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**Deconstructing U.S. Army Maps of Korea:
A Case Study for Rethinking Historical Environmental Data**

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In partial fulfillment of a Bachelor of Arts Degree in Environmental Analysis,
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December 13, 2021

Readers:

Professor Albert Park

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ABSTRACT

At a time when the natural world and global climate are experiencing extreme changes at unprecedented speeds, understanding these environmental changes over time is more important than ever. With advances in remote sensing technology, large amounts of information about the natural world are becoming more accessible than ever before; however, satellite-collected data are only available from 1984 onwards. To understand how land use has changed on longer timescales, researchers have turned towards archival maps as a data source. Archival maps are a rich source of environmental information; however, they are often saturated with complicated colonial histories. Maps, more so than other historical materials, can hide behind the veneer of objectivity and thus escape important interrogation. As methods that utilize archival maps become more popular, the need to critically analyze the historical and social contexts of the maps becomes even stronger. This thesis argues for a rethinking of historical environmental data through a case study of U.S. Military Maps of Korea from 1945-1954. By providing appropriate historical and social context, three maps of Seoul are deconstructed, thereby illuminating their fallibility as objective environmental sources. This case study ultimately encourages scholars to engage with environmental history more critically and think beyond the analogues dictated by current technology.

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The land on which this thesis was written is the ancestral homeland of the Gabrielino/Tongva peoples, who are the traditional land caretakers of Tovaangar (the Los Angeles basin and South Channel Islands). I am grateful to have had the opportunity to work for the taraaxotam (Indigenous peoples) in this place. I pay my respects to the Honuukvetam (Ancestors), ‘Ahihirom (Elders) and ‘Eyoohiinkem (our relatives/relations) past, present and emerging.¹

Given that this thesis takes as one of its starting points the importance of specificity and relationality as opposed to universality and isolation, I hope to engender this sort of specificity through the citational method used in this thesis. The citational strategy I chose to practice comes from Max Liboiron (Métis/Michif) and Marisa Duarte (Yaqui). Within academia, it is common to denote Indigenous authors’ nations or tribal affiliations; however, this same sort of identification is rarely applied to settlers, thereby reinforcing settlerhood as an invisible norm. Following Liboiron and Duarte’s example, the first time I cite an author, I parenthetically identify them as they introduce themselves in their text or on their website. If an author does not introduce themselves and their land relations, I utilize Liboiron’s method and mark them as “unmarked” as opposed to “settler.”²

Through this practice, I hope to give the reader more context for the conversations that are emerging between scholars in this thesis. Academic literature is essentially a conversation, and conversations between strangers are always much more uncomfortable than conversations

¹ This land acknowledgement is adapted from UCLA’s, which was created in collaboration with Tongva elders. Per Liboiron, I am choosing to use words that have been created for guests to this land. Goeman, “Acknowledging Native Peoples at UCLA Events”; Liboiron, *Pollution Is Colonialism*, vii.

² See Liboiron, *Pollution Is Colonialism*, 3 for more on this.

that start out with introductions and context. Thus, I will now identify myself, my relations, and my obligations; some of which have brought me to the topic of this thesis.

My name is Lee 소라 Beckwith. I am a settler; I grew up on unceded Pennacook land. My mother hails from Seoul, South Korea; my father, from South Bend, Indiana. I come from intertwined tales of missile development and war-driven displacement; white sands and icy rivers. Thank you, first, to my grandparents for the life they have made possible. Thank you to my parents for their unwavering belief in me; to my brothers for keeping me grounded. Thank you to all of the friends who have supported me from near and far: Anna, Moe, Camilla, Marina, Charlie, Hope, Thummim.

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This thesis was not written in isolation; it is an amalgamation of conversations. It is my hope that it will be approached as an opening: may it lead to new conversations.

INTRODUCTION

A 1968 booklet about the United States Army Map Service opens to a full-page, colorful rendering of the organization's Coat of Arms.³ The next page contains the following explanation of the various symbols that come together to create the Coat of Arms:

The shield divided quarterly and the counterchanged 'disc' formed globe were suggested by a surveyor's aiming target and refer to surveying, positioning and targeting functions. The globe and geographic grid lines allude to the geodetic function of precisely determining the size and shape of the earth (or other celestial bodies) and the classic topographic function of locating and portraying the features thereon. The compass rose alludes to the role of the topographer in exploration and in advancing the frontiers of civilization. The solar rays symbolize the extending of man's horizons and knowledge of his physical universe; making known the unknown by casting light to dispel darkness.

Through an analysis of the various visual symbols that comprise the coat of arms—such as the shield, globe, compass rose, and solar rays—the viewer is brought into the knowledge production structures of the U.S. Military. But what does this Coat of Arms have to do with historical environmental data? The Army Map Service is providing an argument about how to “read” this compilation of visual symbols. Just as the coat of arms can be deconstructed into its components and a narrative can be constructed about the overall meaning of the visual, so too can the military map. Many historical environmental studies utilize archival maps to understand landscapes of the past. The vast majority of these maps come from colonial and/or military projects. Yet these studies do not acknowledge the complex power relationships embodied in colonial and military maps (Table 1).

In this thesis, I provide a case study that highlights the role of an exogenous militaristic force in historical environmental studies. The Korean peninsula has a unique relationship with the American military. From 1905 to 1945, Korea was under Japanese colonial control. After

³ United States Army Service, *U.S. Army, Corps of Engineers, Army Map Service*.

World War II, the peninsula was divided into two along the 38th parallel, with the United States taking control over the South and the Soviet Union controlling the North. The subsequent Korean War, both a civil war and a Cold War proxy war, solidified American military forces in South Korea. Today, there are upwards of 26,000 U.S. military personnel in South Korea, which is approximately 15% of all internationally deployed U.S. military personnel.⁴ Additionally, the environmental legacy of the Korean War is a fruitful area for environmental historians to explore. The presence of the Demilitarized Zone (DMZ) between North and South Korea is a product of the Korean War, but has turned into an unofficial wildlife sanctuary of sorts, as human activity is prohibited in the zone.⁵ The lingering effects of the war and of the American military presence in South Korea as well as the potential for future research in this area make for a compelling case study.

In Chapter 1, I provide an overview of contemporary research that utilizes archival maps to understand historical environmental conditions. After establishing some of the factors contributing to the growing popularity of this methodology, I lay the theoretical groundwork for the work of this thesis, drawing on Donna Haraway's conception of situated knowledges to motivate the project. In Chapter 2, I provide the necessary historical and theoretical background to critically examine U.S. Military maps of Korea. In Chapter 3, I deconstruct three Army Map Service maps of Seoul, identifying small visual details that betray the subjective imperial nature of the maps. In Chapter 4, I look beyond the map, providing guiding questions and examples of alternative, situated, specific methodologies for scholars of environmental history to consider as they work with or beyond archival maps.

⁴ "Number of Military and DoD Appropriated Fund (APF) Civilian Personnel Permanently Assigned By Duty Location and Service/Component (as of June 30, 2021)."

⁵ Brady, "How Wildlife Is Thriving in the Korean Peninsula's Demilitarised Zone."

1. LITERATURE REVIEW

This literature review first traces the use of archival maps in land-use and species distribution analyses, with particular attention paid to whether these analyses acknowledge the social and historical context of the archival maps used. The review then pivots to lay out the theoretical argument for why this lack of social and historical context is an epistemological shortcoming.

Historical Environmental Data

In the very early stages of this project, I stumbled upon a paper that used British Admiralty maps of the Pacific Northwest coast to understand how kelp forests have changed over the past two centuries. Yet, this paper, which was published in an environmental science journal, failed to properly contextualize the archival maps the researcher used.⁶ I was curious whether this pattern would hold across other publications utilizing similar methods. I evaluated ten long-term natural resource analyses informed by archival maps (Table 1). While each analysis utilizes historical maps slightly differently, similar methodological gaps emerge.

As with any data-driven analysis, the researchers discuss any uncertainties emerging from their use of archival maps. For example, Li et al. (unmarked) remark that older maps “introduce higher levels of positional error and uncertainty owing to the use of different sources and lack of georeferenced coordinates.”⁷ To deal with these sorts of uncertainty, Costa et al. (unmarked) developed a “Reliability Index” for the charts they were working with, based on the alignment of kelp features with recorded depth measurements.⁸ They note that different surveyors might have

⁶ Costa et al., “Historical Distribution of Kelp Forests on the Coast of British Columbia.”

⁷ Li et al., “Understanding Urban Growth in Beijing-Tianjin-Hebei Region over the Past 100 Years Using Old Maps and Landsat Data.”

