

Deconstructing Borders, Territories, and Toponyms: Cartographic Designs in the Political
Disputed Territory of Sakhalin

by

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THESIS ABSTRACT

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Master of Science in Geography

Title: Deconstructing Borders, Territories, and Toponyms: Cartographic Designs in the Political Disputed Territory of Sakhalin

In this research, I aim to deconstruct and quantify the cartographic designs of maps of Sakhalin Island—a politically contested area between Russia, China, and Japan. This will enhance understanding of how the design of borders, background fill colors, and toponyms (place names) are presented and used to advance territorial claims. I conducted a quantitative content analysis of 200 maps in four languages, identifying key cartographic designs such as border dash effects, fill color visual variables, and toponym types. I found that uncertain designs of borders and territorial fill colors are more frequently adopted by Japanese map makers to express the neutrality of the contested region of Southern Sakhalin and question Russian's legitimate control, and uncertain designs of toponyms (double labeling) appeared more in Chinese and Japanese maps to signify their historical presence and control of the Island. All these are indicative of specific ways that the cartographic design of borders strokes, territorial fill-colors, and toponyms serve to assert and facilitate political stances and claims towards the contested territory of Sakhalin.

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CHAPTER I

INTRODUCTION

1.1 Introduction

Maps have long been used for a variety of purposes other than navigation. For political purposes, maps have made political boundaries and state control legible (Scott 1999). Maps can also be powerful instruments that can explicitly or subtly convey a variety of biases. In cartography, reference maps, as opposed to thematic maps, are often regarded as more neutral, providing representations of physical and political geographical locations, routes, and environments. However, maps are all biased, including reference maps (Monmonier, 1996; Coetzee & Carow, 2021; Lloyd & Patton, 2011). The choices cartographers make, from scale and layout to projection and colors are all interpreted by individual map readers differently (Dodge et al., 2011). Sometimes, the emphasis or omission, also known as “map silences” of cartographic features, such as borders, fill-colors, or place names, can also influence the messages of reference maps (Harley, 1989).

The biases in reference maps are particularly prominent in representing politically contested regions. For example, since the Russian annexation of Crimea in 2014, several controversies have emerged concerning the ways maps have depicted the Russian-Ukraine war. Cartographers and web map providers have been accused of using Ukrainian-designated place names in Russian-controlled Crimea (Taylor, 2016). Dataset providers, such as Natural Earth, were criticized for placing the Crimean Peninsula in Russian territory (Github, 2023; Github, 2023). Yandex, a major Russian search engine, who provides web map services,

chose to stop showing all borders on their maps to avoid controversy, but this presents a whole new set of potential issues (Lomas, 2022). Similarly, some publishers, such as National Geographic, have use dashed borderlines, labeling cities in both local and English spellings, or include informative annotation about territorial issues in dark red text near these disputed regions (Figure 1.1) to accommodate more diverse interpretations from their illustrations. These practices have shown how sensitive and complex depicting contested regions is and how cartographers and web map providers attempt to modify cartographic designs to be as unbiased as possible.

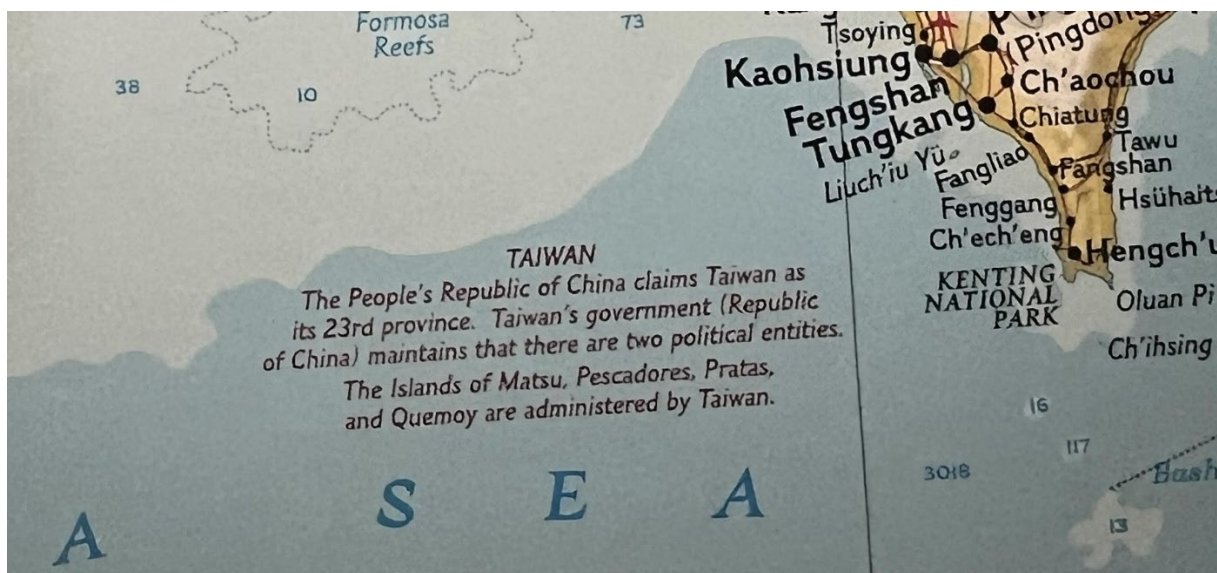


Figure 1.1 : Red-text annotation to the lower-left of the island attempts to explain the Taiwanese territorial issue (*National Geographic Atlas of the World 8th Edition, 2004*)

1.2 Thesis Research Goal

In this thesis research, my goal is to better understand the nuances of reference maps as a tool for building, reinforcing, and disseminating political narratives. I specifically focus on the case of Sakhalin Island, a region of both historical and ongoing geopolitical tensions among China, Japan, and Russia. These three countries have used maps to represent aspects

of Sakhalin Island, employing languages, text systems, and cartographic designs that imply political control, land claims, narratives, and different territorial-legitimation arguments.

Sometimes these representations follow international treaty agreements, while others might be viewed as in conflict with those agreements. Thus, my goal is to understand how these representations differ across these cultural-linguistic contexts.

1.3 Research Questions

Through initial research, I was able to see how the cartographic designs of borders, territories, and toponyms were altered depending on the authorship of the map. Often these elements were used to delegitimize political control or imply political claims. For example, the designs of borders and use of fill colors imply certain sovereignty statuses of a place. The languages, place names, and scripts used can imply political control and territorial claims, emphasize or hide local linguistic characteristics, and shape map readers' understandings and connections to the place. Given this, the objective of this thesis research is to quantify and deconstruct cartographic manipulations in reference maps of Sakhalin Island. More specifically, I aim to answer these two questions:

1. How are cartographic designs, including a) border strokes, b) territorial fill-colors, and c) toponym labels, used differently on Chinese, English, Japanese, and Russian maps of Sakhalin Island and how do these differ depending on the time period depicted in the map?
2. In what ways do the cartographic designs of border strokes, territorial fill-colors, and

toponym labels, in the case of Sakhalin Island, imply political contestations or uncertainty of political control?

3.

1.4 Research Significance

By quantifying the cartographic manipulations of border strokes, territorial fill colors, and place names to better understand how political control is conveyed through maps, this research is intended to contribute to the literature in cartography on the power of maps as a tool for narrative constructions about geopolitical claims. In modern contexts, maps are widely disseminated through a variety of different media. The messages conveyed in these maps are intertwined with public opinions and public perceptions. This research not only focuses on analyzing the specific cartographic designs of maps on Sakhalin issue; it also seeks to incorporate a discussion on how maps generally advance particular positions in the face of broader political territorial contestations.

This thesis is organized as follows. First, in Chapter 2, I begin with a literature review where I examine the current literatures and scholarships on maps and power relations, pointing out connections between political geographic literature on states and territories with cartographic representations. In the background chapter, Chapter 3, I illustrate why Sakhalin Island is an important example to investigate, including the richness in both the territorial claims and the cartographic representations by the surrounding countries, China, Russia, and Japan. In the methods chapter, Chapter 4, I illustrate how I conducted my research to answer the research questions using quantitative content analysis. After describing the results of that

analysis (Chapter 5), I discuss (Chapter 6) further how this research unravels the complex ways that cartographic design reflects views of political territorial contestations and the narratives and stances behind the contestations. Finally, I return to my research questions and summarize my responses to them in Chapter 7.

CHAPTER II

LITERATURE REVIEW

The goal of this literature review is to connect the fields of political geography, toponymy, and cartography to illustrate the linkages between cartographic representation and the assertion of political power in maps. In section 2.1, I discuss the origins of modern states, which includes description and discussion of territories, borders, and place names. In section 2.2, I describe how states, territories, borders, and place names are important for understanding politically contested territories. In section 2.3, I bring in a discussion of critical cartography and describe the connection between political power and cartographic design. Finally, in section 2.4, I describe the nuances of how borders, territories, and toponyms are translated into cartographic designs of borders, color-filed polygons, and labels.

2.1 States, Territories, Borders, and Place Names

In this section I discuss how states, borders, territories, and place names are vital to the way we view political geography on maps. In Section 2.1.1, I discuss the emergence of modern states. In Section 2.1.2, I discuss the concepts of territories and borders which are embedded in the modern state system. And finally, in Section 2.1.3, I illustrate how the place names and place naming are influenced by political, economic, and social processes.

