

Spatial Media of Secularity

Buddhist Cosmo-Geographic Space in the 19th Century

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What could be called “scientific media of space” played an important role in transformations of the cosmo-geographical imagination in 19th-century Theravada-Buddhist Modernism.¹ Christian missionaries used these instruments and devices – maps, globes, compasses, and astronomical models – in their debates with Buddhists all over the Theravada world and deemed them essential to their challenge to traditional notions of space. This mobilisation of science in attempts at conversion to Christianity, though often unsuccessful, hints at the ways in which ‘religious’ actors contributed to conceptual distinctions in regard to “Western science”² and paved the way for later differentiations and the emergence of a religio-secular episteme.³ In Siam, for example, the missionaries’ expertise was highly welcomed by most of the Buddhist elite, and King Rama IV became quickly convinced that these new “geographical knowledges [sic]” had to be understood as “true facts of the world”.⁴ This view that Western geographical learning was no longer to be challenged by indigenous knowledge traditions demonstrates how a new understanding of geographical and astronomic space had, at least among the elite, replaced traditional concepts. In exploring the intimate links between spatial notions and

Christian mission and scientific media of space

“True facts” of modern geography and astronomy

- 1 What follows is an abbreviated version of the detailed argument presented in Adrian Hermann, “‘True facts of the world’: Media of Scientific Space and the Transformations of Cosmo-Geography in Nineteenth-Century Buddhist-Christian Encounters,” in *Asian Religions, Technology and Science*, ed. István Keul (Routledge: London, 2018).
- 2 Cf. Marwa Elshakry, “When Science Became Western: Historiographical Reflections,” *Isis* 101, no. 1 (2010): 102–03.
- 3 Cf. Markus Dreßler, “Modes of Religionization: A Constructivist Approach to Secularity,” Working Paper Series of the HCAS “Multiple Secularities – Beyond the West, Beyond Modernities” 7 (Leipzig, 2019).
- 4 Letter (1855), quoted from John Bowring, *The Kingdom and People of Siam. A Narrative of the Mission to that Country in 1855* (London: John W. Parker and Son, 1857), 445; Cf. Hermann, “‘True facts of the world” 11.

the media through which they are conveyed, Bruno Latour's concept of the "immutable mobile" provides insights into the material ways in which the "true facts" of modern geography and astronomy travelled to the Theravada world.

Scientific Media of Space

Spatiality and mediality

The term "media of space" highlights the idea that spatiality and mediality are intimately linked,⁵ and "that every mediatic dispositive produces a specifically structured space. Stages in the history of space are therefore also stages in the history of media."⁶ This view makes it possible to ask "which spaces can possibly be constituted through which media at a particular historical point in time?"⁷ While any medium – e.g. a text or an image – can thus be understood as a medium of space, a specific range of *scientific* media of space can be identified that claim to be conveying scientific knowledge as well as to be faithfully representing geographical-physical spatial conditions. Such media (like the modern map for example) are understood as the historical condition of possibility – "matrices of imagination" – for distinctly modern notions of space.⁸ The geographical imagination⁹ linked to these different media points to the particular notions of space which are imaginable in the context of a certain order of knowledge at a specific point in time.¹⁰

Imagination and media of space

5 Hermann Doetsch, "Einleitung. (II) Räumlichkeit und Schriftkultur," in *Von Pilgerwegen, Schriftspuren und Blickpunkten. Raumpraktiken in medienhistorischer Perspektive*, ed. Jörg Dünne, Hermann Doetsch, and Roger Lüdeke (Würzburg: Königshausen & Neumann, 2004); Tristan Thielmann, "'You have reached your destination!' Position, positioning and superpositioning of space through car navigation systems," *Social Geography* 2, no. 1 (2007); Tristan Thielmann, "Locative Media and Mediated Localities: An Introduction to Media Geography," *Aether. The Journal of Media Geography* 5 (2010); Jörg Dünne, "Die Karte als Operations- und Imaginationsmatrix. Zur Geschichte eines Raummediums," in *Spatial turn. Das Raumparadigma in den Kultur- und Sozialwissenschaften*, ed. Jörg Döring and Tristan Thielmann (Bielefeld: Transcript, 2008); Jörg Dünne, *Die kartographische Imagination. Erinnern, Erzählen und Fingieren in der Frühen Neuzeit* (München: Fink, 2011).

