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Digital and Spatial Humanities Mapping: Eurasia-Pacific Early Trade and Belief Linkages

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DIGITAL AND SPATIAL HUMANITIES MAPPING: EURASIA-PACIFIC EARLY TRADE AND BELIEF LINKAGES

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Abstract:

The Eurasia-Pacific is a dynamic region of rapid economic growth, cultural awareness, natural resource exploration, and military buildup. The concept of the region is relatively new, featuring contested vast areas of geo-resource space of numerous cultures and languages. The current findings in anthropology and archaeology and even its more specific subfields such as folklore are important contribution to the understanding of periodic environmental changes and technical innovations were the main forces of transformations in social structures that have determined the mechanisms and levels of cross-cultural trade activity across the region. We have traced early trade and belief linkages across Eurasia-Pacific regions as research in the digital humanities from the Neolithic to early history. It's about antecedents leading up to an outcome of 'Silk Roads' producing a dynamic time map. Recently demonstrating digital and spatial humanities mapping, the Atlas of Maritime Buddhism research project was displayed as visualized 3D virtual exhibitions in Hong Kong and Taiwan. Buddhist artifacts and archaeological sites were presented as integrated narratives for the public to explore. Viewers witnessed accumulated researched data for the spreading linkages of Buddhism from South Asia to Korea through the seaports of Southeast Asia.

Keywords: Eurasia-Pacific, digital and spatial humanities, early trade routes, belief networks, archaeological sites, Megalithic monuments, corresponding mythologies, heritage awareness, dynamic time map, museum displays

Introduction

In recent decades we have entered an age where digital tools are increasing ever more to help us in daily life. In the academic realms of text mining, network analysis, public history, heritage studies, and mapping, we are 'coming of age' in digital humanities and related disciplines. Among these areas of study, many specialties are focusing on analyzing digital space through time. We call this spatiotemporal research—mapping across time with digital computational methods providing a large array of information. This enhances our ability to observe a large array of data beyond an individual's abilities to observe every possible component.

The data stems from aerial mapping, remote sensing, photometric imagery, random sampling archaeology, statistical programming with languages such as R, and contemporary software development for innovative methods to perceive beyond what we can see. Mapping is one of the most commonly used techniques in reviewing our 'sense of being' in spatial dimensions (see Cosgrove 2004; Blundell and Sitnikov 2017; Blundell *et al*. 2018).

Spatial humanities is a sub-discipline of digital humanities based on geographic information systems (GIS) and timelines providing an effective integrating and contextualizing function for mapping geo-cultural attributes. Information systems from multiple sources and in multiple formats visual indexes that are created for diverse cultural data displays. Spatiotemporal interfaces provide new methods of integrating primary source materials into Web-based interactive modes of virtual reality (VR) visualizations. We are able to chart the extent of specific traits of cultural information via maps using GIS gazetteers for collecting and curating datasets.

For comprehensive developments in spatial humanities, we consult Jo Guldi's "What is the Spatial Turn?" an introduction of the spatial turn for eight academic disciplines (2011), and Richard White's essay "What is Spatial History?" (2010). Digital mapping gives resource affordability to researchers. Availability to digital resources allows novice or advanced researchers who are not cartographers, abilities to chart information.

Now historiography has fresh and innovative tools (Robertson 2012). GIS provides history an exciting unfolding in digital and spatial humanities (Gregory and Geddes 2014) with advances in computing and information infrastructures offering researchers possibilities of reconsidering the entire strategy of analysis and dissemination of information. It features 'deep mapping' acknowledging multiple meanings existing in a particular place and across time (Bodenhamer 2010 *et. al.*).

Our systems are based on GIS point locations, routes, and regions linked to enriched attribute information. These are charted and visualized in maps and can be analyzed with network analysis, creating an innovative digital infrastructure for scholarly collaboration. These methods give researchers an expanse of data in layers of time across space providing the tools to advance humanistic inquiry. This in turn becomes a Web-based bulletin board for local community and scholarly knowledge exchange.

Our aim is to recount human transformations from cartography, historical records, aesthetic determinants, and community research partnerships. That implicit conceptual underpinning of advanced hermeneutics research in our qualitative tradition is critical and able to potentially enrich and deepen perspectives *based on elements seemingly unrelated yet connected*.

A far-reaching goal is to further standards in cartographic strategies through the utility of digitalization and animation of map content giving new possibilities in the hands of local and international collaborators. We provide examples for developing best practice standards applied to databases giving interactive multimedia utility aspects. This allows uniting the context of geography and landscapes with cultural data for making enhanced possibilities in spatial humanities with scales of data, large and small—with humanistic and

scientific results. Digital mapping today gives resource affordability to researchers. Availability of digital resources allows researchers who are not cartographers, abilities to chart information.

The interactivity of digital maps allows one to filter data to the desired scale and includes a multitude of sources through data abundance, allowing for gathering and trans-disciplinarily comparative information for dynamic model making. Why and what data are factored in for new models for cultural and economic network systems? The challenge is to break new ground, developing new knowledge using digital tools to produce results that could not be achieved through traditional research in any single discipline. It is leveraging data from disparate databases to create integrated systems and customizable visualizations. Within spatiotemporal historical studies this opens new perspectives.

