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Mapping the Spread of Buddhism: Caravans and Sailing Ships

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Mapping the Spread of Buddhism: Caravans and Sailing Ships

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Abstract

Prior to 1500 C.E., the map of the presence of Buddhism covers a wide area of Eastern Eurasia. This mapping has been given the name, “Great Circle of Buddhism”. One method of study is to identify information relating to the “rim” of this “Circle” as well as to the “core”. Important events in the history of the tradition took place at the “rim” as trade and cultural issues flowed in both directions along it. Using geo-registration software for the data, it is possible to document the trading and sailing circuits that were to be found in a complex pattern that had both local as well as international structures. This approach allows for a study of the dynamics of the religion’s dissemination even when textual histories do not exist.

Introduction

If we map Buddhist expansion over time and place prior to 1500 C.E., the area in which the tradition had appeared, roughly outlines a “circle”. I am describing this map as “The Great Circle of Buddhism”. Up to the late 15th century, the boundaries of Buddhism were limited to this region and it did not have any lasting presence in the rest of Eurasia. However, with the age of colonial powers in the centuries after 1500 C.E., came a new era for Buddhism when it began to expand far beyond the “Great Circle”, first making its way into Europe and North America and now a fully global institution.

Eventually, the arcs of the “Great Circle” of Buddhism would encompass the whole of Southeast Eurasia. One portion of the arc went from the West Coast of India up the Indus Valley and around the far end of the Himalayas to the Tarim Basin leading to Chang’an (Xi’an), a route of more than 4000 miles. The connecting maritime segment of the “Great Circle” started on the western shores of India, circling around the peninsula and Sri Lanka up the East Coast to the Bay of Bengal and then moving East around the coastlines of Bangladesh, Myanmar, Malay Peninsula, across to Thailand, Cambodia and Vietnam, before turning north to East Asia and the ports of China, Korea, and Japan. The circumference of both arcs: land and sea, measured enough miles to encircle the equator of the earth, the indented shorelines contained 20,000 miles of surface, five times the land route mileage¹ Today, the equivalent of the “Great Circle” is often shown on the internet images with the notation: “more people live inside this circle than outside.”² At present, the population density of the “Great Circle” containing China, India, Indonesia and smaller nations, outnumbers all of the rest of the earth’s people. During the time of the spread of Buddhism

¹ Joon Heo, Jung Hwan Kim, and Jin Woo Kim. "A new methodology for measuring coast-line recession using buffering and non-linear least squares estimation." 1165-1177.

² A link to one of the sites giving this map <https://www.weforum.org/agenda/2017/07/more-people-live-inside-this-egg-than-outside-of-it-and-other-overpopulation-data/>

around these arcs, starting in the 4th century BCE, this portion of Eurasia was also a major populated area of the earth. It was a market of sufficient size and diversity to attract the attention of merchants from far distant ports.³ The population and the resources available within the “Great Circle” and around its “Rim” meant sizable wealth potential for traders who were willing to travel long distances and be away from their homes for months or years.

In many ways, the pre-1500 C.E. “Circle” functioned as two domains. One was the inner core or interior and the other was the “rim” marking the boundary of the outer most spread of Buddhist practice and influence. I was led to think of this area of the Buddhist world as a “circle”, by the diary of an 8th century Korean monk, Hyecho.⁴ He made his way from Korea down the coastline of China, through the islands and coastal ports of the “southern” seas until his arrival in India. There, he chose to continue his journey through Inner Asia back to China. It is important to consider that this monk knew that he could go down to the seaport in Korea and travel by ship to India. In this sense he had knowledge of the “Great Circle” and for a major part of his journey, was able to follow its rim. His discovered diary is so precisely and neatly written that it is hard to imagine it as a document being made over months of time in a variety of circumstances. The value of the diary for Hyecho would have been of such importance that it is unlikely he would have left his copy behind. It is more probable that someone at Dunhuang recognizing the unique value of these observations made a copy. This copy was eventually placed in the famous cache of documents found in Cave¹⁷ and there it was preserved for a thousand

³ A significant part of the research on early trading in the Indian Ocean has been done by Professor Himanshu Ray. Her pioneering works influenced my study at every step. See, Himanshu Prabha Ray, *The archaeology of seafaring in ancient South Asia*. (Cambridge University Press, 2003).

⁴ Donald, Lopez Jr, "THREE. At Sea: The Pilgrim Sails for the Holy Land." In *Hyecho's Journey*, 71-84. It was significant that Hyecho started his journey by sea rather than taking the land route.

years.⁵ Paul Pelliot, the French sinologist found it in the early years of the 20th century during his visit to Dunhuang. He made it known to the world and to Korea. Since Hyecho stayed in China until his death and never returned to his homeland, knowledge of him in Korea was lost until this copy of his travel record was uncovered on the distant “rim” of his “Great Circle” journey, centuries after his lifetime.

The “rim” of that circle, the outer most boundary of the geographic presence of Buddhism, might be expected to be a marginal area for study of the religion. Certainly, it has not previously been used to describe the development of the tradition with the same focus as that assigned to capital cities, mountain centers, pilgrimage sites and monasteries found within the interior of the “circle.” However, the geo-registration of the information about the spread of Buddhism from India to China, makes it evident that the “rim” has been the site for much of its social and economic history.⁶ Noting the presence of Buddhist artifacts and architecture along the rim has raised the question of how the “rim” could function as a conduit for travel, commerce, and cultural dissemination. Was it a real domain or simply an artifact of mapping a boundary of activity? If it was truly “something,” was the flow through it going in both directions? Another way to look at these queries is to ask, “Does the “rim” have a physical dimension that can be identified and studied?”. These challenges are perhaps more easily answered for the boundaries of Buddhist expansion within Inner Asia. It is not too difficult to map archeological sites through sparsely populated areas. These are now ruins of ancient cities and monasteries that were once thriving. Having a map of such sites very easily shows us where they are located and beyond which we find no indications

⁵ Donald Lopez Jr, "Dunhuang: The Discovery of the Pilgrim's Account." In *Hyecho's Journey*, 45-58. Gives the story of how the diary was found by Pelliot.

