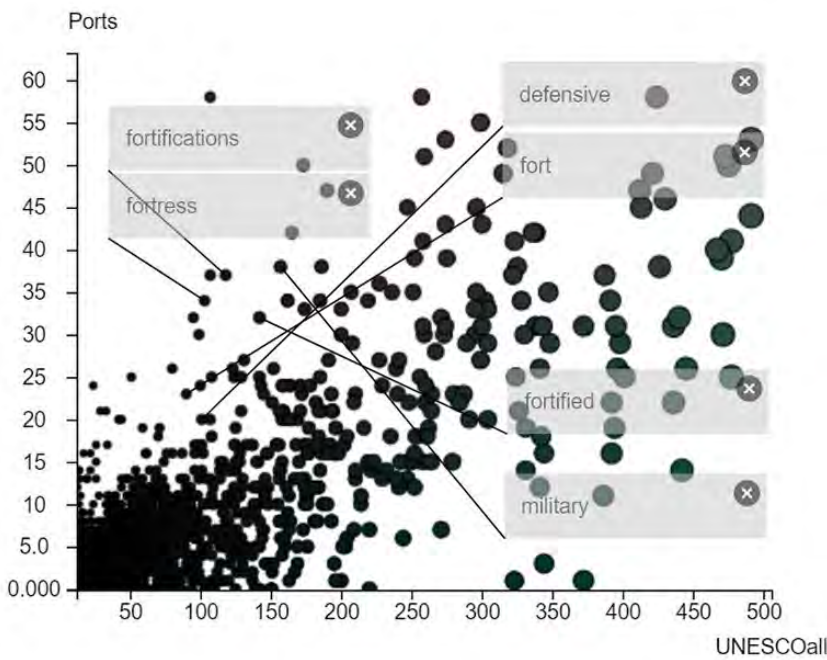


FIG. 5 Screenshots of scattered diagram with tags indicating the words used more frequently in abstracts of port-city heritages themed in military structures

is to compare word frequencies among the 107 port cities with word frequencies among all sites. Graphically, words that “lean” left to the y-axis (and are colored reddish) are more frequently used in the 107 port city abstracts compared to all abstracts, while words that lean right to the x-axis (and are colored blueish) are less frequently used in the same data [Fig. 5].

Some key themes in conceptualizing port heritage appeared, represented by the clustering of words used more frequently in the abstracts of port heritage. For instance, as shown in Figure 5, “fortifications”, “fortress”,

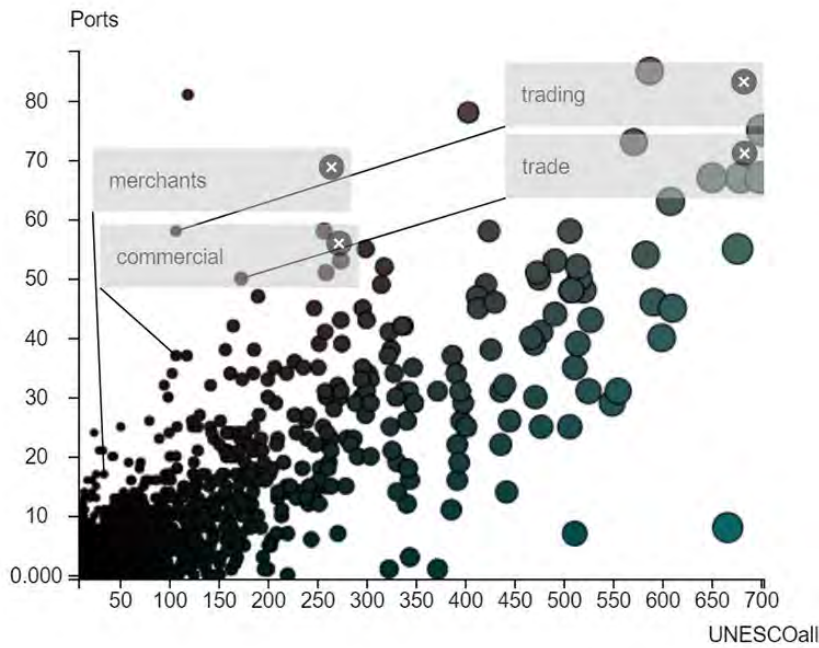


FIG. 6 Screenshots of scatter diagram with tags indicating the words used most frequently in abstracts of port-city heritage sites related to maritime trading