⁸ Costa et al., “Historical Distribution of Kelp Forests on the Coast of British Columbia.”

had different methods for recording kelp features, and thus the overall consistency of the historical maps might vary greatly. Similarly, Li et al. note that it was “challenging to adopt a standardized approach to process all the old maps, owing to the unique styles and cartographic habits of different institutions and different time periods.”⁹

While these scholars are quick to point out numerical and positional inaccuracies, they pay little attention to the social contexts in which the archival maps they are using are embedded. Maduekwe (unmarked) makes a quick note that the Nigerian Topographic Map sheets “indicate that the Canadian Government sponsored aerial photograph data collection, ground control and compilation” of the maps.¹⁰ Chen et al. (unmarked) remark that the 1904 Japanese military map that they use only covers the lowland areas of Taiwan (about 57% of the landmass) and assume that “the lack of interest by the Japanese rulers in mapping the upland areas was interpreted as an indication that there was little to no economic infrastructure worth defending” and thus “assumed that all upland areas were covered by forests around 1904.”¹¹ Lawson et al. (unmarked) note that some of the maps they utilize were produced to “support burgeoning U.S. colonial interests” and were meant to “help commercial vessels” navigate treacherous reef-laden waters.¹² Similarly, McClenchan et al. (unmarked) note that the charts they drew data from were “British imperial maps of overseas territories.”¹³ Other authors briefly note that the maps were intended for military use, but do not expand. Three of the publications provide no historical or social context for the maps they use (Table 1).

⁹ Li et al., “Understanding Urban Growth in Beijing-Tianjin-Hebei Region over the Past 100 Years Using Old Maps and Landsat Data.”

¹⁰ Maduekwe, “A GIS-Based Methodology for Extracting Historical Land Cover Data from Topographical Maps.”

¹¹ Chen et al., “Reconstructing Taiwan’s Land Cover Changes between 1904 and 2015 from Historical Maps and Satellite Images.”

¹² Lawson, Letendre, and Drew, “Historical Maps Provide Insight into a Century and a Half of Habitat Change in Fijian Coasts.”

¹³ McClenchan et al., “Ghost Reefs: Nautical charts document large spatial scale of coral reef loss over 240 years.”

As evidenced by the temporal distribution of these publications, there has been growing interest in these methods over the past five years. This increased interest is due to two important phenomena: increased concern about the climate crisis and increased computational capabilities. The natural world and global climate are experiencing extreme changes at unprecedented speeds; to understand how these changes might manifest, climate scientists rely on large computational climate models. Models are constantly being improved: one potential avenue for increased accuracy is inputting more detailed historical land use data. While climate scientists have long understood the link between land cover and global climate trends, recent literature in this area has looked at how the output of climate prediction models might change when given more accurate historical land change data.¹⁴

Historical land change data is becoming more accessible due to the development of machine learning, which has given rise to computational tools such as semantic segmentation. A 2019 paper, “New Tools for the Classification and Filtering of Historical Maps,” shows how image segmentation and machine learning can be used to create “a semi-automatic procedure for the digitalization of heritage maps and the successive filtering of undesirable features such as text, symbols and boundary lines.”¹⁵ Similarly, a 2020 study, “Fully convolutional networks for land cover classification from historical panchromatic aerial photographs,” shows how convolutional neural networks can be used to classify historical land cover.¹⁶ The motivation for more accurate land use analysis is growing due to increased awareness of the climate crisis. Alongside this motivation, computational tools are being developed to make it easier and faster

¹⁴ Chilukoti and Xue, “An Assessment of Potential Climate Impact during 1948–2010 Using Historical Land Use Land Cover Change Maps.”

¹⁵ Gobbi et al., “New Tools for the Classification and Filtering of Historical Maps.”

¹⁶ Mboga et al., “Fully Convolutional Networks for Land Cover Classification from Historical Panchromatic Aerial Photographs.”

to extract data from historical maps. Thus, as archival maps become more and more popular as data sources, the need to critically analyze the social and historical contexts of archival maps becomes more urgent. This impetus is fleshed out in the next section, which details the epistemological importance of specific, partial, situated knowledges as opposed to seemingly objective, top-down knowledge.

Table 1. Long-term environmental analyses informed by archival maps.

Year	Authors	Title	Maps Used	Historical/Social Context of Maps
2021	Lawson et al.	“Historical Maps provide insight into a century and a half of habitat change in Fijian coasts”	<ul style="list-style-type: none"> Nautical charts from the British Admiralty, U.S. Exploring Expedition, U.S. Army, and Fijian Lands and Survey Department, 1840-1945 	<ul style="list-style-type: none"> “While both Tasman (in 1643) and Cook (in 1784) sighted the islands, the first European to make a comprehensive map of Fiji was William Bligh, who after mutiny on the H.M.S. Bounty sailed through the Fijian archipelago en route to what is now Indonesia. Additional charts were made by the United States Exploring Expedition in 1840 in support of burgeoning U.S. colonial interests. By the time the United Kingdom seized control of Indigenous lands in 1874, the British Admiralty was already publishing charts to help commercial vessels navigate the reefs.”
2021	Li et al.	“Understanding Urban Growth in Beijing-Tianjin-Hebei Region over the Past 100 Years Using Old Maps and Landsat Data”	<ul style="list-style-type: none"> 1:50,000, 1:100,000 maps of Zhili, Chahar, and Jehol provinces; Qing dynasty city maps, 1920-1930 	<ul style="list-style-type: none"> No historical or social context given
2020	Costa et al.	“Historical distribution of kelp forests on the coast of British Columbia: 1858–1956”	<ul style="list-style-type: none"> British Admiralty hydrography charts, 1858-1956 	<ul style="list-style-type: none"> No historical or social context given
2020	Maduekwe	“A GIS-Based Methodology for Extracting Historical Land Cover Data from Topographical Maps: Illustration with the Nigerian Topographical Map Series”	<ul style="list-style-type: none"> 1:50,000, 1:100,000 Nigerian Topographic Map Series, 1962 	<ul style="list-style-type: none"> “Map sheet history indicates that Canadian Government sponsored aerial photograph data collection.”
2019	Chen et al.	“Reconstructing Taiwan’s land cover changes between 1904 and 2015 from historical maps and satellite images”	<ul style="list-style-type: none"> Japanese military fortress map, 1904 Taiwanese topographic map, 1926 Taiwanese land use and forest type map, 1956 	<ul style="list-style-type: none"> “The lack of interest by the Japanese rulers in mapping the upland areas was interpreted as an indication that there was little to no economic infrastructure worth defending present in that area at that time. We, therefore, assumed that all upland areas were covered by forests around 1904.”
2019	Noda et al.	“Changes in land cover and grassland area over the past 120 years in a rapidly urbanised area in Japan”	<ul style="list-style-type: none"> 1:20,000 Japanese Rapid Survey Maps, 1880–1882 1:25,000 topographic map, Geospatial Information Authority of Japan, 1952 	<ul style="list-style-type: none"> “To compensate the information obtained from the historical maps, we used a Reconnaissance Note, which included supplemental information of the Rapid Survey Maps. The note records the microclimate, landscapes, forest conditions, resources of each village, the character of the people etc. We extracted information related to vegetation from it.”

2018	Lieskovsky et al.	“Historical land use dataset of the Carpathian region (1819–1980)”	<ul style="list-style-type: none"> ▪ Second Habsburg Military Survey, 1819-1873 ▪ Third Habsburg Military Survey, 1923-1945 ▪ German Military Maps, 1937-1941 ▪ Romanian, Czechoslovak, Polish, Hungarian, Soviet military topographic maps 1950-1983 	<ul style="list-style-type: none"> ▪ “Most of the World Wars period maps and Socialist topographic maps for the Czech Republic, Hungary, Slovakia and Ukraine were prepared for military purposes. Only the maps representing the socialist times for Poland and Romania were civil topographic maps.”
2017	McClenachan et al.	“Ghost reefs: Nautical charts document large spatial scale of coral reef loss over 240 years”	<ul style="list-style-type: none"> ▪ British nautical charts, 18th century 	<ul style="list-style-type: none"> ▪ “18th century British imperial mapping of overseas territories marked the first global effort to collect high-resolution spatial data on coastal areas; these charts often contained substantial amounts of ecological information, with coral of particular interest as a navigational hazard.”
2016	Pindozi et al.	“Using historical maps to analyze two hundred years of land cover changes: case study of Sorrento peninsula”	<ul style="list-style-type: none"> ▪ Topographic and hydrographic contour map of Naples, 1816 ▪ Topographic map of Mount Vesuvius, Torre Annunziata, and Castellamare di Stabia, 1871 ▪ Map of Italy, 1875 	<ul style="list-style-type: none"> ▪ “The maps of the year 1817 were drawn by the officers of the Royal Topographic Office. It followed the first geodetic survey in France around 1680 which inspired other nations to establish national map surveys” ▪ “The maps of 1875 were produced by the Italian Military Geographic Institute and constitutes the basis of the cartography of the Italian state.”
2015	Munteanu et al.	“Legacies of 19th century land use shape contemporary forest cover”	<ul style="list-style-type: none"> ▪ Second Habsburg Military Survey, 1819-1873 ▪ Soviet and National Topographic Maps, 19th century 	<ul style="list-style-type: none"> ▪ No historical or social context given

Theoretical Framework

In her canonical essay, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” Donna Haraway reconciles the notion of objectivity with the constructed nature of knowledge. She is concerned with “how to have *simultaneously* an account of radical historical contingency for all knowledge claims...*and* a no-nonsense commitment to faithful accounts of a ‘real’ world.”¹⁷ Leaning too far in either direction is dangerous: claiming all knowledge is subjective forecloses possibilities for “better accounts of the world, that is, ‘science,’” whereas claiming that certain kinds of knowledge are exempt from socio-historical conditions can lead to knowledge that reinforces and reifies existing power structures.¹⁸ Haraway’s solution lies in partiality: “Objectivity turns out to be about particular and specific embodiment...only partial perspective promises objective vision.”¹⁹ For Haraway, feminist objectivity can be realized through “locatable, critical knowledges sustaining the possibility of webs of connections.”²⁰ When knowledge acknowledges its own limitations, the possibility of building upon this knowledge to build more accurate knowledge becomes possible. Awareness of this partiality, for Haraway, becomes a prerequisite for making knowledge claims in the first place. Haraway explicitly refuses the “view from above” characteristic of dominant science, which tries to “escape” and “transcend limits.”²¹ In reality, the only way to get a true understanding of the fundamental truths of the world is to “be somewhere in particular.” By

¹⁷ Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective.”