⁶ The exploration of such geo-registration has come with the Electronic Cultural Atlas Initiative. See Michael Buckland and Lewis Lancaster. "Combining time, place, and topic: The Electronic Cultural Atlas Initiative" and Lewis R. Lancaster, and Ruth Mostern. "A View from Cyberspace: The Silk Road Atlas of the Electronic Cultural Atlas Initiative."

of Buddhist presence. These centers of activity were not isolated entities, they were connected to one another through caravan trails used by merchants. In some cases, the old roads are still visible, and contemporary travel through Inner Asia often follows the centuries-old routes that help us delineate the “rim.” The lack of any sites beyond the “rim” is strong evidence that a very different cultural sphere existed and, in some cases, interacted with Buddhist communities. The dynamic of this flow around the “rim,” going in both directions, has yet to be fully explored. The most neglected aspect of the “Great Circle” is the maritime portion from India through Southeast Asia to the Western Pacific coastlines of East Asia.⁷ What is apparent is that the “rim” of the “Great Circle”, whether it was a trail through the desert or ports along the coastline, is crucial to our understanding of the spread of Buddhism. An important and surprisingly sizable part of the Buddhist tradition functioned in the narrow lines that marked this outer boundary of the Buddhist area. While the interior of the “Great Circle” was home to important events and institutions, the flow along the “rim” cannot be ignored in any history of Buddhism.

The “Great Circle” serves as one way to give context to data. Buddhist events over time constitute an immense amount of information. The studies of it come to us in focused research limited to specific areas and topics. These studies, with good reason, do not attempt to explain the whole of the tradition. Use of the “Great Circle” is not an explanation or interpretation of all events, it is just a way of capturing a snapshot of history, an image that is made relevant through geo-registration combined with temporal designation. It also allows us to determine if there is some discernable structure in the mapping such as “rim” and “core”. Another

⁷ The work of Professor Tansen Sen is ground breaking in terms of giving substance to the study of Maritime Buddhism. See his works: Tansen Sen, "Buddhism and the Maritime crossings." In *Early Global Interconnectivity across the Indian Ocean World*, and "The spread of Buddhism to China: a Re-examination of the Buddhist Interactions Between Ancient India and China."

way of looking at the “Great Circle” digital map is with layers of other types of data laid down on it. These, shown through digital display, can provide important aspects in a form that is rapidly comprehended by the viewer. For example, when the “map” is covered with colors representing altitude, we see immediately that the “Great Circle” had physical barriers stretched across it.⁸ These are: the Himalaya mountain ranges, the high-altitude plateau covering much of western China, and the large rivers that drain from these heights. This helps us to visualize one aspect of the “rim” as a major conduit of cultural features spreading from India to the eastern shores of the landmass avoiding the geological barriers that characterize the inner “core”. Seeing the barriers that were avoided by land and sea routes, allows us to understand the value and function of the “rim”.

In Buddhist Studies, the “rim” of caravan routes covering the segment through Inner Asia, has received the most attention. This portion of the mapping, named “The Silk Road” has dominated the literature describing the move of Buddhism from the Indian sub-continent to China and East Asia. The viewpoint expressed in such literary accounts, does not see the “Silk Road” as a segment of a very long “rim”. It is described as a “road” going from one point (Indian cultural sphere) to another (Changan, China) or using the image to describe routes that led all the way to the Mediterranean. There has been no attempt to see the “road” that has its terminus in Xian as part of a larger context that includes the whole geography of Buddhism including the maritime regions. A major reason for this focus on the caravan routes has been due to the magnitude of

⁸Crossing over the barriers was complicated, as we see in the following: Tina Harris. "Trading places: New economic geographies across Himalayan borderlands." Shanker Thapa, "Indian Savants, Historical Silk Road and Exodus of Buddhism to China." Robert Boschi, and Valerio Lucarini. "Water pathways for the Hindu-Kush-Himalaya and an analysis of three flood events." The caravan routes were not free of influence from the monsoon weather patterns, especially on the southern slopes of the Himalayas were heavy rain fall occurred. Valerie Hansen, "The Impact of the Silk Road trade on a local community: The Turfan Oasis, 500-800."

archaeological discoveries that are found along them.⁹ There is much to be learned from ancient ruins that dot the way and a large number of sites are still waiting to be excavated by archaeologists. The appeal of the inner Asia “rim” is related to the exciting travel experiences it can offer. This segment of the “rim”, is spectacular, taking one over high snow-covered mountains, contrasted with long stretches of one of the earth’s driest and hottest desert landscapes, fording rushing rivers, and often offering a variety of vast vistas. The ancient ruins provide resource data for research on land-based sites of the “rim” in ways that are not often possible for the portion that borders the sea. Ships can have sailed centuries ago from one port to another, and nothing is left in their wake for us to study. It is only in the scattered wrecks on the ocean floor or archeological sites at the harbours that artifacts are to be found. From the recovered material of the seabed, such as pottery or metal objects, we at least have something that is tied back to the past, and from these items, we glimpse a way of life that has long ago disappeared. New technology for remote sensing is uncovering a larger number of heretofore unknown sites, some on land and others deep under water.¹⁰ While there is a growing interest in the sunken ships, they lack some of the appeals of archaeological sites on land because they are not easily accessed.

A major challenge is the question of how we can make adequate study of the “rim” that is thousands of miles in length with complicated social and cultural activities taking place over centuries of time. For example, during the construction of the Maritime Atlas of Buddhism, a study focused on the seaports, there were a number of issues that had to be

⁹ The literature on archaeology for the region is extensive. A few examples: Jin Li, Hailing Zheng, Yujie He, Boyi Chen, Linshuai Liu, Yi Ouyang, Chengyu Zhu et al., "UltraSensitive Electrochemical Immunosensor Reveals the Existence of Silk Products on the Maritime Silk Road." Fuxi Gan, *Ancient glass research along the Silk Road*. Hang Lin, "Global trade and cross-cultural exchanges along the Silk Road: Cities and Lives Reconstructed Through Archaeological Findings." Hou Can, "Environmental Change in the Tarim Oases as Seen Through Archeological Discoveries."

addressed. With the help of the Archaeological Survey of India field work teams and Atlas of Maritime Buddhism staff, data was collected by mapping all the known Buddhist archaeological localities in Tamil Nadu and Kerala states of South India.¹⁰ Using GPS tools to accurately note the location of these sites, the teams collected information that clearly demonstrated the clustering of Buddhist artifacts along the coast. In other words, Buddhist communities and centers were well placed to participate in maritime activity. It is also true that some sites lined the banks of the rivers that lead from the hinterlands to seaports. These riverine sites were spread apart by some distance and their numbers are smaller and less dense than the ones found in the port regions. Leading away from the rivers, sites were also found along the land routes where animals and humans were needed to transport goods. The Buddhist artifacts and locations on the land routes are small in number and size compared to the port and riverine ones. It appears that the further one is from harbors and navigable rivers in India, the fewer the archaeological remains of Buddhism. The geo-registration of Buddhist material clearly indicated that in South India, Buddhism was a coastal based movement. It was the case that population density in general was focused along the coasts so it should not come as a surprise that Buddhist sites are found in these areas. There is now sufficient spatial data to say that a large number of major Buddhist places are located on the "Rim" of the "Great Circle," especially where it is defined by the seashore. We find such important centers as: Nagarjuna-konda, Amaravati, Palembang at the seaside alongside those based on a riverine pattern connecting to the sea such as Bagan, Ayutthaya, Angkor Wat, and Guangzhou. This information encouraged me to continue with the construction of the Atlas of Maritime Buddhism.

