

Maps and Meanings: Urban Cartography and Urban Design

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**A thesis submitted in fulfilment of the requirements of the degree of
Doctor of Philosophy**

The University of Adelaide

School of Architecture, Landscape Architecture and Urban Design

Centre for Asian and Middle Eastern Architecture (CAMEA)

Adelaide, 20 December 2012

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ABSTRACT

In today's practices of urban design, the map acts as a documentary and design tool as well as a legal document. Its usefulness hinges on its perceived truthfulness and objectivity in the representation of reality. Yet this has not always and everywhere been the case. There was a time in Western and non-Western societies where the nature of the map and the acts of mapping were very different. This study traces this difference in an attempt to understand the process of change and its impact on the nature and quality of human settlements.

To do this, the study explores points of intersection between urban design and urban history. Focussing on Southeast Asia, it examines the transition from pre-modern to modern modes of mapping enabled through the mediation of Western intervention. The aim is to comparatively trace the map's historical evolution in intertwining Western and non-Western contexts. Using archival materials, the study brings together Southeast Asian urban history, history of urban cartography, and urban design theories. It shows how different forms of mappings reveal culturally specific ways of seeing and understanding the world. Pre-modern maps typically prioritised sacred and profane space and the proliferation of religious knowledge over the need to satiate any geographical enquiries. As technological developments in Europe brought about new forms of cartography, Western ideas about space, previously dominated by socio-religious beliefs, were openly challenged by science and exploration. The Enlightenment period's embrace of reasoned knowledge and rational thought filtered into mapping practices, which was eventually embraced globally to the demise of sacred space. Yet the past survived in urban history, and between the retrospective view of urban history and the projective view of urban design a new schism emerged.

By examining the role of the map at a conjunction of urban history and urban design, the study attempts to show how the Enlightenment's rational mapping proliferated into the non-Western world, how the production of urban space shifted from a socio-culturally motivated style to a highly theorised framework, how the concept of the modern city was born alongside the emergence of modern urban planning, how the emergence of modern thinking about the city corresponded with new ways of designing, and how theorists reacted to the modernist urban design

rationalism which was anchored in the authority of scientific mapping. Through this path of enquiry the study strives to uncover some of the lost meanings and functions of the map, and to examine new approaches to dealing with the loss of quality and identity in today's urban environments.

ACKNOWLEDGEMENT

I am grateful to a vast number of people who have contributed to the final realisation of this big project. To my main supervisor, Associate Professor Samer Akkach, I am indebted for his endurance, endless encouragement and acceptance of the many hurdles which presented themselves. I must acknowledge Samer's commitment to refine the manuscript and yet accept any flaws which remain in the final version to be solely my own responsibility. My gratitude extends to my co-supervisor Dr Peter Scriver for his support, suggestions throughout the process and a positive outlook always at crucial times. To Emeritus Associate Professor Terry Williamson, thanks for his humour and remarks to ensure my determination to finish. To Dr Alpana Sivam, my colleague and friend, from whom I received many valuable anecdotes and insight into doctoral scholarship, and which were of great benefit to the final document. My sincerest thanks to my editors Sally Shipway, Norman Prentice, Jeff Catchlove and Myriam Sampson for their instructive corrections and perseverance with the body of work with which they were presented. To all of my dear friends for their enduring support and with special thanks to Vasa Raven, Heleen Terwel, Kate Heap, Ann Laffan, Andrea Fillmore, Rachel Cordes, Kong Yen, Dougald Prentice and Paquita Kennett for listening as well as everything else. To all of my family who have assisted in every possible way from babysitting to cooking and sympathising, I feel very lucky. My heartfelt thanks go to my amazing Mother and Peter, Belinda and Naomi, Carol, Peggy and Ted, Meg, Cathy and Matt, Sue and Ian, Dave and Belinda. Finally thank you, to my gorgeous children, Amelie, Xavier and Sebastian for their giggles and cuddles, and to my husband Mark for his love, patience, belief in me, and mastery in "holding the fort!"

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INTRODUCTION: AIMS AND METHOD

An early career posting in Kuala Lumpur, Malaysia, fostered my enthusiasm for the practice of urban design. It also encouraged a broader passion for reflecting on patterns of urban development from a historical perspective. Working and living in Malaysia at this time, I grappled with many questions concerned with cultural identity and the extent to which entrenched socio-cultural factors or practices affect the physical resolution of modern cities. Perhaps the vibrancy of life in my adopted city of Kuala Lumpur, the smells of sumptuous street food, the activity at all hours, the cultural diversity, the tropical environment ensuring many everyday practices occur in the public realm, and the practicalities and romance of the urban architecture led me to question motivations behind the choices people make in realising lived space. I was intrigued by the shifting from what appeared to be a distinctly Southeast Asian style of modernisation to prioritising a Western style of urbanisation. Southeast Asian cities, particularly in the 1990s, experienced wholesale expansion of their urban centres. In most instances the fast-track urbanisation of this region involved modern topographical analyses and two-dimensional master planning solutions, typically undertaken by imported design consultants. Professional practice made me aware of the common myriad factors contemporary cities are required to address. From the need for high speed transport systems, to global aspirations for connectedness with communities beyond their immediate borders, to fostering local resources, identity, and talents, the complex nature of urban life seemed to be shaped by many factors. Yet why did rapid economic expansion of the late 1990s appear to translate the mechanical requirements of Southeast Asian cities into forms which seemingly reflected Western-inspired tower blocks and homogeneous urban environments? What are the most influential tools in the practice of urban design? How have humans imagined, designed, and realised their settlement throughout history? Have people always and everywhere thought about their cities in the same way? These and other related questions sparked my interest in the “map” and the notion of “mapping.”

Why specifically look at the map? What role does the modern map play in the realisation of an urban environment? The map is a cultural construct and seems to be an essential tool in the process of creating human environments. While the

complexities entrenched in mappings have been widely acknowledged by scholars of geography, cartography, chorography, anthropology, philosophy, and, to a degree, sociology, few studies have examined the evolution of the map and the city as synchronised events. To what extent has the map's changing nature affected Western and non-Western built contexts, and can the complexities of mapping reflect the meanings involved in the creation of human settlements, are questions that have received limited attention in current literature.