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Ibid.

taking a more grounded, humble, collaborative approach, “feminist objectivity makes room for surprises and ironies at the heart of all knowledge production.”²²

While Haraway provides a beautiful theoretical overview of feminist objectivity, Max Liboiron explores what feminist objectivity might look like in practice. They are concerned with methods: how, exactly, does one utilize situated knowledges to discover larger truths? Similar to Haraway, Liboiron articulates the dangers of universalism, first defining it as “the claim that ‘certain principles, concepts, truths, and values are undeniably valid in all times and places and, by extension, the characteristics of phenomena are invariant.’”²³ Dominant science tends to promote universalism, thereby creating “a single knowledge system [that] becomes the touchstone for all other knowledge systems.”²⁴ Specificity is the opposite of universalism; thus, Liboiron treats specificity as a methodology in itself. While some will take specificity as an opportunity to “substantiate uniqueness” and endlessly categorize, Liboiron utilizes specificity to “situate differences that matter to political action.”²⁵ Specificity, which allows for “nuanced connection and humility,” will inform other methods of producing knowledge.²⁶

When one is aware of the relations that make their knowledge claims possible, they are able to identify their obligations and therefore build up methodologies unique to their situation. For Liboiron, all knowledge must be not only specific and particular, but held to standards dictated by the relations of the knower. These standards can be referred to as obligations; obligations arise out of the specific relations and attachments created within “infrastructures of inequality.”²⁷ Haraway touches on this, claiming that by situating and specifically locating the

²² Ibid.

²³ Liboiron, *Pollution is Colonialism*.

²⁴ Ibid.

²⁵ Ibid.

²⁶ Ibid.

²⁷ Ibid.

sources of knowledge, “partial perspective can be held accountable for both its primisting and its destructive monsters.”²⁸ Liboiron’s emphasis on obligation encourages people to first identify their obligations, then create methodologies that are in conversation with these obligations. For example, many of the obligations Liboiron’s lab holds are anticolonial. For Liboiron, any “assumed entitlement to Indigenous Land” is colonialism.²⁹ Thus, their lab will never assume that they have access to the land or resources they might need to conduct experiments. While Liboiron is highly skeptical of universalism, they extol the power of generalization; in fact, generalization is what makes their book possible. The majority of the text provides examples of how, in their lab, they enact methods of specificity. Their hope for the book is that it inspires readers to approach their work from places of deep relationality; the book offers a vision of this type of work. The lessons from Liboiron’s lab can be generalized, but not exactly reproduced; that would conflict with the fundamental lesson of specificity.

Ultimately, Liboiron shows how feminist objectivity can be realized through taking stock of relations, understanding what obligations arise out of these relations, and then developing unique methods for creating knowledge that are specific to these relations. They neatly summarize their methodological intervention: “different relations make different obligations, which engender different methods...this is not relativism, but a deep specificity based in place and in the relations to which we are accountable.”³⁰ What might Liboiron’s insistence on specificity mean for historical environmental data? This thesis as a whole attempts to answer this question through a case study, and the next chapter moves towards an answer by introducing the historical and social context for American military maps of Korea.

²⁸ Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective.”

²⁹ Liboiron, *Pollution is Colonialism*.

³⁰ *Ibid.*

2. THEORETICAL & HISTORICAL BACKGROUND: The Map

As A Text

“Maps are a graphic language to be decoded. They are construction of reality, images laden with intentions and consequences that can be studied in the societies of their time. Like books they are also the products of both individual minds and the wider cultural values in particular societies.” —J.B. Harley (British), “Text and Contexts in the Interpretation of Early Maps”³¹

“Deconstruction urges us to read between the lines of the map – ‘in the margins of the text’ – and through its tropes to discover the silences and contradictions that challenge the apparent honesty of the image. We begin to learn that cartographic facts are only facts within a specific cultural perspective. We start to understand how maps, like art, far from being ‘a transparent opening to the world’, are but ‘a particular human way...of looking at the world’” —J.B. Harley, “Deconstructing the Map”³²

This chapter establishes the theoretical and historical background necessary to embark on a close reading of U.S. Military maps of Korea. First, I provide an overview of canonical texts in the field of critical cartography, which establishes the map as a text to be read and deconstructed and places the map within the history of modern nation-states. Then, I trace the history of the military map as a specific form of information meant to augment the power of the nation-state. Given that the military map developed out of traditions of Western cartography, I then outline the history of the Korean peninsula from the point of view of the West and Japan.³³ Finally, I detail the historical events in the wake of World War II that led to the creation of the U.S. Military Government in Korea.

³¹ Harley, “Text and Contexts in the Interpretation of Early Maps.”

³² Harley, “Deconstructing the Map.”

³³ As this case study is concerned with exogenous cartographic traditions, Korean cartographic practices are beyond the scope of this thesis.

Critical Cartography

Critical cartography can be defined as “the idea that maps—like other texts such as the written word, images, or film—are not (and cannot be) value-free or neutral.”³⁴ By drawing explicit links between map-making and power, critical cartographers push back on the notion of geographic objectivity. The field of critical cartography is generally understood to have emerged in the late 1980’s; pioneers include J.B. Harley and Denis Wood (unmarked).³⁵ This thesis takes as its departure point two canonical critical cartography texts: Harley’s essay “Deconstructing the Map” and Wood’s book *The Power of Maps*.

In his 1989 essay “Deconstructing the Map”, J.B. Harley complicates the dominant narrative of maps as presentations of refined, precise scientific truth. Harley argues for the map as a “text” which can be read and deconstructed in the Derridean tradition. Drawing on Foucault’s conviction that power influences all knowledge, he states that maps reflect societal forces, not just physical phenomena. Harley begins by asking “What type of rules have governed the development of [Western] cartography?”³⁶ One set of rules arise from the promotion of “a standard scientific model of knowledge” by European map makers from the 17th century onwards. This set of rules assumes that everything on the map is “real” and “objective” and exists “independent of the cartographer”; moreover, “systemic observation and measurement” allow for reality to be expressed in purely mathematical terms. The map acts as a “mirror of nature,” with technological advancements allowing for more and more precise representations of reality.³⁷ These science-driven rules of cartography privilege the Western maps that have emerged out of the Enlightenment tradition and result in the view that older maps and non-

³⁴ Perkins, “Critical Cartography.”

³⁵ Crampton and Krygier, “An Introduction to Critical Cartography.”

³⁶ Harley, “Deconstructing the Map.”

³⁷ Ibid.

Western maps are not true maps because they do not follow in the rigid post-Enlightenment scientific tradition.³⁸

Harley then gestures to another set of rules, “those governing the cultural production of the map.” He references the “rule of ethnocentricity” that influences the mapmaker to place their own society at the center of the map as well as the “hierarchialization of space” that places more visual significance on “the estate of a landed gentleman” over that of a farmer.³⁹ Having established the rule systems cartography is bound by, he sets up the map as a text to be deconstructed. He relies on the following definition of deconstruction:

To deconstruct is to reinscribe and resituate meanings, events and objects within broader movements and structures; it is, so to speak, to reverse the imposing tapestry in order to expose—in all its unglamorously disheveled tangle—the threads constituting the well-heeled image it presents to the world.⁴⁰

While the concept of deconstruction can be easily taken up in the case of “non-scientific” maps such as the State Highway Map of North Carolina, Harley argues that “science itself becomes [a] metaphor” to be deconstructed. The task of reading the scientific map as a text requires showing “how cartographic ‘fact’ is also symbol.” Despite the best efforts of “‘scientific’ cartography...to convert culture into nature and to ‘naturalize’ social reality,” the map remains a rhetorical text that can be critically examined.⁴¹

Building on the Foucauldian concept of “power-knowledge,” Harley explains the “external” and “internal” power of cartography. “External” cartographic power is enacted in the links between maps and political power; for example, patrons commissioning maps and the use of maps to maintain state/religious institutions. Maps are utilized by existing power; external

³⁸ Wood, *Rethinking the Power of Maps*.

³⁹ Harley, “Deconstructing the Map.”