6 Doetsch, "Einleitung," 73.

7 Dünne, "Die Karte als Operations- und Imaginationsmatrix," 49.

8 Cf. Dünne, "Die Karte als Operations- und Imaginationsmatrix," Dünne, *Die kartographische Imagination*.

9 Cf. Derek Gregory, *Geographical Imaginations* (Oxford: Blackwell, 1994).

10 Cf. Dünne, "Die Karte als Operations- und Imaginationsmatrix," 50.

In regard to cosmo-geographical notions, media of space can be considered even more important, since this space is never experienced directly through sensory perception, but only ever conveyed and imagined through media, be they traditional or scientific. Therefore, novel and modern media of space, like the modern map and the globe, played a decisive role in challenging the traditional Buddhist cosmo-geography.

The Mount Meru Cosmo-Geography

In classical Indian and Buddhist cosmo-geography, in which the world-system is imagined as a flat disk, Mount Meru is considered to be the centre of the world, encircled by seven concentric rings of mountains and oceans. These are surrounded by another saltwater ocean in which four continents are located in the four cardinal directions, and which is circumscribed by an outer ring of iron mountains. The Southern continent Jambudvīpa is populated by humans and animals. The different ‘hells’, inhabited by ghosts (*peta*), anti-gods (*asura*) and hell beings (*naraka*) are located below these four continents. Along the slopes of Mount Meru and above it, the six heavenly realms in which the gods (*devas*) dwell are situated. These eleven realms (of hell beings, anti-gods, ghosts, animals, humans, gods) make up the world of the senses (*kamadhatu*), beyond which the sixteen realms of form (*rupadhatu*) and the four formless realms (*arupadhatu*) can be found. Sun and Moon circle around Mount Meru inside of a ring of wind, which is located exactly midway between the surface of the ocean and the top of the mountain and also contains the stars.¹¹

In his study of Pali-Buddhist concepts of *nirvana*, Steven Collins considers this “cosmo-geography”¹² a central part of what he calls the “Pali-Imaginaire”.¹³ In his view, this extraordinarily stable “mental universe created by and within Pali texts”¹⁴ was held together

11 Akira Sadakata, *Buddhist Cosmology. Philosophy and Origins* (Tokyo: Kosei Publishing, 1997), 38–39. For a Bhutanese 19th-century depiction see https://commons.wikimedia.org/w/index.php?title=File:Bhutanese_thanka_of_Mt_Meru_and_the_Buddhist_Universe.jpg&oldid=329073843 (accessed June 11, 2019); for schematic diagrams see “Tibetan Cosmological Models”, https://web.ccsu.edu/astronomy/tibetan_cosmological_models.htm (accessed June 11, 2019).

12 Steven Collins, *Nirvana and Other Buddhist Felicities. Utopias of the Pali Imaginaire* (Cambridge: Cambridge University Press, 1998), 301.

13 Collins, *Nirvana and Other Buddhist Felicities*.

14 Collins, 41.

Transformations of the Pali-Imaginaire

by the common language as well as the world contained within the Pali-texts, giving rise to a relatively stable world-view in the different regions of the Pali-Buddhist ecumene.¹⁵ In the modern period of Buddhist history since the 19th century, in a “reaction to western colonialism and science”, as Collins argues,¹⁶ important transformations in regard to this Mount Meru cosmo-geography took place.

Controversies about Cosmo-Geographical Space in Christian-Buddhist Encounters in Ceylon

In 1826, the Church Missionary Society’s *The Missionary Register* printed a letter by the Methodist missionary Benjamin Clough (1791–1853), to which it gave the heading “The Faith of a Buddhist Priest Shaken”.¹⁷ In this letter, Clough relates a long discussion with a learned Buddhist abbot. When asked if the Buddha should be considered omniscient and therefore “all which he has said and caused to be recorded” should be regarded as infallible, the monk answers in the positive. Clough questions this omniscience:

Then, may I ask how it happened that your god should, in the course of his orations and religious revelations, have given to the world so erroneous a view of the geography of the world?