Aims and Definitions

The primary aim of this study is to examine the fundamental connection between a visual representation of a form of human settlement, broadly referred to as a “map,” and the reality of settlement itself. This examination is conducted in Western and non-Western contexts in order to understand, on the one hand, the agency of the map in spatial conception of settlement, and on the other, the meanings and narratives, direct or symbolic, that the map conveys. This study focuses on only one aspect amidst many which influence the form of past and present cities: the historical evolution of the map and its effect on, and association with, the city and urban space from pre-modernity to post-modernity.

In this study a “map” is understood primarily as a graphic interpretation of space, geography, or objects, using signs and symbols to give meaning to its chosen form of representation, which may even transcend the physical.¹ While “mapping” concerns the process of producing a map, in which data that may consist of, but are not limited to, anything of spiritual, imaginal, cosmological, geographical, ideological, physical, or topographical nature, which is then, in a highly selective way, collected, collated, and interpreted into a type of representation of space. In modern scholarly studies, “mapping” has become a verb widely adopted to describe a process of inquiry and subsequently the results of that process. The distinguishing factors of the mode of inquiry adopted here are, firstly, a focus on the socio-cultural meanings of the map, and secondly, the possibilities of the agency of mapping for urban design and what

¹ Laxton, Paul. 2001. *J. B. Harley: The New Nature of Maps: Essays in History of Cartography*. USA: John Hopkins University Press, 16.

maps reveal in representing different spatialities.² By following the historical role of the map and understanding its conceptual framework, we might be able to understand the ways in which maps and mapping affect design outcomes.

Human settlement, its patterns, influences, methods, and motivations, have been hypothesised for many a century, from both singular and multi-faceted perspectives. Historically, social processes of settlement formation included place and society evolving together without any comprehensive pre-planning undertaken, perhaps adapting to geographic difficulties or particular rules of land ownership.³ Other alternatives for urban formations included settlement patterns being controlled by certain rules dictated by social, religious, or legal understandings and requirements, as was the case with geomancy, the Laws of the Indies, the Islamic religious laws, or interpretations of literary works.⁴ A major aspect of settlement formation can be traced to our cultural as well as our emotional needs and desires.⁵ Some of these processes include consultation with the fields of cartography and geography, for collated data that explicates the origins of cities and settlement patterns.

Modernity has prompted a range of investigations into mapping processes in city creation, for example, works by 1960s art movements, such as the Dadaists, Surrealists and later architectural offices (eg. Archigram and *Utopie*). These works, which were accorded with the rise of the utopian movement, were included in new

² Corner, James. 1999a. "The Agency of Mapping: Speculation, Critique and Invention." In *Mappings*, edited by Denis Cosgrove, 213-252. London: Reaktion Books Ltd, 213. Corner differentiates between planning and mapping as the latter enables possibilities whereas planning limits potential in its tracing of space rather than creating it. See also, for the abstract and theoretical nature of maps, Wood, Denis. 1992. *The Power of Maps*. New York: Guilford Press; Monmonier, Mark. 1991. *How to Lie with Maps*. Chicago: University of Chicago Press; Pickles, John. 1992. "Texts, Hermeneutics and Propaganda Maps." In *Writing Worlds*, edited by Trevor J Barnes and James Duncan. London: Routledge.

³ Atkin, Tony, and Joseph Rykwert. 2005. *Structure and Meaning in Human Settlements*. Philadelphia, Pennsylvania: University of Pennsylvania Museum of Archaeology and Anthropology, 12.

⁴ See Hakim, Besim Selim. 1986. *Arabic-Islamic Cities: Building and Planning Principles*. 1st ed. London: Kegan Paul International Ltd. Original edition, 1979. Reprint, 1988. Hakim, Besim. 1978. Sidi Bou Said, Tunisia. Halifax, Nova Scotia, Canada: Nova Scotia Technical College, Canada, 20-23, Call to prayer for this city meant residents of the old town located their houses within a 250 metre zone from the minaret to hear the voice of the muezzin. In addition see Nasr, Seyyed Hosein. 1966. *Ideals and Realities of Islam*. London: George Allen and Unwin Ltd. On Southeast Asia where religion and religious traditions were seen as reasons behind certain indigenous built forms, see Marr, David, and Anthony Milner. 1986. *Southeast Asia in the 9th to 14th Centuries*. Singapore: Institute of Southeast Asian Studies; Bacus, Elizabeth, Ian Glover, and Peter Sharrock. 2008. *Interpreting Southeast Asia's Past: Monuments, Image and Text*. Singapore: NUS Press.

⁵ Atkin & Rykwert, 2005, 9. The traditions and variety of Southeast Asian urban forms may be further understood through consulting texts such as Widodo, Johannes. 2004. *The Boat in the City: Chinese Diaspora and the Architecture of Southeast Asian Cities*. Singapore: Marshall Cavendish Academic, also Chihara, Daigoro. 1996. *Hindu-Buddhist Architecture in Southeast Asia*. Leiden: E. J. Brill.

editions of Bannister Fletcher's book, recognised for its contribution as a source on the history of architecture and landscape.⁶ These movements of modern inquiry interpreted different modes of mapping for creating built form, yet their practices were largely considered utopian and experimental, and therefore, on the whole, not credible options for realising the city.⁷ A contemporary resurgence in interest into investigations of an overlap between cartography and the creation of urban landscaped environments has occurred since protagonists of the Landscape Urbanism movement began adopting mapping processes for research and design in the late 1990s.⁸ A flow-on effect resulted in the surface architecture genre of buildings, yet like many earlier attempts, did not necessarily translate into applying these processes to analysis of the broader urban environment. Thus in rethinking the agency of map and the process of mapping, this study traces the socio-cultural and intellectual contents of early maps and their influence historically, if any, on urban form and settlement patterns. Does settlement precede the map? Or does the map precede settlement? And to what extent does the map motivate and capture cultural influences of settlement? These are some of the questions this study attempts to address.

The study approaches the concepts of maps and mapping within the intellectual sphere developed in the writings of Denis Cosgrove, Thongchai Winichakul, Matthew Edney, and James Corner. Cosgrove argues that “[m]apping is a process which involves both a ‘complex architecture of signs’...and a ‘visual architecture’ through which the worlds they construct are selected, translated, organised and shaped.”⁹ He highlights contemporary scholarly considerations of pre-modern maps, ranging from material objects to metaphors.¹⁰ From a different standpoint, Winichakul looks at the non-Western context of Siam (Thailand) in its resistance to colonisation and the shaping of its identity and appreciation of nationhood, and the role of mapping in this

⁶ Banham, Reyner. 1976. *Megastructure: Urban Futures of the Recent Past*. London: Thames and Hudson Ltd, 92. Refer chapter 5 “Fun and Flexibility” for a discussion of a myriad of projects in the mid-1960s which were characterised by their lack of “nut-and-bolt” proposals, yet elaborate drawings and models espoused their promotion of fantasy for new living environments, 84.