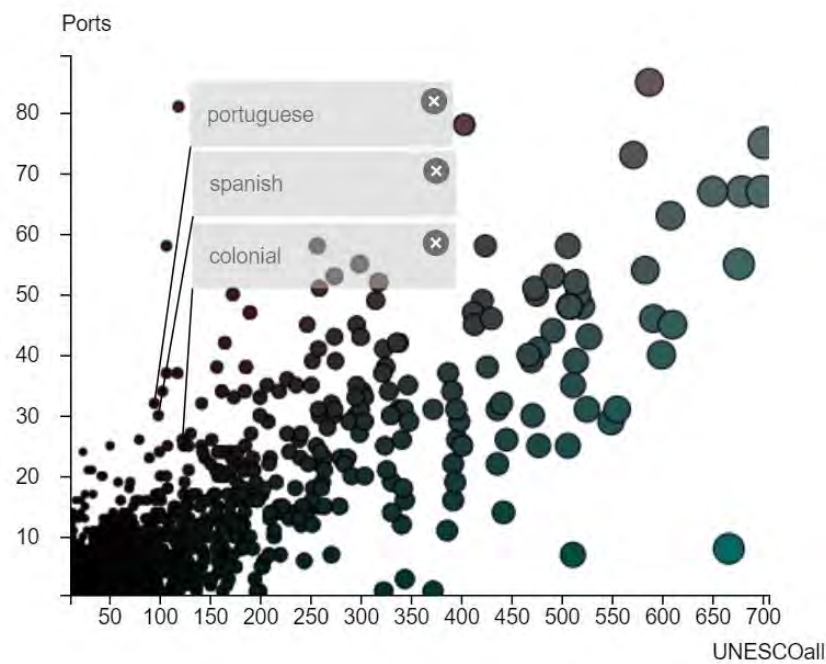


FIG. 7 Screenshots of scatter diagram with tags indicating the words used most frequently in abstracts of port-city heritage sites related to European colonialism

“defensive”, “fort”, “fortified”, and “military” all speak to the theme of military history and structure. These high-frequency words used in the texts denote that one of the most recognized and protected types of port heritage is the one associated with armed forces, as many ports play crucial military roles for the navy. The second theme is maritime trading, demonstrated by the clustering of “merchants”, “commercial”, “trading”, and “trade” [Fig. 6]. The third main theme is European colonialism that lasted from the 15th to 20th centuries, represented by the terms “Portuguese”, “Spanish”, “colonial” [Fig. 7]. The vestiges attesting European powers, extend their reach around the globe by establishing colonies in

the Americas, Africa, and Asia, form one of the commonly recognized heritage types in port heritage.

We can see that the OUV of port heritage sites, as represented in the 107 abstracts, speaks extensively to the interchange of values through military, trading, and colonial activities, over a span of centuries. Structures that witness these maritime activities are remarkable testimonies to the nature and objectives of power expansion. It seems that the abstracts render a picture of port heritage sites closely connected to the maritime activities by Italy, Spain, and France, and emphasise how these nations have built their prosperity upon military, trading, and colonial activities.

Third, we employed a data mining tool GeoD²⁰ to decode the geographical information in each of the 107 port heritage abstracts to understand how the abstracts that we studied represent the role of ports, shipping, maritime practices and exchange from a networked perspective. We were particularly interested in seeing whether the abstracts take into account the diverse structures that are part of the port cityscape beyond the military, trading and colonial functions on land and sea side, and therewith acknowledges the nature-culture interconnection in port-city-regions. GeoD identifies not only place names, but also well-known institutions, businesses, infrastructures, and famous people who are mentioned in the texts, which helps us explore how the different port and urban functions are related to one another in historical sites. The tool then locates places, headquarters, birthplaces, etc. on Google map by cross-reference to Wikipedia. Apart from the decoded geographical information, GeoD also takes into account the locations of the 107 heritage sites provided on the UNESCO World Heritage Center's website, so as to spatially link each heritage site with the geo-codable terms found in the abstract of the respective site.