¹⁰ The support for the data collection in South India came from Dr. D. Dayalan of the Archaeology Survey of India. His help was especially helpful since he actively participated in many of the excavations. He published his view of the material in: "The Role of Archaeology in the Study of Maritime Buddhism in India." *The Maritime Silk Road and Seaport Cities*.

From the amount of data collected by our teams in South India, it was evident that tracing the information for the thousands of miles of the whole of the “rim” was going to be the work of generations of researchers. Even the task of starting the study required careful consideration that included planning the methodology for such a huge endeavor. My questions were: First, what data is available for this study? Second, what methodology should be followed to handle the type and distribution of such data? And Third does the data relating to seaports have relevance and connection to that of the land routes in Inner Asia? Because the “rim”, covers a variety of geographic and cultural spheres, how can it profitably studied so that the resulting huge data sets can be made available in a usable format?

The first step of a methodology was to consider each point on the map marking Buddhist presence as a “node”. In the initial work in South India, when the “nodes” marking all known archaeological evidence of Buddhism were displayed as points on a map, we had the image of the density distribution of these identified spots. Quantitative analysis was to identify the density of the “nodes” in terms of location related to seaports, river embankments, or roads. This permits us to make comparisons with the caravan trails, the “rim” outlined by the routes that wound through Inner Asia, especially in the Tarim basin leading to the heartland of the Han dynasty. This caravan part of the “rim” was also marked by “nodes” that were small urban developments and monastic institutions established at convenient intervals. The “nodes” along much of this arc of the “rim” are now the ruins visible to those who travel the modern roads and railways. In contrast to the Indus River trails that branched out and offered alternative routes and a wider “rim”.¹¹ The “rim” beyond the Indus was often very narrow. In some places, it was merely a series of footpaths that the caravans followed. There were no significant populations for long

¹¹ J. Neelis. "Capillary Routes Of The Upper Indus." In *Early Buddhist Transmission and Trade Network*. Qiang Shu, Wei Zhong, and Cai Li. "Distribution feature of ancient ruins in south edge of Tarim Basin and relationship with environmental changes and human activities."

distances on either side of the trails, save at the “nodes,” which were essentially service centers for the caravans. These urban developments were not dependent on local trade alone because it would not have been sufficient to provide the incentives for such a massive system that stretched for hundreds of miles. Lines of trade and communication in Central Asia, which marked the demarcation boundaries of Buddhism, were less dependent on local support and activity along the way than they were on the driving forces that arose along the Western seaports of India and ended at the Han capital of Changan. International trade helped and, in some cases, initiated and sustained this long thin line, as it snaked through the mountains and basins of Inner Asia. Being dependent on distant markets, the “rim” of Central Asia was susceptible to the rise and fall of such mercantile activity. Without a local support base to be a back-up, commerce for this region was fragile and subject to decline when the markets of the larger world shifted focus and methods. The “towns” that grew up along the “rim” of the “Great Circle” in Inner Asia were, therefore, often merely interim support bases for the relay of trade and goods between India and China. Without that active movement of people and goods, there was no support for many of them. In Canada, and the U.S. where large areas of sparse population are crossed by modern highways and railroads, “nodes” of fuel, food, and rest stops thrive on the custom of the travelers. The travelers do not make the journey for the sole purpose of stopping at these “nodes” nor were the “nodes” constructed to serve the small populations living in the local area. We can only understand such developments as part of a larger system of travel and communication that has purposes not defined by any “node” in a specific location. Where such systems exist, changes can be dramatic, as along the “rim” in Central Asia. We witness the result of changes by traveling along this route today and passing one abandoned city after another. It is similar to what happened with Highway 66 that was once a major route between Los Angeles and

Chicago.¹² When the interstate freeway system was developed, it meant that commercial transport and travel moved away from the old highway. Today, Highway 66 no longer has a strategic place in the nation's economy, and it has few remnants of the glory days. In some places, it has become a nostalgic tourist attraction to visitors, some remember when they once used the route before the construction of the Interstate highways. While the ruins along the "rim" are often explained in a number of ways, including ecological disasters of water shortage and the impact of "invasion" of Islamic merchants and culture into the region, less attention has been given to the impact of economic basis for the rise and fall of trade route populations. A few cities that survived and functioned around the Taklamakan basin had sufficient population and an agricultural production area to remain viable over time. However, even these cities, such as Kashgar, while not abandoned, are now considered to be isolated from major commercial activities. The urban centers that exist today along the "rim" in Inner Asia are often smaller than their historic footprints in the ancient past.

When we turn from the caravan routes to the "rim" of the "Great Circle" of Buddhism that ran along the thousands of miles of coastline from the Western part of India through Southeast Asia and the Chinese coast, the story for this system is also determined by trade and communication links. Even seaports that once flourished could be abandoned as patterns of trade shifted. We see this, for example, at the former seaport of Oc Eo in the Mekong Delta of Vietnam.¹³ When Chinese envoys visited the city in the 4th century, they described a vibrant international trading center with houses built on stilts to survive the annual flooding of the river. It was of sufficient importance to attract the Chinese visitors and to have their report of it preserved. Today, Oc Eo is a beautiful 1000-acre rice

¹² Donatella Davanzo, "Tangibility and Symbolism along Historic Highway 66 in Albuquerque."

¹³ Pierre-Yves Manguin, "The archaeology of Funan in the Mekong River Delta: the Oc Eo culture of Vietnam."

field that can only be imagined in its former glory. The demise of the city was in no small way brought about by technology development and changing patterns of trade between China and the Srivijaya capital of Palembang in Sumatra. When there were larger and stronger vessels that could make longer open sea journeys, such as the one between Sumatra and Guangzhou, they did not need to make intermediate stops in places such as Oc Eo. Once the flow of trade took a new route, even a thriving city port in a rice growing region within a large river delta, lost a reason to exist as a major “node”. It could not sustain its importance without being part of a functioning system of international trade and it was eventually abandoned. We find similar ports in India that were once much more active than today and others that are now identified only through archaeological excavations.¹⁴ In some cases, silting and shifts in the coastline accounted for abandonment. However, it appears that sea routes are as susceptible as caravan roads to the waxing and waning of trade patterns.