⁷ *Ibid.*, 101. The use of Barbarella type images to populate these representations, Banham suggests, “nothing could more aptly illustrate the proposition that megastructures were ideal cities containing other people’s Utopias...”

⁸ Mostafavi, Mohsen, Ciro Najile, and Architectural Association. 2003. *Landscape Urbanism: A Manual for the Machinic Landscape*. London: Architectural Association, 7.

⁹ Cosgrove, Denis. 1999b. “Introduction: Mapping Meaning.” In *Mappings*, edited by Denis Cosgrove, 1-23. London: Reaktion Books Ltd, 3.

¹⁰ *Ibid.*, 4.

process.¹¹ He acknowledges that people of different cultures mapped their world differently. This shows that there is something imaginal about mapping, and that “imagined geographies” are in essence the object of all mapping practices. Being highly imaginative, the pre-modern map, unlike its modern counterpart, does not reveal the same meanings universally to its viewers, but allows for interpretation of multiple meanings.¹² Winichakul states that “to understand the space and the map, one has to understand its concept (its grammar) and its symbolism (its morphemes).”¹³

In Matthew Edney’s study of the mapping and creation of colonial India, he asserts that modern understandings of geography cannot reconcile mapped space, which does not connect to the greater context of the earth, using latitude or longitude. By contrast, pre-modern mappings engaged and represented all aspects of life on earth as well as life after death, in their conceptions of space. Colonials, in their cartographical enterprise in India, created a consolidated India in the eyes of the Indians, or posed as the “intellectual masters of the Indian landscape.”¹⁴ The trigonometrical survey of India conducted and drawn by the British, the first graphic interpretation, was made available for viewing by the Indian and British citizens to demonstrate the extents of the lands which signified the continent of India in its entirety. According to Edney, this cartographical process also occurred in other colonised territories, such as parts of British and Dutch Southeast Asia, whereby territory indicated on map enabled the conception of a region.¹⁵

James Corner’s work, together with Charles Waldheim and Mohsen Mostafavi, in its review of the map in the contemporary context, has led to new disciplines of study

¹¹ Winichakul, Thongchai. 1994. *Siam Mapped: A History of the Geo-Body of a Nation*. USA: University of Hawai'i Press, 13. See also Jumsai, Sumet. 1988. *Naga: Cultural Origins of Siam and the West Pacific*. Singapore: Oxford University Press; Lieberman, Victor. 2003. *Strange Parallels: Southeast Asia in a Global Context, 800-1830*. 2 vols. Vol. 1: Integration on the Mainland. Cambridge. For an alternative non-Western case and point of view of the role of mapping in the fifteenth century in China see Menzies, Gavin. 2002. *1421: The Year China Discovered the World*. London: Bantam Books.

¹² Ibid., 21. See also Wheatley, Paul. 1961. *The Golden Chersonese: Studies on Historical Geography of the Malay Peninsula Before AD1500*. Kuala Lumpur.

¹³ Ibid., 28.

¹⁴ Edney, Matthew. 1997. *Mapping an Empire: The Geographical Construction of British India 1765-1843*. Chicago: University of Chicago Press, 16. As a product of Enlightenment thinking with regard to correctness and accuracy, this spatiality of India was a creation of history and events. See also Carter, Paul. 1987. *The Road to Botany Bay: A Spatial History*. London: Faber and Faber, xv.

¹⁵ Ibid., 3. See also Emerson, Donald K. 1984. "Southeast Asia: What's in a Name?" *Journal of Southeast Asian Studies* no. 15:1-21. Until post Second World War there was not an understanding of the Southeast Asian region until it was able to be recognised in colonial maps. Bacus, Elizabeth, Vincent Piggot, and Ian Glover. 2006. *Uncovering Southeast Asia's Past: Selected Papers from the 10th International Conference of the European Association of Southeast Asian Archaeologists*. Singapore: NUS Press.

and a new form of practice known as Landscape Urbanism.¹⁶ Critically assessing notions of maps and mappings has revealed new ways of designing, where mappings of data actively contribute to and sometimes participate in design outcomes in both landscape and urban designs, rather than being solely design tools. For Cosgrove and Corner, the process of mapping can act as a prism through which to view the changing nature of urban environments. Contemporary mappings are projected interactively into the design method. New types of spatialities are motivated around greater connectedness in urban environments physically and metaphorically, and then implemented through socio-cultural practices.¹⁷

Unlike pre-modern times, the map today is utilised predominantly as a documentary and design tool. It is used more as an “instrument” rather than a “story,” revealing the socio-cultural and religious dispositions of the peoples which inhabit mapped space.¹⁸ To what extent has this shift in the role and understanding of the map reflected similar changes in the evolution of our built environments? Historically, the creation of cities have occurred over vast tracts of time, responding to different technologies as they become available, and to changes in thinking about the way peoples should dwell and inhabit space. Typically, pre-modern cities grew organically and mappings of their physical spaces and buildings occurred retrospectively. This chronology of events occurred for a variety of reasons, from invasion to colonisation to creating registers of land holdings and entitlements. It is only in modern times that cities and their evolution have been completely dependent upon maps for the layout of key buildings, roads and other infrastructure, dwelling sectors and public spaces, which all occur prior to the creation of the city, and entirely in a premeditated and highly articulated fashion. Thus gaining insights into the historical production of the map will provide us with clues to understanding the changing nature of the city’s urban qualities.

¹⁶ Mostafavi & Najle, 2003, 5.

¹⁷ Cosgrove, 1999b, 5.

¹⁸ *Ibid.*, 2. For the reductive nature of the modern map from the socio-political perspective see Scott, James C. 1998. *Seeing Like a State: Why Certain Schemes to Improve the Human Condition Have Failed* (The Institution for Social and Policy Studies at Yale University) New Haven: Yale University Press. For mapping insight and the revealing potentials of the map see Hall, Stephen. 1992. *Mapping the Next Millenium: The Discovery of New Geographies*. New York: Random House.