Christian-Buddhist debates in Ceylon

The abbot answers that this is impossible, which leads Clough to claim that he can prove the Buddhist geography to be false. The rest of the report goes as follows:

I produced some maps, a globe, a quadrant, and a compass; and proceeded to give him as correct an outline of our geography, navigation [...], as I could [...]. “And now,” said I, “not a day passes but we make fresh discoveries that Buddhu mistook. He represents the world as a vast plane. Now,” said I, “on this principle, if a ship leave a port, and for two years together continue to sail at such a rate in a direct westerly course, then at the end of that two years she must be so many thousand miles from the place she left.” “Certainly,” said he. “But,” said I, “our ships have often tried this; and [...], instead of finding themselves many thousand miles from the place they left, they have found themselves in the port from which they sailed.” Having a globe before

¹⁵ Collins, 51, 63–64.

¹⁶ Collins, 54.

¹⁷ Benjamin Clough, “The Faith of a Buddhist Priest Shaken,” *The Missionary Register for 1826...* (1826), 610–11. Typographical errors in the original have been corrected.

me, I now explained the matter, and he immediately apprehended it. “Besides,” said I, “here is this quadrant, and this compass, by which instruments we find our way to every part of the world. And I can assure you, that Buddha has referred to oceans, to continents, to islands, and empires, and people, which never had an existence! [...]” And here I handed him a list of all the places mentioned in their books, as well known by him; and, showing him a map of the world, said, “This list of yours does not include one quarter of the world.” By this time the Priest was in a pitiable state: [...] his whole frame was agitated. When he recovered, he [...] said, “Sir, [...] how are we situated in other respects?” “Well,” said I, “your astronomy, your history, and in fact, the whole system of your theology, is precisely in the same state. It is all error!” With great emotion he now rose, [...] and said he never could have expected such discoveries to be made to him; [...] and begged me to become his spiritual instructor.

It might be fruitless to try to read this account written by a Methodist missionary in 19th-century Ceylon as an accurate report on if and how this meeting took place and which positions the Buddhist monk actually defended. Nevertheless, the letter illustrates two important aspects of the 19th-century Christian-Buddhist encounter: the attitudes of Christian missionaries towards the scientific knowledge of the time, especially in the areas of astronomy and geography, and the central role of controversial debates about spatial concepts and ideas linked with traditional Buddhist cosmology. In this respect, Clough’s letter relates a typical example of the widespread 19th-century missionary conviction that the whole Buddhist system would fall apart – opening the way to a later acceptance of Christianity – as soon as its cosmological basis was shattered.¹⁸ In pursuing this strategy, Western actors often relied on the argumentative evidence of scientific media of space like the map and the globe, not only in Ceylon, but also in other parts of the Theravada world like Siam. Here, Christian

Christian missionaries
and scientific
knowledge

18 Cf. Richard F. Young, and G.P.V Somaratna, *Vain Debates. The Buddhist-Christian Controversies of Nineteenth-Century Ceylon* (Wien: Sammlung de Nobili, 1996), 69–70; Donald S. Lopez Jr., *Buddhism & Science. A Guide for the Perplexed* (Chicago: University of Chicago Press, 2008), 53–57. On this general point and the Christian missionary movement’s relationship to science, cf. Elshakry, “When Science Became Western,” 102: “Perhaps because conversion is itself a kind of translation, missionaries played a key role in vernacular science translations around the world [...]. And yet, while missionaries were important vectors for the globalization of the modern sciences from the seventeenth to the nineteenth centuries, the ambiguities and paradoxes in their enterprise meant that they promoted a very particular vision of ‘science.’” See also her overall assessment of this

Scientific media of space
and delegitimation
of traditions

missionaries were equally convinced that these media could be used to delegitimise other, competing depictions and notions of space. In 1846, the missionary Jesse Caswell wrote to the American Board of the Commissioners of Foreign Missions:

A little money expended in purchasing a few articles of apparatus illustrative of scientific truth may probably obtain that for the cause of Christ which is greatly needed, and cannot be obtained from any other quarter, while at the same time it contributes to enlarge the minds of those who render the service and qualify them the better to operate on the minds of their fellow countrymen.¹⁹

Buddhist Modernism in 19th-Century Siam and the Scientific Media of Space

Beginning in the 1830s, Siam experienced a transformation of notions of cosmo-geographical space that was mostly the result of contacts that different members of the political and monastic elites established with representatives of Western powers and especially the Protestant missionaries who had newly arrived in the country.²⁰ In this process, the engagement with the claims of a new geographical knowledge and the confrontation with modern scientific media of space turned out to be crucial.