To further explain the logic behind GeoD, let us take the World Heritage Site "Historic Centre of Macao" as an example. From the abstract of this site in txt format, GeoD extracts all the geo-codable terms that can be linked to Wikipedia such as "Portuguese", "China", "Church of St. Paul's", "Guia Lighthouse", "Mount Fortress", "Outer Harbour", "Penha", etc. Then, the tool geolocates these places on Google map and draws lines linking these places with the geo-location of the Historic Centre of Macao. These spatial links are shown on an interactive mapping to deliver a visual

20 Dan C. Baciú, "Cultural Life: Theory and Empirical Testing," *Biosystems* 197.104208 (2020).
Chen-Tse Tsai and Dan Roth, "Cross-Lingual Wikification Using Multilingual Embeddings," in *Proceedings of the 2016 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies* (Proceedings of the 2016 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, San Diego, California: Association for Computational Linguistics, 2016), 589–98, <https://doi.org/10.18653/v1/N16-1072>.; Chen-Tse Tsai, Stephen Mayhew, and Dan Roth, "Cross-Lingual Named Entity Recognition via Wikification," in *Proceedings of The 20th SIGNLL Conference on Computational Natural Language Learning* (Proceedings of The 20th SIGNLL Conference on Computational Natural Language Learning, Berlin, Germany: Association for Computational Linguistics, 2016), 219–28, <https://doi.org/10.18653/v1/K16-1022>.; Dan C. Baciú, "Cultural Life: Theory and Empirical Testing," *Biosystems* 197 (2020).

expression. Overall, it must be said that the 107 abstracts represent very little data and coverage for the entire globe. We hope that additional data will clarify and correct our present findings at a later point.

Having a closer look at all the existing spatial connections on the mapping, there are some meaningful cultural and historical interconnections at the global/regional level. For instance, the link between “Historic Centre of Saint Petersburg and Related Groups of Monuments” and “the Gulf of Finland” [Fig. 8] suggests that the unique urban landscape of the port and capital city of Saint Petersburg actually emerged from the Neva estuary where it meets the Gulf of Finland. The link between “The Naval Port of Karlskrona” and “Baltic Sea” [Fig. 9], illustrates how the major European powers secured their positions largely through wars and battles at sea (see <https://whc.unesco.org/en/list/871>). The links between “Archaeological Border complex of Hedeby and the Danevirke”, “North Sea”, “Baltic Sea”, and “Denmark” [Fig. 10], briefly introduces the history of the archaeological site of Hedeby, situated between the Frankish Empire in the South and the Danish Kingdom in the North, becoming a trading hub between continental Europe and Scandinavia, and between the North Sea and the Baltic Sea. The OUV of this site mainly lies in Hedeby’s vitality in facilitating exchange between trading networks spanning the European continent, and in controlling the trading routes, the economy and the territory at the crossroads between the emerging Danish kingdom and the kingdoms of mainland Europe (see <https://whc.unesco.org/en/list/1553>). The link between “Historic Centre of Macao” and “Portugal” [Fig. 11] reveals the history of Macao as a Portuguese settlement from the mid-16th century to the year of 1999. The OUV of this site has been testified by Macau’s association with the exchange of a variety of cultural, spiritual, scientific and technical influences between the Western and Chinese civilisations (see <https://whc.unesco.org/en/list/1110>).

Based on the analysis of the spatial links, we can see that firstly links related to the OUV of the port heritage sites are mainly associated with the military, trading and colonial history of a port city. Values related to other parts of the port cityscape, such as leisure districts, spaces of migration, and religion are missing. Either these spaces and their associated values have not been recognized as relevant enough for the World Heritage list, or their contribution to port city functions has not been recognized. Secondly, the reciprocity between two or multiple neighbouring port heritage sites are rarely seen in the mapping. For every sea or ocean, normally more than one port heritage site exists along its coastline. These sites connected by the same body of water, should have many social, cultural and economic linkages. In the port heritage abstracts, however, the linkages between neighbouring ports or between one port and its counterpart are seldom mentioned. For instance, in Figure 9. “Historic Centre (Old Town) of Tallinn,” another port heritage site closely related to Baltic Sea, is not mentioned in the abstract introducing “The Naval Port of Karlskrona”.