2.1.1 The Emergence of States

The most widely accepted modern definition of “the state” is by Weber, who defines

it “as a compulsory political organization that maintains a monopoly of the legitimate use of force within a certain territory” (Cudworth et al., 2007, pp.95). States dominate the modern political system through international relations and our daily lives. Modernist political geographers view the state as having *sovereignty*, exclusive rights to govern and manage their properties, including people and resources, within their territories without foreign interference. Political geographers regarded the establishment of the modern sovereignty state system as the basis for fill-colored polygons and border strokes that we see on political maps.

2.1.2 Territories and Borders

Territories are the discrete geographical areas defined by borders where states exert exclusive political control and governance (Murphy, 1996). In this section, I draw on the literature on political geographers’ theocratizations of territories and borders, and important debates over territories and borders.

Early geopolitical thinkers regarded territories in a utilitarian way to solve the question “how to conquer the world”. A lot of these narratives focused on how states control the destinies of the world by controlling certain areas or certain strategic territorial junctions. Modernist discourses emphasize how power shapes geographical spaces and how territorial geographical arrangements are containers (Taylor, 1994) that reinforce or undermine power itself.

Borders and boundaries separate territories of one state from another. In political geography, borders are usually discussed along with territories since these two elements are

inseparable and mutually constructive. However, borders are neither fixed nor stable. Critical human geographers including feminist geographers have pointed out the embodiment of borders as also being psychological, gendered, and localized (Hiller, 2014; Jackman et al., 2020; Smith et al., 2016). In the traditional political geographic arena, some scholars advocate for a de-bordered world due to issues of migration, property ownership, flow of capital, physical deployments of armed forces by other states, and the rise of transnational organizations (Anderson and O'Dowd, 2010). In other words, there is an increase in activities and engagements which transcend state borders (Ip, 2010; Kobrin, 2017; Sassen, 2013) and lead to the formation of transnational identities (Sassen, 2002). Yet, other scholars have pointed out the enduring significance of territories and borders in political-territorial ideas, issues, and agendas (Ceglowski, 2000; Diener and Hagen, 2009; Murphy, 2013).

This political geography literature review suggests more critical perspectives are needed to examine relationships between borders, territories, and the political powers, which signifies a re-thinking how the maps are used and communicate these relationships.

2.1.3 Political Power and Place Naming

Similar to states, territories, and borders, the nature of place naming and place names is also inheritably political. Place name studies, also called toponymy, and specifically critical toponymy, have emerged to reveal the connections between place naming and power (Berg and Vuolteenaho, 2009; Rose-Redwood, 2011). Giraut & Houssay-Holzechuch (2016), using Foucauldian governmentality as a frame, discussed how place naming processes can

enhance government control in a society. They examined how geopolitical contexts, actors, and technologies triggered how political powers interact and influence the establishment and modifications of toponyms. Rose-Redwood (2011) also investigated the renaming of places that are driven by the commodified capitalist market. These places were renamed by corporations and institutions with powerful economic stakes, such as amusement parks, industrial parks, and monopoly companies to attract more visitors and laborers. This renaming thus erases the original names of towns and villages and deprives people of their own connections to a place.

2.2 Politically Contested Territories

In this section, I use the concepts of states, territories, borders, and place names to discuss politically contested or disputed territories in three parts. In 2.2.1, I discuss the conflicts between the state and nations/ethnicities and how these conflicts contribute to territorial disagreements between states. In 2.2.2, I present literature on the ideological institutions behind the struggles over contested political regions in the political geography field. In 2.2.3 specifically, I argue that the contestations over place names are a crucial part of politically contested territories.

2.2.1 Nations and Ethnicities

The essence of territorial conflicts largely lies in the conflicting ideologies between nations and states. In this section I discuss the fundamental characteristics of these two terms which leads to conflict around nation-state ideals which in turn creates contested territories.

A nation is a group of people who view themselves as a community with sense of shared history, culture, and territory (Anderson, 1991). The term state, in contrast, is typically viewed as a political-territorial organization or entity. Nation-states are thus where borders and territories mirror the nation, and the European nation-state ideology can be seen in how territories were divided into nation-states (Wimmer and Feinstein, 2010). However, geopolitical studies and international relations scholars have argued that the term, nation-state, has been misused (Mikesell, 1983; Connor, 1992; Connor 2007), with some scholars (e.g. Connor 1978) arguing that most states in the contemporary world are multi-ethnic states rather than singular nation-states. Mikesell and Murphy (1991) investigated how the geographical patterns of majority and minority groups trigger state policies against minority groups, resulting in either compromises and coexistence for multiple nations; or might cause inter-state conflicts represented as politically contested territories.

2.2.2 Inter-state Territorial Conflicts

Political geographers have investigated states' claims on territories, especially exploring how claims are derived and embedded, contextualizing them into broader territorial arrangements, historical developments, or narratives made by states to justify these claims.

Earlier political geography literature deconstructed territorial contested claims through functional and descriptive analysis. For example, Burghardt (1973) examined state narratives around politically contested areas to deconstruct territorial claims in categories.

Murphy (2004) proposed a new concept, *Regimes of Territorial Legitimation (RTL)*, which is a series of ideological and materialistic ways for states to make claims on territories. Murphy pointed out that nation-state ideals and self-determination played a huge role in the narratives over territorial claims. RTL is contextually dependent and does not always follow the building of nation-states, such as regimes bonded to complex historical-territorial arrangements (Falah, 2004; Fang and Li, 2020; Limor and Mekelberg, 2017; Pradana and Suprayogi, 2021).

2.2.3 Toponymy in Contested Territories

Toponymy is also especially crucial in politically contested territories. The forms and spellings of place names are embedded materialistically or ideologically in top-down political manipulations from the central government handling the relationships with minority groups within state territories (Riordan, 2016; Socquet-Juglard, 2022). Specifically, Rundstrom (1993) investigated how an Arizona county-level government forced Hopi place names to be standardized into English and Latin scripts, representing an erasure of indigenous landscapes. Place names can also be used in international relations and diplomacy to advance certain state-centered arguments. For instance, this happens when certain names are used for

waterbodies (Choo, 2012; Kadmon, 2004, pp.85) or in East Asian Island names between China, Korea, and Japan (Medzini, 2017; Koo, 2010, pp.95; Dzurek, 1996, pp.4).

2.3 Cartography and Power

In section 2.3, I introduce how cartographers have investigated political power and how it is reflected and intertwined in maps and mapping processes. In section 2.3.1, I review critical cartography literature on the connections between power and mapping. In section 2.3.2, I describe several case studies on how political power can drive and interfere with the mapping process.

2.3.1 Critical Cartography Literatures

State powers must project legitimate political control, which influences cartographic representations on maps. Specifically, during the emergence of modern states, cartographers changed their ways of mapping by implementing discrete polygons and borders to represent territorial states, which differed from previous map designs which typically emphasized individual cities (Biggs, 1999). Critical-cartography research has engaged with questions as to *how* maps serve the goals of those in power (Crampton and Krygier, 2009). Branch (2013) stated that the development of modern states, bonded by sovereignty and nation-state ideals, is reflected in maps to exercise state territorial power (Branch, 2013). Harley, in *Deconstructing the Map* (1989), referring to poststructuralists Derrida and Foucault, argues that all maps convey political, cultural, social processes rather than merely being

representational, and this is especially true for maps which protect the power of the state. By borrowing Derrida's power of *metaphor*, Harley deconstructed maps into a series of texts (framed as "Cartographic Text"), with implicit meanings behind the seemingly neutral "truth" that they convey. By borrowing Foucault's *governmentality* and other discourses of power, Harley indicated that the process of map making, publishing, and distributing maps was embedded in the larger power of the state. Monmonier's *How to Lie with Maps* (1996) also discussed the ideologies and manipulations of a wide variety of maps. In particular, he explored how maps of all kinds, but especially political propaganda maps and disinformation maps, are manipulated. He found that even minor aspects of map design, such as the color-fill of one arrow, the arrangement of a border design, or the spellings of place names, carry certain political meanings that could trigger anger in one group and advocacy in another. Muehlenhaus' work on cartographic manipulations expanded on Monmonier's. Muehlenhaus' work deconstructed cartographic design for persuasion in a quantitative and systematic manner. In one study, Muehlenhaus (2012), made four differently designed maps using the same data in the styles he had identified through content analysis: propagandist, sensationalist, authoritative, and understated. In those maps, he only varied symbol design, layout, and ancillary information without altering the data inputs. The "propogandist" and "sensationalist" maps used high contrast colors, warning messages, and frightening icons and pictures, while the "authoritative" and "understated" maps were presented in a minimalist and information-accurate way. His user study showed that reader's perspectives and emotions are

dependent on design decisions, signifying a direct relationship between users' emotions and cartographic design.

To respond to critiques by early critical cartographers, more recent research in critical cartography has experimented by pushing back against power structures embedded in traditional cartographic representations, what is called counter-mapping. Several cartography projects and studies have articulated the possibility of borrowing concepts from modern art (Cosgrove, 2005; Kanarinka, 2006), where counter-mappers advocated that the maps are not always monopolized by state power but also can be shared, utilized, and mobilized by communities and people themselves (Hunt and Stevenson, 2017; Wainright and Bryan, 2009, Oslender, 2021).