Our studies contribute to our scholarly attention of indigenous cultures, trans-ocean navigation, migration, symbolism, international belief systems, and narratives of new dimensions through the innovative methodology of spatial humanities. It is a compelling demonstration of how GIS can contribute to our complex historical understanding.

This knowledge derives from various research fields and integrates many different types of data and analytical styles developing new research methodologies, creating paradigm shifts and multi-vocal views in the humanities. We are able to chart the extent and dynamics of specific elements of cultural data via maps using GIS. By utilizing modern communication technologies, typically innovative mobile handheld tools, acquisition of high-quality spatiotemporal information has become much more efficient and cost-effective than before. As a result, many researchers deem that data collected by volunteers with minimum training can be used for scientific research if carefully designed quality assurance processes are performed.

Here we explore the concept of Eurasia-Pacific and globalization—positioning historical roots and contemporary languages and cultures as valuable peaceful and sustainable development tools for interconnectivity across regions that can be used to seek collaboration and partnership due to their association with heritage linkages. We have established a clear relationship between variable aspects of our projects, particularly based on languages and cultural elements as logistical resources. These mapping network systems designate data points to specific items, and these points in turn can be connected with geo-referenced connecting lines. People in a specific community contributing to the map will be able to see their basic elements have interconnectivity with other places distant and close to them. Meanings and shapes of the elements could then be observed, discussed, shared, and graphically displayed in dynamic interactive maps.

The projects are developed to reach world audiences with a high level of participatory interactive 3D visualizations to be more accessible with mobile phone apps and multi-media museum displays. Featuring historic timelines, ships, trade routes and trade winds, traveling monks, life accounts at ports, and diaries integrate content and technology to enable our understanding of routes across Eurasia and seasonal wind driven Monsoon Asia, its diffusion of culture, and land and oceanic navigation to become alive and accessible (Blundell and Zerneke 2014).

Geographic information is required by a wealth of scientific research for various disciplines. Due to much progress of geospatial technologies in recent years, acquisition of high-quality spatial and temporal information has become much more efficient and cost-effective than past few decades. Remote sensing provides massive high-resolution imageries about Earth surface, which can be analyzed by image processing tools to automatically derive valuable information for various applications such as climate change, land resources inventory, environmental monitoring, and urban sprawl.

We are challenged to imagine new methods for doing research and making results available to broader user communities. Can we find meaning and innovation digital humanities beyond what has been traditionally part of scholarly efforts? We examine GIS point locations tracing routes and networks imbued with historical meaning across the region linked to enriched attribute information. These are charted and visualized in maps and can be analyzed with network analysis, creating an innovative digital infrastructure for scholarly collaboration and creation of customizable visualizations.

Today, with our current geographic technologies we are able to trace this historical process as map layers—from prehistory to early history into the era of written inscriptions. Paul Wheatley (1961) initially brought this to my attention in his publications. His methods and terminologies were based on his ability to translate texts from both early Indic and Chinese writings. He mapped historic Southeast Asian peninsulas and islands showing layers of settlements. The texts of Wheatly's *Golden Khersonese* comment on the historical trade relations in terms of the Malay Peninsula (see Fig. 1).

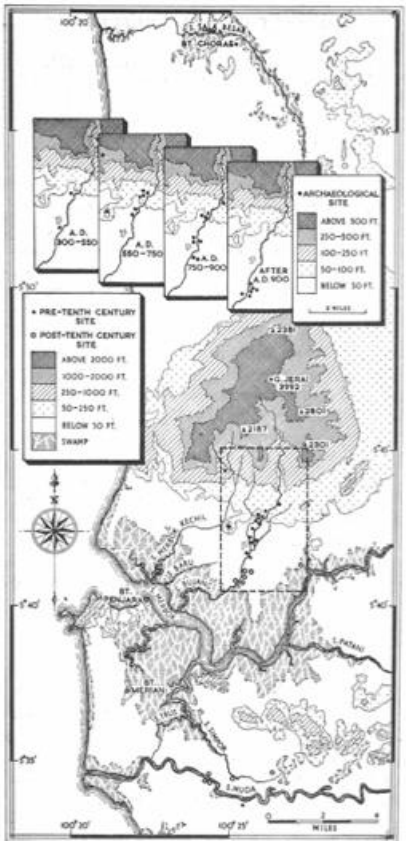

Figure 1. Composite map of Bujang Valley, Merbok River tributary, Kedah of the Malay Peninsula (Wheatley 1961, Fig. 44).

Our research shares ideas about early historical Indian Ocean destinations to seats of kingdoms and trade centers where the word of the *dharma* and its faith developed in a healthy vigorous way, especially in particularly Monsoon regions of Southeast Asia (see Manguin *et al*. 2011; Reid 2015).

Historical kingdom map overlays on Google Earth give time-enabled layers of information within a specific geographic region, time period or cultural era, trading system, person or group of people (see Fig. 2).