Until the middle of the 19th century, spatial notions in Siam were dominated by the Mount Meru cosmology sketched above. After 1830, these were challenged not only by the representatives of Western powers and Christian missionaries, but by the Siamese political and monastic elites themselves. The monk and future King Mongkut (1804–1868, r. 1851–1868) emerged as the leader of a small group of Buddhist intellectuals that engaged closely with Western knowledge and technical inventions. The early Protestant missionary Karl Gützlaff

Buddhist elites and
Western knowledge
in Siam

enterprise: “science (and medicine) became critical weapons in the missionaries’ spiritual arsenal—albeit ones that, in the age of Darwin, had a propensity to backfire.” This therefore “constituted a highly uncertain strategy for conversion” despite hopes that “science would pave the way to God. Its rationality would testify to the superiority of Protestantism over the benighted superstitions of the East” (Marwa Elshakry, “The Gospel of Science and American Evangelism in late Ottoman Beirut,” *Past and Present* 196, no. 1 (2007): 177, 214).

19 Caswell, quoted in William L. Bradley, “Prince Mongkut and Jesse Caswell,” *The Journal of the Siam Society* 54, no. 1 (1966): 40.

20 Cf. Thanet Aphornsuvan, “The West and Siam’s Quest for Modernity. Siamese Responses to Nineteenth Century American Missionaries,” *South East Asia Research* 17, no. 3 (2009).

(1803–1851), who in 1831 met with Mongkut, referred to him as a “decided friend of European sciences”.²¹ John T. Jones writes in 1836: “[H]e [Mongkut] has an eighteen inch celestial globe [...] He seems tolerably well to understand the Copernican system of astronomy as to its most important facts, and to believe it.”²² Jones also expected that this interest in Western knowledge “must affect his religious beliefs”. Many other members of the Siamese elite in the middle of the 19th century had equally accepted Western geographical learning and modern geographical maps as a form of knowledge no longer to be challenged by indigenous knowledge traditions.²³ How can the novelty of these scientific media of space be described and their role in the transformation of notions of space be analysed? In what ways do they differ from other media of space and earlier mapping practices?

Novelty of scientific media of space

After 1569, Mercator’s grid of longitudes and latitudes spanned the whole world and located every reachable point in the world in this surveyed space. This homogenous “objectivistic vision of the world”²⁴ now stood in competition with alternative topographies. It would be wrong to think, however, that substantial records of geographical knowledge exclusively developed in Europe and were introduced to non-Western contexts only in the modern era. In Siam, a plurality of local conceptions of space existed well before the 19th century. While in most instances these were linked to Buddhist notions of space, there were also a number of other topographical records resulting in

Local conceptions of space

21 Karl Gützlaff, “Journal of Three Voyages along the Coast of China,” in *Early Missionaries in Bangkok: The Journals of Tomlin, Gützlaff and Abeel, 1828–1832*, ed. A. Farrington (Bangkok: White Lotus Press, 2001), 67.

22 John T. Jones, “Extracts from the Journal of Mr. Jones,” *The Baptist Missionary Magazine* 16, no. 10 (1836): 233.

23 With respect to the development of Western geography and cartography, the 15th century should be regarded as the period of the most crucial advances. Cf. David Woodward, “Maps and the Rationalization of Geographic Space,” in *Circa 1492: Art in the Age of Exploration*, ed. Jay A. Levenson (New Haven: Yale University Press for the National Gallery of Art, 1991). Earlier European maps were mostly either medieval *mappae mundi* based on the T-O scheme or local topographical depictions produced for specific occasions. The rediscovery of Ptolemy laid the foundation for modern methods of projection, and in 1569 Mercator’s isogonal cylindrical projection combined geographic coordinates with straight compass routes in a single map.