2.3.2 Power's Direct Interferences on the Mapping Process

In this section, I discuss specific and direct measures, such as policies, regulations, or laws, which reflect the top-down manipulation of the map-making processes and related products for the state. The existing literature is primarily concentrated on the censoring of map-making processes and the control the state has over the production and the dissemination of maps and mapping processes more recently due to the rise of digital technologies (Karimbayeva, 2010; Bier, 2017; Branch, 2017). Konopska (2013) found that censored information strictly regulated by the state government in the communist period in Poland continues to influence current Polish commercial map designs. In the British context,

Alexander (2023) described how the Crown's copyright provisions on authoritative maps were used to advance and monopoly map trades in the market.

More recently, the rise of digital technologies has led to the state controlling map making processes in certain places. For instance, Chinese governmental policies forced the Chinese version of Google Maps to restrict certain functionalities for users in China, such as Volunteered Geographic Information (VGI) and street views (Karimbayeva 2010). Bier's (2017) work described how Israel controls the mapping of the Palestinian territories. In her work, Bier showed that the Israeli government possesses the right to measure geographic information, so they can alter the border lines to erode Palestinian Territories and justify expanding Israeli settlements in these regions. Branch's (2017) more optimistic view of digital technologies, including digital surveying and GIS, found that maps and the technologies used to create them can mitigate territorial conflicts by providing more accurate international borders compared to maps produced by individual states. In his view, web map providers, such as Google Maps, might become an undisputed way of representing borders.

2.4 Visualizing Borders, Territories, and Toponyms on the Map

Reflecting on power's presence in cartographic design, in this section, I introduce the connection between political geography concepts of borders, territories, and toponymy and how this is translated into the cartographic language of line strokes, colored-filled polygons, and place labels on maps. Bertin's *Sémiologie Graphique* (1967/1983) described the ways designers can vary graphical elements to achieve differentiated ways of communicating

visual information. These graphical variables, now often referred to as the *visual variables* (Roth, 2017), are widely discussed in cartography as the building blocks of mapmaking. Bertin discussed how different visual variables, such as the design of point symbols, line strokes, or polygon fills, can and should be used to convey certain types of data. In the geopolitical mapping space, different uses of the visual variables can be used to convey different meanings of power and control.

2.4.1 Borders to Line Strokes

Boria (2015) identified how the modern sense of implementing discrete and continuous borders on maps correlated to the institutionalization of the modern state system. van Houtum's piece *Remapping Borders* (2012) emphasized how the current cartographic notion of borders is stagnant and does not reflect their porous nature. He argued that "[d]rawing fixed lines on a map as a representation of borders does not help us to understand and describe the complexity and multidimensionality of borders and migration" and these are *drawing table politics* (pp.416). Popescu (2012) also signified a sense of division by using borders to separate the space on maps.

In contrast, feminist cartographic approaches to drawing borders on maps suggest the need for a more porous and multi-scalar designs dependent on an individual's embodied experiences (Ribeiro, 2018). Kelly (2019) studied the international borders of Syria, where she found that the experience of individuals conflicted with how borders are often depicted on maps, especially for fleeing refugees. The migrants in her study illustrated how their

embodied experiences unevenly were represented across different parts of the international border. Kelly then recreated the cartographic border trying to capture the nuance of those individual experiences in drawings. Finally, Van-Essen (2019) encouraged viewing borders as they are drawn on maps in three-dimensional space by looking at how space is presented in the air and how high border fences are.

2.4.2 Territories to Filled Polygons

Geographers and cartographers have also considered how different political-territorial powers are influenced by how they are represented on maps as polygons. Biggs (1999) noted that the development of modern cartography reflects political authority based on the concept of sovereign states with exclusive territories by using filled polygons with discrete borders. In cartography, through the decrease cost in printing color and the prevalence of digital technologies, and now with the majority of maps being viewed on screens, colors are more often used (Moser and Meyer, 2019). Applying discrete colors to state polygons is now widely practiced by cartographers for political mapping. However, recent research (Oslender 2021) has advocated for anti-colonialist and anti-state ways of representing territories. This counter mapping is being done by facilitating community-led and indigenous-led mappings which emphasize peoples, natural environments, and local societies instead of higher political structures which typically use solid borders and color-filled state territories.

2.4.3 Toponyms to Labels

Finally, place names are also important in the representation of territories on maps. There are two primary categories of place names: exonyms and endonyms. Exonyms are the local names, spellings, and scripts used for place names, while endonyms refer to foreign place names that do not include the local spelling or scripts. Presenting exonyms or endonyms on maps usually reveals certain political considerations by the cartographer. However, that is not always the case; sometimes the use of exonyms may confuse map readers unfamiliar with those terms (Jordan, 2019) and so it makes sense to use endonyms in those cases. Many modern publications (e.g., Times, 2023; National Geographic, 2010) and datasets (e.g., Natural Earth Dataset and the OpenStreetMap) are now attempting to include both exonyms and endonyms to account for the complexity of using place names on maps.

2.5 Uncertainty Visualization in Cartography

MacEachren (1992) synthesized the concept of uncertainty in the field of cartography and proposed to alter graphic variables (visual variables) to present uncertain information. Later, researchers started to focus on the effectiveness of using various uncertain designs in the mapping process. MacEachren (1998) tested texture and color designs to depict public health issues in a systematic manner. Aerts et al. (2003) acknowledge the efficiency of presenting uncertain visual variables in the decision-making process under the context of land-use planning. Retchless and Brewer (2016) implemented bivariate visual variable designs to express uncertainty levels and tested map users' abilities to comprehend the

uncertain designs. This research focused further on how specific types of visual designs influence map communication between map makers and the audiences. Reuschel and Hurni (2013), in turn, illustrated an extensive use of uncertain designs on points, lines, and polygons, in the interdisciplinary project ‘A Literary Atlas of Europe’, where they blurred the borders to indicate ambiguous political controls in historical maps.

2.6 Summary of Literature Review

Maps are used as essential instruments in representing and facilitating political claims and stances towards a politically contested area (Wood, 1994). In this literature review I noted some important gaps related to how disputed territories are represented and discussed in cartography and political geography. I made clear why this thesis research is timely and important for both cartography and political geography. Specifically, I examined the research on geopolitical power and map design focused on the representation of borders, territories, toponyms, and uncertain information in general. By reviewing literature on the political-territorial arrangements on maps and specifically disputed territories, I hope my study, a quantitative deconstruction of political disputed territories on the maps, can serve as an elaboration on the discourse of the political nature of cartography.

CHAPTER III

BACKGROUND

There are many political contested areas in the world and every disputed area has its own geopolitical narratives. In this study, I chose Sakhalin Island as a case for my research to analyze the way in which reference mapping designs have implications for political control. In this chapter, I illustrate how Sakhalin has been depicted on maps and why Sakhalin Island is a good case for this research.

3.1 History of Sakhalin Island

Sakhalin is an island north of the Japanese islands and east of the Eurasian continent. The Island is separated from the northern most part of Japan, the Japanese Island of Hokkaido, by La Perouse Strait (Soya Strait) and from the Eurasian continent by the Tartar Strait (Strait of Tartary) (Figure 3.1).



Figure 3.1: A map of the Sakhalin Island and the surrounding areas (map designed by the Zhaoxu Sui)

Due to Sakhalin’s location and proximity to Russia, China, and Japan, each one of these geopolitical powers has played a part in the historical narrative of the region. In this next section, I give a brief history of how political control has shifted in Sakhalin among these three geopolitical powers.

The first settlers, Sakhalin Ainu people, dominated most of the island beginning in the 11th century and are considered the indigenous people of the southern part of the Island. Tungusic peoples inhabited on the northern and central part of the Island. However, around the early 15th century, Chinese empires incorporated the northern part of the Island into the Chinese tribute system.

Beginning in the 19th century, Russia and Japan started to expand their territories and had overlapping interests in Sakhalin Island. In 1875, the Treaty of Saint Petersburg was signed between Russia and Japan, affirming Russian sovereignty over the whole island in exchange for Japanese sovereignty over all of the Kuril Islands to the East. However, in 1905, Russia lost the Russo-Japanese war, and ceded the southern half of Sakhalin Island to Japan. As a result, the Japanese government established Karafuto Prefecture as southern Sakhalin Island. The northern part of Sakhalin Island continued to be controlled by Russia.

At the end of the second World War in 1945, Soviet troops entered the Kuril Islands and Southern Sakhalin, without facing much resistance, and claimed all of Sakhalin as Russian. In 1951, the Treaty of San Francisco was signed by the United States, United Kingdom, and Japan, regarded as the end of the Pacific theater. In the treaty, the Japanese government officially abandoned claims on the southern portion of Sakhalin Island and the northern Kuril Islands; however, while the Japanese government renounced its claim to these areas (Sakhalin, Northern Kuril Islands, Taiwan, and the South China Sea Islands), they did not acknowledge the legitimacy of Soviet control over Sakhalin. Thus, since the 1951, Japan has viewed southern Sakhalin Island as a politically disputed territory. In addition, Japan has also advanced their sovereignty claim over the Soviet controlled southern Kuril Islands, known as the Northern Territories

3.2 Vital Concessions over Sakhalin Issue

The dispute over Sakhalin post-WWII is tied to the more intense Northern Territories/southern Kuril Islands conflicts between Soviet Union/Russia and Japan. The Northern Territories consist of the closest four islands to Hokkaido in the Kuril Islands chain: Iturup, Kunashir, Shikotan, and Habomai. The Treaty of San Francisco unclearly regulated these four islands, which allowed the Japanese government to claim them, even while Soviet armed forces actively maintained control. In the Soviet-Japanese Joint Declaration of 1956, both sides agreed to restore diplomatic relations, and the Soviet Union proposed to transfer two islands out of four, Habomai and Shikotan, to Japan in mutual understanding. On the other side, Japanese government proposed to recognize Soviet legitimacy over the southern portion of Sakhalin Island and the northern Kuril Islands, but this negotiation was gradually abandoned by both sides due to the intensifying Cold War in the 1970s (Williams, 2006).