Research Parameters: Space and Time

Space

In pre-modern times, maps were culturally specific. In an attempt to illustrate the cultural specificity of the pre-modern map and mapping processes, the study focuses on the example of Southeast Asia as a non-Western cultural context. For the purpose of this study, the region of Southeast Asia includes the following countries: Burma (Myanmar), Thailand, Laos, Cambodia, Malaysia, Philippines, Vietnam, Indonesia, Singapore, Brunei Darussalam, Timor Leste, and Malaysian Borneo. *The History of Cartography* volume on Southeast Asia excludes some of these countries in its definition of the region, due to their cartographical influences being more closely aligned with countries, such as China in the case of Vietnam.¹⁹ However, in the context of this study I do not support such exclusions as the countries within the region enjoyed many influences typically based upon religious belief systems, such as Theravada Buddhism, Islam, Hinduism, and Christianity. These influences most commonly came as a result of early trade and travellers from China, India, and the Middle East.²⁰ The region of Southeast Asia is a modern phenomenon and bears little significance as a concept or a conglomeration of territories for pre-modern Southeast Asian peoples, but rather served as a convenient way to identify the group of islands and different countries in the region in post-colonial times for the ruling hegemonies.²¹

Not only was Southeast Asia as a region and group of countries not acknowledged in pre-modernity, but other concepts such as boundary and territory also had quite different meanings between cultural groups.²² Western ideas about maps indicating boundaries and territory were thrown into disarray as the very basic knowledge and

¹⁹ Woodward, David. 1994. "Preface." In *The History of Cartography: Cartography in the Traditional East and Southeast Asia*, edited by J. B Harley and David Woodward, xxiii-xxvii. Chicago, USA.: The University of Chicago Press Pty. Ltd, xxiv.

²⁰ See Reid, Anthony. 1993. *Southeast Asia in the Age of Commerce*. 2 vols. Ithaca, for an exhaustive analysis of trade, economic activities which prompted increased urbanisation in the region. Also for accounts of the role of the Chinese in European views of the world through maps, see Menzies, Gavin. 2008. *1434: The Year a Magnificent Chinese Fleet Sailed to Italy and Ignited the Renaissance*. London: Harper Collins.

²¹ Winichakul, 1994, 14.

²² See Pellow, Deborah. 1996. *Setting Boundaries: The Anthropology of Spatial and Social Organisation*. USA: Bergin & Garvey, for an analysis of different understandings of the concept of boundary between indigenous peoples and Western interpretations.

signs which constituted a map were challenged by local peoples.²³ The notion of boundary in contemporary thinking has become more aligned with a permeable concept of pre-modernity, unlike early colonial conceptions.²⁴ Western assumptions about the form of the map were also undermined as archaeologists revealed temple architecture and other three-dimensional structures displaying cartographic signs to explain the passage of life from birth to death. Some examples included Hindu temples, which represented the first visual display of cosmographic ideas dating from the seventh century in Java. On the whole, though, map-like images were still not common, only appearing in temples from twelfth and thirteenth centuries. The frequency of appearances of temple mappings is not known.²⁵ Buddhist temples portraying similar information go back to the eighth century.²⁶ While medieval Christian world was highly cosmological, for Southeast Asian peoples the significance of space on earth was intrinsically linked to the after-world. This meant that their ideological positioning motivated more musings about a connectedness to whatever lay beyond the earthly world than a purposeful investigation of further earthly territories. Mappings were in life and death socio-cultural and religious representations of pre-modern Southeast Asian ideas. They explored ideas in both cartographic media, as well as other constructions, such as rock maps, verbal itineraries, stick charts, sand mandalas, and mythical stories. In many ways, pre-modern Southeast Asian mappings grappled with complex and timely transitioning between worlds of life and death, metaphorically and physically. Therefore the breadth of territory to map may be considered as more highly conjectural or ambitious than any European equivalent. Amongst the variety of these early attempts at understanding the world that Southeast Asians inhabited as well as the realm they would pass to after death, their immediate physical neighbours and associated territories were not viewed with the same urgency for attaining knowledge.

²³ Winichakul, 1994, 68. Winichakul highlights many misunderstood examples of boundaries in his “clashes of conceptions of boundaries”.

²⁴ Cosgrove, 1999b, 4.

²⁵ Schwartzberg, Joseph E. 1994b. "Introduction to Southeast Asian Cartography." In *The History of Cartography: Cartography in the Traditional East and Southeast Asian Societies*, edited by J. B Harley and David Woodward, 689-700. Chicago: The University of Chicago Press, 695.

²⁶ *Ibid.*, 693 & 695.

Time

Historically, the time frame of the study extends from pre-modernity to post-modernity. A few prehistoric examples and ideas are discussed due to their significance and contribution to the main aims of the study. While pre-modernity in Southeast Asia may be said as having extended until colonisation, yet colonial practices did not dominate local cartography until around the nineteenth century. Thus the temporal borderline that separate pre- from early modernity is somewhat blurred. The sixteenth century corresponded with the great age of exploration for western societies, and thus European voyages prompted many changes in cartographical representations for indigenous and non-indigenous peoples.²⁷ Printing and copying processes reflected the progress of earlier exploration in interpretations of geographical and socio-cultural qualities of non-European societies, discovered by sea in early modernity or late in the sixteenth and early seventeenth centuries. These altered ideas of foreign places filtered into the mapping genre, which encouraged mapmakers in their refining and sharing of information.²⁸ Although Southeast Asian countries were colonised at different times, some, like Siam, retained their sovereignty. The influence of Western practices in cartography began to filter throughout the region due to its perceived accuracy and sophistication of method.

Pre-modern Southeast Asians utilised different modes and approaches to convey ideas about space, some examples were visual like cosmologies and sand *mandalas*. Other conceptualisations were verbal and in literary forms, while some were sculptural and three-dimensional in the form of sacred architecture. These methods remained largely unchanged until they gradually shifted and were reflected in cartographic works from post-nineteenth century perspectives. Southeast Asia offers a geographical and temporal frame within which to differentiate between Western and non-Western mappings prior to the nineteenth century.²⁹

²⁷ Black, Jeremy. 2000. *Maps and History: Constructing Images of the Past*. New Haven, London: Yale University Press, 6. Maps could be more easily reproduced and there were also more maps to refer to in creating revisions. See also Menzies, G. 2002 1421: The Year China Discovered the World. London: Bantam Books, 11, for an account on how China had made significant and accurate maps of new worlds prior to the Europeans in the mid-fifteenth century.

²⁸ *Ibid.*, 6.

²⁹ Woodward, 1994, xxiv.