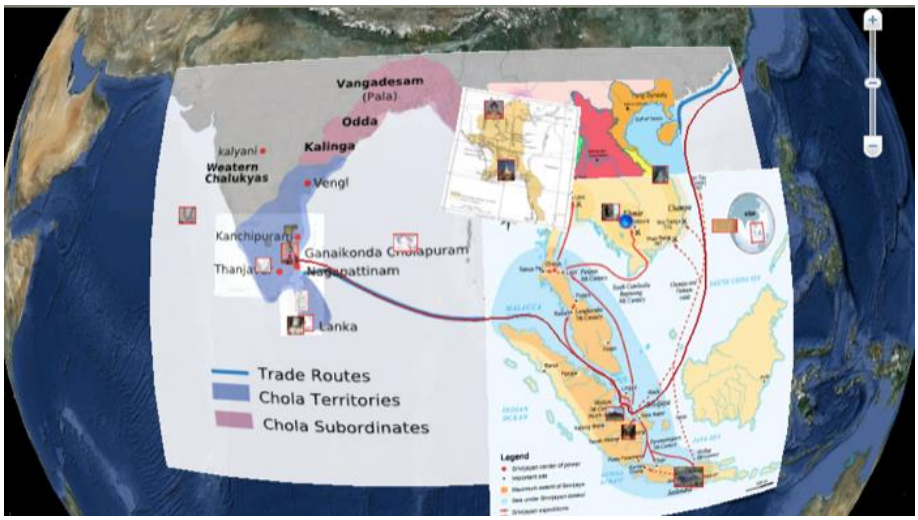

Figure 2. Maps of historical kingdoms in Southern Asia, their associated trade routes, and other information are used to construct geo-registered layers by time in Google Earth (courtesy of Jeanette Zerneke).

Eurasia-Pacific Heritage of Trade and Beliefs

Over the past century, much has been written recounting the vast Eurasian networks up to early modern history (Ciocîltan 2012). Our purpose is not to review the literature of Eurasia in terms of cultural networks from earliest times. Here, we are offering new ways to survey

economic and religious networks through spatiotemporal visualization. That is to say through digital humanities, we are looking for the best way to interact with the existing scholarship and find new ways of sharing data to build academic frameworks intended for modeling the region.

The 'Silk Road,' or 'Seidenstrasse' in German, was a term created by Ferdinand von Richthofen in 1877 (Chin 2013) to describe an extensive network of historical Eurasian trade from the Far East to the Mediterranean. In Central Eurasia, trekking across deserts was conditional by potable water stations, known as *oasis* encampments, that later became trade stations.

In the Far East, transfer cities and ports facilitated horse breeding for the overland trade. Connecting maritime ports required ship construction. Tradesmen were also craftsmen transporting their unique wares to local interconnected marketplaces. Precious stones and artwork such as Scythian-style animal forms of the Central Asian steppes were traded as far as the cities on the Nile River dating from 1,000 BCE (Lubec *et al*. 1993).

Near Stuttgart, Germany, lies the tomb of a Scythian prince dating to the 6th century BCE, with Greek bronzes and Chinese cloth. Similar animal-shaped pieces of art and human wrestler motifs on belts have been found in Scythian gravesites stretching from the Black Sea region to Mongolia and Shanxi in China. Cultures generated linkages from the Hungarian plain and the Carpathian Mountains to the Yellow River. Another route connected the Middle East with the Punjab. It could be said these were shamanic routes (Corradi Musi 1997).

By the time of Herodotus (c. 475 BCE) in Hellas (Greece), the Royal Road of the Persians was 2,857 km (1,775 mi) from the port of Susa east of the Tigris to the port of Smyrna (Izmir, Turkey) on the Aegean Sea. It was maintained and protected by the Achaemenid Empire (c. 500-330 BCE) and had postal stations and relays at regular intervals creating an infrastructure of a far-reaching civilization (see Braudel 1995).

Over the past century, there has been much written recounting the vast Eurasian networks up to early modern history. Many scholars believe that religious and mythological patterns could be spread in the vast territories along ancient trade routes. For example, Corradi Musi, who studies parallels between the Finno-Ugrian shamanism and European mediaeval magic, explains the phenomenon of cultural similarities due to ancient trade routes. She argues that, from the most distant past, Western and Eastern Europe were much closer to each other than could be imagined. She suggests that cultural elements, myths, and beliefs could be spread along the 'trade routes of Baltic amber' (Corradi Musi 1997).

The ideas of Corradi Musi support our supposition that sustaining mythological elements across Eurasia-Pacific could be a product of regular contact among peoples along a web of prehistoric trade routes.

These routes connected rivers with seashores, creating and supporting a prehistoric cultural unity from Scandinavia and the Mediterranean in the West through the Fertile Crescent and Hindustan eastwards across Southeast Asia to coasts of China, from Kamchatka and Chukotka in the north to Pacific island systems and New Guinea in the south.[1]

These sustaining mythological elements can be observed in symbols and motifs, which are connected with land travel and seafaring. One of the most repeated mythological symbols which is connected with reality of seafaring and is spread over Eurasia and the Pacific was the symbol of a magic ship or boat. The magic ship *skithblathnir* of Germanic mythology is reminiscent of the Greek *Argo*, the *flying ship* of Russian fairytales, and the *flying canoe* of the Trobrianders of the Pacific. The Norse deity Freyr of fertility and prosperity had such a magic ship conveying the idea of being that the god of Indo-Pacific Sea nomads. Freyr's paternal image supported this idea and suggested that an earlier cult may have existed among the population. The father of Freyr, Njord, was the Norse god of sea, seafaring, wind, fishing, wealth, and crop fertility. He brought good fortune at sea and in the hunt (Lindow 2001). Njord was very wealthy and prosperous, and could grant wealth in land and valuables to those who requested his aid.