The 1990s witnessed a softening of the Northern Territories crisis. The newborn Russian Federation was seeking support from the Western World, including Japan, to gain access to global markets. Yeltsin's Russian government sent signals that they were willing to negotiate with Japan over Sakhalin and the Northern Territories and make concessions. However, it was not an easy task due to the deteriorating relationships between Moscow and the Russian state of Sakhalin, called Sakhalin Oblast. The fall of the Soviet Union created instability between central and regional political structures in the Russian Federation. Yeltsin had to hold political rallies across Russian to gain support for negotiations with Japan from regional political elites, especially from the governors of Sakhalin Oblast, Fedorov and

Farkhutdinov, who were not willing to make any concessions to Japan. On the other side, the Japanese central government and the Hokkaido government also realized the importance of the local government of Sakhalin Oblast in Russian politics. To gain support from the local Sakhalin government, the Japanese offered economic aid and cultural and academic communication activities (Williams, 2006). The Japanese also opened a new consulate in Yuzhno-Sakhalinsk, the capital of the southern portion of Sakhalin Oblast in 2001 marking the Japanese government's de facto recognition of the Russia's sovereignty over southern Sakhalin; however, this did not last long. The inauguration of Vladimir Putin as the president of the Russian Federation in 2000 and the election of Junichiro Koizumi from Liberal Democratic Party (LDP) in Japan in 2001, reshaped the foreign policies of each country—aligning them with strong nationalist movements, and progress was postponed (Kapur, 2012). Recently, due to the Russian-Ukrainian conflicts, the Japanese government sanctioned products exported to Russia, leading to a further deterioration of the relationship. For instance, *Excerpts of the Situation Concerning Japan's Territories* from the Ministry of Foreign Affairs of Japan and the Frequently Asked Questions page of All Japan Federation of Karafuto, Inc (which is not accessible anymore) firmly renounced Russian claims to legitimacy over Southern Sakhalin. This has led to ambiguity about the Japanese stance on the sovereignty of southern Sakhalin.

3.3 Cartographic Representations of Sakhalin Island after WWII

Echoing the complex power relations that have played out on Sakhalin Island, Japanese maps and atlases often depict the southern part of Sakhalin Island (Karafuto) as either contested or neutral. In Japan, the Ministry of Education, Culture, Sports, Science, and Technology (Shortened as the Ministry of Education) reviews and ratifies maps in Japanese educational materials. In 1969, the Ministry issued a notice regarding the cartographic treatment of the Northern Territories, Northern Kuril Islands, and Southern Sakhalin which was enforced beginning in 1971. The notice dealt with “inappropriate” map representations of Southern Sakhalin and the Kuril Islands. In particular, they noted that four international borders need to be placed on maps, at: 1) the Soya Strait (La Pérouse Strait), 2) the 50th parallel on Sakhalin Island, 3) between the Kuril Islands and the Kamchatka Peninsula, and 4) between the Northern Territories (Japanese claimed) and the rest of Kuril Islands. Besides borders, the notice dictated that Southern Sakhalin and the Northern Kuril Islands should be filled with a white color indicating these areas are neither controlled by Japan nor Russia. This regulation also recognized that place names in these two areas can be labeled using kanji, hiragana, and katakana, part of the Japanese writing system. The place-name policies in the notice, however, were not as strictly enforced as the border designs and polygon-fill policies (FAQ Page, *Teikoku Shoin*, 2024).

To investigate these Japanese cartographic regulations, I conducted preliminary archival research in Tokyo’s Diet Library in summer 2023. For this preliminary archival research I reviewed atlases published by Japanese map publishers between 1946 to 2023. In total I

collected 47 atlases. Most of the atlases were world atlases published by *Teikoku Shoin* (Japanese textbook and atlas publisher) and *Heibonsha* (Japanese encyclopedia and book publisher) (Table 3.1). It was clear from this preliminary research that many of these atlases portrayed the Southern Sakhalin and Kuril Islands as neutral through the design of borders, fill-colors, and the particular scripts used for toponyms. Beginning with atlases published starting in the early 1970s, the four borders dictated by the 1969 regulation by the Ministry of Education, Culture, Sports, Science, and Technology were shown on the maps. However, I noticed that most of the atlases were topographical and used hypsometric tinting to depict elevation values rather than using fill-colors to represent political interests (e.g., Figure 3.2). In the cases where atlases did represent political divisions with fill-colors, these maps used a white fill-color for Southern Sakhalin Island and Northern Kuril Islands, making it distinctly different from both Japan and Russia and implying that neither state controlled the territory. Finally, as for the toponyms, Japanese atlases used double labeling after the 1960s, showing names in both Japanese as scripts and in Russian using Katakana and Latin script. Atlases only featuring Russian place names were published before 1956, the year of the Soviet

Japanese Joint Declaration.

Japanese Name	English Name	Publisher	Year
中学校社会科地図帳	Middle School Social Subject Atlas	<i>Teikoku Shoin</i>	1950
新選社会科地図	Newly Selected Social Subject Atlas	<i>Teikoku Shoin</i>	1950
精密 世界地図帖 アシア要部篇	Detailed World Atlas - Crucial Asian Session	<i>Toseisya</i>	1950
中学校社会科地図帳	Middle School Social Subject Atlas	<i>Teikoku Shoin</i>	1952
標準世界地図	The Standard Atlas of the World	<i>Zenkyozu</i>	1952
新選社会科地図	Newly Selected Social Subject Atlas	<i>Teikoku Shoin</i>	1954
高等学校社会科地図帳	High School Social Subject Atlas	<i>Teikoku Shoin</i>	1955
新修世界地図	Newly Corrected Atlas of the World	<i>JCAPR</i>	1955

世界地図帳	Atlas of the World	<i>Heibonsha</i>	1960
標準世界地図	The Standard Atlas of the World	<i>Kyokiku-tosho</i>	1961
高等地図	High Level Atlas	<i>Teikoku Shoin</i>	1963
世界地図	World Atlas	<i>Heibonsha</i>	1963
最新高等地図	New Version High Level Atlas	<i>Teikoku Shoin</i>	1964
新詳高等地図	New Detailed High Level Atlas	<i>Teikoku Shoin</i>	1964
新詳高等地図	New Detailed High Level Atlas	<i>Teikoku Shoin</i>	1966
高等地図帳	High Level Atlas	<i>Ninomiya</i>	1967
世界各国地図	Country-Based Atlas of the World	<i>Shogakukan</i>	1968
世界地図: ポケット	World Atlas: Pocket	<i>Heibonsha</i>	1968
詳密高等地図	Detailed High Level Atlas	<i>Teikoku Shoin</i>	1969
世界地図帳	Atlas of the World	<i>Heibonsha</i>	1970
中学校社会科地図	Middle School Social Subject Atlas	<i>Teikoku Shoin</i>	1971
世界地図	World Atlas	<i>Heibonsha</i>	1972
世界大百科事典	World Great Encyclopedia	<i>Heibonsha</i>	1972
中学校社会科地図帳	Middle School Social Subject Atlas	<i>Teikoku Shoin</i>	1973
世界旅行地図	World Travel Atlas	<i>Teikoku Shoin</i>	1974
現代地図帳・高等地図帳	Modern Atlas - High Level Atlas	<i>Ninomiya</i>	1974
最新基本地図	New Version Basic Atlas	<i>Teikoku Shoin</i>	1979
グランド 新世界大地図	Grand New World Atlas	<i>Zenkyozu</i>	1980
アトラス現代世界	The Atlas of the Modern World	<i>MAPPLE</i>	1983
ポケットアトラス日本	Pocket Atlas Japan	<i>Heibonsha</i>	1986
最新基本地図	New Version Basic Atlas	<i>Teikoku Shoin</i>	1987
大学アトラス	University Atlas	<i>Teikoku Shoin</i>	1989
世界旅行地図	World Travel Atlas	<i>Teikoku Shoin</i>	1990
アトラスジャパン	Atlas Japan	<i>Teikoku Shoin</i>	1990
スタンダードアトラス世界地図帳	Standard World Atlas	<i>Heibonsha</i>	1991
世界全地図	The Live Atlas of the World	<i>Kodansha</i>	1992
アトラス世界地図帳	Deluxe World Atlas	<i>MAPPLE</i>	2006
世界大地図帳	Grand Atlas World	<i>Heibonsha</i>	2006
日本アトラス	Japan Atlas	<i>Kodansha</i>	2012
新詳高等地図	New Detailed High Level Atlas	<i>Teikoku Shoin</i>	2017
最新世界大地図	Atlas of the World	<i>Shogakukan</i>	2017
ポケットアトラス 日本地図帳	Pocket Atlas Japan	<i>Heibonsha</i>	2017
日本地図・世界地図	Japan Atlas - World Atlas	<i>Seibido</i>	2019
最新基本地図	New Version Basic Atlas	<i>Teikoku Shoin</i>	2020
世界大地図帳	Grand Atlas World	<i>Heibonsha</i>	2020
地歴高等地図	Land & History High Level Atlas	<i>Teikoku Shoin</i>	2021
グローバレマッフル世界地図帳	Global Mapper World Atlas	<i>MAPPLE</i>	2021

Table 3.1: Japanese Atlases collected in the preliminary archival research.