The study also looks at significant changes which took place in early modernity in Europe as a result of modern science developments, which affected mapping and cartographic practices. In one seventeenth century example, maps began to play a specific role in European societies, whose judiciary relied on them in land entitlement disputes.³⁰ In addition, as a graphic reference, they became significant in historical and secular knowledge relating concepts of space to a place, while maps also offered the possibility of demonstrating space, historically, in an objective manner.³¹

The seventeenth century also signified changes in the relations of time and space which had implications for the reading and understanding of both geography and history. As conceptualisations of space changed in Europe due to scientific innovations in optics, measurement of longitude and latitude, triangulation techniques, and the measurement of time, techniques of modern mapping also evolved. These developments were not unilaterally transferred to non-European nations, but affected Dutch cartography, for example, by requiring a greater degree of realism or topographical accuracy to be achieved by the mapmaker.³²

While the focus of the study is on pre-modern and early modern developments in mapping, it also looks at how these changes and innovations in mapping affected conceptualisations of urban environments which resonated into the twentieth century and to current practices. For example, the modern movement adopted the map developed from Enlightenment technologies as a source or a tool with which to rationalise space. The mantra of “form follows function” synonymous with modernism supported these principles into the design process, and ultimately into the created environment.³³ By contrast late twentieth century practices, such as Landscape

³⁰ Black, 2000, 6. See also Fletcher, D H. 1995. *The Emergence of Estate Maps. Christ Church, Oxford c. 1600-1840*. Oxford: Oxford University Press.

³¹ Black, 2000, 7. This was also due to the influence of humanism with literal interpretations of texts over the allegorical aspects of religious writings. See also Burke, P. 1969. *The Renaissance Sense of the Past*. London: Edward Arnold.

³² Ibid., 8. See also Alpers, S. 1983. *The Art of Describing: Dutch Art in the Seventeenth Century*. Chicago: The University of Chicago Press. Chapter “The Mapping Impulse in Dutch Art.”

³³ “Form follows function,” although adopted as a phrase by the modernists was first mentioned by American sculptor Horatio Greenough, who in 1852 was relating it to the organic principles of architecture. The American architect Louis Sullivan, who admired rationalist thinkers like Greenough, Thoreau, Emerson, Whitman and Melville - used it, in 1896, in his article *The Tall Office Building Artistically Considered*. Here Sullivan actually said “form ever follows function”, but the simpler (and less emphatic) phrase is the one usually remembered. Louis Sullivan's phrase “form (ever) follows function” became a battle-cry of Modernist architects after the 1930s. Form follows function implied decorative elements, or any type of external feature or “ornament,” were superfluous in modern buildings. http://en.wikipedia.org/wiki/Form_follows_function viewed 20.03.12

Urbanism shifted to prioritise mapping as a process, denying the map its previous stasis and rationalism, focussing on flows of information and the dynamic nature of space, and questioning how that might be reinterpreted in the creation of contemporary urbanities.

Method

Sources

The methodology of the study is based on archival research, examining textual and visual materials. The topic requires selection, collating, and examination of sources from interdisciplinary fields, including geography, cartography, social science, anthropology, urban studies, urban design, urban history and theories, architecture and landscape architecture, all of which influence mapping practices and processes. This approach highlights the intrinsically complex characteristics of the map, and its interdisciplinary nature, while shifting the conventional focus from its technical properties to its socio-cultural, religious, and intellectual qualities.

The primary sources used in this study are both historical and theoretical. They include the *History of Cartography* with the Southeast Asian and East Asian volumes being consulted for the most part.³⁴ *Early Modern Mapping in Southeast Asia* by Thomas Suárez is included as it features some indigenous maps, which have not been previously published and were sourced from private collections.³⁵ In addition, Ralph Ehrenberg's pictorial *Mapping the World* presents an insightful graphic study of some key European maps.³⁶ All sources are in English and by predominantly Western-educated authors. Although some indigenous materials are included, this study is limited to those works which have been published in the English language. Each of the sources has been selected for its insight and influence within its given field, and its use of original archival material. Where appropriate, I have attempted to identify and acknowledge biases and weaknesses of each source, especially with regard to dealing with original indigenous sources.

³⁴ Harley, J B, and David Woodward. 1994. *The History of Cartography: Cartography in the Traditional East and Southeast Asia*. 2 vols. Vol. 2, Book 2, *The History of Cartography*. Chicago, USA: The University of Chicago Press Pty. Ltd.

³⁵ Suárez, Thomas. 1999. *Early Mapping of Southeast Asia*. Singapore: Periplus Editions (HK) Ltd.

³⁶ Ehrenberg, Ralph E. 2006. *Mapping the World: An Illustrated History of Cartography*. Washington D.C.: National Geographic Society.

The selected studies on Southeast Asian urban history and mapping, such as *The History of Cartography*, as well as *Early Mapping of Southeast Asia* are considered exemplary in their collation of descriptions and interpretations of indigenous and non-indigenous mappings, thereby enabling access to pre-modern and early modern maps. They identified the extent of the surviving corpus of published Southeast Asian maps, and outlined the difficulties of studying historical material of another culture and time period, as well as problems with interpreting it within the realm of our modern conceptions of space and maps. Mapping material was sometimes prepared by indigenous peoples at the request of Europeans, as in the eighteenth century case of the Burmese assisting an Englishman named Hamilton.³⁷ There were also other problems of storage and preservation of archival information, for example, in Thailand where the concept of cleansing and purification (*Chamra*) governed archival management and has affected access to original copies. *Chamra* has a long history and is considered an important practice in Thai culture.³⁸ It may refer to a mild alteration of the document, such as correcting grammatical errors, modernising the spelling or updating titles of individuals.³⁹ More radical alterations include filling in blank areas of manuscripts, rewriting of materials and removal of some documents from circulation. *Chamra* is a continuous process and as ideas change over time so does *Chamra*. Therefore, Thai manuscripts cannot be viewed as stable entities.⁴⁰ The difficulties involved in this mapping practice range from determining authorship and authenticity of original material to interpretation of pre-modern cartographical signs.

Secondary sources for this study include texts which offer insights on critical interpretations of mapping, maps and cartographic, as well as urban history. This group of texts have provided a theoretical and analytical frame through which to read the primary sources. They have also enabled an informed understanding of how the changing role of the map through early modern history has critically affected the creation of human urban habitats and ideas about settlement. To this end, authors such

³⁷ Schwartzberg, 1994b, 699. See also Fell, R T. 1988. *Early Maps of South-East Asia*. Singapore: Oxford University Press Pty Ltd, for the European perspective on Southeast Asian mappings. In addition a study by Phillimore, Reginald Henry. 1956. "An Early Map of the Malay Peninsula." *Imago Mundi* no. 13:174-79.