In Wickersham (2000) there is a reconstruction of the Greek Argonauts' route. Some versions of the legend show them returning home, the Argonauts went to the Danube River, and then they traveled along various rivers (Wickersham 2000 Vol.1, 56). Other variants say that they went north to the Baltic Sea; others inform that they followed the Rhine River to the Atlantic; or that they reached the Adriatic Sea. Mapping the variations of the return journey gives us an idea that in the Argonauts' journey there are multiple stories and information about an early historical Mediterranean region.

The close similarity of beliefs and mythological symbols in the vast territory of the Eurasia-Indo-Pacific area could be explained in terms of longtime contacts among cultures. Worsley (1986, 49-50) suggests that the information and beliefs could have been spread by merchants, fisherman, and also by native trade expeditions. Although he does not believe in any direct contact between these distant regions, he supposed that native trade expeditions could have passed on news and information through a series of intermediaries. As an example, Worsley reminds us of the famous Massim islanders' great trading expeditions (see Malinowski 1922) and says that many similar trade routes existed along the New Guinea coast (*ibid*.). Citing Mead (1938) and McCarthy (1939), Worsley stated that even longer distances could be covered over longer periods of time, diffusing objects and ideas via such trade routes.

To summarize, we believe that the networks of trade routes connecting East, South, and Western Asia with the Mediterranean world

[1] For example, a set of sustaining mythological elements was identified by Igor Sitnikov (2009) in his research on the '18 deities' cult in Taiwan.

could be the explanation for the similarities in sets of mythological symbols extensively across the region. It is believed that the network of trade route known as the 'Silk Road' originated from the Han dynasty (221–206 BCE), yet the network of trade routes originated in earlier times.

Explaining the reasons for the former expansion of local cults in China, Kleeman (1993, 57) stated that the cults were spread by officials and merchants whose sons may have aspired to official postings. Kleeman resumes (*ibid:* 63) the phenomenon of local deities' transformation into gods worshiped all over the country:

The changes evident in Sung society, including increased interregional trade and travel, the monetization of the economy, increased immigration, urbanization, and the development of communications, all must have expanded the horizons of the individual and encouraged people to look beyond the confines of their traditional world, the village community.

Ter Haar (1990), explaining the spread of the Mazu (Sea Goddess) beliefs, stated that during the Sung dynasty most crews of sea-going vessels came from Fujian helped to rapidly increase Mazu's popularity. In a study of another cult known as *pao-sheng ta-ti* spread to Taiwan, Schipper (1990) claimed that the wide-scale emigration from its area of origin in the hinterland of Xiamen (Amoy) is a reason why now hundreds of temples dedicated to the goddess can be found in coastal regions of Southeast Asia, from Taiwan to Singapore.

Eurasia-Pacific Networks in Monsoon Asia

Villages and towns prospered at places of trade exchange along the route across regional Eurasian expanses. Historically trade was segmented according to the feasibility of the route by land or sea. In the Indian Ocean trade was regulated by seasonal Monsoon winds prevailing from the Arabian Sea to Southeast Asia giving rise maritime trade and belief networks (see Ray 1999, 2003).

In Monsoon Asia, starting from the 1st millennium BCE from the lower Ganges plain south along wooded deltas to Tamil land (Dayalan 2019), merchants and pilgrims were introducing and transmitting the idea of Indic *dharma* across a vast territory of South and Southeast Asia.

The term *dharma* is a concept referring to a scope of mental and physical laws of nature. It relates back to what people experience in observing life's processes, perceived as truths of natural phenomena. The term *dharma* predates the Buddhist tradition, appearing in the texts of the Vedic hymns. Buddhism, a continuum of Southern Asian beliefs, adopted the term to refer to a collection of teachings, which are recorded in various compilations of *sutra*. The collection of the Buddhist teachings varies in scope depending on the region. In principle, however, there are stable transferable practices and beliefs that connect Buddhist traditions together. The essence of the *dharma* should be the

same everywhere, yet there is debate as to what constitutes this essence of *Three Jewels*: *dharma* (cosmic law), the essential form of the *buddha* (awakened), and the *sangha* (community). With these motifs to embrace, the faithful has a sense of continuity with the world at large (see Horsch 2004).[2]

The *dharma* circulated by sea, yet the question concerns the navigators who operated the ships. Going back in time, to early history and the Vedic days of about 3,500 years ago, and before writing into the Neolithic cultural stratum, across Southern Asia, beliefs coexisted with the *solar cycle* (wheel), *air* (ether, wind, or lofty), *soil* (earth layer, organic base), and *water* (conveying hydraulics from lakes, rivers to oceans) was the basis of substance. It was a primer for basic life, and for humans to respect, and give their observance, at first in the oral traditions, and later in text. The seafaring Neolithic cultures of Monsoon Asia expanded and continued, fueled by the demand for trade opportunities. In the 1st millennium CE, it spread as a spiritual notion ushering Southern Asian beliefs carried through derivatives of written language. Yet, there is an underlying aesthetic sense of a flourishing *dharma*, or cosmic flow, from the Neolithic circulating across land and ocean. Buddhism, a complexity of pre-Vedic derived beliefs, and pre-existing notions mixed to produce a *raj*—the authority of state ordering administration in a place, of a time.