24 Bernhard Siegert, “Repräsentationen diskursiver Räume. Einleitung,” in *Topographien der Literatur. Deutsche Literatur im transnationalen Kontext*, ed. Hartmut Böhme (Stuttgart: Metzler, 2005), 6.

cartographic depictions.²⁵ While at first glance it therefore appears to make sense to differentiate clearly between indigenous and Western topographical depictions, the theoretical perspective presented above has highlighted the close relationship between mediality and notions of space and thus makes a different assessment possible: rather than being distinguished by on the one hand conveying imaginary geographies and on the other hand objective geographical knowledge, the spaces being constituted by pre-modern as well as modern scientific maps emerge in an interplay of perception, imagination and the media of space that co-produce them.

Modern map as a
'a-perspectival medium'

Based on a geometric projection, the modern map is an 'a-perspectival medium': its depiction of space is significantly *not* seen from a perspective. The earth can never be *seen* as it is depicted on a map which is ruled by a mapping grid.²⁶ On the contrary, the spatiality constituted by the map as a medium of space is only available through a form of cartographic imagination enabled by the map itself. This is as much the case for the map as it is for the globe, which can only be observed in parts – even from a bird's-eye-view. At the same time, the globe is a central medium of the bounded and homogenous space of modernity. As Denis Cosgrove writes: "on the globe the 'ends of the earth' cannot be ignored".²⁷ Therefore, while Western maps and globes are not in themselves representative of superior knowledge, they nevertheless lay claim to a

Globe represents
bounded and
homogenous space

25 In contrast to the primarily Buddhist and cosmographic representations, these maps (e.g. a manuscript from 1776 showing the paths of rivers and Ceylon, a map of coastlines from Korea to Arabia, or a strategic map of today's northeastern Thailand used for military purposes in 1827) represented segments of the Earth's surface. Pre-modern indigenous notions of space should not be understood as generally cosmological and imaginary, but rather as already pointing to complex combinations of different notions of cosmological and geographical space. Nevertheless, there are no surviving globes or non-cosmological world maps from pre-modern Southeast Asia; see Joseph E. Schwartzberg, "Conclusion to Southeast Asian Cartography," in *The History of Cartography. Volume 2, Book 2: Cartography in the Traditional East and Southeast Asian Societies*, ed. Harley, J. Brian, and David Woodward (Chicago: University of Chicago Press, 1994), 839. The surviving maps from Siam do not include any information on how the topography depicted on them relates to the totality of the Earth's surface, see Thongchai Winichakul, *Siam Mapped. A History of the Geo-Body of a Nation* (Honolulu: University of Hawaii Press, 1994), 31.

26 Cf. Robert Stockhammer, *Kartierung der Erde. Macht und Lust in Karten und Literatur* (München: Fink, 2007), 27.

27 Denis Cosgrove, *Apollo's Eye. A Cartographic Genealogy of the Earth in the Western Imagination* (Baltimore: The John Hopkins University Press, 2001), 13.

different space than do the local maps. Subsequently, any notion of cosmo-geographical space therefore enters into a competitive relationship with any knowledge flagged as scientific.²⁸

A key new development we can observe over the course of the 19th century is therefore the emergence of a strict binary contrast between traditional cosmographic notions and new ‘scientific’ knowledge. The impact of these transformations of cosmo-geographical space in Siam can best be understood by looking at a book printed in Siam in 1867. The *Nangsue Sadaeng Kitchanukit* (“A Book Explaining Various Things”), written by Chaophraya Thiphakorawong, can be regarded as a central text of early Buddhist modernism, not only in Siam.²⁹

*Nangsue Sadaeng
Kitchanukit (1867)*

Thiphakorawong’s perspective is based on the assumption that Western scientific astronomy and its model of the earth as a sphere is superior and convincing knowledge, which has to replace traditional notions of cosmo-geographical space. As an argument for this belief, he presents, among other things, the discovery of the new world by Columbus.³⁰ As Thiphakorawong points out, however, the Buddha himself never taught this false cosmology:

*The Buddha and
traditional cosmology*

Those who have studied Pali know, that the Lord [...] never discoursed about cosmography. [...] For if he had taught that the world was a revolving globe, contrary to the traditions of the people, who believed it to be flat, they would not have believed him.³¹

This argument makes it possible to retain the doctrine of the omniscience of the Buddha.