Our study of abandoned sites is necessarily complex and dependent on interpretation of the data. For example, archaeology can show us the patterns by which infrastructure of cities deteriorated over time. This data raises the essential question of why the occupants no longer maintained the necessary roads, canals, dams, wells and agriculture to meet the basic needs for occupation of a site. The history of this decline can often be clearly traced in the layers of archaeological excavations. The reasons for this abandonment are less easily seen in these physical artefacts. The determination of why Buddhism flourished at certain times on particular segments of the “Great Circle” and at other times declined and even disappeared, cannot be separated from the organized integrated whole of the elements of life along the trade routes. As we study the “Great

¹⁴Rajan Gurukkal and Dick Whittaker. "In search of Muziris." Anitta G. Kunnappilly, "The Trade of the Port of Muziris in Ancient Times." A. Gaur, Sundaresh, and K. H. Vora. "Ancient Shorelines of Gujarat, India, During the Indus Civilization (Late Mid-Holocene): A Study Based on Archaeological Evidences."

Circle” of Buddhism and look at the series of abandonments along it, one knows that great differences exist between Inner Asia and seacoasts of the Mekong Delta. And yet, these far-flung distances have commonalities, they are linked by the fact that Buddhism once passed along these sites and was a dominant factor in their histories. Whether by sea or by land, the rise and decline of the religion went hand in hand with the states of physical sites that grew up along the “rim” of the “Great Circle.” After all, religious practice is a human endeavor and can only exist where there is a population. If places of habitation are abandoned as commercial centers, so too, religion, for that place, faces the same fate. At one level, what we witness in every segment of the “Great Circle” is a system of activity that was in some parts economic and in others cultural. The demise of Buddhism, in areas where there was a major shift of population and commercial enterprise, can hardly be attributed to some internal weakness of the religious tradition. Each segment of the “rim” of the “Great Circle” contained an aggregation of functions that fit together so as to form a distinctive and coherent whole, a structure of a great variety of parts that at certain times were related and unified. When changes occur, even the most complex system may be powerless to resist the results of these shifts.¹⁵ The dramatic ruins of abandoned cities along the “rim” of the “Great Circle” give certainty of the degree to which changes can occur in social formations. Such considerations, in one way, challenge the ecological and invasion explanations for the abandoned cities of Central Asia, or at least suggest that these explanations are not the only possibilities by which to judge events in that region.

¹⁵ Morris Rossabi, "The “Decline” of the Central Asian Caravan Trade." In *From Yuan to Modern China and Mongolia*, makes a different point that local social and political events were equal to the influence of sea trade. However, without the trade, social and political issues would never have existed in the form that we see.

Palembang was one of the ports that is often mentioned in written accounts, such as those describing travel and trade.¹⁶ It was held to be the capital of the Srivijaya Kingdom and a large entrepot for international goods being exchanged. Such a city must have had a sizable population and ways to provide food and provisions for its people. In addition, many traders are reported who stopped there and had to stay for some months as they waited for the favourable winds to continue their journey. From the texts and from knowledge of the extent of commercial trade, assumptions were made about the size and nature of this port. However, for some decades in the 20th century there was a problem with Palembang. Archaeologists began to make excavations and could not find any indications of occupation or presence of such a metropolis as early as the 6th century. Coedes, the French researcher, was adamant in his belief that it must have been a great city, even if archaeology was unable to verify its exact location. In the face of this disappointing record for the presence of a large urban development, it is difficult to handle the narrative of maritime Buddhism which has made the city a central focus of the tradition for the sea lanes and the travel of monks and nuns to China. But if there are no archaeological remains from the centuries mentioned in the texts, how are we to understand the nature of the place? Scholars who faced the reality of this archaeological issue tried to find answers. Was the reference to Palembang actually to Kedah on the Malay Peninsula or to a settlement along the shoreline of Thailand? Kedah presented its own problems since the temples found there were small and isolated in the forests. They did not seem to fit the description of a great city where Buddhist monks from distant lands came to study. Another solution was to consider it a “water city” that was settled at the river’s edge with elevated housing to handle the monsoon floods. It was given the name of “City of a Thousand

¹⁶ Pierre-Yves Manguin, “Palembang and Sriwijaya: An Early Malay Harbour-City Rediscovered.” Another interesting source is the research of Widya Fransiska Febriati Anwar. “Identification of the Morphological Characteristic of Palembang Riverside Settlement.”

Rivers.”¹⁷ The “missing” city had perhaps rotted away into the delta and nothing remains from its architecture. There was one other factor that hid the city from view. Such a large place would have required massive rice cultivation but no such features of fields or irrigation were to be found for the period under consideration. “Where did Palembang get its food, in particular starch, if not from rice?” It was a great relief when further archaeological explorations in the 1980s and 1990s finally found extensive examples of habitation in the wetlands downstream from the present city of Palembang. We no longer have to resort to convoluted explanations for a “missing” city. At long last there was definitive proof that an ancient urban area of great size had existed along the Musi River delta. Long term occupation was in place by the 7th century and remained active until the 11th century when Jambi came into dominance. As for the “missing” rice fields needed for feeding the city, the solution seems to be that the basic form of starch was not rice but sago palm.¹⁸ The trunk of this tree is edible and full of starch. Most sources of starch are based on grains and thus rice fields were considered essential for a large urban settlement. When processed, sago flour made from the fibers in the trunk of these trees provides needed carbohydrates. The plantations or wild growth of the palms did not require significant movement of soil. The trees grew in wetlands, just like those surrounding Palembang settlements, and could tolerate salt content. We can now understand that the sailors who stopped in Palembang and stocked up on food did so with sago flour and biscuits. Sago flour when baked can be kept for many weeks if it is dampened. Similar tohardtack, the stored bread of European sailors, sago biscuits could be taken by sailors and eaten for much of a long voyage. Unlikehardtack, sago biscuits are kept moist and allowed to ferment. The only drawback

¹⁷ Muhammad Fathoni, Pradono Pradono, Ibnu Syabri, and Y. R. Shanty. "Analysis to assess potential rivers for cargo transport in Indonesia."

¹⁸ Charles Pearce, EM, and F. M. Pearce. "The Horticultural Context." Gives a good description of the use of Sago flour.

was the smell of the fermenting food as the weeks went by. People in ports would remark that sailors were eating the most foul-smelling food and they must have been referring to the fermented sago. Eventually rice became the starch of preference and sago use declined. Today, few sago palms are left around Palembang and there was little to draw attention to how important they once were for the city and the people who passed through it. The questions raised by the early archaeological record had made researchers suspicious of the Chinese texts filled with references to Palembang from the 6th century. But it now seems clear that a large city did exist in ancient times and served as a base for mariners who were plying the seas between India and China. The written record has been vindicated.