⁴⁰ Eagleton, “Against the Grain.”

⁴¹ Harley, “Deconstructing the Map.”

power is “power *with* the help of maps.” “Internal” cartographic power, on the other hand, describes how “cartographers manufacture power” in the ways they process environmental data. Just as people are “normalized” upon interacting with disciplinary institutions (such as schools, hospitals, and prisons), information about the environment is standardized through the process of mapmaking.⁴² The illusion of scientific neutrality grants the cartographer power which is silently enacted on the page.

Harley provides a concrete example of his deconstructionist framework in his essay “New England Cartography and the Native Americans,” in which he examines early maps of the British colonies that would eventually become the United States. He argues that these maps deliberately erase evidence of Indigenous people by anglicizing placenames as well as depicting uncolonized land to the West as blank spaces. The simple act of rendering places in English, as well as renaming places to “New” versions of places in Europe, “made the unbelievable seem more familiar, the unknown more knowable, and the wilderness less wild.”⁴³

In conversation with Harley, Denis Wood explores the ways in which maps exert power. For Wood, maps operate as propositional objects: they argue for the existence of features, and in doing so, bring these features into being. The fundamental proposition of the map is “*this is there*.”⁴⁴ Within this statement there is another implied proposition about the existence of “*this*,” where “*this*” can stand in for private property, counties, voting districts, animal habitats, or even nation-states. These map’s ability to turn ontological propositions into locative propositions “gives the map an unrivaled ability to transform desires, guesses, suppositions...into facts.”⁴⁵

⁴² Ibid.

⁴³ Harley, “New England Cartography and the Native Americans,” 181.

⁴⁴ Wood, *Rethinking the Power of Maps*, 58.

⁴⁵ Ibid.

Wood also argues that the development of cartography as we know it today was ultimately in service of burgeoning state powers, as opposed to a fundamental human need to communicate spatial relations. He traces the history of modern mapping back to the first cadastral surveys of the 16th century, which were used to consolidate local knowledge for the central state. As the new bureaucratic political structure formed, the state utilized maps to visually prove its existence: “the image of the national map was one of the few visual artifacts demonstrating what many perceived to be either an abstract or even untenable fiction.”⁴⁶ Wood neatly lays out how maps became larger and larger arguments for the very existence of nation-states: “[maps] began by arguing for the existence of paddy fields, long fields, and manor lands; the nation-states the fields came to compose; and the world composed by the nation-states.”⁴⁷ While the map originally functioned to legitimize burgeoning nation-states, as these nation-states sought to expand their dominions, the map was transformed into a tool for violent conquest.

The (American) Military Map

In 1952, Arthur Robinson (unmarked), an American geographer who served as director of the map division of the Office of Strategic Services (OSS) during WWII, asserted that “nothing during the past fifty years has exerted so great an influence on geographic cartography as has the occurrence of two world wars.”⁴⁸ Even earlier, in 1908, Captain Henry Edgar Eames (unmarked), an engineering instructor at an Army Service School in Kansas, proclaimed that “modern war is largely fought on maps” and thus “hand in hand with the development of the science of war has advanced the science of Topography.”⁴⁹ The intertwining of military and

⁴⁶ Wood, *Rethinking the Power of Maps*.

⁴⁷ Ibid.

⁴⁸ Arthur H. Robinson, “Geographic Cartography,” in Bousquet, *The Eye of War: Military Perception from the Telescope to the Drone*.

⁴⁹ Eames, *Military Maps Explained*.

cartography can be traced back to the Napoleonic Wars of the early 1800's. These wars were the first conflicts where maps were systematically utilized. Napoleon devoted "unprecedented" resources to cartography, which allowed for "time-space modelling and analysis of strategic movements" through the medium of the map.⁵⁰ In the wake of the Napoleonic Wars, other European powers came to understand the strategic possibilities afforded by maps: they were tools for "visualizing and managing the future."⁵¹ The 1853 British Ordnance Survey was one of the first explicitly militaristic cartographic undertakings. Prompted by a Jacobite rebellion in the Scottish Highlands, the survey received widespread support as fears of invasion grew. The scale of the map was chosen to facilitate the movement of infantry. Today, the national mapping service of Great Britain still bears the name "Ordnance Survey." Around the same time, the American Civil War prompted the annual production of approximately 43,000 map sheets by the United States Coast Service and the Army's Engineering Corps.⁵²

World War I resulted in an even greater degree of reliance on maps. Due to the multimodal nature of the war (aerial, naval, and land forces) catalyzed by new technologies, commanders were unable to visualize the entire battlefield. Thus, accurate and constantly updated maps were necessary to understand the position of the enemy and subsequently strategize about how to most effectively defeat them. Over the course of the war, upwards of 900 million war maps were produced, with Germany creating the bulk of them.⁵³ These maps utilized a rectangular grid to identify any point as opposed to latitude and longitude. But why develop a grid in the first place, when latitude and longitude have been used for centuries? While latitude/longitude positioning is highly accurate, distance calculations between latitude/longitude

⁵⁰ Bousquet, *The Eye of War: Military Perception from the Telescope to the Drone*.

⁵¹ Ibid.

⁵² Ibid.

⁵³ Ibid.

points require the use of complex spherical trigonometry. Invented in 1915 by French survey engineers, the grid system “turned the entire western front into a flat, Euclidean gameboard subject only to the simple rules of plane geometry.”⁵⁴

The grid system facilitated “map shooting.” Map shooting, or predicted fire, is a technique developed during WWI that allowed artillery to target any previously mapped location. Calculations based on the range and azimuth of the target, along with the wind speed/direction, and barometric pressure, enable the targeting of places that are not in the gunner’s direct line of sight. The one caveat is that both the shooting location and the target location must be mapped using the same coordinate system. Many European powers adopted grid systems during WWI, but each country used unique ellipsoid projections to create their grids. This resulted in non-compatible grid systems, as each grid was based on slightly different ellipsoids.⁵⁵ Thus, trying to aim artillery across national borders required many complex calculations. Only the French military succeeded in “unifying the entire western front into a single mathematical space” over the course of WWI, expanding their specific ellipsoid projection across multiple countries.⁵⁶

Immediately after WWI, however, America created its own systematic military grid for its homeland. The grid was a “technology of territorial consolidation,” as it allowed for surveying information to become cohesive and centralized.⁵⁷ The grid extended into the public sphere: it was hoped that “highway engineers, land surveyors, police, private companies, and even lay citizens” would use the newly created grid system.⁵⁸ Later, towards the end of WWII,

⁵⁴ Rankin, *After the Map: Cartography, Navigation, and the Transformation of Territory in the Twentieth Century*.

⁵⁵ Ibid.

⁵⁶ Ibid.

⁵⁷ Ibid.

⁵⁸ Ibid.

American forces applied abroad the techniques it used domestically, creating “a uniformity of grid zones so that their artillery could use the same mathematical tables and coordinate conversions everywhere.”⁵⁹ This international, uniform grid is the Universal Transverse Mercator coordinate system (UTM), an adapted version of which is still used today by the U.S. Military.⁶⁰

The goal of the UTM project was to increase U.S. military intelligence and pave the way for hyper-mobile, responsive warfare: creating a continuous international grid system granted the U.S. the ability to fire a weapon across any border without exorbitant calculations. The globe is first divided into 60 North-South strips, which are then further divided into high-level Grid Zones. Each Grid Zone is then divided into 100-km squares. The goal of the project was to increase U.S. military intelligence and pave the way for hyper-mobile, responsive warfare. The system came into operational power in early 1947; it was subsequently adopted by Canadian and British armies in 1948 and was in use for joint land-air-marine operations during the Korean War, the first use of the system. The development of long-range missile technology which allowed for cross-ocean targeting, required an accurate mapping of the entire globe. The UTM system met this need: by making the world flat, it “made geographic space more calculable, more accessible, and more connected.”⁶¹

Over the course of the Cold War, “army geodesists made a strong push to have UTM installed as widely as possible around the world.”⁶² This undertaking required consistent, precise surveys to ensure the accuracy of the grid lines on map sheets; moreover, intense calculations

⁵⁹ Ibid.

⁶⁰ United States Geological Survey. “What Does the Term UTM Mean?”

⁶¹ Rankin, *After the Map: Cartography, Navigation, and the Transformation of Territory in the Twentieth Century*.