Conceding the scientific untenability of Mount Meru, however, does not mean that all Buddhist stories connected to this cosmology are rejected:

28 Cf. Winichakul, *Siam Mapped*, 21–22.

29 For more information on the importance of the *Kitchanukit* for conceptual transformations in 19th-century Siam, cf. Ruth Streicher and Adrian Hermann, “‘Religion’ in Thailand in the 19th Century,” in *Companion to the Study of Secularity*, ed. HCAS “Multiple Secularities – Beyond the West, Beyond Modernities” (Leipzig University, 2019), www.multiple-secularities.de/publications/companion/css_streicher_hermann_thailand.pdf. The *Kitchanukit* was partly published in an English translation in 1871 as the first part of Henry Alabaster, *The Wheel of the Law. Buddhism Illustrated from Siamese Sources* (London: Trübner & Co., 1871). All quotations are taken from this translation.

30 Cf. Winichakul, *Siam Mapped*, 41.

31 Quoted in Alabaster, *The Wheel of the Law*, 15.

I have explained about this matter of Meru, and the other mountains, as an old tradition. But with respect to the Lord preaching on Davadungsa as an act of grace to his mother, I believe it to be true, and that one of the many stars or planets is the Davadungsa world.³²

Relocating the Davadungsa heaven

In an instance of hybrid knowledge formation, the traditional story of the Buddha preaching to his mother in the Davadungsa heaven is relocated as having taken place on one of the many planets of the new ‘scientific’ cosmo-geographical space.

Buddhist modernism and science

The example of the *Kitchanukit* shows that the confrontation with the scientific cosmo-geography had profound consequences for the Siamese elite, but did not lead to an abandoning of Buddhism. Rather, in Siam, as in many other Buddhist contexts, the encounter between the new scientific knowledge and traditional ideas was used to purge the ‘true doctrine of the Buddha’ from later accretions and claim a compatibility of Buddhism and science, which became a central strategy in Buddhist modernism all over Asia. In Thiphakorawong’s case, the fact that the other religions had proposed a flat earth even led him to the following claim: “One who thinks that the earth is flat is a follower of those who believe in God the Creator. For one who believes that the earth is spherical is following the Buddha’s words about what is natural”.³³ The strategy the missionaries were using to de-legitimise Buddhism was thus redirected at them, not only in Siam but also in Ceylon, where the claim to possess the true understanding of cosmo-geography was not given up so easily.

Scientific Media of Space as “Immutable Mobiles” in 19th-Century Ceylon

The power of scientific media of space

The encounter between Rev. Clough and the monk, related above, served as an illustration of the epistemological fissures which opened up in the encounter of geography, cosmology, and the confrontation with Christian missions. At the same time, it was left undetermined from where media of space draw their effectiveness that makes them so useful in challenging traditional conceptions of space, and how they differ from their pre-modern counterparts. How can the power of scientific knowledge and its media be described without resorting to a history of scientific progress which in retrospect can only

³² Alabaster, 17.

³³ Quoted from Winichakul, *Siam Mapped*, 41.

consider these media to be conveying a naturally superior, objective, and scientifically correct geography and astronomy? How can a situation be analysed, in which the possibilities of reaction and the forms of knowledge formation were much more hybrid, and in which the result of a displacement of traditional notions of space was all but to be expected with certainty?

These questions become even more urgent if we consider the fact that such instruments and devices had, for example, already been in high demand in Siam in the 17th century. At the end of his reign, King Narai (r. 1656–1688) possessed “a model of the solar system constructed of silver and gold, various watches, and many other pieces of scientific equipment”.³⁴ However, according to Ian Hodges,³⁵ Narai’s interest in European knowledge and technology in the 17th century did not have a lasting influence on spatial and cosmological ideas. This pre-history of the Siamese interest in Western maps and technical devices illustrates that the mere availability of scientific instruments was not sufficient to initiate a transformation of spatial conceptions. Drawing on the work of Bruno Latour, this can be understood as a failure to extend the network in which scientific facts are constituted and enabled to spread.³⁶

Media of space in
17th-century Siam

Following Latour, scientific media of space like maps and globes can be understood as “immutable mobiles”³⁷. He explains the special power of scientific knowledge and its technological-material representations as an effect of the combination of a consistent repertoire of cultural techniques and describes the media-technological superiority of the West in a way that makes the assumption of a “great divide” between pre-scientific and scientific cultures unnecessary.³⁸ Latour focuses on practices of inscription that are connected to paper media like the printing press, the linear perspective, geometrical

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34 Ian Hodges, “Western Science in Siam: A Tale of Two Kings,” *Osiris* 13 (1998): 88.