³⁸ *Ibid.*, 698. See also Wilson, Constance. 1982. "Cultural Values and Record Keeping in Thailand." *CORMOSEA [Committee on Research Materials on Southeast Asia] Bulletin* no. 10 (2):2-17, 4-6.

³⁹ *Ibid.*

⁴⁰ *Ibid.*

as Denis Cosgrove, James Corner, and Françoise Choay have enabled the positioning of this study to analyse the data and material provided in the historical body of the thesis.

Denis Cosgrove's edited book *Mappings* entails a series of essays, highlighting contemporary thinking and critical analyses around the changing nature of the map.⁴¹ Cosgrove expands on the initial definitive work of Brian Harley, who challenged the triumphalist nature as well as assumptions about the accuracy of information the map might portray.⁴² Cosgrove accords contemporary interest in mapping processes and the map to the rapidly changing nature of post-modern society compared with that of modernity. Twenty-first century culture connects closely and often simultaneously via data networks, with the global sphere and thus the fixing of space to certain boundaries has taken on different meanings in today's society. There is now a greater focus on theorising space from dynamic and interconnected perspectives. Deleuze and Guattari view space from a socio-political perspective associated as highly structured and "arborescent," or of the "rhizome type" which is neither structured nor hierarchical but more sporadic and unplanned in reference to the nature of rhizomic connections and movements of contemporary society.⁴³ In summary, Cosgrove and others question the very assumptions upon which mappings have typically been based and any implied stasis associated with space, which may be mapped, conceived, and therefore understood.

James Corner speaks of the "agency of mapping" and acknowledges the benefits of such a process in reshaping ideas about mapping as well as the map itself.⁴⁴ Corner in this case does not dwell on the power relations of the map but rather adopts its

⁴¹ Cosgrove, Denis. 1999a. *Mappings*. London: Reaktion Books Pty Ltd. See also Starling, Roger. 1998.

"Rethinking the Power of Maps: Some Reflections on Paper Landscapes." *Ecumene* no. 5:105-8; Söderstrom, Ola. 1996. "Paper Cities: Visual Thinking in Urban Planning." *Ecumene* no. 3:249-81.

⁴² Harley, J. B. 1987 "Maps, Knowledge and Power." In *The Iconography of Landscape: Essays on the Symbolic Representation, Design and Use of Past Environments*, edited by Denis Cosgrove and Stephen J Daniels, 277-312. Cambridge: Cambridge University Press. 278. Opposing the binary oppositions set up in mapping i.e. accurate and inaccurate, objective and subjective, Harley highlights maps always have sets of values. See also to compare Wolff, Janet. 1981. *The Social Production of Art*. New York: New York University Press, chapter "Art As Ideology."

⁴³ Deleuze, Gilles, and Felix Guattari. 1986. *Nomadology: The War Machine*. Translated by Brian Massumi. New York: University of Minnesota Press. Original edition, Mille Plateaux, Paris, Editions de Minuit, 13.

⁴⁴ Corner, James. 1999a, 213. See also Corner, James. 1999b. *Recovering Landscape: Essays in Contemporary Landscape Theory*. USA: Princeton Architectural Press, chapter "Operational Eidetics in Forging New Landscapes."

liberating capacity for designers of urban space.⁴⁵ The practice of mapping enables the re-making of space and territories, each time the space is recreated through a mapping. A copied map or what Corner calls “tracing” does not permit such possibilities.⁴⁶ Corner suggests that maps are “analogous-abstract” in nature and offer up both the calculated surface of the geographic context in question, which is subsequently projected onto the graphic representation, in addition to an abstract quality of context—that is the information which is not relayed via the mapping.⁴⁷ It is inherently a selection process and therefore a degree of abstractedness results. So Corner states his focus is not on the finished, complete product of the map, nor its meaning, but rather on what the product does to or for the design creative process.⁴⁸ I explore this perspective in my study, and the final chapter looks at some contemporary practitioners in this area.

Françoise Choay’s work *The Rule and the Model* focuses upon written theoretical foundations of concepts of the urban environment.⁴⁹ Although written accounts of human environments and ideas of space date back most notably to ancient Chinese texts, Choay’s focussing on the theoretical, argues that the “creation of an autonomous discourse” on theories of spatial configurations is a Western preoccupation.⁵⁰ Choay highlights that in non-Western contexts, and in societies without writing, “the organisation of built space is interconnected with the whole of social practices and representations, without there having to be a word in the lexicon dedicated to reflection on the idea of spatial arrangement.”⁵¹ Choay attributes the origins of urban theory in Western discourse to the first architectural treatise of the fifteenth century, namely Leon Battista Alberti’s the “*De re aedificatoria*.”⁵² The treatise identifies a set of rational rules, with its basis in developments of mathematics and physics of the period, with the “explicit aim of developing an autonomous

⁴⁵ See in Corner, James. 1992. "Representation and Landscape." *Word & Image* no. VIII (3):243-75.

⁴⁶ Corner, 1999a, 214. See also Deleuze, Gilles, and Felix Guattari. 1987. *A Thousand Plateaus: Capitalism and Schizophrenia*. Translated by Brian Massumi. Minneapolis: University of Minnesota Press, 12.

⁴⁷ *Ibid.*, 215. See also Harley, J. B. 1992. "Deconstructing the Map." In *Writing Worlds*, edited by Trevor J Barnes and James Duncan, 231-47. London: Routledge; Harley, J. B. 1987 "Maps, Knowledge and Power." In *The Iconography of Landscape: Essays on the Symbolic Representation, Design and Use of Past Environments*, edited by Denis Cosgrove and Stephen J Daniels, 277-312. Cambridge: Cambridge University Press.

⁴⁸ *Ibid.*, 217.

⁴⁹ Choay, Françoise. 1980. *The Rule and The Model*. Edited by Denise Bratton. English Translation ed. USA: The Massachusetts Institute of Technology. Original edition, Editions du Seuil. Reprint, 1997.

⁵⁰ *Ibid.*, 3. Whereby the term “urbanism” was coined in 1867 by Ildefonso Cerda.

⁵¹ *Ibid.*

⁵² *Ibid.*

conceptual apparatus in order to conceive and build new and unknown forms of space.”⁵³ It is the authorship of this text that Choay identifies as the period in Western history of urbanism, where there is a shift from non-theorised contexts to theorising text in relation to the built environment. In effect, “*De re aedificatoria*” established another means by which to conceptualize, draw one’s world, or map it.