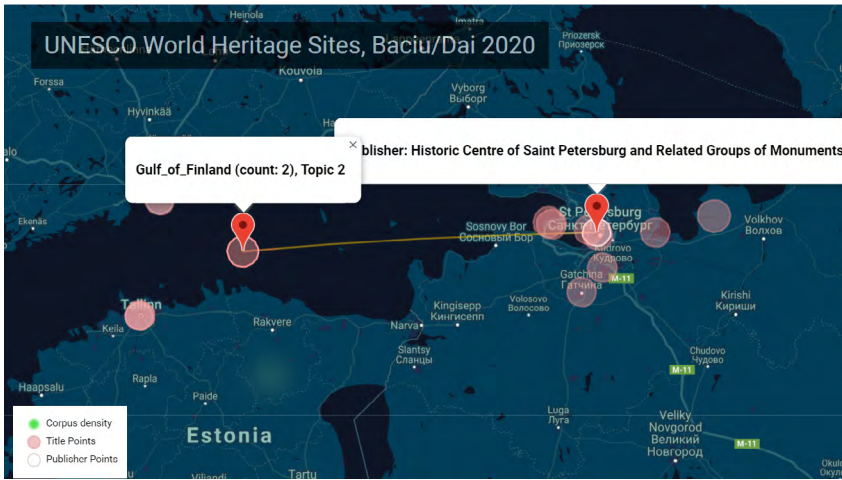


FIG. 8 The link between “Historic Centre of Saint Petersburg and Related Groups of Monuments” and “the Gulf of Finland” revealed from the world heritage site description

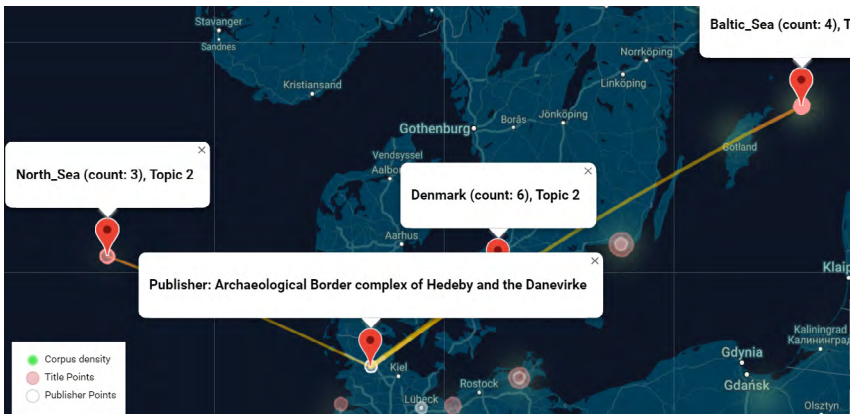


FIG. 9 The link between “The Naval Port of Karlskrona” and “Baltic Sea” revealed from the world heritage site description

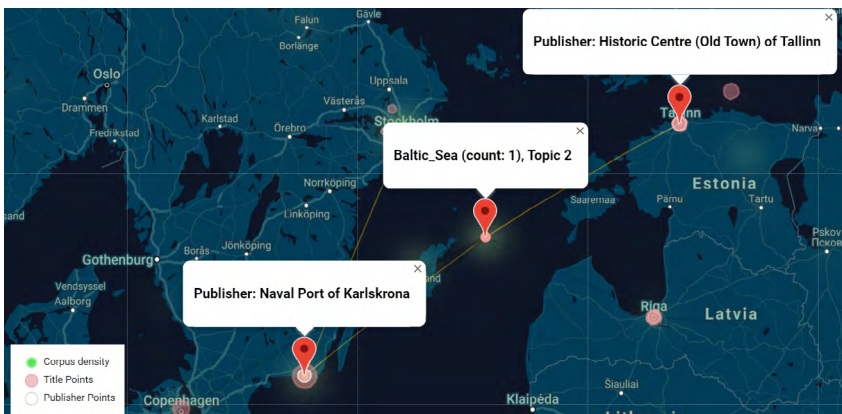


FIG. 10 The link between “Archaeological Border complex of Hedeby and the Danevirke”, “North Sea”, “Baltic Sea”, and “Denmark” revealed from the world heritage site description

Thirdly, the nature-culture interconnections in port-city-regions are barely seen in the mapping. The visible nature-human settlement linkages are mostly to indicate the geological locations of the sites, but not the natural beauty or geological history of the sites. Comparing our mapping with the interactive map of World Heritage Sites and with ESAI's map of global shipping (https://www.esa.int/Applications/Telecommunications_Integrated_Applications/ESAIL_s_first_map_of_global_shipping) [Fig. 12],



FIG. 11 The link between “Historic Centre of Macao” and “Portugal” revealed from the world heritage site description