35 Hodges, “Western Science in Siam,” 90.

36 Cf. Bruno Latour, *Science in Action. How to Follow Scientists and Engineers through Society* (Cambridge, MA: Harvard University Press, 1987), 167, 250.

37 Latour, *Science in Action*; in regard to maps cf. Denis Cosgrove, *Geography and Vision. Seeing, Imagining and Representing the World* (London: I.B. Tauris, 2008), 167–68.

38 Cf. Erhard Schüttelz, “Die medientechnische Überlegenheit des Westens. Zur Geschichte und Geographie der *immutable mobiles* Bruno Latours,” in *Mediengeographie. Theorie – Analyse – Diskussion*, ed. Jörg Döring and Tristan Thielmann (Bielefeld: Transcript, 2009), 69.

projections and cartographic advances, as well as statistics, tables, and diagrams. While each of these inventions is of central importance in itself, he treats these cultural techniques and their products mainly as elements whose power lies in their being *immutable* as well as *mobile*. The superiority of scientific knowledge therefore cannot be attributed to a mental superiority of Western actors or a basic difference in the quality of knowledge. Rather, the power of scientific knowledge lies in the combination of a multitude of observations and parts of knowledge in, and with the help of, immutable mobiles. This drawing together takes place in “centers of calculation” in a process in which the combination of inscriptions of immutable mobiles produces new immutable mobiles of a higher order.³⁹ With the concept of the immutable mobile, therefore, Latour answers his own question regarding the power of the media of scientific knowledge:

how to act at a distance on unfamiliar events, places and people? Answer: by somehow bringing home these events, places and people. [...] By inventing means that (a) render them mobile so that they can be brought back; (b) keep them stable so that they can be moved back and forth without additional distortion, corruption or decay, and (c) are combinable so that whatever stuff they are made of, they can be cumulated, aggregated, or shuffled like a pack of cards.⁴⁰

“Immutable mobiles”
and actor-networks

The existence of scientific knowledge is not independent of the immutable mobiles and the actor-networks constituted through them.⁴¹ The persuasion of another of the knowledge transported through the immutable mobiles is the same thing as the expansion of a network linking actors and things with the centres of calculation in which this knowledge was produced. The scientific facts which play a role in the constitution of new notions of cosmo-geographic space in the 19th-century Buddhist-Christian encounter could not arrive in Bangkok or Colombo independent of the devices used to transport them.⁴²

Modern maps as
“immutable mobiles”

The modern map is a prime example of an immutable mobile as a material device which is used as a medium of scientific knowledge and its claims to truth. It combines pieces of information collected in

39 Cf. Latour, *Science in Action*, 232–47.

40 Latour, 233.

41 Bruno Latour, “Give me a laboratory and I will raise the world,” in *Science Observed: Perspectives on the Social Study of Science*, ed. Karin Knorr-Cetina and Michael Mulkay (London: Sage, 1983), 167.

42 Cf. Latour, *Science in Action*, 250.

many different places, which have been collated and combined in a centre of calculation and then, in an immutable mobile of a higher order, been put into circulation again.⁴³

From this Latourian perspective, the devices and instruments obtained by King Narai in the 17th century did not function as media of scientific facts, because they did not form part of an actor-network in which these facts could have been transported. King Mongkut and the other members of the Siamese elite since the 1830s, however, did become integrated into such a network, partly through the work of such devices. As Latour stresses, however, such a network (in which scientific facts are constituted and transported) is only expandable and stable if the scientific controversies at issue are resolved. This can be illustrated by a last example from Ceylon.

In a famous public controversy at Panadura in 1873 between missionaries and monks, the Rev. David de Silva challenged the Mount Meru cosmo-geography as follows:

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debates in Ceylon 1873

Where, then, is this great mountain [...] situated? How is it possible that it could not be seen to the eyes of men? This globe represents the earth. (Here the globe was shown.) In this the shape of the earth, its dimensions, the great rivers and seas, and the positions of the countries, etc., are all represented. [...] Men at no period ever saw such a mountain, nor have they known by science that there could be such a mountain. [...] Mahameru⁴⁴ [...] must be placed on the earth; if not, Buddhism must be rejected at once.⁴⁵

Rev. de Silva's use of the globe and his argumentation can be read as an attempt to extend the actor-network of the scientific knowledge connected to this immutable mobile and to enforce an alternative understanding of cosmo-geographic space. Coincidentally, this debate at Panadura has become famous because, in the opinion of many observers, it was not the missionaries but the monks who emerged victorious from the debate.