Figure 3.2: Middle School Social Subject Atlas, Teikoku Shoein, 1973.

I also reviewed 35 world atlases published by non-Japanese cartographic agencies (Table 3.2) and compared them with the Japanese maps. None of those 35 world atlases implied a difference in control of the northern vs. southern portion of Sakhalin Island. None of the maps in these atlases used a border at the 50th parallel. However, there was a wide variety of difference in how the Northern Territories were depicted. In some cases, cartographers feature international borders and place annotations to illustrate the geopolitical conflicts of these four islands between Japan and Russia. In other cases, the Northern Territories are labeled as Russian without territorial disputes.

Latin Name	Publisher	Publisher Country	Year
Middle School Teacher Atlas	<i>Sinomaps</i>	China	2003
Atlas of the World	<i>Sinomaps</i>	China	2022
Diercke International Atlas	<i>Westermann</i>	Germany	2021
Le Nouvel Atlas Geographique Du Monde	<i>Glenant / Liberia Geografica</i>	France	2022
De Grote Bosatlas	<i>Wolters-noordhoff</i>	Netherlands	1972
Atlas Mondial	<i>France Loisirs</i>	France	1995
Atlas of World Geography	<i>Rand McNally</i>	United States	2002
Longman School Atlas	<i>Pearson Longman</i>	United Kingdom	2006
Pearson Atlas	<i>Pearson Education</i>	Australia	2006
Neuer Illustrierter Atlas der Welt	<i>Kunth</i>	Germany	1999
Essential World Atlas	<i>DK</i>	United Kingdom	2016
Diercke Tashenatlas der Welt	<i>Westermann</i>	Germany	2019
Pocket Atlas of the World	<i>Klett Perthes</i>	Germany	1999
Pocket Travel Atlas	<i>Philip's</i>	United Kingdom	2014
The International Atlas	<i>Rand McNally</i>	United States	1969
Atlas der Welt	<i>Kunth</i>	Germany	2013
Modern School Atlas	<i>Philip's</i>	United Kingdom	2019
Columbus World Travel Atlas	<i>Columbus Travel Media</i>	United Kingdom	2011
Essential World Atlas	<i>Oxford</i>	United Kingdom	2021
World Atlas Reference Edition	<i>Collins</i>	United Kingdom	2019
Earth Book	<i>Esselte</i>	Sweden	1987
Illustrated World Atlas	<i>Reader's Digest</i>	United States	2004
Knowledge Atlas of the World	<i>Sinomaps</i>	China	2021
Atlas Mira (Atlas of the World)	<i>GUGK of USSR</i>	USSR / Russia	1967
Complete Atlas of the World	<i>DK</i>	United Kingdom	2016
Goode's World Atlas	<i>Rand McNally</i>	United States	2010
The Travel Atlas	<i>Lonely Planet</i>	United States	2018
Atlas Mira (Atlas of the World)	<i>GUGK of USSR</i>	USSR / Russia	1988
	<i>ATKAR PKO Cartography</i>		
Atlas Mira (Atlas of the World)	<i>and Onyx</i>	USSR / Russia	2006
Atlas of the World	<i>StarMap Press</i>	China	2004
Atlas of the World	<i>National Geographic</i>	United States	2011
East View World Geographical Atlas	<i>East View Press</i>	Italy	2011
Atlas of the World Concise Version	<i>The Times</i>	United Kingdom	1997
Atlas of the World	<i>BIK</i>	USSR / Russia	2016
Atlante Internazionale	<i>Touring Club Italiano</i>	Italy	1968

Table 3.2: Non-Japanese Atlases collected in the preliminary archival research.

CHAPTER IV

METHODOLOGY

In this study, I employed quantitative content analysis to analyze the use and designs of borders, fill-colors, and toponyms on maps of Sakhalin Island across four different cultural-linguistic contexts: Chinese, English, Japanese, and Russian. In Section 4.1 I address the objectives of this content analysis, in Section 4.2 I discuss the sample collection process. In Section 4.3 I describe the coding scheme and criteria. Finally, in Section 4.4 I outline the statistical methods I used to analyze the data from this content analysis.

4.1 Objectives for the Quantitative Content Analysis

Quantitative Content Analysis has been increasingly used in the cartography field to better understand cartographic design in a wide variety of different cases (Fish, 2020; McGurk & Caquard, 2020). It was originally developed to systematically examine texts (Krippendorff, 2018), and later also extensively used in other media forms such as images and videos (Lutz and Collins, 1993; Rose, 2016; Pham et al., 2017). In cartography, often quantitative content analysis relies on collecting a large number of maps, creating a set of codes, and deriving meaning from those codes (Muehlenhaus, 2012). Through this content analysis, I seek to answer the following research questions:

1. How are cartographic designs, including a) borders, b) fill-colors, and c) toponyms, used differently on Chinese, English, Japanese, and Russian maps of Sakhalin Island?
2. In what ways do the cartographic designs of borders, fill-colors, and toponyms, in the

case of Sakhalin Island, imply political contestations which do or do not align with international treaty agreements?

4.2 Sample Collection

In this study, I collected 200 maps of Sakhalin Island from the Internet using three different search engines across four different cultural-linguistic contexts: Chinese, English, Japanese, and Russian (Table 4.1). China, Japan, and Russia were all political powers that have at various points in history administratively controlled the whole or parts of Sakhalin Island. English was included to serve as a reference group. For the Japanese and English contexts, I used Google to search for map images. Google is the most prevalent search engine among English and Japanese speakers (The Egg Company, 2021). Baidu is the most used search engine in China, and Yandex is the equivalent in Russia; thus these two search engines were used for those two cultural contexts respectively. All these search-engine platforms have image search functionalities, which is how I identified the maps for my analysis.

	Chinese	English	Japanese	Russian
<i>Search Engine</i>	<i>Baidu</i>	<i>Google</i>	<i>Google</i>	<i>Yandex</i>
<i>Search Keyword(s)</i>	萨哈林岛 地图	<i>Sakhalin map</i>	サハリン 地図	<i>Сахалин карта</i>

Table 4.1: Image Search Engines & corresponding keywords for map querying.

Across these three search engines, I use a single set of keywords (Table 4.1) The term “*Sakhalin Map*” was translated into each cultural-linguistic language. I specifically used

“*Sakhalin*”, instead of *Karafuto* (the Japanese exonym) or *Kuye* (the Chinese exonym), because Sakhalin is the current endonym – the name that currently is most used in both local contexts and international relations.

Each of the four searches resulted in hundreds of images results. My goal was to collect the top 50 images for each cultural-linguistic context to be included in the final sample set for analysis. To be included in the final sample set of maps for analysis, the image needed to be a map, and each map needed to include the entirety of Sakhalin Island, both north and south. I collected the maps for my sample collection in sequenced order starting with the first queried result and continued through image 50 of those map images that fit the criteria. In the search engine platforms, the sorting algorithms order the images by relevance, thus higher relevance and higher importance images end up being shown first and lower relevance and lower importance images are shown subsequently (Beel and Gipp, 2009; Tian et al., 2015). Thus, it made sense to collect the maps in order of how they appeared in the resulting pages from the search engines. I stopped adding maps to my collection once I had 50 maps in each cultural-linguistic group that fit the criteria for a total of 200 maps across the four contexts. I saved all 200 map images to a shared server drive and documented each map image in a separate spreadsheet on which I coded each map according to the coding scheme I describe in the next section.

4.3 Coding Scheme

Content analysis relies on creating a set of codes related to the research questions to analyze the content (Krippendorff, 2018). My coding scheme for these maps of Sakhalin is divided into five groups: *Metadata Codes* (Table 4.2), *Border Codes* (Table 4.3), *Territorial Fill-Color Code* (Table 4.4), and *Toponym Codes* (Table 4.5).

4.3.1 Metadata Codes

The *Metadata Codes* were designed to keep track of the following information: 1) a unique identifier for each map in the collection, 2) how I found the maps, 3) the web locations of collected maps, and 4) the time period depicted in the map. These are described in detail in Table 4.2. I also elaborate on the TIME code in the next few paragraphs because this required some cartographic analysis for coding.