The third group of sources are the studies, which are close to aspects of my work, yet also different, include Matthew Edney, Thongchai Winichakul, and again James Corner. The latter author is mentioned twice as this study adopts his critical perspective to mapping in urban history and urban design. Matthew Edney’s major work *Mapping the Empire* looks at the great trigonometrical survey of India.⁵⁴ Although the work is about the British colonisation of India, the relevance of the argument presented regularly refers to the Southeast Asian context for comparison and to demonstrate what the British were doing with their evaluation of geographical data in their other colonies, such as Malaysia and Singapore.⁵⁵ Edney also offers insights into the technical strategies, which were available to colonisers for achieving their geographical visions.⁵⁶ The power of the map is asserted, as a result of these studies, as a great tool of psychology. For the Southeast Asian condition, whilst earthly geography was not extensive and connected in mappings, indigenous thoughts beyond the immediate realm of the village did most convincingly extend to greater realms of spatial considerations. Cosmological considerations extended spatial dimensions and understandings of the world beyond. Southeast Asian concepts of physical space may not have aligned with Western pre-modern understandings, yet cosmological and temple mappings seem to suggest that indigenous spatialities were typically both projective and retrospective spaces, rather than just a translation of a physical place.

Another source that is substantially referenced in this study is the work of the Western-educated Thai scholar, Thongchai Winichakul, *Siam Mapped: A History of*

⁵³ Ibid., 6.

⁵⁴ Edney, 1997. See also Wright, Gwendolyn. 1991. *The Politics of Design in French Colonial Urbanism*. Chicago USA: The University of Chicago Press.

⁵⁵ Note: British Malaya (18th century-1946), a loose collection of British-controlled states. Modern term post independence Malaysia.

⁵⁶ Anderson, Benedict 1991. *Imagined Communities: Reflections on the origin and spread of nationalism*. Revised second edition ed. London, New York: Verso. Anderson suggests that both Thailand and Indonesia seemed to adopt imaginings with regard to their countries prior to the colonial era, 163, 174-78.

the Geo-Body of a Nation.⁵⁷ In this work, one third of the references are translated from original Thai sources. Yet one of the most valuable contributions of the work is the idea of “geo-body” and the way it is constructed to permit a legitimate and viable retrospective and projective analysis of the subject matter. This proposition allows the study of the history of Thailand as a theoretical concept and as a given territorial entity, using the author’s notion of geo-body. Winichakul does not present a linear history but prioritises other understandings of space, proposing it as a guise to consider pre-modern Thai history. In effect the geo-body of Siam reflects geographical area on a map as well as the characteristics which make-up the “life of a nation.”⁵⁸ It is this very understanding of the complexity of pre-modern versus modern interpretations of space that make this text useful for my study. Winichakul highlights the dilemma of whether territory exists before or sometimes only on the map.⁵⁹ For this reason it is important to open up our conceptions of mappings because they are not always focused on territory *per se*. By the same token, Winichakul champions Mongkut, who was part of the Siamese aristocracy (later became King Rama IV, r.1851-1868) for accurate predictions of geography and topography based on indigenous astrology and modern astronomy.⁶⁰ These interpretations of geography apply to the specificity of the Thai case as it remained independent in the colonial era. Siamese map makers had freedom, unlike other colonised countries, to choose to follow traditional or modern methods or combinations of the two in their spatial interpretations. Winichakul’s text is highly persuasive in its delivery of the ideas that whatever the achievements of modernity, most studies on non-Western contexts appropriated historical cultures and misrepresented them according to their own subjective views and interests. The acceptance of a degree of bias in any composition is an important aspect in the exchange of human knowledge, and this study does not claim to be free from such bias in the views of every reader.

Limitations and Contributions

This is an interdisciplinary study that bridges across three major fields: urban history, urban design, and history of cartography. The three fields are large, their literatures

⁵⁷ Winichakul, 1994.

⁵⁸ Winichakul, 1994, 17.

⁵⁹ *Ibid.*, 56. Edney concurs with this idea in the context of India.

⁶⁰ *Ibid.*, 37.

are extensive, and consequently many limitations confine this study. In addition, the study is utilising insights from other disciplines, most notably geography, anthropology, architectural and landscape architectural history, to trace other facets of meanings in settlement formation. Thus the study can only deal with a small sample of selected literature from each field to construct the thesis and sustain the core arguments. Yet, it is in this interdisciplinary research that the main contributions of the thesis lie. The thesis derives insights from many strands of literature, across a multi-faceted field of research, bringing them together to bear on urban design issues. The cross sectional depiction of human settlement, viewed through the lens of mapping over a long historical span and in three major fields, has enabled this study to present fresh insights into the field of urban design, which rarely engages in such protracted historical and theoretical explorations. By examining the role of the map at a conjunction of urban history, urban design, and history of cartography, the study is able to show how people in medieval Europe and South East Asia conceived of and mapped their spaces of habitation, how the European Enlightenment's rational mapping proliferated into the non-Western world, how the production of urban space shifted from a socio-culturally motivated style to a highly theorised framework, how the concept of the modern city was born alongside the emergence of modern urban planning, how the emergence of modern thinking about the city corresponded with new ways of designing, and how theorists reacted to the modernist urban design rationalism, which was anchored in the authority of scientific mapping. Through this new path of enquiry the study is also able to uncover some of the lost meanings and functions of the map, and to examine new approaches to dealing with the loss of quality and identity in today's urban environments. It is in the construction of this narrative from a multi-faceted, historically-based theoretical perspective that the study delivers its strands of contributions.