Early historical metropolitan Southern Asia ascended through cultural exchange from a prehistoric common dominator shared across the Monsoon region. Urbanization was seeded from a spirit that proliferated cultural diversity with a social structure of theocratic civil administration (see Blundell 2003). This is key to understanding the cohesive weave of Southern Asian concepts found in *rasa*: a holistic aesthetic value system of fundamental ideas for life that are pervasive in the region. It is an aesthetic system dealing with the value of perception, taste, and related experiences. It identifies traits and clues within the workings of a culture to create understandings and judgments. This aesthetic experience forms intrinsic attitudes *vis-à-vis* things specifically or generally recognized as worthy of attention in a society (Blundell 1996).

The voyages that transported these beliefs can be traced through artifacts and languages from the 1st millennium BCE. The Austronesian-speaking navigation diaspora provided transportation to merchants and monks plying the trade routes to Southeast Asia. What they shared in common were animist origins, a belief in nature. At historical ports, like the ones found in Southern Sri Lanka, *merchants*, *monks*, and *mariners* boarded ships with outriggers to traverse Monsoon ocean expanses (Devendra 2013).

The question is to what extent were international religious systems, such as belief in the *dharma* beginning about 2,300 years ago, facilitated

[2] Information on *dharma* was provided by Chris Rowe, 2014, also see Horsch 2004.

by Malay/Indonesian navigators? That is to say, there was a range of influence stemming from Southern Asia across the Bay of Bengal to the kingdoms of island Southeast Asia (Munoz 2016.). The region became receptive to the *dharma* in peninsula and island Southeast Asia. How could routes be traced?

The supposition is that the *dharma* as a literary belief system was carried out as far as writing could be traced on palm leaves, metal, and stone. Our hypothesis is that, in the 2nd century CE, the *dharma* moved out by sea travel onboard ships with seasoned mariners who we believe were Indigenous, now known as Austronesian language speaking voyagers (Blundell 2014). An image of one such voyaging outrigger ship is depicted on the stone relief at the Buddhist temple of Borobudur in Java (see Fig. 3). Yet, there are gaps in the record. So to remedy this, we are taking stock of old knowledge, and new technologies within today's academic networks to further trace the extent of seemingly unrelated cultures that intersected, and its periphery (Blundell 2016).

Figure 3. Stone relief panel of voyaging outrigger ship on the Buddhist monument Borobudur, Java, Indonesia, 8th-9th century (photo by David Blundell).

The ascendancy of heavy basalt adzes for woodworking and pointed drills revolutionized the durability of bark-and-skin-sewn river craft in favor of those constructed of oceangoing timber planks. Sailboats with slim, graceful lines bending into long curved ends, built for strength and allowing for flexibility that would counter the dynamics of the water for speed and stability, carried men away from the shoals and coastal waters on voyages in the seas of peninsular and island Asia.

Sea traffic facilitated the seeding and planting of the coconut, sugar cane, yam, areca nut, betel leaf and pepper, along with the hundred varieties of banana, to find new receptive soils west, and the horticultural revolution of ten thousand years was revealed to a people who savored monsoon harmony. Ancient patterns of group coexistence maintained a tolerance for the endurance of unique belief systems that evolved to represent resistance and blending under the major

persuasions of religions. Cultural whispers emerged across strengthened clans with myths of origins that paralleled indigenous totems (Ferreira 1965). Artificial divisions separating the region did not exist, as it was a continuum of social and trade networks.

Spread of Megalithic Cultures

To discover such traditions and effective integration mechanisms we need to address Carl Jung's concept of the *collective unconscious*. According to Jung, the collective unconscious is a part of the unconscious mind, shared by a society, and is the product of ancestral experience (see Jung 1991; Sitnikov 2011). It is concentrated in traditions, beliefs and moral norms. The sea nomads' cultural heritage seems to be hidden in the collective unconscious of many Eurasia-Pacific cultures. The study of mythologies, beliefs, rituals, and cults in combination with particular objects of material culture and archaeological artifacts across the region could help to analyze the collective unconscious of the peoples populating the Eurasia-Pacific to find a set of common cultural patterns, which can help to reconstruct the ideology of the initial integration phase in the region.

Prior to the state system, at sacred spots, there existed a concept of order that was grounded deeply in the foundation of the temple stone planted in both earth and sky by equal dimensions. People displayed their rooted form in nature by primary material stones of erect *menhir* (see Fig. 4), recumbent dolmen, and stone seats.

Figure 4. Top, Menhir at Ballinagree, Cork County, Ireland (released to public domain by its author, Ceoil, at English Wikipedia); Bottom, Saoba Menhir, Wuhe Plateau, Ruisui Township, Hualien County, Taiwan (photo by Danee Hazama).