Code	Title	Description
<i>GROUP</i>	<i>Group Name</i>	<i>Chinese, English, Japanese, or Russian</i>
<i>ID</i>	<i>ID</i>	<i>Unique map identifier given to each map</i>
<i>PLAT</i>	<i>Platform</i>	<i>Name of image search platform used to find, download, and collect map</i>
<i>KEY</i>	<i>Keyword</i>	<i>Keyword used for querying the map in search engine platform</i>
<i>URL</i>	<i>URL Link</i>	<i>Web link to the image irrelevant to the webpage where the image may be embedded</i>
<i>WEB</i>	<i>Website</i>	<i>Website or server where the image is originally posted, includes news websites, social media platforms, etc.</i>
<i>TIME</i>	<i>The specific time-period depicted in the map</i>	<i>1 – before 1875 2 – between 1875 and 1905 3 – between 1905 and 1945 4 – after 1945 Unclear – Hard to decipher time period</i>

F – Fictional time period

M - Multiple time periods on one map

Table 4.2: List of *metadata codes* with descriptions.

The **TIME code** (the specific time-period depicted in the map) consists primarily of an ordinal scale to classify the time period depicted in the map which corresponds to historical events described in Chapter 3. To decipher the time period, I relied on the contextual information of how surrounding areas were represented or annotated on the map.

A code of *1* refers to maps that depicted any time prior to 1875 under the Treaty of Saint Petersburg when Russia controlled the entire island. The visual clues of this period include: 1) the depiction of Qing or earlier Chinese dynasties, 2) the absence of Russian and/or Japanese forces or regimes on Sakhalin, and/or 3) the depiction of the lower Amur basin and Siberia, which implies that they were not controlled by Russia.

A code of *2* indicated that the map depicted a time between 1875 and 1905 when the Southern half of the Island was transferred from Russia to Japan under the Treaty of Plymouth. The visual clues of this period include: 1) Qing or Republic of China not being in control of the lower Amur Basin, 2) Russian control of the lower Amur Basin and Siberia. 3) the label “Russian Empire,” 4) an indication that Russia controls the entire island, and 5) an indication that Japan controls Hokkaido and the entirety of the Kuril Islands.

Maps that were coded with a *3* were those that depicted a time period between 1905 and 1945 when Soviet troops entered the southern half of the island. The visual clues of this period include: 1) the Republic of China is present, or Manchukuo is depicted on the map, 2) the Soviet Union is depicted, 3) a split of Sakhalin Island along the 50th parallel between Russia and Japan is shown, 4) Hokkaido and entirety of the Kuril Islands are shown as

Japanese territory, and 5) the Soviet Union is shown as controlling the entire lower Amur Basin and Siberia.

I coded maps with a 4 to denote maps that depicted any time after 1945, i.e., the post-WWII period when the island was controlled entirely by the Soviet Union and later Russia. During this time period, Japan did not fully accept the Treaty of San Francisco (1951) and Japan insisted that Russian occupation of Southern Sakhalin Island is illegal. Visual clues of this period include: 1) the presence of Soviet Union or Russia, 2) the presence of the Republic of China or People's Republic of China, 3) Soviet Union or Russia shown as controlling the northern part of Kuril Islands, 4) the Soviet Union or Russia depicted as the controlling power of the lower Amur Basin and Siberia.

Three additional codes were also used in this category: *unclear*, *F*, and *M*. The *unclear* code was used when it was not possible to decipher the time period reflected on the map. I used *F* when the map represented a fictional time period that does not apply to real-world history, and I used *M* when the map represented multiple time periods in a single layout.

4.3.2 Borders Codes

The next set of codes were the *Borders Codes*. These are divided into three major Boolean codes (Table 4.3, Figure 4.2) to identify and classify maps that included borders at three locations of interest (Strait of Tartary, Soya/La Pérouse Strait/50th parallel), and three Boolean subcodes (Table 4.4), which were used if any of the major codes were coded with a

“1” to further classify the visual variables used for the borders (Bertin, 1967/1983).

Code Description	Data Entry Options
<i>Border on the 50th Parallel</i>	<i>0 – International Border Absent 1 – International Border Present</i>
<i>Border on the Strait of Tartary</i>	<i>0 – International Border Absent 1 – International Border Present</i>
<i>Border on the Strait of La Pérouse (Soya Strait)</i>	<i>0 – International Border Absent 1 – International Border Present</i>

Table 4.3: Major *Borders* Codes with descriptions.

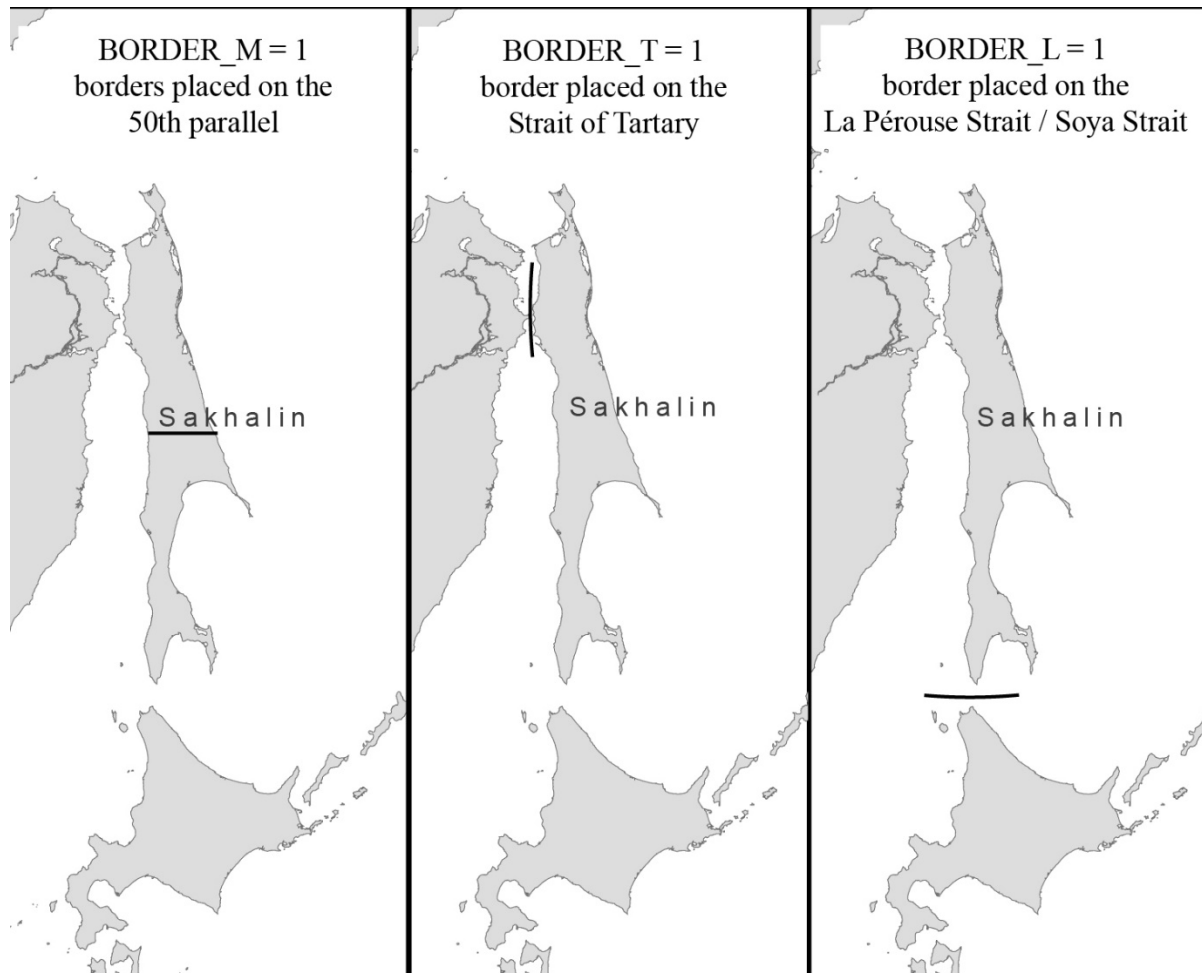


Figure 4.2: Graphic/map examples for each of the major *Border* codes.

Code Description	Data Entry Options
<i>Border Size</i>	<i>0 – Width of stroke of the international border(s) is narrower than 20% of the width of the La Pérouse Strait depicted on map.</i>

	<i>1 – Width of stroke of the international border(s) is wider than 20% of the width of the La Pérouse Strait depicted on map.</i>
Border Color	<i>0 – Color of border(s) stroke is used for other line features, such as internal administrative borders, highways or coastlines.</i>
	<i>1 – Color of border(s) stroke is exclusive to the international border(s).</i>
Border	<i>0 – Border is solid</i>
Arrangement	<i>1 – Border uses visual variable of arrangement, such as dashed or dotted.</i>

Table 4.4: *Border* subcodes & descriptions.

The **Border Size** code refers to the width of the borders. The goal was to classify when maps had thicker and more salient borders at these locations of interest vs. maps that did not emphasize the borders using a large line width. Because of the varied dimensions and resolutions of the maps, I measured the width of the borders in comparison to the La Pérouse Strait (the larger of the two straits) between Sakhalin Island and Hokkaido Island. For border(s) that are thinner than 20% of the width of La Pérouse Strait, I coded the map with a 0, i.e., thin, less salient borders. For border(s) which were thicker than 20% of the width of the strait, I applied a 1, i.e., thick, more salient borders.