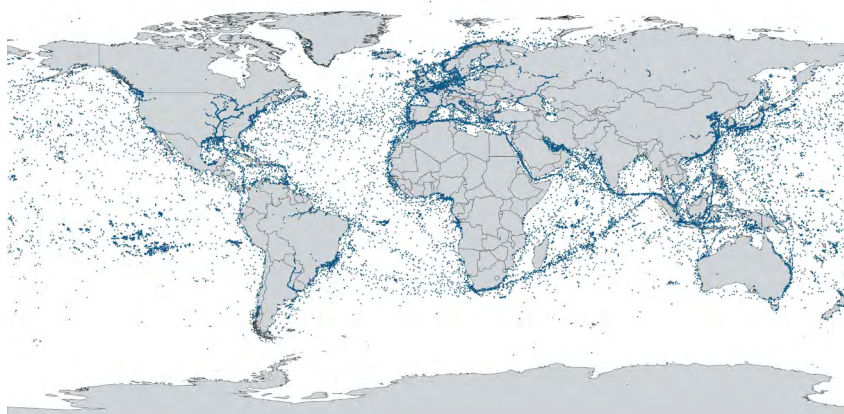


FIG. 12 ESAIL's map of global shipping

we can see that the number of the ports / port cities today are actually much higher than that of ones listed as world heritage sites. It is interesting to realize that the mapping of the 107 port heritage abstracts only partly mirrors the much larger present maritime network. For instance, very few port heritage sites are recognized and protected at a global level along the British Columbia Coast and the long coastline of Southeast Asia, where shipping activities greatly concentrate. One of the reasons might be that, for many ports, their values reflected merely in shipping and maritime practices are not outstanding enough to support the nomination of the city or town as a world heritage site. Nevertheless, heritage practitioners, in a networked perspective, can discover and stress other cultural and natural values of these ports/port cities, reflected in cultural practices and natural phenomena at a local, national or even global level. The heritage values of these ports and sites can be used to promote the collaboration, interaction, or even tourism industry, e.g., cruise tourism, between ports and port cities.

Discussion and Conclusion

4.1 Problematic conception of port heritage

Our findings suggest that the port heritage conceptualized by the abstracts of world heritage sites is rather limited in themes and scope. Firstly, structures and spaces featuring the port heritage or the port cityscape in the world heritage list are of some specific heritage types such as the historic centre of a town or a city, rock art, historical port towns, archaeological sites, small islands, military architecture, and churches. Many structures playing important roles in port functions and activities, such as cranes, warehouses and lighthouses, are seldomly inscribed as parts of the heritage sites. Secondly, the OUV of listed port heritage sites, as presented in the abstracts, is mainly related to three port city practices: maritime trade, defence and colonial practices. It is surprising that other practices or values reflected in urban spaces, including houses, leisure facilities or religious spaces, are rarely recognized by UNESCO or deemed not so relevant to functions of ports and port cities. The reason may lie in the lack of official narratives on port city networks, their global links and local imprint, as part of UNESCO criteria for heritage conservation. Thirdly, the port heritage should represent an interaction of historical natural and cultural resources that occurred at the port-city-region interface. However, the intimate relationship between human and nature has not been emphasized or recognized as parts of the OUV in the abstracts of port heritage sites. Thus, we argue that UNESCO's perspective on preserving port heritages is not living up to its full potential. The reasons shaping such a perspective largely lie in the existing dichotomous categories of cultural and natural sites and associated criteria assessing the OUV of World Heritage Sites.

4.2 Limitations

Our research also has a couple of limitations. First, regarding the decoding of geo-codable terms, our detection of locations has certain inaccuracies. While we have cross-referenced the processed geological information with Wikipedia, we did not correct any of the geocodes provided by Wikipedia. Therefore, although most spatial connections between heritage sites and geographic information, indicated by the yellow lines, are correct, some might be wrong. In addition, the word cloud, the unique port city terms, and the spatial connections indicated in our mapping are found only based on the short abstracts of heritage sites. It is possible that more high-frequency, unique terms, and spatial connections are mentioned by UNESCO in other documents or through other media, that we have not studied in the current research. Future studies should include a larger database that more inclusively represents UNESCO's discourses upon port heritage sites.