The megalith was erected in an organized effort to secure from the dead secret wisdom and prosperity. In the course of a rite, the deposited soul would enter the underworld, the abode of spirits, with the potential of giving benefit to those above. The builder of the monument would gain merit and the magic qualities of fertility would ensure the succession of generations. The personal ego waned to make way for the cultural ego, and men operated in agreement, holding their rare shrine in common union. The gesture of the active pillar, on a built mound, functioned as the clan's ancestral devotion. Earth worship was a thread of a cultural continuum that reached across Southern Asia and the seas in the veneration of stone on sacred space (Vroklage 1953).

The dolmen was the repository for human ash, bone, and spirit (see Fig. 5). Under the mounted stone and earth, salvation was retained and the future was sealed. It reflected the muted radiance of the moon in a silent calm. And like the moon, the deceased kinsman's virtue, compacted in stone, held the essence of life's cycle. The mound was passive, providing a seat on which the living could rest and commune. The simple concept exerted a powerful influence over the convictions of men. The soil of the *vulva* was intimately connected with the enigma of nature. Upon elaboration, the forest stone was divided to form a larger sphere over the place where the warm and cool substances unite into a non-dual being. As the golden germ of a child matures in its first dwelling place in the everlasting darkness of primordial waters, the support of the universe was heightened. In unity with the grace of the feminine form, the masculine element rose to ignite the energy of the cosmos as a vertical posture of sacred Mount Meru[3] on the horizontal spread until its eventual extinction on the plains (see Blundell 1984).

[3] Central mountain features of the landscape venerated as sacred in nature and replicated as temple shrines.

Figure 5. Top, Dolmen at Historical Museum of Sochi, Russia (photo by Igor Sitnikov); Bottom, Crescent Stone Pillar at Peinan Site Park, Taitung, Taiwan (photo by Igor Sitnikov).

Notwithstanding that the main purpose of the study is to discover the cultural meanings and functions of megalithic constructions, since those monuments are widely distributed both in time (from Mesolithic Age, starting around 10,000 years ago, through Bronze and Iron Ages to the present) and space and represented by multitude of various forms, it seems the typology and classification should be other methods of studying the phenomenon. Nicholas Roerich (1874-1947) distinguished three main forms of megalithic monuments: 1. *Menhir* (a Celtic word meaning long stone), single upright stones; 2. Alignments, groups of *menhirs*; and 3. Cromlechs, dolmens, the remains of prehistoric stone chamber tombs (see Macdonald 2003: 90; Roerich 2017).

Robert Wernick classifies megaliths by three similar types with variations in every type: 1. Menhirs; 2. Alignments: (a) in circles or

semicircles; (b) ranks or rows (sometimes stretching for miles); (c) henges, stone or timber circles surrounded by circular ditches and banks; 3. Dolmens (table stones), roofed structures: (a) single chamber (a small room, round, rectangular or polygonal, roofed with flat stones or corbelling; (b) passage grave (it begins with a corridor which opens into a chamber; sometimes smaller rooms open off the main chamber; the chambers are often roofed with corbelling); (c) gallery grave, or long tomb (it has no corridor, the funerary chamber forms the whole structure); (d) barrows, *megalithic* tombs covered by mounds of earth; (e) cairns, *megalithic* tombs covered by small stones (Wernick 1973: 11-13).

Both classifications, however, seem to be very unclear and confusing, especially concerning dolmens (or cromlechs) and alignments as well, because these two terms include too many different forms of monuments. Even the term 'megalith' itself looks to be a very loose one, when it is used to name not only really huge stone monuments, and the Neolithic cultures which produced and continue to produce a variety of middle-sized stone objects of unknown function but also applied to constructions made from timber and earth. The term "megaliths" is also often applied to different types of statues made from stone monoliths, such as, for example, *kurgan stelae* (stone *babas*) and the *moai* of Easter Island. As it is known, the term 'megalith' comes from the Ancient Greek words *megas* meaning *great*, and *lithos* meaning *stone*; so I would suggest this term not be used for timber, earth and even stone constructions, which are not made from the huge stone monoliths; and it is also necessary to use different terms for anthropomorphic statues, various types of stelae, and constructions made of raw stones.

It seems reasonable to suggest a classification scheme for large stone monuments according to their function, which are mainly two: memorial (*menhirs*) and funeral (tombs). Such a classification would allow us to trace the development of all forms of monuments: *menhirs* as memorials for significant dead or special events could be the original form of later vertical cairns, various types of stelae, and anthropomorphic statues, such as *kurgan stelae* (stone *babas*) and *moai*.

In Chinese culture, *menhirs* probably developed into the form of popular memorial stelae with engraved inscriptions. In Taiwan, such transformed variants of *menhirs* are represented by stones in the temples devoted to the Earth deity (*tudi-gong*), which could be understood as a god of local areas or local natural environments; a similar origin lies behind the statues of the wind gods on Kinmen Island, Taiwan. Table-shaped structures as one chamber tomb could be understood as an original form of tombs which in a different environmental and cultural context could transform into a passage grave, a long tomb, barrows or *tumuli,* and Egypt's pyramids. All the types of alignments seem to be developed from *menhirs* with their memorial function which could transform into sacral territories for holding various rituals and

ceremonies, and later to the temples, including Mesopotamian Ziggurats symbolizing sacred mountains connecting the earthly realm with heaven.