Palembang and Oc Eo were once major ports of call for ships that were at the heart of maritime trade from the Red Sea to the Chinese coast. As described above, they disappeared and could only be “found” through archaeological excavations. The disappearance of Palembang and Oc Eo alerts us to the fact that much of Buddhist architecture was wooden. Over the centuries these wood structures and art objects have for the most part disintegrated. We are left with only stone that survives to tell us about Buddhism, whether in India or in the trading ports that lined the way to China. The stone remains have led to a description of the architecture of the past that may be misleading.

At Oc Eo, we have a surprising discovery that provides a new view of wooden Buddhist artifacts. A number of larger-than-life Buddha images carved from local wood were found buried in the mud along ancient canals.¹⁹ Because of anaerobic process of the mud, these wooden images have survived in remarkably good condition. They are similar to the

¹⁹Namhee Noh, "A Preliminary Research on Sixth-century Wooden Buddha Images from Funan." The discovery account is found in: Than Dong Thap. "Excavations at Minh Su Mound, Go Thap site, Dong Thap Province, South Vietnam, 2000–2003."

Amaravati style found on the East coast of India. Modern technology for dating wood indicates that these images can, with high probability, be dated to 1500 years ago. Having sophisticated and professionally carved images of the Buddha made from large trees growing in the Mekong Delta, indicates that there was a significant Buddhist community that included artisans and the resources to pay them. What is of great interest is that large and beautiful Buddha images did exist in the distant past carved from wood rather than cast as metal or carved from stone. We can only surmise that if wood was a recognized medium for images, there must be many that have vanished due to decay. It is miraculous that such objects could lie in mud for many centuries and be preserved. The hundreds of caves cut out of stone in the western mountains of India that were made in imitation of wood structures for which we have no examples are another indication of how much Buddhist art and architecture done with wood may have perished without a trace.

The “rim” was also important because it was a place where cultural interchange often took place. Since the “rim” has been mapped by the outer limits of the presence of Buddhist activity and artifacts, it can also be considered the “rim” of the neighboring non-Buddhist cultural features. When the “rim” is at the sea, we might say that there is no cultural sphere in the vastness of the waters that are found touching the land. However, the sea was not empty, it contained sailing ships and maritime agents who interacted with the shore and this interaction included Buddhism. On the land “rim”, the interconnected aspects of sites where Buddhism existed but shared the space with other religions, creates a less than perfect separation. This segment of the “rim” was often a cosmopolitan mixture and in some situations and periods of time, Buddhism was not the dominant religion.²⁰ Brahmanic and local religious traditions were

²⁰ Maurizio Taddei, “Non-Buddhist Deities in Gandharan Art: Some New Evidence.” Julia Shaw, “Buddhist landscapes in central India: Sanchi Hill and archaeologies of religious and social change, c. third century BC to fifth century AD.” See Andre Aciri, for a

as much a part of the “rim” as Buddhism was and later Islam was a crucial component. It is at this point that the approach of using points on a map (dots) linked to data, is not sufficient to deal with the dynamics of the “rim.” This leads us to look beyond those “dots” on a map that identify sites or “nodes” along a line that stretches for hundreds of miles. In order to understand the nature of those “nodes” we need to look at the lines (edges) which connect the “nodes”. “Edge” research is based on exploring the type of activity that existed between two points.²¹ We can produce Edge Graphs that provide information about such things as: a listing of items that were carried to and from one “node” to another; dates or types of events that involved more than just a single “node,” demographic data that indicated the multiplicity of peoples who occupied the region. Our study of the “Great Circle” is in many ways the description of the cultural activities that moved along a massive series of “edges.” It is from such an approach that we can begin to understand the dynamics of the system that made up the “rim” of Buddhist mapping. “Edges” differ from one region to another since they mark specific actions and items of exchange. In the caravan portion of the “rim,” the thin long line of trails often expanded by the addition of more “nodes” or inhabited places along the route. The “edge” data between these nodes show a varying degree of differences. Through the Taklamakan trails, patterning could be similar for a series of connected “edges” because the main activity was limited to the transport of items through a number of “nodes” that were not themselves generating additional material. In other segments of the “rim,” “edges” were varied by local patterns and products. For example, we find the shipment of horses from Inner Asia down the Ganges River to the Bay of Bengal and from there through the seaports to China, passing through the

discussion of the mixtures found on the maritime route. "Introduction: Esoteric Buddhist Networks along the Maritime Silk Routes, 7th–13th Century ad". Also note his suggestions in "Revisiting Siva-Buddha: Once Again the Relationship between Saivism and Buddhism in Java and Bali."

²¹ Béla Bollobás, Béla, and Paul Erdős. "On the Structure of Edge Graphs.

Mekong Delta.²² The “horse shipment” “edges” only passed through the Ganges River to the Bay of Bengal; they did not, for example, extend to the ports of Western India. In modern parlance, the metadata attributed to each “edge” allows us to identify a wide range of different types based on the information relating to the nature of connections between the dots on the map. Another example of how “edges” show us so much more than “points” on a map, is the life of the famous Buddhist teacher Atisha.²³ When his life is mapped by using every description of travel from one point to another that is found in his biographies, we can display these “edges” on our map. It shows that he grew up in the Bay of Bengal and moved about that locale early in life trying to find a spiritual teacher (these travel reports form a number of “edges”). His recorded history tells us that he finally left his home and sailed all the way to Palembang in Sumatra, where he studied for twelve years (an “edge” that differs significantly from his shorter Bay of Bengal travels). After that, the “edges” of his travel show: his return itinerary from Sumatra to Sri Lanka to the Bay of Bengal to Kathmandu to western Tibet, to eastern Tibet (each leg of his journey can now be constituted as an “edge”). His travel “edges” give us an example of the complex pattern of his life as he studied at a seaport on the “rim” of the “Great Circle” and carried his message deep into the mountains and interior monasteries of the continent. It is an example of how we can have images of the contacts around the “rim” and begin to trace the ways in which those contacts extended into the interior regions.

As our “edges” multiply with additional data being added, the number of lines radiating from one “point” on the map may number in the hundreds. Future challenges will be finding the most efficient and accurate ways of doing analysis on the overwhelming numbers of connections. While it may seem far beyond our ability to grasp the meaning of

²² Suchandra Ghosh, "The Route of Horse Trade Early in India (Up to C. 500 AD)." Also consult Nazer Aziz Anjum, "Horse trade in medieval South India."