The **Border Color** code is designed to code whether the color of the international border is unique or stands out on the map. The goal was to identify when borders were made salient through color. A 0 was used when the border(s) was the same color as other stroke lines (e.g., coastlines, railways, internal borders), i.e., the border was not salient compared to other line features, and 1 was used when the color of the border(s) was unique to the international border(s), i.e., it was designed to be salient within the map design to stand out.

The **Border Arrangement** code was used to code when the visual variable of arrangement is used, such as dashed or dotted lines. The goal of this code was to classify

maps that used solid lines, which implies a defined/definitive border, whereas maps that use dashed or dotted lines imply a border that is less definitive and potentially more contested. A 0 was applied if the border(s) was a solid line. A 1 is applied if the border(s) used dashed lines, dotted lines, or any other patterns.

4.3.3 Territorial Fill-Color

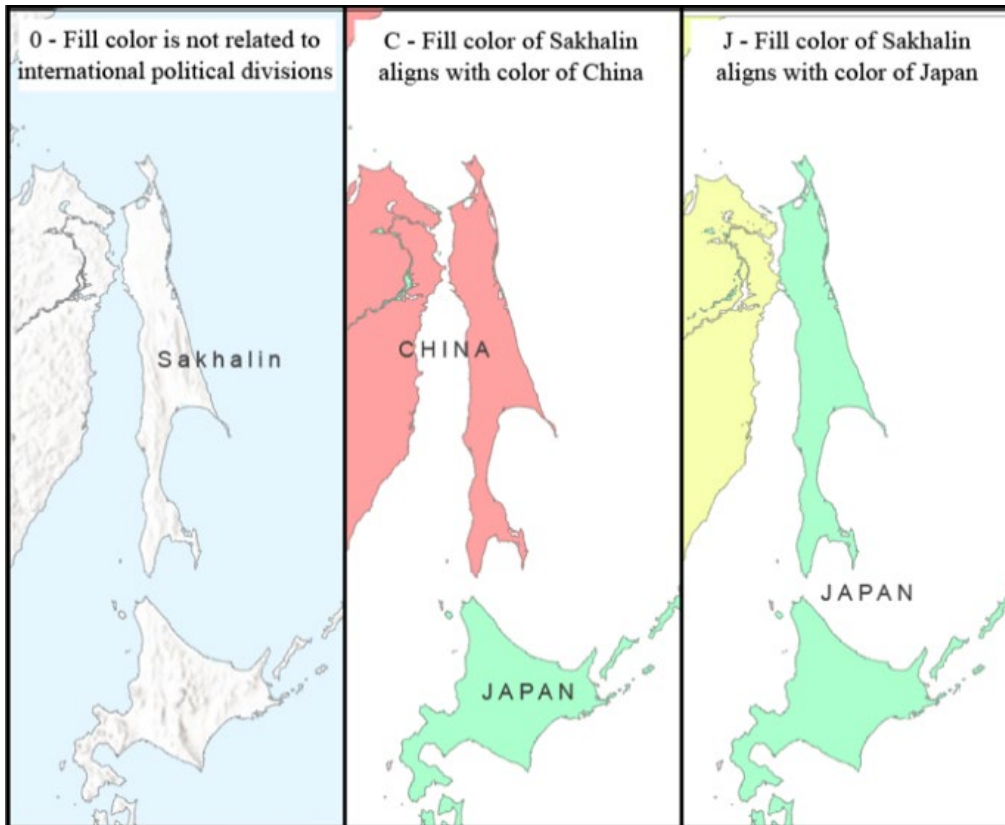
The *Territorial Fill-Color* included just one code designed to categorize how territories are colored to assess territorial control implied on the maps (Table 4.5, Figure 4.2). There were six data entry options for this code to classify the implications of fill-color for territorial control. Maps with fill colors not directly related to political entities were recorded as 0. These included maps had random colors or colors that were related to other thematic variables. The codes of *C*, *R*, and *J* were used if the fill color of Sakhalin Island aligned with the fill colors of either China, Russia, or Japan, respectively. The code *RJ* was used when two fill colors were used dividing Sakhalin at the 50th parallel with fill color of Northern Sakhalin aligning with Russia and Southern Sakhalin aligning with Japan. The code *RW* was used when two fill colors were used dividing Sakhalin at the 50th parallel with fill color of Northern Sakhalin aligning with Russia and the fill color of Southern Sakhalin was white. The white color in these cases was meant to imply an undetermined status.

Code Description	Data Entry Options
<i>Territorial Fill Color</i>	<i>0</i> – Fill color is not associated with territorial control. <i>C</i> – Fill color aligns with fill color of China. <i>J</i> – Fill color aligns with fill color of Japan. <i>R</i> – Fill color aligns with fill color of Russia.

RJ – Two fill colors are used dividing Sakhalin at the 50th parallel with fill color of Northern Sakhalin aligning with Russia and Southern Sakhalin aligning with Japan.

RW – Two fill colors are used dividing Sakhalin at the 50th parallel with fill color of Northern Sakhalin aligning with Russia and the fill color of Southern Sakhalin in white.

Table 4.5: Territorial Fill Color code with descriptions.



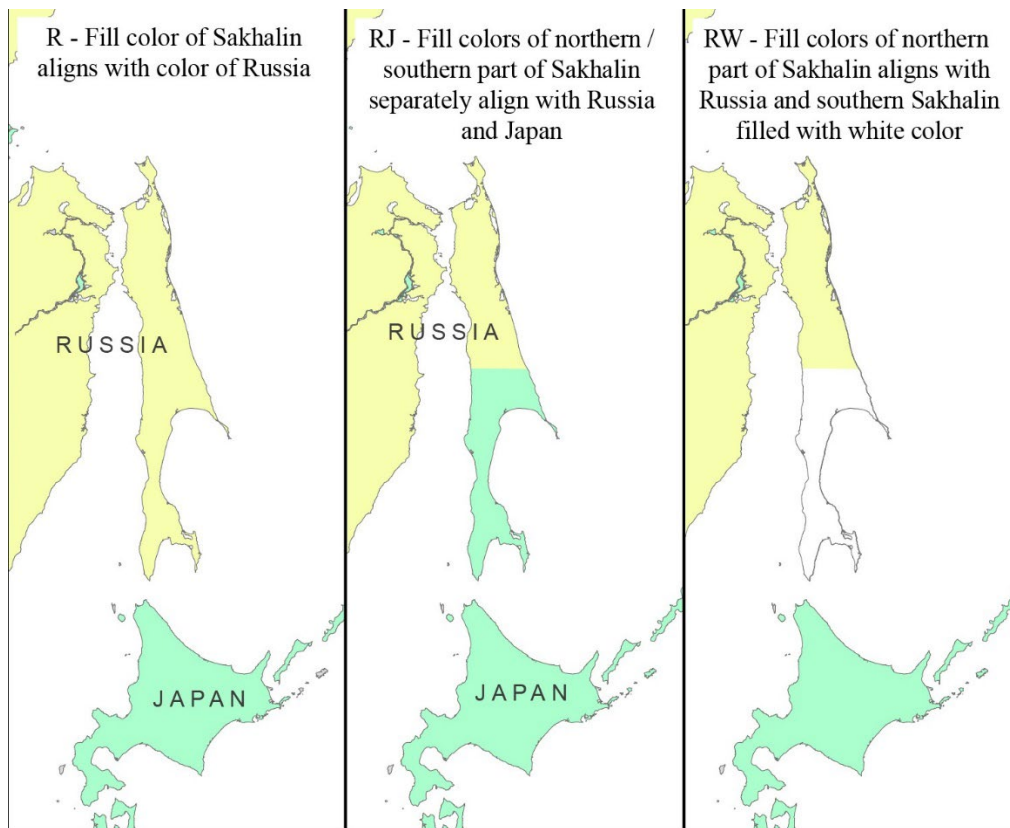


Figure 4.3: List of data entry options for the Territorial Fill Color Code. It is worth noting that while the period which Sakhalin was belonged to China, the neighboring Siberia or lower Amur Basin was also a part of China according to the sampled maps, thus C and R conditions were similar except political entities differ.

4.3.4 Toponym Codes

As previously discussed, the types of toponyms used on maps can imply political control and claims on maps. This is especially true in disputed areas, and thus I created six codes related to the use of toponyms on the maps to ascertain the representation of political control through toponym labels. There are three major codes in the toponym category (Table 4.6). The three codes correspond to whether the toponym naming the Island originated from Chinese, Japanese, or Russian (Table 4.6). I only used the options of N and S were if there was a division of Island by two regimes.

Code	Data Entry Options
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Description	
Chinese	<i>0 – Chinese toponym not used</i>
Toponym used to label Island	<i>N – Chinese toponym used on Northern Sakhalin</i>
	<i>S – Chinese toponym used on Southern Sakhalin</i>
	<i>NS – Chinese toponym used on whole Sakhalin</i>
Japanese	<i>0 – Japanese toponym not used</i>
Toponym used to label Island	<i>N – Japanese toponym used on Northern Sakhalin</i>
	<i>S – Japanese toponym used on Southern Sakhalin</i>
	<i>NS – Japanese toponym used on whole Sakhalin</i>
Russian	<i>0 – Russian toponym not used</i>
Toponym used to label Island	<i>N – Russian toponym used on Northern Sakhalin</i>
	<i>S – Russian toponym for used on Southern Sakhalin</i>
	<i>NS – Russian toponym used on whole Sakhalin</i>

Table 4.6: List of major codes under the *Toponym Codes* with descriptions.