Another important approach is contained in mapping the Megalithic monument sites, which could help to analyze the distribution of these cultures in the world. However, this approach has significant difficulties caused by the multitude of large stone monuments distributed across space and time. The best way to accomplish mapping is to take into consideration all the dimensions mentioned; this would mean a typological distribution of monuments in space by periods of time, which would also touch upon the cultural function and form. The solution, probably, is to design a series of dynamic maps which will show the distribution in space for each form of specific function. However, to start this work it is necessary to first make a general map, where the areas of Megalithic monument sites from any time period could be identified.

We are collecting relevant data both from the transfer of mythological symbols and objective phenomena of economic daily living. It is to study the interplay of ancient cultural pursuits in the archaeological record and mapped with advanced GIS techniques. The question is relevant today to better understand the continuum of transport networks.

The stone ages moved into technologies of metal tools, at different times across the Monsoon Asia region. With the advent of Buddhism, the earthen heaped up reliquaries became the *stupa* and stone *megaliths* became monastic and ceremonial monuments (see Fig. 6), and rock-cut cave complexes (Efurd 2021) spread across South Asia and the region of scared landscapes (Ray 2007). The oral traditions stemming from Megalithic cultures and their spiritual practices transformed into literate Indic *dharma* traditions that circulated from South Asia to Southeast Asia and East Asia (Blundell 2020).

Figure 6. Prior page: Stupa, Mihintale Ridge, Anuradhpura, Sri Lanka (photo by David Blundell). Above: Central tower in Angkor Wat, Cambodia (photo by Igor Sitnikov).

Modeling Elements of Spatiotemporal Networks[4]

Without further dwelling on the importance of separate cultures interacting and creating synergies of linkages in their time, our emphasis here is to revisit the uniqueness of the ancient cultures yet having a sense of interacting with common denominators of legends, symbols, and motifs. This created a continuity like a tapestry of identifiable separate peoples yet connected along trade routes. Mapping these networks is based on points in a time-enabled atlas hosted by the Electronic Cultural Atlas Initiative (ECAI) and the Atlas of Maritime Buddhism led by Lewis Lancaster. His narrative is about the spread of Buddhism from South Asia by maritime travel across the eastward regions of Asia (see Fig. 7) (Lancaster 2021).

[4] For further discussion of this topic, see David Blundell, *et al*. 2018.

Figure 7. Monsoon Asia Map with ECAI research sites mapped as historical points (courtesy of Jeanette Zerneke).

The development of an electronic virtual Atlas of Maritime Buddhism was initiated by Lancaster as a project of his Electronic Cultural Atlas Initiative (ECAI) at the University of California, Berkeley (see Lancaster's Maritime Buddhism Project, and the Great Circle of Buddhism and related papers, www.ecai.org). The atlas traces Buddhist archaeological sites and their early historical connections to examine mercantile activities from 2,300 years ago and transmission of beliefs (Kenderdine and Shaw 2021a). The network of South Asian seaport merchants was a primary support for the Indic *dharma*. Indic trade and beliefs circulated to Southeast Asia (Glover 1996) and to China (Ray 2006). Following, Muslim merchants entered this arena of trade, and Islam grew in seaport communities.

An important element in this research includes the role of the Monsoon Asian winds and the annual shift of wind direction that determined the trade calendar for ocean shipments. The time and distance from Africa to South Asia or from South Asia to Malaysia and Indonesia or further across the seas to East Asia depended on seasonal wind directions (see Wheatley 1961).

We are challenged to imagine new methods for doing research and making results available to broader user communities. Can we find meaning and innovation in digital humanities beyond what has been traditionally part of scholarly efforts? We examine GIS point locations tracing routes and networks imbued with historical meaning across the region linked to enriched attribute information. These are charted and visualized in maps and can be analyzed with network analysis, creating an innovative digital infrastructure for scholarly collaboration and creation of customizable visualizations.

Our research shares ideas about early historical Indian Ocean destinations to seats of kingdoms and trade centers where the word of the *dharma* and its faith developed in a healthy vigorous way, especially in particularly Monsoon regions of Southeast Asia. The seafaring *nusantara* traders of the islands of Monsoon Asia (primarily Indonesia

and Malaysia) created trading centers facilitating Hindu/Buddhist propagation and commerce from South Asia to Southeast Asia. These faiths were brought in and practiced by these Indic merchants (SarDesai 2012).

An important element in this research includes the role of the Monsoon winds and the annual shift of wind direction that determined the trade calendar for ocean shipments. The time and distance from Africa to India, or from India to Malaysia, or further out across the seas to East Asia, depended on seasonal wind directions (see Blundell 2017, 2019).