The Buddhist debater, Rev. Migettuwatte, responded by conceding that the scriptures quoted by Silva show that the Buddha had proposed the existence of Mount Meru. However, instead of abandoning

43 Cosgrove, *Geography and Vision*, 167–68.

44 Mount Meru is often also referred to as *Mahameru* [Great Meru].

45 Quoted from Pranith Abhayasundara, ed., *Controversy at Panadura or Pānadura Vādya* (Colombo: State Printing Corporation, 1990), 140–43.

Defending Mount Meru the traditional cosmo-geography, Migettuwatte defends it and questions the basis on which de Silva made his claims:

The Rev. Gentleman no doubt alluded to Sir Isaac Newton's theory [...]. The little globe which the Rev. Gentleman produced was one made on Newton's principle [...].⁴⁶

This principle, however, Migettuwatte claims, is not uncontroversial:

even amongst Englishmen there were serious [...] differences of opinion as to whether Newton's theory was correct or not. Among others, Mr. Morrison, a learned gentleman, had published a book refuting Newton's arguments [...]. (Here he produced and handed around the 'New principia' by R. J. Morrison, F. A. S. L., published in London.) How unjust, then, to attempt to demolish the great Buddha's sayings by quoting as authority an immature system of astronomy, the correctness of which is not yet accepted.⁴⁷

Re-opening the scientific controversy

Migettuwatte thus questions the globe's status as a scientific medium of space. Instead of a device which represents 'natural facts', it is turned into the object of a scientific controversy.

In analysing such a situation of conflict between 'scientific' and 'religious' knowledge, it is especially important to take a non-deterministic position. Latour's third rule of method is helpful here, which claims that decisions about "nature" are only the result of the end of a controversy and therefore cannot be used to explain how the decisions in the controversy were taken.⁴⁸

Questioning the status of the globe

While the missionary de Silva regards the controversy around the spherical form of the earth as a closed issue and the globe as a medium of this secure knowledge, the monk uses the book by R.J. Morrison⁴⁹, a proponent of a geo-centric worldview in the England of the 19th century, to question the status of the globe as a medium

⁴⁶ Quoted from Abhayasundara, *Controversy at Panadura*, 153.

⁴⁷ Quoted from Abhayasundara, 153–54.

⁴⁸ Latour, *Science in Action*, 99.

⁴⁹ Richard James Morrison published the first edition of his book *The New Principia; or, True System of Astronomy. In which the Earth is Proved to be the Stationary Centre of the Solar System, and the Sun is Shewn to be Only 365,006.5 Miles from the Earth, and the Moon Only 32,828.5 Distant; While the Sun Travels Yearly in an Ellipse around the Earth, the Other Planets Moving about the Sun in Ellipses Also* in 1868. The book was at least successful enough to warrant a second edition in 1872. Cf. Lopez, *Buddhism & Science*, 56.

of secure knowledge.⁵⁰ By referring to this book, the monk now tries to recruit Morrison as an ally in a network against the missionary de Silva, a network which now suddenly spans the great distance between London and Colombo and turns both into actors in a newly flared-up scientific controversy.

Conclusion

Theravada elites in Ceylon and Siam reacted to the authoritative claims of geography and cosmology with a reformulation of the Buddhist tradition, retaining central pieces of the cosmological tradition as possibly true – and literally true –, but at the same time locating them in the context of modern science. Scientific media of space, the maps and globes discussed above, appear in this process simultaneously as manifestations and agents of change. In constructing religious and scientific knowledge as two different kinds of knowledge and in referring to the pretensions of a universal scientific geography, they deny alternative Buddhist notions their veracity. In reaction to these claims, Buddhist modernists either appropriated this universalism and began to treat the classical Mount Meru cosmology as pre-scientific and un-Buddhist, or confronted the challenge on the level of science itself as in the example from Ceylon.

Scientific media of space
as agents of change

50 Cf. Latour, *Science in Action*, 97–98.

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