⁶² Ibid.

were necessary to merge surveys that were calculated with different ellipsoids.⁶³ The U.S. offered to perform all of the necessary calculations for European countries in exchange for survey data. In other countries, Americans pursued a similar strategy, offering to do survey work and coordinate conversion calculations for free. In the early 1950's, the U.S. created a unifying axis of triangulation from Egypt to South Africa and created the Inter-American Geodetic Survey which performed high-precision surveys and aerial photography. While there was no monetary cost to the countries surveyed, the U.S. would take a copy of any survey results. The Army's acquisition of a UNIVAC machine allowed for faster and more accurate processing of survey data than ever before. The U.S. Army processed geographic data for nearly all of Latin America and recalculated the surveys of India, Thailand, Cambodia, Laos, and Vietnam. By the end of the Cold War, the system unified most of the non-Communist countries.⁶⁴

The creation and implementation of the UTM system was spearheaded by the U.S. Army Map Service. The Army Map Service was formed in 1942 to meet the growing demands for geographic information during World War II.⁶⁵ It was subsumed in 1972 by an organization that would become the National Geospatial-Intelligence Agency. Its primary task was the “compilation, publication, and distribution of military topographic maps and related products required by the Armed Forces of the United States.”⁶⁶ On the back cover of an informational pamphlet about the U.S. Army Map Service is the following unattributed quote: “An army without maps is like an army without eyes.” As of 1968, it was the “world's largest mapping agency,” with “working agreements with over 57 foreign nations.” Its mission was “to map the

⁶³ For a brief period during WWII, German prisoners of war were forced to complete these calculations by hand. Rankin, *After the Map: Cartography, Navigation, and the Transformation of Territory in the Twentieth Century*.

⁶⁴ Ibid.

⁶⁵ Fleeharty, “Army Map Service Semicentennial.”

⁶⁶ Ibid.

world.” It was through the AMS that UTM was implemented; the AMS was proud to report that it “provided technical training and assistance to foreign countries” and produced “completely new maps of areas that had never been mapped before.”⁶⁷ The Korean War was a test of the abilities of the AMS, which it passed easily: “During the first four weeks of the Korean War, the AMS printed 10 million copies of maps—more than were printed during all of World War I. In addition, a new 1:250,000 scale map series covering all of Korea was compiled, drafted, printed, and distributed to troops within eight weeks after invasion day.”⁶⁸ While the Korean peninsula was easily subsumed into the American mapping machine, this ease was facilitated by Western cartographers who had worked to make the East legible for centuries.

Korea in Western Cartography

To Europeans, Korea “emerged slowly out of the confusion of a barely known Orient.”⁶⁹ The first mention of the peninsula now known as Korea in the Western archive is in Marco Polo’s book of travels; it was denoted as “Kaoli,” a province of China.⁷⁰ Yet it was not until the 1450s that the Mauro circular map of the world suggested the location of Korea. This map was compiled from Arab, Chinese, and Persian sources, which might explain its unusual accuracy and breadth. While the Mauro map depicted the peninsula in the 1450s, it was not until the 1550’s that European powers solidified their knowledge of the Far East and crystallized this knowledge in their maps. As we know from Wood’s analysis of the map as a state-making tool, “mapmaking in Europe went hand in hand with rising political power and efforts at overseas

⁶⁷ Seems a little suspicious. Really, no one had ever mapped these places before? Really, you’re just teaching foreign nations your mapping techniques with no caveats? Fleeharty, “Army Map Service Semicentennial.”

⁶⁸ Fleeharty, “Army Map Service Semicentennial.”

⁶⁹ Short, *Korea: A Cartographic History*, 32.

⁷⁰ Savenije, “Korea in Western Cartography.”

expansion.”⁷¹ European powers were eager to establish trade with Eastern powers in order to capitalize on the absurdly high profit margins⁷² made possible by trade. Thus, European knowledge of Korea was influenced by trade; while China and Japan were becoming more legible to the West, due to its northerly location (and thus its inability to produce spices), Korea remained largely unknown in the Western conception of the East and was not reliably depicted on Western maps until the end of the seventeenth century.⁷³

John Rennie Short (unmarked) identifies three ways that Korea was depicted in Western cartography: as an unknown, as an island, and as a peninsula. Both Sebastian Münster and Abraham Ortelius, prominent cartographers active during the late 1500s, fail to represent any notion of Korea in their work. Ortelius was the creator of the first modern atlas, and Münster created *Cosmography*, “the single most important source of geographical, historical, and scientific knowledge” during the latter half of the sixteenth century.⁷⁴ Neither of these publications acknowledged the presence of the Korean peninsula, likely due to the lack of trading opportunities there.

Around 1600, a cartographic shift occurred: Korea gained a place on Western maps, but as an island. Much of European cartographic knowledge was gathered from travelers and merchants; thus, notes from a Dutch merchant’s journeys seem to be the inception of this rumored depiction. This merchant wrote: “A little above Japan, on 34 and 35 degrees, not far from the coast of China, is another big island, called Insula de Core, from which until now, there is no certainty concerning size, people, nor what trade there is.”⁷⁵ This observation was

⁷¹ Wood, *Rethinking the Power of Maps*.

⁷² Like, 60,000% markup on nutmeg?!

⁷³ Short, *Korea: A Cartographic History*.

⁷⁴ Ibid.

⁷⁵ Savenije, “Korea in Western Cartography.”

immortalized in world maps produced at the time, which depicted Korea as an island snug against the coast of China. A notable theme of these island representations is the lack of details denoted on the island; China and Japan are marked with various place-names, but Korea remains blank; it would be many years until internal details of the peninsula were filled in.

As part of the Age of Enlightenment in Europe, geographic knowledge became more important and desired for commercial, political, and scientific reasons. European states sponsored a plethora of Pacific voyages; these voyages served to collect data as well as expand economic and military power. A French naval officer, La Pérouse, was one of the first European explorers to plot Korean territory using latitude and longitude; he came across the previously unmapped island of 울릉도 (Ulleungdo) and plotted its position in 1787.⁷⁶ Ten years later, the British navy captain William Broughton embarked on a two-year mission to survey the coast of Asia and also made “scientific readings” of latitude, longitude, and altitude at a “village” he visited.⁷⁷

Another way that European powers received information about Korea was through missionaries stationed in China and Japan. The Jesuit missionary Martino Martini, for example, “set about gathering as much geographical information as he could” upon arriving in China.⁷⁸ He gained access to Chinese maps, and passed this information back to Italian cartographers who implemented these geographies in their own maps. The work of other Jesuit cartographers and Chinese surveyors culminated in a map of Korea produced by Jean-Baptiste d’Anville in 1735. This map remained the most accurate representation for the next two hundred years.

⁷⁶ Short, *Korea: A Cartographic History*.

⁷⁷ Ibid.

⁷⁸ Ibid.

The presence of Korea within Western cartography is tinged by trade and religion, but ultimately becomes visible to the West for scientific reasons. Even though Korea remained economically closed off from Europe until the end of the nineteenth century, the peninsula still made its way onto Western maps as part of a European push to scientifically map the world.

Japanese Maps of Korea

The next important milestone in the exogenous cartographic history of Korea is the mapping of the peninsula by Japan during the colonial period, 1910-1945. Many Western maps in the late 19th and early 20th century were based on Japanese maps of Korea, as they were known to be scientifically accurate.⁷⁹ After the 1854 Treaty of Kanagawa, which forced Japan to step onto the global stage, Japan embarked on a period of intense modernization. This modernization was realized in part through the adoption of Western scientific ideas, including rigorous cartographic practices.⁸⁰ As David Fedman (unmarked) writes, “scientific maps...were the lingua franca of international sovereignty, making them a sine qua non for the acquisition of and authority over colonial territories” (207). Japanese leadership understood the important relationship between geodetic science and national legitimacy. Even before assuming power over the Korean peninsula, Japan had embarked on secret surveying projects to map Korean coastal waters in case of an incursion or invasion.⁸¹

When Japan invaded Korea in 1910, Japanese officials surveyed and subsequently mapped the entire peninsula. The colonial government published 5 map series, culminating in an estimated 1,000 distinct map sheets at various scales.⁸² These cartographic acts concretized

⁷⁹ McCune, “Maps of Korea.”

⁸⁰ Short, *Korea: A Cartographic History*.

⁸¹ *Ibid.*

⁸² *Ibid.*

Japanese colonial power, both in Korea and abroad: through mapping, Japan was able to demonstrate it was a powerful, modern nation. The maps of Korea produced by Japan “naturalize[d] the administrative architecture of the colonial government by fixing political boundaries and delineating the organs of state authority.”⁸³ Many maps were focused on soil conditions, infrastructure, and geomorphology: information that would aid in state-sponsored development projects.⁸⁴ Not only did these surveys reinforce the power of the Japanese metropole, they also allowed Japan to take inventory of Korea’s natural resources and reallocate them. Japanese authorities required landowners to register their land claims, and any unclaimed land was subsumed by the state.

Through their use as inventory tracking and resource reallocation tools, Japanese maps acted as instruments of plunder.⁸⁵ These tools of plunder and violence were heavily utilized by the Army Map Service; nearly all of the maps produced by the AMS were partially based on Japanese Imperial Land Surveys.⁸⁶ Many of the AMS maps bear romanizations of Japanese place-names.⁸⁷ This reliance on colonial Japanese structures is mirrored in the establishment of the U.S. Military Government in Korea.

U.S. Military Government in Korea

After Japan’s surrender at the end of WWII, there was a scramble to figure out what to do with Korea, Japan’s now-liberated colony. Previously, Franklin Delano Roosevelt had advocated a “tutelage” program for former colonies of Axis powers, to “oversee internal affairs and prepare

⁸³ Fedman, “Triangulating Chōsen.”

⁸⁴ Ibid.

⁸⁵ Short, *Korea: A Cartographic History*.