Achieved Virtual Atlas Projects

Igor Sitnikov (2009) produced an elaborate atlas visualizing a commonality of symbols and styles, especially of mortuary monuments and scared space across the Eurasia-Pacific as a continuum of heritage from the Neolithic Age to early history. It was color-coded with commentary showing the transmission of legends, symbols, and motifs from Ireland to Oceania. The pivotal aspect of the study was based on a Taiwanese legend featuring a boat drifting ashore with 18 dead people and a dog. The spirit of the dog was perceived as a guardian over the dead and a temple was constructed to honor the dog and the 18 dead became deified. Corresponding stories, symbols, and motifs were traced back across Eurasia and into regions of the Pacific comparing stories and artifacts.

In 2021 the Atlas of Maritime Buddhism research project was unveiled as extensive displays of digital and spatial humanities mapping visualized as 3D virtual exhibitions in Hong Kong and Taiwan. Buddhist artifacts and archaeological sites were presented as integrated narratives for the public to explore at the Indra and Harry Banga Gallery, City University, Hong Kong (July to November 2021) and titled Buddhist Maritime Silk Road and at the Buddha Museum, Fo Guang Shan Monastery, Taiwan (May 2021 to May 2025) (see Fig. 8) (Kenderdine and Shaw 2021b). Viewers witnessed a vast art collection of Buddhist origins and linkages from South Asia to Korea.

Figure 8. Displays of Buddhist Maritime Silk Road exhibition, Buddha Museum, Fo Guang Shan Monastery, Taiwan (see Kenderdine and Shaw 2021a).

Components included spatiotemporal enabled historical sources in diverse formats telling a story based on archaeological materials, Buddhist pilgrim journals. and gazetteers of information for GIS mapping. "These projects mapped and displayed narrative coherence through the experimental application of the world's first deep mapping data browser—a navigational interface developed in a 360-degree 3D (omnidirectional) virtual environment" at the exhibition (Kenderdine and Shaw 2021a).[5]

The virtual atlas exhibitions demonstrate narratives of historical maritime transportation routes where Buddhist entrepreneurship gathered at ports of a 'pan-Asian' trade system from 2nd century BCE to 12th century CE. The viewer is led through hundreds of sites and features virtual artifacts from India, Sri Lanka, Indonesia, Myanmar, Thailand, Cambodia and China. The Atlas of Maritime Buddhism is the "largest archive of immersive, high-resolution panoramic and panoptic 3D images" displayed (*ibid*.).

Conclusion

We are learning from the past through to the present about a vast region where trade occurred in vast areas of contested resources inhabited by numerous cultures and languages. This current work tracks original sources from prehistoric linkages into the realm of early historical connections traced through nomadic legends to Austronesian sea nomads. We trace of these long-lived elements found in many religions and cultures from Ireland to China, Taiwan, and Oceania. We

[5] https://www.epfl.ch/labs/emplus/projects/page-155231-en-html

would like to pay attention to the emergence of the concept of *Eurasia-Pacific*. Goody (1996) suggested that similarities in inheritance patterns indicate that the term 'Eurasia' is more valid than either 'Europe' or 'Asia'. We suppose that unification of these two concepts are geo-seamless giving opportunity to observe the phenomenon of sociocultural change in its dynamic variations on the vast and continuous 'megageographical' and historical arena of cross-cultural interactions where ideas and artifacts were widely exchanged along early trade routes on land and sea (Lewis and Wigen 1997).

Our research indicates that from the first millennium BCE there were many segmented trade routes crisscrossed vast expanses of land and ocean predating the supposed 'Silk Road' from China to Europe. That notion was conceived by Ferdinand von Richthofen in 1877 as 'Seidenstrasse' in German or known as the 'Silk Road' popularized in English. What was not imagined was the practice of crafts people trading their wears from their community to marketplaces. These markets disseminated crafted artifacts to other marketplaces and in time traveled across the region (see Ecom 2017). Scythian bronzes and Indic amulets, portable and valuable, were traded along with beliefs and technical innovations to have determined the physical mechanisms of cross-cultural activity across the region. We find Megalithic erect stones (*menhir*) from Ireland to Taiwan (see Fig. 4) corresponding to the Neolithic cultures that flourished at scared sites and marketplaces across the Eurasia-Pacific.

Our knowledge of the region has derived from various research fields and integrated with many different types of data and analytical styles developing new research methodologies, creating paradigm shifts and multi-vocal views in the humanities. Our aim is interdisciplinary for producing narratives from ancient evidence; thus, we are recounting timelines of religious transmissions, aesthetics, and trade partnerships.

This data collected can be a resource for museum installations that can be interactive, animated, and augmented or installed in immersive 3D display environments. The development of apps allows for our information to be available on handheld devices. Geographic information and timelines provide an effective integrating and contextualizing function for the presented cultural attributes. Crosswalks of information from multiple sources and in multiple formats create visual indexes for diverse cultural data utilization.

Systems are based on spatiotemporal GIS point locations linked to enriched and multiple attribute data. We are able to chart the extent of specific traits of cultural information via maps using GIS gazetteer spreadsheets for collecting and curating datasets. Through methods in spatial humanities, history is reaching new dimensions, with state-of-the-art opportunities for gathering and analyzing data. With spatiotemporal tools, it is exciting to research multidimensional pathways of the historical Eurasia-Pacific.

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