²³ Hubert Decler, "Atisha's Arrival in Nepal." Pierre-Yves Manguin. "Srivijaya: Trade and Connectivity in the Pre-modern Malay World." Swaran Ludher, *They Came to Malaya*.

this dizzying array of lines, we should turn to the algorithms of computer analysis to give us the assistance to see trends over time and major aspects of the relationship of one point to another.²⁴ As difficult as this may be, it is the case that in reality these numerous connections did exist and without insight into the nature of them, we will not have fathomed the temporal and physical history of places. In the contemporary study of “edges,” we can map every voyage of ships from China to the Mediterranean or North America. When we look at these thousands of lines representing the current individual sailings, it is possible to have visual proof that along the “rim” of the “Great Circle” of Buddhism, the major modern sea routes still follow the tracks of the ancient ones.²⁵ While there are thousands of lines marking every ship passage, the cluster of the “edges” shows us routes that were the major ones. It is these major routes that often maintain a pattern similar to the ancient ones. One conclusion to take from this study of the ancient routes compared to contemporary ones, is that the history of the “rim” is important even as we construct and interpret our present age and activities. Therefore, the study of the “rim” of the “Great Circle” of Buddhism becomes an essential part of our research into the history and development of the religion over centuries of time. At the same time, such study of the maritime activities of the “Great Circle” of Buddhism constitutes an important source for the history and understanding of contemporary links between nations. One major task before us is to determine how to analyze so much data and make it meaningful and realistic.

While Buddhist “nodes” and “edges” were initially fanning out from the Ganges Basin to the whole of the sub-continent, the great challenge of establishing centers in distant locations across the sea constitutes

²⁴ Nick Archibald, Paul Gow, and Fabio Boschetti. "Multiscale edge analysis of potential field data."

²⁵ Xuejing Yang, Joyce MW Low, and Loon Ching Tang. "Analysis of intermodal freight from China to Indian Ocean: A Goal Programming Approach." David O'Sullivan, and David Unwin. Geographic information analysis.

a different era for Buddhist history. For example, reaching Sri Lanka required sailing off the shores of India. The spread of the Buddhist movement throughout the peninsula and across to nearby Sri Lanka was impressive. However, a far greater challenge awaited the tradition outside the cultural and linguistic domains of India. The "Great Circle" would carry Buddhist ideas and practices thousands of miles away from India. New homes for it were found along the coasts and rivers, wherever merchants needed to go. Commerce along the southern coasts of Eurasia grew rapidly during the time of the Roman and Han Empires.²⁶ Wealth was being accumulated at an unparalleled pace through the profitable exchange of spices, silk, cotton, metals, and a host of natural products and manufactured objects. As this new commercial expansion was taking place, Buddhists stood ready to move with the merchants on both land and sea routes. They had, after all, been prepared for this moment in history by their founder and the way in which he interacted with merchants. Their movement had arisen in the Ganges Basin with strong ties to the business community who carried on exchange between urban centers that could be several hundreds of miles apart. With international trade on a grand scale becoming a reality, goods, people, and technology flowed between the Mediterranean and East Asia passing through the Indian cultural and social sphere of influence. It is often the case that the Buddhist involvement with merchants is seen as a passive act of following in the train of the traders without having an impact on the way in which this trade developed. When we say that Buddhism was prepared to interact with the international merchants, it implies that the Buddhists also contributed to and helped expand and even encourage the commercial system.

We have no way of knowing how many Buddhist monastics and lay pilgrims used the sea for travel over the last two millennia. Presence of Buddhist artifacts uncovered along the shorelines of South, Southeast and East Asia indicates that thousands of individuals have been involved in

²⁶ Marco Galli, "Beyond frontiers: ancient Rome and the Eurasian trade networks."

these sites. The written records of names and activities of travelers is a relatively short list and this lack of information helps to account for the neglect of the study of maritime Buddhism. However, once we expand our search beyond the texts and include such things as archaeology, commercial records, mapping, inventories of artifacts, shipwrecks, study of art and architectural features, a picture emerges of the previously undocumented past. Using this type of data to infer the way in which Buddhism spread along the coasts is basically an “appeal to dynamics” similar to the methodology that is used by physics to explore “Big Bang” events and speculate on what preceded our expanding universe.²⁷ The spread of Buddhism, that is still a social and cultural feature of our time, is shown to be a massive expansion of cultural features and practices as the religion moved off the shores of South Asia. When we take all that we know of the practices and thought of Buddhism today, the enormous canonic collections recording events and development, along with archaeological artifacts and interpretations, our “appeal to dynamics” approach gives us some assurance that we can reconstruct part of the past.

The expansion of Buddhism in seaports outside of India can be tracked through the archeological record, first to Sri Lanka. Buddhism left the peninsula through an existing system of shipping with sailing ships. The ports that existed for this enterprise lined the coastline of India forming an interlocking system of local sailing circuits. It was along the route between these ports that travelers and trade moved on the Indian “Rim” of the “Great Circle of Buddhism.” Thus, the starting point for maritime Buddhism was on the “Rim” that arced around India itself.²⁸ When the monks began to go with traders across the seas, Buddhist monasteries and

²⁷ Forest R. Moulton, "An attempt to test the nebular hypothesis by an appeal to the laws of dynamics." Simon Saunders, Jonathan Barrett, Adrian Kent, and David Wallace, eds. *Many Worlds?*

²⁸ Himanshu Prabha Ray, "Early Maritime Contacts Between South and Southeast Asia."

communities along the coast were ready to join in the venture. In order to have the ability to move along the rim of the Great Circle, Buddhist monks and nuns had to rely on merchants. This was true for the land routes with their animal caravans, as well as the sailing circuits of maritime traders. The transmission of Buddhism was not just the migration of believers to new homes nor was it only the conversion of individuals in those locations. The tradition was a complex structure of: rituals based on a lunar calendar; yearly and seasonal festivals; training for a “priestly” group to administer and lead each community; a large and ever expanding corpus of texts that recorded an oral tradition that had been handed down over centuries and required periodic copying for preservation; art and architecture needed trained artisans to create and maintain religious structures and embellishments; rules of conduct for monastics as well as laity required regular chanting as a reminder of how to act in relationship to one’s personal life as well as living with others; and even dress code for members was a crucial identification of status and position. It was only when the full structure of Buddhism had been established that the far-flung groups could maintain a self-generating ability to survive without dependence on leadership coming from India. The cost of transferring such an intricate culture was great but the merchants on the “Rim” of the “Great Circle” had the means to give this level of support. The spread of Buddhism by land and ocean was one of the great transmissions of culture in the history of mankind. The expansive trade networks and wealth being created through these commercial exchanges was an essential part of the developments contained within the “Great Circle” of Buddhism.