⁸⁶ McCune, “Maps of Korea.”

⁸⁷ Ibid.

them for independence and self-rule.”⁸⁸ An official proposal, the Cairo Declaration, was created at the end of 1943 which bound the US, China, and Great Britain to support Korean independence “in due course.”⁸⁹ The messy end to the war resulted in a somewhat ad-hoc approach to Korean independence, however. After Germany’s surrender, the landscape of the war had shifted significantly. The U.S. and the U.S.S.R. agreed to take on complementary responsibilities: The U.S. would invade the Japanese mainland while the U.S.S.R. would liberate Korea. The American development of the atomic bomb, however, allowed for the possibility of defeating Japan without the help of the Soviets. The U.S.S.R. was suspicious of American intentions and ended up invading Manchuria ten days earlier than planned to reclaim land they had previously lost in the Russo-Japanese war. Japan’s sudden collapse after the atomic bombing of Hiroshima was a cause of concern for the Americans: without anticommunist intervention, Soviet forces would be able to overtake the entire peninsula. Thus, the U.S. approached the U.S.S.R. with a proposal for joint tutelage; the peninsula would be split along the 38th parallel with the U.S.S.R. in charge of the northern half and the U.S. in charge of the southern.⁹⁰

Bruce Cumings (unmarked) traces the installation of the U.S. Military Government in Korea (USMGIK) in his book *The Origins of the Korean War: Liberation and the Emergence of Separate Regimes, 1945-1947*. Cumings is very comprehensive in his research, utilizing all sorts of primary sources to paint a picture of the tumultuous years between WWII and the Korean War. He argues that the period of U.S. “tutelage” was nothing more than an extension of Japanese colonialism. For example, following a disastrous experiment instituting a free market in South Korea, the USMGIK reestablished the old Japanese agricultural management system,

⁸⁸ Jager, *Brothers at War: The Unending Conflict in Korea*.

⁸⁹ “The Cairo Declaration.”

⁹⁰ Jager, *Brothers at War: The Unending Conflict in Korea*.

including a rice collection scheme. Koreans resisted this reimposition extensively; eventually, police had to accompany state-sponsored rice buyers as they went about the countryside. Additionally, the very laws and precedents that the USMGIK relied on were “a combination of Japanese law and the special or extraordinary law deriving from the inherent powers of a military occupant.”⁹¹ Americans filled an estimated 170,000 bureaucratic positions but more importantly chose to “preserve the bureaucratic structure itself” and though they removed Japanese officials, they filled in bureaucratic positions with Koreans who had worked for the Japanese Government-General and often kept Japanese officials as unofficial advisors.⁹² Despite outside appearances that the USMGIK was working with the Korean people to establish an independent government, Leftist forces recognized that the Military Government had “merely perpetuat[ed] a traditional social order that had been maintained by the Japanese.”⁹³ Ultimately, American policies in Korea that had been built on existing colonial Japanese structures obstructed the path to Korean self-determination and independence. Having established the theoretical and historical context of American military maps of the Korean peninsula, the next chapter provides close reading of three of these maps.

⁹¹ Cumings, *The Origins of the Korean War: Liberation and the Emergence of Separate Regimes, 1945-1947*.

⁹² Ibid.

⁹³ Ibid.

3. CLOSE READING SEOUL AT SCALE: Creating the Orient

This chapter explores the visual legacies of three archival maps of Korea that the U.S. Army Map Service created between the years of 1945 and 1954. Taking these maps as rhetorical texts to be deconstructed, key details on each of the maps that reinforce their imperial nature are identified. Ultimately, these maps each function differently to create an imagined geography of the Orient. The Orientalization of the maps provide a crack in the maps' objective scientific shells, thereby illuminating their fallibility.

The three maps that will be analyzed center on the city now known as 서울 (Seoul), as it is currently the capital of South Korea. Each map is at a different scale: the most zoomed-in map (1:12,500) only displays the city, the next tier (1:50,000) displays the city as well as some neighboring towns and rivers, and the most zoomed-out map (1:250,000) displays thousands of other cities, islands, and rivers. All three maps are explicit in their intended audience: "For use by War and Navy Department Agencies only; not for sale or distribution."⁹⁴ The viewer is assumed to have some experience reading topographical maps, as there are many symbols and conventions that are not explained, such as cloud-shaped symbols along topographic lines, X's in seemingly random locations, and different hatching styles. The viewer should also be able to intuit that filled in gray polygons represent buildings, and blue swaths representing water features, as neither of these symbols are explicitly listed in any of the map legends. It is only by seeking out external resources such as the contemporary United States Geological Survey (USGS) master legend for topographic maps that meaning can be discerned from these mysterious markings.⁹⁵

⁹⁴ "Kyongsong"; "Tukto"; "Kyongsong or Seoul (Keijo)"; "Soul."

⁹⁵ United States Geological Survey, *Topographic Map Symbols*.

These unexplained symbols are an example of how these maps convey hidden meanings to the right audience: in this case, the military personnel for whom they were produced. What other implicit knowledge might be contained in these maps, and how does this implicit knowledge shape the experience of viewing and using the map? Through close readings of these maps, two competing implicit knowledge themes are identified: rigid imperial frameworks and constructed Oriental geographies. Ultimately, the presence of imagined geographies of the Orient alongside traditional, standardized imperial cartography practices illuminates the fragility of dominant, “objective” knowledge: tiny areas of slippage are identified where the true nature of the map creeps through. This slippage destabilizes the map as an objective source of information, revealing its shortcomings.

The most obvious implicit knowledge theme crystallized in these maps is the rigid imperial framework which undergirds the map as a concept. Modern mapping can be traced back to cadastral surveys of the 16th century, which collected, centralized, and transformed local knowledge into a useful form for the state.⁹⁶ As the new bureaucratic political structure formed, the state utilized maps to visually prove its existence. Beyond just the form of the map, though, imperial concepts such as universalization, standardization, and objectivity are realized through specific aspects of the maps.

At the 1:50,000 scale, Seoul is cut in two; the expanse of the city extends over two different map sheets.⁹⁷ The AMS’ rigorous indexing of land resulted in the creation of hundreds of square map sheets at this scale which form a comprehensive whole when put together. Each degree of longitude is split into four, and each degree of latitude into six. Thus, each degree-square is made up of 24 perfectly square sheets. The slicing of physical space without regards to

⁹⁶ Wood, *Rethinking the Power of Maps*.

⁹⁷ “Kyongsong”; “Tukto.”

the specificities of each place speaks to the prioritization of standardization and universalization. The bottom left corner of each map identifies the larger series it is a part of; the 1:12,500 map is part of the L951 series, for example, and the 1:50,000 belongs to L751. For the L751 series, there is an accompanying map index which identifies the sheet number for any area of the Korean peninsula, crudely cutting land and sea into hundreds of tiny squares. The series reference at the bottom left corner implies the existence of other series. The colonial machine has already and will continue to consume and regurgitate foreign lands in this stark, gridded way, which pays no mind to the specificities and irregularities of place.

Included in the 1:50,000 maps are indices to boundaries: counties, townships, provinces. The index is a small, sparse version of the map itself: it only contains the Han River and a smattering of curved lines that the viewer is expected to match up with the lines on the larger map. Within these lines there are letters and numbers that correlate to different towns, provinces, and counties. There is a visual hierarchy of boundaries: thinner and dashed for towns, thicker and solid for provinces. The thickness and texture of the boundary lines are meant to correlate with the “strength” of the border and the implications of crossing it. These borders and their index create the boundaries, which are not visible on the landscape. The borders act as a form of control, making people and land into distinct units that can be remotely administrated and managed. The inclusion and indexing of borders reinforce their legitimacy, perpetuating a system of colonial administration.

All three maps list the sources utilized to create them. Two common references emerge across scales: the Japanese Imperial Land Survey and aerial photographs taken by the U.S. Air Force. While Korea was under Japanese colonial rule, many cadastral surveys and other mapping projects were undertaken. These maps were then used by the AMS to create their topographic

maps. This layering of cartographic knowledge is similar to the geopolitical layering that occurred on the Korean peninsula after the end of World War II: the U.S. Military Government that was implemented utilized preexisting Japanese colonial structures.⁹⁸ The fingerprints of Japanese colonialism are also evident through the romanization of Japanese place-names in parentheses after the romanization of Korean place-names.⁹⁹ The use of Japanese colonial resources reflects the universal logics of colonization: the specifics of the colonizer do not matter, as they all rely on similar logics and techniques which are easily layered and utilized by different colonizers.