4.3 Conclusion

In this article, we first introduced the notion of port heritage, and explained why we should reconceptualize port heritage as practice of port city culture. Second, through decoding, analysing and visualizing textual data, we revealed the general focus of UNESCO on port heritage, unique terms used by UNESCO to describe the port heritage in question, and the geographical maritime network composed of port heritage sites and their related locations to demonstrate the spatial connections between port heritage sites with other places and functions in the city, the region or around the world. We argue that the limited vision employed in valuing the port heritages by the global authority overlooks the interconnections between the port and other urban spaces, nature and culture, neighbouring port-cities linked by seas and oceans, hindering the recognition of networking of seas, ports, hinterlands, and all the associated tangible and intangible features. The main reasons shaping such a vision are the established World Heritage Site categorization, and the operationalization of the criteria assessing the OUV of World Heritage Sites.

Appendices

Appendix A. The selected port city related world heritages, indicated by their World Heritage Site ID number and Names in English

ID number	Name in English	ID number	Name in English
996	Historic Centre of Brugge	1211	Genoa: Le Strade Nuove and the system of the Palazzi dei Rolli
95	Old City of Dubrovnik	661	Himeji-jo
97	Historical Complex of Split with the Palace of Diocletian	688	Historic Monuments of Ancient Kyoto (Kyoto, Uji and Otsu Cities)
582	Old Rauma	775	Hiroshima Peace Memorial (Genbaku Dome)
1181	Le Havre, the City Rebuilt by Auguste Perret	1495	Hidden Christian Sites in the Nagasaki Region
1256	Bordeaux, Port of the Moon	1535	Sacred Island of Okinoshima and Associated Sites in the Munakata Region
1467	Speicherstadt and Kontorhaus District with Chilehaus	1593	Moju-Furuichi Kofun Group: Mounded Tombs of Ancient Japan
272	Hanseatic City of Lübeck	1349	Seventeenth-Century Canal Ring Area of Amsterdam inside the Singelgracht
1067	Historic Centres of Stralsund and Wismar	788	Early Christian Monuments of Ravenna
456	Paleochristian and Byzantine Monuments of Thessalonika	1055	Lamu Old Town
978	Old Town of Corfu	1295	Fort Jesus, Mombasa
852	Historic Centre of Riga	299	Tyre
541	Vilnius Historic Centre	295	Byblos
125	Natural and Culturo-Historical Region of Kotor	183	Archaeological Site of Leptis Magna
837	Medina of Tétouan (formerly known as Titawin)	184	Archaeological Site of Sabratha
59	Bryggen	190	Archaeological Site of Cyrene
540	Historic Centre of Saint Petersburg and Related Groups of Monuments	699	City of Luxembourg: its Old Quarters and Fortifications
871	Naval Port of Karlskrona	1223	Melaka and George Town, Historic Cities of the Straits of Malacca
959	Historic Quarter of the Seaport City of Valparaíso	131	City of Valletta
285	Port, Fortresses and Group of Monuments, Cartagena	1227	Aaprasvasi Ghat
1399	Levuka Historical Port Town	895	Historic Fortified Town of Campeche
658	Coro and its Port	753	Medina of Essaouira (formerly Mogador)
1058	Portuguese City of Mazagan (El Jadida)	599	Island of Mozambique
135	Fortifications on the Caribbean Side of Panama: Portobelo-San Lorenzo	352	Rock Art of Alta
755	Historic Centre of Oporto, Luiz I Bridge and Monastery of Serra do Pilar	1010	Land of Frankincense