The emergence of groups of followers raises the question of how they were recruited, given the complex nature of having a fully functioning Buddhist organization. In many cases, the merchants were the first Buddhists to be found in the ports and urban centers of trade. Since numerous merchants had dual residences where months of each year were spent in both, it is probable that they had two families. Our example of this comes from the documentation of Islamic merchants in Indonesia and

Malaysia. Coming from the Western Asian regions, or from Gujarat in Northwest India, these traders arrived in Southeast Asian ports without families or wives. Today, DNA studies show that the genetic markers for Indonesian Islamic communities only show male ones from the West. The ancestors who came to trade, married local women, and established families. That is why no matrilineal DNA shows up for the merchant's homelands.²⁹ They had arrived as single men and did not attempt to transfer children and wives from either of their residences. A similar pattern must have been true for the early Buddhist traders. They would have established kinship ties to the families of local wives. Children of such arrangements would have constituted part of the Buddhist membership in the port. Once trained teachers were brought to provide regular patterns of practice, Buddhists did eventually break out of the ghetto of foreign traders to find converts among the general population. In Xi'an, the attempt to convert Han ethnic persons was difficult and it took several generations before they had any local followers who practiced some of the rituals much less being trained as monks or nuns. It was helpful that the Buddhists who were encouraging locals to join, were merchants who had resources and operated businesses. Some of the locals who began forms of Buddhist practice, must have found it profitable to share religious life with the wealthy foreigners. As the Buddhist communities survived over decades or even centuries, they could finally have proof of their permanence when they had trained monks who were fully a part of the local culture and spoke the language or dialects. It was a milestone in the spread of Buddhism, when these locally trained individuals began to make pilgrimage back to India in search of the homeland of the Buddha. Indians came to accept the fact that foreigners were arriving who identified

²⁹ Melanie Capredon, Alicia Sanchez-Mazas, E. Guitard, H. Razafindrazaka, J. Chiaroni, B. Champion, and J-M. Dugoujon. "The Arabo-Islamic Migrations in Madagascar: First Genetic Study of the GM system in Three Malagasy Populations" is the most complete study of merchant diffusion studied through DNA.

themselves as Buddhist and wished to see the historic sites of the Buddha's life. The acceptance of strangers from distant lands was possible for the Buddhists who reflected the acceptance of travel and trade that characterized even the life of Śākyamuni.

The complexity of Buddhist culture took time to make its way into the life of ports and hinterlands as far away as China and East Asia. Given this lens of observing Buddhism, we can revisit the travel of pilgrims from China to India. It is from these travelers that we have a few written records of what it was like to move along the "rim" of the "Great Circle". These stories remind us of how dynamic the two-way flow of trade and monastic travel was.

It is not until the 5th century CE that we have a record of a trained Chinese Buddhist monk arriving in India. Imagine the interest that such an individual would generate in India. A foreigner knew about Buddhist teachings, could read and speak in Indic language, and he was intent on visiting the important places of the life of the Buddha. He was proof of a Buddhist community existing far across the sea. The earliest such visitor to India for which we have a record was Faxian (337 CE–422 CE).³⁰ He was a monastic who had entered the order at the age of three. This gives a suggestion that initially the Chinese who became monks had been introduced to Buddhism as children, perhaps orphans. It was an important moment in history because it indicates that Chinese monks were able to address issues of doctrine and practice and set out to find answers without being totally dependent on Indian missionaries. Faxian's motivation for travel was to find the Vinaya texts that would allow Chinese monastics to live fully by the rules of conduct said to have been laid down by the Buddha. His travel alerts us to the important concerns of Buddhists in China as well as the maritime ports. By the early 5th century CE, monastic growth in China was significant. However, with rapid growth, Chinese monks had begun to raise the question about how East Asian monks and

³⁰Max Deeg, "Chinese Buddhist Travelers: Faxian, Xuanzang, and Yijing."

nuns were viewed from the perspective of rules of conduct, ordination requirements, and even dress. It was becoming obvious that there were distinct differences between missionary monks and local monastics. These questions, about how to act, what rules to follow, how to dress, and what rituals were necessary for Chinese monks and nuns, dominated the attention of the 5th century traveler. Faxian states that the conditions among the Chinese monastics varied to the point of chaotic ways of living. Missionary monks going to China had often been harsh judges of what they saw among those Chinese who were pioneering in a life apart from that of householders. Distressed by these problems, Faxian was determined to go directly to India and get a complete set of rules in order to establish a recognized and authentic monastic community in China.

His stay in India and Sri Lanka was productive. He found texts of interest and visited important monasteries. One of these was Abhayagiri³¹ in Sri Lanka which had strong ties to Mahayana at that time. It also had a large community of nuns.³² Here he came into contact with a practicing group of nuns who were fully ordained and living by the Vinaya. As a result of this contact with a sizable group of ordained women, among the texts that Faxian carried back to China were the rules of conduct for nuns. Ten nuns from Abhayagiri would within the next two decades follow Faxian on the maritime journey to Guangzhou. They hoped to make it possible for Chinese women to be fully ordained in a ritual performed by ten monks and ten nuns. This would be a “double” ordination that was considered to be essential for Chinese women to be considered as legitimate nuns.

Faxian’s information about making such a long trip indicated that he started the journey with the perception that India was toward the

³¹ Rangama Chandawimala, “Heterodox Buddhism: The School of Abhayagiri.”

³² Xing Guang, Maritime transmission of the monastic order of nuns to China. See “A Wider Study of Nuns” in Kathryn Ann Tsai, *Lives of the Nuns: Biographies of Chinese Buddhist Nuns from the Fourth to Sixth Centuries*.

West. Therefore, he set out to travel those roads that were used by animal caravans to relay goods between the West coast ports of India and the hinterland tracks along its rivers, across Inner Asia to Changan. However, when he learned more about the sea route he made the decision to return home by sailing rather than retracing his steps through Inner Asia. Sea travel was by no means an easy one. On his first voyage coming down the East coast of India from the Bay of Bengal, the ship had to rely on the winds of the Northeast Monsoon when the flow was toward the south (October–December). His journey onward from Sri Lanka would have depended on the Southwest Monsoon (July–September) moving toward the East and North.

His trip from Sri Lanka was beset by a cyclone and the crew of the ship threw cargo overboard to keep afloat. Faxian feared that they would jettison the copies of Buddhist texts that he had so carefully collected in Sri Lanka. He tells of even more tension with the crew during the crisis of the storm. They began to threaten to toss Faxian into the sea since they feared that he had brought bad luck with him. His fellow countryman warned the crew of the possible punishment if they did so, and they left him on board. The episode involved a crew that was not Buddhist, they were sailors from the Western regions of the Indian Ocean. But the troubles of winds and waves were not over for Faxian. After weeks of sailing across the Andaman Sea and into the South China Sea, the monsoon winds blew them northward along the coast of China. The ship missed the Pearl River entrance to Guangzhou and the crew lost all knowledge of their position. Navigation was still difficult: no way to determine longitude; the captains lacked accurate maps; and during storms the ships were at the mercy of the gale force winds. Finally, after more than seventy days, the ship was beginning to run out of water and food. Uncertain of their location, they landed to try to find someone who could tell them where they were. To their surprise, they were at the Shandong Peninsula, more than a thousand miles north of Guangzhou. Ironically, Faxian was now closer to the capital than he would have been had they made their original

landing at Guangzhou. It was no easy matter to travel the maritime “rim” of the “Great Circle”.