Such an interdisciplinary study involves some inevitable conceptual and methodological problems and challenges. Southeast Asia has only been recognised as a region since post-World War II, therefore the grouping of the countries in the region is a modern phenomenon, which inherently creates a conflict between modern conceptions and pre-modern conditions.⁶¹ Thus the task of selecting sources on

⁶¹ See Wallace, Andrew Russel. 1962 (1869). *The Malay Archipelago*. New York: Dover Publications. for the term "Malesia" (and later Malaysia 1963), based on bio-geographical references for flora and fauna studies

Southeast Asia as the most authentic poses some challenges. There are also difficulties associated with the research as far as making generalisations due to the grouping of different socio-cultural contexts into regions, for example, not only in the case of Southeast Asia but also for the European conditions. Sources utilised in this study are predominantly written in English by Western authors, thus it is legitimate to question their reliability in representing indigenous views.⁶² Accessing original sources proved difficult predominantly because of language limitations, where a working knowledge of Thai, Bahasa, Mandarin, Taglog, Mandarin, Vietnamese, Lao, and/or Hindi is required. The scope of the work has thus been restricted to the sources mentioned above. These limitations are only relevant to the first part of the thesis, however, which looks at historical texts dealing with the Southeast Asian condition and its mapping history. As regards this aspect of the study, the main contributions this study makes lie not so much in the historical material itself, but in the ways in which these historical insights are made relevant to, and brought to bear on, contemporary practices. They lie in the ways in which urban history is read together with urban design, an interdisciplinary reading that allows the conventional understanding of maps and mapping to be seen in a new light. In tracing the role of the map through the Enlightenment and the significant changes associated with it during this period, the study provides a new lens to re-view the role of the map as an instrument for design purposes.

Thesis Layout

The thesis begins with the historical collation of information followed by a critical analysis of the findings, summing up with some alternative and contemporary practices, which demonstrate how notions of maps and mapping are being revisited in an urban design capacity in early twenty-first century practices. The thesis structure consists of three main parts. Part I: Maps and Settlements examines how and in what form pre-modern mapping existed and survived; Part II: Mapping and Modernity

based in the Malay archipelago. See also Bellwood, Peter. 1997. *Prehistory of the Indo-Malaysian Archipelago*. Honolulu: University of Hawai'i Press Original edition, 1985. Reprint, 1997, for the term of prehistory "the Indo-Malaysian Archipelago."

⁶² See Kien, Lai Chee. 2010. "Southeast Asian Spatial Histories and Historiographies." *The Journal of the Society of Architectural Historians, Australia and New Zealand* no. 19 (2):82-105, who presents an interesting overview of Western-based and English sources, from the point of view spatial construction in Southeast Asia. See also Chen, Kuo-wei. 2002. Meaning in Architectural and Urban Space of the Penang Kongsi Enclave. Paper read at The Penang Story - International Conference 2002, at Penang Malaysia.

identifies the key influences upon mapping from the Enlightenment to modernity; Part III: Mapping and Modern Urbanism examines some examples of mapping in urban design from the rationalist approach utilised for the creation of twentieth century modernist designs. It also examines some examples of contemporary mapping practices and movements which ultimately arose as reactions to the modern movement.

Part I utilises each of its three chapters to investigate the breadth of maps of pre-modernity, which embraced both cosmological as well as cartographical concerns. Chapter one reflects upon various ways pre-modern cultures conceived their world through drawing, and how these drawings differed from mappings in their embrace of certain cartographic signs. While revealing and discussing the idiosyncrasies of pre-modern conceptions of space linked to sacred and profane geographies, this chapter, in turn, demonstrates the interconnected nature of pre-modern understandings of cartography and cosmography. Extrapolating on these ideas of representation, chapter two identifies five different themes of mappings typical to pre-modern and non-western worlds. Chapter three explores mapping in its relationship to pre-modern ideas about settlement. Focussing on Southeast Asian urban conditions, tracing evolution of settlements also uncovers the complexities in reading archaeological findings retrospectively. This dilemma is further elaborated in contemplating how pre-modern geographies and settlements were represented, many of which were combinations of sacred and earthly spaces.

To illuminate the significance of the transition, from conceiving settlement for sacred and socio-cultural purposes, to our modern scientific understanding, Part II, and firstly chapter four, focuses on Enlightenment developments. The European Enlightenment, signified shifts in mapping practices due to developments in cartography, geography, and other sciences which made way for our modern way of seeing the world. This shift in conceptualisation also paralleled the Second Great Age of Exploration whereby first hand encounters produced conflict with previously assumed religious and geographic knowledge. Religious and scientific thinking became incompatible, as the geographical archive was prepared by European powers for colonial motivations. Colonial locations including surrounding areas in Southeast Asia provided opportunities to put Enlightenment thinking into practice. New ideas and

developments, stemming from the rationalised and reasoned Enlightenment processes, in mapping and settlement design were implanted into new colonial territories. A context removed from entrenched European socio-cultural and religious considerations, perhaps permitted a less contentious transition to modern settlement formation. Also as dominated peoples, Southeast Asian sacred and profane conceptions of space were misunderstood by Europeans. This lack of understanding also facilitated a generally disregard by Europeans for indigenous conceptions of space, in addition to local peoples presenting little physical or psychological opposition to the new hierarchy. The emergence of modern mapping was more easily projected and enacted due to colonisation around the eighteenth and nineteenth centuries. However, chapter five highlights how the disjunction between colonial ideas of mapping and the indigenous views of space were exacerbated in maps, whilst also noting the lack of immediate traction of Enlightenment technologies to be adopted in the colonies. In addition to the problems associated with mapping new lands, there were the cross-cultural misunderstandings of mapping practices and its purpose.

Finally, Part III of the thesis, consisting of chapter six and seven, expands on the Enlightenment project and the results of ultimate rationalised spatial understandings which ignited utopian gestures of the modern movement. Again through technological developments, but this time due to the Industrial Revolution, prompted new ways of thinking about modes of production of human environments. Mapping was instrumental in this new mode of production, as it relayed rationalised space and conceptual principles clearly and concisely in representations of the survey and master plan. Yet the modern movement was deemed by critics to have failed in its delivery of its utopian ideas around the overthrow of the woes of the industrial city. Thus the shift from an intrinsic relationship between meaning instilled in socio-cultural space to a projective, supplanted, highly planned and designed spatial realisation proved problematic. Chapter seven then evaluates some movements, ranging from the Situationists to contemporary practitioners of ecological urbanism, to show how they too have revisited maps and mapping processes to provide other methods for achieving projective design.⁶³ Many of whom embrace the potentials of

⁶³ Kusno, Abidin. 2000. "Imagining Regionalism, Re-Fashioning Orientalism: Some Current Architectural

mapping processes with aims to use the agency of the map for connecting the fields of urban history and urban design. It is the intention of this interdisciplinary study, that it acts as a starting point, in its overview of mapping processes, and also aids future theoretical investigations into these fields of inquiry.

Discourses in Southeast Asia." *Journal of Southeast Asian Architecture* no. 4:45-61. See Kusno for critical assessment of Southeast Asian understanding of region. He examines Banister Fletcher, Spiro Kostof, Sumet Jumsai, Tay Kheng Soon and Ken Yeang's theoretical positioning in the debate on regionalism as a reaction against modernism.