The 1:50,000 maps contain a “coverage diagram” which classifies areas of the map based on how reliable they are.¹⁰⁰ This measure of reliability is purely qualitative; there are only two tiers (good and fair). The coverage diagram also demarcates which areas of the map were compiled by which methods (map vs. photo-planimetric). There is a similar diagram for the 1:250,000 map; however, it is called a “reliability diagram.”¹⁰¹ This diagram utilizes a different metric for reliability, equating reliability with method. The reliability level for any given part of the map is either “good” or “photography.” There is no explicit value given to the reliability of photography, but it is assumed to be the closest thing to true; the most reliable: a section marked as “photography” is sure to be more reliable than a section marked as “good.” The map was revised based on four different sets of aerial photos, from four different years. This is seen as a supplement to the original Japanese maps: proving the intelligence might of America. Yet there are physical entities that are hidden from the camera: for example, tattoos on Indigenous Maori people who were photographed by colonizers were not rendered in prints due to the chemical

⁹⁸ Cumings, *The Origins of the Korean War: Liberation and the Emergence of Separate Regimes, 1945-1947*.

⁹⁹ “Kyongsong or Seoul (Keijo).”

¹⁰⁰ “Kyongsong”; “Tukto.”

¹⁰¹ “Soul.”

processes used.¹⁰² This same sort of blindness could have happened with aerial photography, but the dominant logic of photographic technology as the most accurate remains unquestioned on these maps. This privileging of the visual comes at the expense of other ways of knowing—such as touch, smell, and sound—perpetuating imperial hierarchies of knowledge.

The maps also act to coalesce power at the hands of the U.S. Military. The 1:50,000 maps and the 1:250,000 map reference the Universal Transverse Mercator (UTM) grid system. The UTM project illustrates the strong connection between state power (as realized through the U.S. Military) and mapping. The geodetic framework these maps utilize exemplifies the colonial impetus to universalize and standardize the landscape; moreover, because of this standardization, the Korean peninsula becomes more vulnerable to attack from the U.S. Military in the future.¹⁰³

Attacks might be even more likely due to the blank space on the 1:12,500 map. In the legend, there are five types of “land use” listed: densely built up, sparsely built up, woodland, grassland, and rice. There are two other inferred other land use categories: water and sand. Any place that does not fall into one of these categories is rendered as blank, white space. It is up to the viewer to figure out what might be there, but a viewer might view the uncategorized land as literally empty, and/or figuratively insignificant. This move towards non-specificity and uncategorized land is reminiscent of the use of blank space on colonial maps of the Americas. The western parts of colonial maps of the Americas were visualized as empty spaces upon which colonizers could project visions of divinely gifted resources and wealth. These spaces in the map eliminated the presence of Indigenous people and their constructed societies and built

¹⁰² Bradley, “Puaki.”

¹⁰³ The UTM projection is subtly Eurocentric. The masterminds of the project assumed that any future military conflict would occur in Europe, and thus chose a projection that would minimize the error for northern latitudes. The distortion for this specific projection increases around the equator. Not a huge deal for Korea, but the distortion errors around Vietnam are “around two and a half times the allowed maximum.” Rankin, *After the Map: Cartography, Navigation, and the Transformation of Territory in the Twentieth Century*.

environments.¹⁰⁴ The blank spaces on the 1:12,500 map are continuing this tradition: creating an imagined geography of lack upon which American forces can enact their will.

Another imagined geography created by these maps is distinctly Oriental. At each map scale, different techniques are utilized to construct an Eastern geography. The most zoomed in map contains a plethora of oddly specific locations, such as Bacteriological Laboratory, Botanical Garden, Forestry Experiments Station, Zoo, Dental College, Mulberry, and Buddhist Welfare Home. The mulberry orchards are an especially fruitful area for speculation. There are about five demarcated on the map sheet, mostly on the east side of the city. Though other “woodland” areas are simply demarcated as “orchard,” these areas are specified to be mulberry orchards. The white mulberry tree is native to China, and it feels significant that this is the only type of vegetation specified, aside from rice.¹⁰⁵ On the 1:50,000 and 1:250,000 maps, there are only three main types of land cover distinguished: built up area, woods/brushwood, and paddy fields. Surely there must have been some other farmland? The decision to denote large swaths of land as “paddy fields” seems a little reductive. Both plants are associated with the Orient; it seems no coincidence that they are the only two highlighted.

The 1:12,500 map is colorful: greens, yellows, and blues are splashed across the page. Tiny streaks of red, brown, and black appear as the viewer looks closer. Black dots litter the green, as do grey rectangles of various sizes. Yellow denotes highly settled areas, or “densely built up.” Perhaps it is just a coincidence, but the use of yellow to symbolize a concentrated presence of Korean people might be harkening back to the idea of “yellow peril” from the late 1800s.¹⁰⁶ Upon examination of other AMS maps from around the same time, there does seem to

¹⁰⁴ Harley, “New England Cartography and the Native Americans.”

¹⁰⁵ “*Morus Alba L.* | Plants of the World Online | Kew Science.”

¹⁰⁶ Odijie, “The Fear of ‘Yellow Peril’ and the Emergence of European Federalist Movement.”

be somewhat of a pattern that Asian locations were rendered in yellow; AMS sheets of China have densely populated areas also rendered in yellow whereas AMS sheets of Rome depict metropolitan areas in gray.¹⁰⁷ At the 1:250,000 scale, the trend of yellow urban areas is maintained.

While both of the more zoomed in maps brandish entirely English lettering, the 1:250,000 map contains red Korean and Chinese lettering. Many of the named places are also referred to by their Hanja characters; all except for Seoul, which is unique in that it has no Hanja translation. Why include these characters when everything else is in English, and all the other maps are only in English as well? One can only conjecture, but it would appear to be a mechanism for Orientalizing the map; creating some sort of “atmosphere” or “texture” that is uniquely Eastern. The map viewer need not understand exactly where Korea is, they will know that it is somewhere in the East due to the red script scattered throughout the page.

Across all three maps, there is a “Glossary” text box, which contains the Korean and Japanese place-name suffixes and their corresponding English translation; for example: temples, mountains, rivers, bridges, mountain passes, ponds, shrines, palaces, counties, churches, townships, municipalities, provinces, and gates. Instead of replacing 산 with mountain or 문 with gate, the map renders the entire English transliteration of the Korean place-name: Namsan as opposed to Nam Mountain, or Hangang as opposed to Han River. Through the curation of plants, colors, and text, these maps reinforce preconceived notions about the East, thereby creating an imagined Oriental geography.

Yet this imagined geography stands in stark contrast to the rigid imperial knowledge structures that are also present within each map sheet. This tension gives rise to areas on the map

¹⁰⁷ “Shang-Hai, West”; “Roma (Rome).”

that acknowledge the incompleteness and potential inaccuracy of the maps. A note at the bottom of the 1:50,000 map sheet proclaims: “Paddy fields are generally subject to inundation; however, they may be seasonally dry.”¹⁰⁸ This note highlights the exotic nature of the paddy fields, perhaps assuming that the map viewer does not know how rice is cultivated. This note also acknowledges the seasonal changes of the landscape. Maps, per imperial knowledge structures, are assumed to be static and unchanged by seasonality; however, this note emphasizes that the landscape might appear very different depending on the time of year.

The 1:50,000 map also notes: “Road classifications should be referred to with extreme caution. The information is generally based on source maps and aerial photography and has not been verified by reconnaissance.”¹⁰⁹ This statement admits to the shortcomings of aerial photography and Japanese colonial maps, implicitly destabilizing the hierarchy of knowledge that places seeing at the top. Additionally, the most zoomed out map, despite not depicting any international boundaries, still proclaims that: “the delineation of international boundaries on this map must not be considered authoritative.”¹¹⁰ What is a map if not an instrument of boundary creation? Yet here, the literal boundary-creating machine is admitting its shortcomings and the fallibility of international boundaries.

On every map, the viewer (assumed to be an “officer”) is encouraged to “add hereon corrections and additions which come to their attention and mail direct to the Army Map Service, Washington, D.C.”¹¹¹ The map is admitting to its inadequacy, but still requires the viewer to buy into the premise of ultimately creating a fully mappable world, an accurate representation. Corrections will be subsumed and regurgitated into a new version of the same map. This also

¹⁰⁸ “Kyongsong.”

¹⁰⁹ Ibid.

¹¹⁰ “Soul.”

¹¹¹ “Kyongsong”; “Tukto”; “Kyongsong or Seoul (Keijo)”; “Soul.”

recalls the formation of a colony/metropole structure, with pioneering officers collecting information and goods from far-off lands and ensuring their safe return to the metropole. The use of the passive voice is intriguing: corrections and additions are not sought out but arise from the land itself. Either way, there is no acknowledgement of creation: it is merely an act of observation; and there is a way to observe correctly and objectively. This note about corrections is not included on a map of Rome compiled around the same time; this sort of acknowledgement of cartographic inaccuracy is unique to maps of the East.¹¹² The unique imagined geography of the Orient allows for the subjectivity of the map to come through.

Ultimately, while these maps appear to bolster imperial knowledge schemes at first glance, they also reveal the fragility of colonial epistemologies and the fundamental impossibility of creating an objective, complete map. The fallibility of the map creates an opening for scholars to utilize other forms of knowledge to understand the environments of the past.

¹¹² “Roma (Rome).”