1361	Historic Jeddah, the Gate to Makkah	1537	Ancient City of Qalhat
144	Ruins of Kilwa Kisiwani and Ruins of Songo Mnara	790	Archaeological Site of Panamá Viejo and Historic District of Panamá
819	Historic Area of Willemstad, Inner City and Harbour, Curaçao	500	Historic Centre of Lima
1312	Tower of Hercules	677	Baroque Churches of the Philippines
1308	Paraty and Ilha Grande – Culture and Biodiversity	206	Central Zone of the Town of Angra do Heroísmo in the Azores
1548	Valongo Wharf Archaeological Site	263	Monastery of the Hieronymites and Tower of Belém in Lisbon
217	Ancient City of Nessebar	1402	Al Zubarah Archaeological Site
741	Old Town Lunenburg	980	Historic and Architectural Complex of the Kazan Kremlin
1178	Humberstone and Santa Laura Saltpeter Works	632	Cultural and Historic Ensemble of the Solovetsky Islands
1110	Historic Centre of Macao	26	Island of Gorée
810	Historic City of Trogir	929	San Cristóbal de La Laguna
1533	Venetian Works of Defence between the 16th and 17th Centuries: Stato da Terra – Western Stato da Mar	555	Birka and Hovgården
204	Old Havana and its Fortification System	37	Archaeological Site of Carthage
841	San Pedro de la Roca Castle, Santiago de Cuba	668	Historic City of Ayutthaya
1202	Urban Historic Centre of Cienfuegos	724	Medieval Monuments in Kosovo
822	Historic Centre (Old Town) of Tallinn	1253	Gamzigrad-Romuliana, Palace of Galerius
583	Fortress of Suomenlinna	916	Robben Island
1553	Archaeological Border complex of Hedeby and the Danevirke	1265	Richtersveld Cultural and Botanical Landscape
493	Medieval City of Rhodes	417	Ibiza, Biodiversity and Culture
530	Delos	1578	Risco Caído and the Sacred Mountains of Gran Canaria Cultural Landscape
595	Pythagoreion and Heraion of Samos	313	Historic Centre of Cordoba
234	Churches and Convents of Goa	314	Alhambra, Generalife and Albayzín, Granada
244	Elephanta Caves	318	Monastery and Site of the Escorial, Madrid
945	Chhatrapati Shivaji Terminus (formerly Victoria Terminus)	379	Historic City of Toledo
1610	Ombilin Coal Mining Heritage of Sawahlunto	381	Old City of Salamanca
1042	Old City of Acre	384	Old Town of Cáceres
1220	Bahá'í Holy Places in Haifa and the Western Galilee	782	La Lonja de la Seda de Valencia
394	Venice and its Lagoon	829	Archaeological Areas of Pompei, Herculaneum and Torre Annunziata
726	Historic Centre of Naples		

Appendix B. Count and Relevance of selected keywords in the word cloud

No.	Word	Count	Relevance	No.	Word	Count	Relevance
1.	outstanding universal value	15	0.998	26.	island of gore	4	0.266
2.	historic centre	27	0.798	27.	medina of essaouira	4	0.266
3.	outstanding example	17	0.754	28.	preserved example	6	0.266
4.	ancient city	16	0.576	29.	kilwa kisiwani	9	0.266
5.	rock art	15	0.488	30.	region of kotor	4	0.266
6.	exceptional testimony	11	0.488	31.	amsterdam canal district	4	0.266
7.	city of qalhat	6	0.399	32.	unique testimony	6	0.266
8.	levuka historical port	6	0.399	33.	hiroshima peace memorial	4	0.266
9.	historical port town	6	0.399	34.	kontorhaus district	8	0.266
10.	knight of st	6	0.399	35.	church of st	4	0.266
11.	hanseatic league	9	0.399	36.	medina of ttouan	4	0.266
12.	middle age	10	0.355	37.	world war ii	4	0.266
13.	archaeological site	14	0.355	38.	degree of authenticity	4	0.266
14.	tower of belm	5	0.333	39.	lower town	8	0.222
15.	old town lunenburg	5	0.333	40.	baltic sea	7	0.222
16.	fort jesus mombasa	5	0.333	41.	military architecture	9	0.222
17.	thousands of year	5	0.333	42.	small island	8	0.222
18.	kingdom of hormuz	5	0.333	43.	stre nuove	6	0.222
19.	persian gulf	7	0.31	44.	historic jeddah	8	0.222
20.	st john	8	0.31	45.	international tre	5	0.222
21.	lamu old town	4	0.266	46.	la laguna	5	0.222
22.	complex of belm	4	0.266	47.	buffer zone	9	0.222
23.	al zubarah	11	0.266	48.	criteria iii	18	0.222
24.	duchy of lithuania	4	0.266	49.	medieval town	10	0.222
25.	songo mnara	6	0.266	50.	criteria	74	0.218

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Contributions

Tianchen Dai and Carola Hein developed the idea, the research question, the methodology and the arguments. Tianchen Dai took the lead in writing of the text. developed the idea, the research question, the methodology and the arguments together with Carola Hein. She also took the lead in writing of the text. Carola Hein developed the original idea and research question for the project. She worked with Tianchen Dai on the methodology and the argument as well as the writing of the text. Dan C. Baciú provided digital tools and knowledge, in particular related to GeoD and 7D, and created the visuals after data pre-processing by Tianchen Dai.