The matter of ordination of nuns was not solved by Faxian and his texts. It remained a matter of concern when an important monk, Gunavarman (367 CE–431 CE), arrived in Guangzhou.³³ He was from Kashmir, said to be a member of the royal household there. Because of its location, one would think that travel from Kashmir to the Han area of East Asia would be solely by caravan. However, along with monks such as Gunavarman, Kashmiris often followed the caravan routes south to the coasts of India and from there set sail for Sri Lanka, Southeast Asia and China. Once Gunavarman had arrived from Kashmir in Sri Lanka, the next major ports were either in Sumatra or Java. In his case, the destination was Java. An information network existed along with the system of sailing circuits and trade. News and even correspondence was carried by fellow merchants who could be contacted at ports included in their circuits of travel. By this messaging system, Gunavarman’s fame became known in Nanjing. In 424 C.E. he was summoned by Emperor Wen to come and teach. He set sail from Java on a ship owned by the merchant Nanti.³⁴ The story of his going to China is not completely clear and there are conflicting accounts. In one scenario, before the message from the Emperor arrived in Java, he had already set sail for Champa present day Vietnam. In an account that was echoed in many of the sea stories, a storm arose. Unable to withstand the powerful winds, his ship was carried to the Chinese coast. However, he made the journey, we know that Gunavarman arrived in China. On his arrival the thorny question of nun’s ordination was one of the subjects that he addressed. He found that the situation for a full ordination of nuns was not possible because only eight of the ten Sri Lankan nuns were still living. He asked Nanti to make a new trip from Guangzhou to Sri Lanka to get at

³³ Valentina Stache-Rosen, "Gunavarman (367-431).

³⁴ Jonathan Silk. "Tidings from the South Chinese Court Buddhism and Overseas Relations in the Fifth Century CE."

least two more nuns from Abhayagiri Monastery. The trip that Nanti undertook could not be completed in one year of monsoon winds, it required two complete seasons before three more nuns finally arrived in Guangzhou and from there went to the capital. By that time Gunavarman had passed away and the final ceremony for the full double ordination of nuns was completed under the aegis of another Indian monk, Sanghavarman. Such accounts provide evidence of the importance of the southern “rim” that included Guangzhou. The northern caravan “rim” was no longer dominant, the center of travel and interchange had shifted.

From the perspective of population, the seaport routes connected a much larger group of people than was in the case of caravan routes in the mountains and Tarim Basin. While the density and size of cities in both ends of the caravan route were significant, the areas through which travel moved overland was sparsely populated and the flow of outside traders and those who served them tended to dominate life. The activity on the caravan routes was sometimes sparse. In Turfan in 600 C.E. only thirty-seven transactions were recorded for the year and the largest quantity of goods for any one transaction was 800 Chinese units of weight, about a ton. There was a huge caravan gathered in the middle of the 6th century when 240 merchants banded together with 600 camels³⁵ to carry a consignment of 10,000 bolts of silk.³⁶ It was a time of uncertainty and so the merchants waited to get enough numbers to protect the shipment from attacks along the way. This size of caravan was rare and was probably organized at the behest of the court. We find nothing comparable in size from other accounts for those centuries. The maritime route in contrast to the Inner Asia one, was operated between ports that were occupied with both the merchants as well as sizable local populations who

³⁵ Raoul McLaughlin, *The Roman Empire and the Silk Routes: The Ancient World Economy & the Empires of Parthia, Central Asia & Han China* describes the formation of this large caravan.

³⁶ Raoul John McLaughlin, "Indian Ocean Commerce in Context: The Economic and Revenue Significance of Eastern Trade in the Ancient World" reports that average ships in the Indian Ocean carried about 180-200 tons.

maintained social and cultural patterns over generations. Cargos on the ships were significantly larger than even the caravan of 600 camels.

The study of Maritime Buddhism is still limited. After gathering the geo-registration of all the Buddhist archeological remains in Tamal Nadu and Kerala, the next question was what new data could be collected to advance our understanding of the sea route. I was joined in this discussion by Professors Sarah Kenderdine and Jeffrey Shaw.³⁷ They had just completed a spectacular 3-D Virtual Reality display for one of the Buddhist caves at Dunhuang.³⁸ We decided that since Maritime Buddhist studies was still missing from most histories, there was a need for a public domain exhibit that would include images from the arc of the “rim” starting in India and moving to Guangzhou. Professor Kenderdine led the daunting project of making high density films and videos to document sites and sculptures with the highest possible fidelity. The equipment and process used involved gigapixel spherical photography, film-based and digital stereoscopic 360-degree panoramas, photogrammetry that captured 3D models of objects and surround-sound recordings. These images would then be processed and made into a 3-D Virtual reality exhibit for museums. The film crews spent over three months in the field moving every day from site to site. As a result of their effort under the guidance of Professor Kenderdine, we now have possibly the largest image and video film collection for this region of the “rim”. In the next step, Professor Shaw took these films and videos along with written content from my research and created a major museum exhibit that has premiered in Taiwan and Hong Kong. It has been installed at the Buddha Museum in Kaohsiung and

³⁷ The work of these two scholars is justly famous in the museum world. Examples are: Sarah Kenderdine, "Experimental Museology: Immersive Visualisation and Cultural (big) Data." and Jeffrey Shaw, Theo Botschuiver, Larry Abel, Joseph Chan, Daniel Eckhoff, and John Choy. "Virtual Sculptures."

³⁸ Sarah Kenderdine, "'Pure Land': Inhabiting the Mogao Caves at Dunhuang."

at City University of Hong Kong. We set out to make the information available to scholars and the general public. The exhibit at the Buddha Museum has achieved the goal we set for ourselves. Thousands of people have already viewed the exhibit, up to 10,000 a day. Among those visiting the site are museum directors, university and high school student groups, Buddhist monastics, and others with an interest in the content.³⁹

There is still much to be done to have a more complete understanding of what has taken place in the “Great Circle” and along its “rim”. Future generations of scholars, over the years, will be the ones to review our methodologies and develop their own.

³⁹There are numerous media reports on the exhibits in Hong Kong and Taiwan. Here are links to the descriptions. (<https://www.fgsbmc.org.tw/maritime/en-bmsr.html>) for Buddha Museum in Taiwan and (<https://en.thevalue.com/articles/cityu-gallery-presents-maritime-silk-road-story>) for City University of Hong Kong.

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