4. BEYOND THE MAP: Specific, Situated Knowledges

...In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose size was that of the Empire, and which coincided point for point with it. The following Generations, who were not so fond of the Study of Cartography as their Forebears had been, saw that that vast Map was Useless, and not without some Pitilessness was it, that they delivered it up to the Inclemencies of Sun and Winters. In the Deserts of the West, still today, there are Tattered Ruins of that Map, inhabited by Animals and Beggars; in all the Land there is no other Relic of the Disciplines of Geography.

—On Exactitude in Science, Jorge Luis Borges (Spanish), trans. Andrew Hurley (unmarked)¹¹³

This short story by Jorge Luis Borges imagines the ramifications of pursuing a 1:1 mapping of a territory. The tale conveys the limitations of cartography by taking the notion of scientific precision to an extreme. Borges eloquently illuminates the one-dimensionality of cartography as a field and the limited knowledge that comes from taking the map as fact and disregarding other sources of knowledge. When thinking through the environmental archive, the sources scholars are drawn to is directly influenced by the type of knowledge that is available today. Remote sensing data, in the form of satellite imagery, is key to the modern study of land use change; thus, scholars looking for a historical analogue will necessarily be drawn to maps as they most closely mirror the form of satellite imagery. As demonstrated in the previous chapters, maps are just as fallible and culturally constructed as other forms of data. Thus, there is nothing holding us to the map as a primary source of environmental data. In fact, we must expand our sources of historical environmental knowledge in order to create a more objective truth.

This chapter first gives an overview of critical archive studies as a high level alternative theoretical framework for approaching historical environmental data. Then, alternative

¹¹³ Borges and Hurley, *Collected Fictions*.

environmental archive methods are introduced, as well as guiding questions for scholars undertaking any sort of archival environmental work.

Critical Archive Studies

The specific historical forces that have led to normative archival practices must be understood before alternative archival methods can emerge. In the article “Towards a Decolonial Archival Praxis,” Ghaddar (unmarked) & Caswell (unmarked) unpack the dominant narrative of written archives as bastions of democracy, arguing that this story obscures the deep colonial logics inherent to modern archival practices. In English language archival studies literature, the origin of the archive is traced to the French Revolution: the “history of modern archives starts with the French Revolution.”¹¹⁴ While all sorts of Indigenous record-keeping and archiving techniques had existed before the 18th century, the establishment of an archival department after the fall of the Bastille was the first time the French people could access cohesive, organized records. Access to these records allowed citizens to hold their government accountable and protect their rights as citizens. While this narrative of archive formation is often touted as an example of democratic accountability, bolstering the position of democracy as an egalitarian, fair form of governance, Ghaddar & Caswell turn to historian Michel-Rolph Trouillot (Haitian) to illuminate the colonial and imperial underside of the same story.

While the French national archive functioned to create the democratic French nation-state, the same archival practice functioned to silence the Haitian Revolution. Record-producers at the time (military officials, missionaries, French intellectuals) were blinded by racist ideas and literally unable to conceive of the Haitian Revolution as a revolution; thus, all written records of

¹¹⁴ Ghaddar and Caswell, “‘To Go Beyond:’ towards a decolonial archival praxis.”

the time reflect this bias: the revolution is rendered impossible. Through this case study, Trouillot shows how power diffuses through the archive: the moment of fact creation (sources), the moment of fact assembly (archives), the moment of fact retrieval (narratives), and the moment of retrospective significance (history). Thus, archivists have the power to decide what is worthy of research and retrospection and can use this discernment to colonial ends. To maintain the narrative of the archive as a manifestation of a nation's equality and freedom, this archive must "remember to forget" anything that would conflict with this image.¹¹⁵

Ghaddar & Caswell put forth a definition of decolonial archival praxis: these sorts of interactions and inquiries "consider how archives emerge through multifaceted global processes and structures, and are embedded within larger discursive formations, in which multiple cultural sites, texts, and contexts are active."¹¹⁶ To critically examine the archive, scholars must challenge "ideas about record-ness and temporality so crucial to the content and pace of archival institutions." Diana Taylor (unmarked) explores the distinction between the archive and the repertoire and what forms of knowledge are encoded and legitimized by both. The archive, she argues, "works across space and time," which results in the "separation of the source of 'knowledge' from the knower." On the other hand, the repertoire "enacts embodied memory": knowledge requires the knower's physical being to become known.¹¹⁷ Much in the way that the repertoire fills a gap in the archive, alternative methodologies for approaching historical environmental data have the potential to reveal environmental knowledge hidden by the map.

¹¹⁵ Ibid.

¹¹⁶ Ibid.

¹¹⁷ Taylor, *The Archive and the Repertoire*.

Alternative Methodologies

Environmental history methodologies beyond the map are slowly coming into focus. Despite the fact that “humans are not the only actors in history” the archive—a human creation—skews towards preserving human activity.¹¹⁸ Movement towards a more expansive archive has taken place in animal studies, as well as marine science. Extensive work has been done in the burgeoning field of marine historical ecology, a “multidisciplinary enterprise” created to “produce data to fill gaps in our knowledge of the levels of change and long-term dynamics exhibited by marine ecosystems.”¹¹⁹ Thurstan et al. provide a review of some of the novel techniques used by marine ecologists to better understand past ecosystem dynamics. These data sources include historical newspapers, restaurant menus, and cookbooks, as well as artwork and natural history museum collections.¹²⁰ Another study looking at the historical arc of marine sciences relied heavily on oral histories to understand how conceptions of oceans and fisheries had changed over time.¹²¹

Recently, more attention has been given to non-visual sensory data; in particular, sound has become a focus of environmental historians. Stephanie Rutherford has studied the role of the wolf howl in the formation of the Canadian settler state, arguing that the howl “has long been important to how humans understand wolves and their place in nature.”¹²² She aims to show how sound can “provide relevant insights into the affective dimensions of environmental attunement, something that is difficult to access in a traditional archive.”¹²³ There is also work being done to

¹¹⁸ Thorpe, Rutherford, and Sandberg, *Methodological Challenges in Nature-Culture and Environmental History Research*.

¹¹⁹ Thurstan et al., “Filling Historical Data Gaps to Foster Solutions in Marine Conservation.”

¹²⁰ *Ibid.*

¹²¹ Olson and Pinto da Silva, “Taking Stock of Fisheries Science through Oral History.”

¹²² Rutherford, “A Resounding Success? Howling as a Source of Environmental History.”

¹²³ *Ibid.*

bring historians into the “natural archive,” i.e. utilizing ice cores, pollen samples, and dendrochronology to inform historical analysis.¹²⁴ Referencing environmental phenomena in the writing of history encourages a deprivileging of traditional documentary sources.

Guiding Questions

The following list of questions is meant for scholars working with historical environmental data. The questions are by no means comprehensive; they are meant to be a jumping-off point.

1. How is the historical environmental data you are seeking related to the current environmental data you have? Are there opportunities to expand the form(s) you are looking for?
2. Where did your historical environmental data come from? Who created it? How?
3. What is the social and historical context of your historical environmental data? Does the context change its meaning? If so, how?
4. Does your historical environmental data rely on (settler-)colonial/imperial structures? Are there alternative, anticolonial sources you can draw on?
5. Does your historical environmental data privilege the visual? Are there opportunities to engage other senses?
6. Are your methods specific to the place you are in and/or the place you are studying?
7. How might you acknowledge the social and historical contexts of your historical environmental data as you share your findings?

¹²⁴ Nowak, “Theorising the Natural Archive.”

It is my hope that these questions allow scholars to critically interrogate what sorts of power relations might be crystallized within the maps they are using. While maps are often seen today as objective sources of spatial information, this case study has shown that this is not necessarily true: maps are imbued with the subjectivities of the structures that created them. These questions are not meant to discount maps as sources of historical environmental data; rather, they should catalyze reflection on how to create a more objective truth from a collection of partial perspectives, which may or may not include archival maps.

CONCLUSION

This thesis has argued for a rethinking of historical environmental data through a case study of U.S. Military Maps of Korea. By providing appropriate historical and social context, the maps are able to be read as texts which illuminate their fallibility as objective environmental sources. It is my hope that this thesis and its accompanying questions will allow scholars to engage with environmental history more critically and think beyond the analogues dictated by current technology. The colonial/imperial/archived map provides a near-perfect analogue to satellite imagery, save for the manual processing. Yet, with the advancements of semantic segmentation and image classification machine learning algorithms, even this tedium is becoming obsolete, encouraging the continued use of archival maps.

But what if we thought outside of the box a little more? What if we looked beyond maps? What if we approached environmental history from non-visual perception patterns? What if we catalogued environmental change through smell, through sound, through conversations, through diaries, through newspaper articles, through restaurant menus? All of these alternative methods have been used sparsely; how might they become more mainstream? How would these alternative methods refigure the human/nature relationship? What might emerge from seeking out different ways of knowing about the environment?

Methods matter. The questions we ask are important, and the ways we set about answering these questions are just as important. Given that there are no guarantees about the conclusions we will find, perhaps *how* we create new knowledge is even more important than the knowledge we end up creating. Specifically in the context of this thesis, *how* we engage with environmental pasts has bearing on *how* we will engage with environmental futures. Productive,

critical, specific interrogation of the past might show us how to equitably create sustainable futures.

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