For each of major Toponym code there were three subcodes. If the major code had a value *other than 0*, then I would code each of the subcodes fields: Toponym Type, Multiple Toponyms, Toponym Differences (Table 4.7). The ***Toponym Type*** code was designed to account for whether the toponym for Southern Sakhalin Island was an endonym or exonym. Whether the toponym could be described as either an endonym or exonym is dependent on the time period depicted in the map. Exonyms refer to the names used by local people during a specific time, and endonyms refer to names used by people outside of Southern Sakhalin during a specific time. *0* is given when the place name of Sakhalin was an endonym and *1* is given when the place name was considered an exonym. For maps depicting Sakhalin before 1875, all toponyms are exonyms. For maps depicting Sakhalin between 1875 and 1905, the Russian toponym is considered an endonym while any other form is considered an exonym. For maps depicting the Island between 1905 and 1945, the Russian toponym is considered an endonym on Northern Sakhalin, while the Japanese toponym is considered an endonym on Southern Sakhalin. Finally, for maps depicting the Island after WWII, the Russian toponym is

considered an endonym and any other form of toponyms used for the Island are considered exonyms. If there were multiple toponym forms used for the Island, I coded the largest non-bracketed label.

The *Multiple Toponym Code* was designed to classify maps which used multiple names for the feature of Sakhalin Island. For instance, in some cases maps used both the Russian and Japanese toponyms to label Sakhalin. These toponyms usually have different origins in different languages, and the practice of placing these multiple toponyms can be referred as double labeling. In this code, a *1* is given when there is more than one toponym for Sakhalin, *0* is used if there is only one label for Sakhalin.

The *Toponym Difference Code* was only used if the Multiple Toponym code was a *1*. The goal of this code was to identify when the labels had the same design (size, font, and other type variations) vs. when they did not. A *1* is given if toponym designs are identical (Table 4.7).

Code	When used?	Data Entry Options
Toponym Type	<i>All maps</i>	<i>0 – Toponym(s) for Southern Sakhalin considered endonyms. 1 – Toponym(s) for Southern Sakhalin considered exonyms.</i>
Multiple Toponyms	<i>All maps</i>	<i>0 – Toponym(s) for Southern Sakhalin written in only one form for each individual geographical feature 1 – Toponym(s) for Southern Sakhalin written in more than one form for each geographical feature.</i>
Toponym Difference	<i>Only used if the Multiple Toponym code was “1”</i>	<i>0 – Toponyms have different size, font, color, and other attributes. 1 – In case of having more than one toponym for one geographic feature, toponyms have identical size, font, color, and other attributes.</i>

Table 4.7: *Toponym Subcodes* with descriptions.

4.4 Analysis

4.4.1 Analysis of the first Research Question

How are cartographic designs, including a) border strokes, b) territorial fill-colors, and c) toponym labels, used differently on Chinese, English, Japanese, and Russian maps of Sakhalin Island and how do these differ depending on the time period depicted in the map?

I used descriptive statistics to identify similarities and differences in the use and design of borders, fill-colors, and toponyms used across the four different cultural-linguistic contexts. To do this, first, I summarized the frequencies of both the major codes and sub-codes for all the maps for each category within each cultural-linguistic context (Chinese, English, Japanese, and Russian). For the major codes, I calculated the percentage of the maps with borders, fill-colors, or toponyms of the 50 maps in each group. For each subcode, I calculated the percentage of maps with those specific designs (i.e., dashed borders, multiple toponym scripts, etc.).

I describe the counts within the context of the TIME field. Because Sakhalin has been controlled by different regimes during different time periods, the placement and design of borders, territorial fill-colors, and toponyms should change depending on territorial control at the time.

4.4.2 Analysis of the Second Research Question

In what ways do the cartographic designs of border strokes, territorial fill-colors, and toponym labels, in the case of Sakhalin Island, imply political contestations or uncertainty of political control?

To answer the second research question, time is a vital piece of understanding how cartographic design implies political control or contestation. I divided the 200 maps into two groups – pre-1945 maps and post-1945 maps. The territorial confusion about control of Sakhalin Island evolved only after WWII, so the post-war maps are vital to answer this research question. Fittingly, the majority of the maps I found depicted Sakhalin post-1945.

In section 5.4, I identified certain borders, fill-colors, and toponym placements that facilitate Russian and Japanese political stances in Sakhalin and compared how maps under different groups using these placements. In section 5.5, I looked into how maps under different groups represent uncertainties through specific cartographic designs of borders, territorial fill-colors, and toponyms.

CHAPTER V

RESULTS

In this chapter I showcase the results of the quantitative content analysis. Section 5.1 presents my descriptive analysis about how borders, fill colors, and toponyms vary across cultural-linguistic contexts. Section 5.2 presents the results of my correlation analysis to illustrate how the use of borders, fill-colors, and toponyms imply different political contestations through representing uncertainties.

5.1 Overall results

Across Chinese, English, Japanese, and Russian maps I observed a wide variety of designs of borders, fill-colors, and toponyms. The results of the border, fill-color, and toponym coding is displayed in Table 5.1.

Code	Chinese	English	Japanese	Russian
Borders at locations of interest	38%	14%	42%	6%
	(19/50)	(7/50)	(21/50)	(3/50)
Border @ 50 th Parallel	11%	71%	81%	33%
	(2/19)	(5/7)	(17/21)	(1/3)
Border @ Tartary Strait	0%	14%	0%	33%
	(0/19)	(1/7)	(0/21)	(1/3)
Border @ Soya / La Pérouse Strait	89%	57%	57%	66%
	(17/19)	(4/7)	(12/21)	(2/3)
Thick Border	58%	14%	38%	66%
	(11/19)	(1/7)	(8/21)	(2/3)
Exclusive Border Color	58%	57%	57%	100%
	(11/19)	(4/7)	(12/21)	(3/3)
Dashed Border	47%	29%	67%	66%
	(9/19)	(2/7)	(14/21)	(2/3)
Fill-Colors are used to represent political control	44%	18%	12%	6%
	(22/50)	(9/50)	(6/50)	(3/50)
Fill Color = China	32%	0%	0%	0%
	(7/22)	(0/9)	(0/6)	(0/3)

Fill Color = Japan	0%	0%	17%	0%
	(0/22)	(0/9)	(1/6)	(0/3)
Fill Color = Russia	55%	100%	33%	100%
	(12/22)	(9/9)	(2/6)	(3/3)
Fill Color = Russian/Japan	14%	0%	0%	0%
	(3/22)	(0/9)	(0/6)	(0/3)
Fill Color = Russia/White	0%	0%	50%	0%
	(0/22)	(0/9)	(3/6)	(0/3)
Sakhalin Island is Labeled	88%	36%	58%	62%
	(44/50)	(18/50)	(29/50)	(31/50)
Chinese Toponyms	86%	5%	0%	0%
	(38/44)	(1/18)	(0/29)	(0/31)
Japanese Toponyms	0%	17%	66%	0%
	(0/44)	(3/18)	(19/29)	(0/31)
Russian Toponyms	59%	100%	93%	100%
	(26/44)	(18/18)	(27/29)	(31/31)
Toponym for Southern Sakhalin is an exonym	57%	17%	45%	0%
	(25/44)	(3/18)	(13/29)	(0/31)
Multiple Toponyms Used	45%	11%	55%	0%
	(20/44)	(2/18)	(16/29)	(0/31)
Multiple Toponym in same design	60%	100%	75%	N/A
	(12/20)	(2/2)	(12/16)	(0/0)

Table 5.1: Overview of cartographic design and toponyms by cultural linguistic group.

The majority of the maps in my dataset depicted Sakhalin Island after WWII (69%, 138/200). 6.5% (13/200) of the maps feature Sakhalin Island before 1875, 3% (6/200) of the maps showed Sakhalin Island between 1905 and 1945, and only 0.5% (1/200) of the maps illustrated Sakhalin Island between 1875 and 1905. 6.5% (7/200) of the maps depicted multiple time periods and fantasized time scenarios. Finally, in 17.5% (35/200) of the maps, the time period depicted was unclear (Table 5.2, Figure 5.1).

TIME also varied by cultural-linguistic context as well. For example, far more of the Chinese maps illustrating years before 1875 (12/50), nearly all of the Russian maps (46/50) depicted post-WWII, and 28% (14/50) of the English maps were unclear.

TIME Value	Chinese	English	Japanese	Russian	Total
<i>Before 1875</i>	<i>12</i>	<i>0</i>	<i>1</i>	<i>0</i>	<i>13</i>
<i>1875-1905</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>0</i>	<i>1</i>
<i>1905 - 1945)</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>6</i>
<i>After 1945</i>	<i>25</i>	<i>32</i>	<i>35</i>	<i>46</i>	<i>138</i>
<i>Unclear</i>	<i>9</i>	<i>14</i>	<i>9</i>	<i>3</i>	<i>35</i>
<i>Multiple Years</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>0</i>	<i>4</i>
<i>Fictional</i>	<i>0</i>	<i>2</i>	<i>1</i>	<i>0</i>	<i>3</i>
Total	50	50	50	50	200

Table 5.2: Result of *TIME* code categorized in four groups.

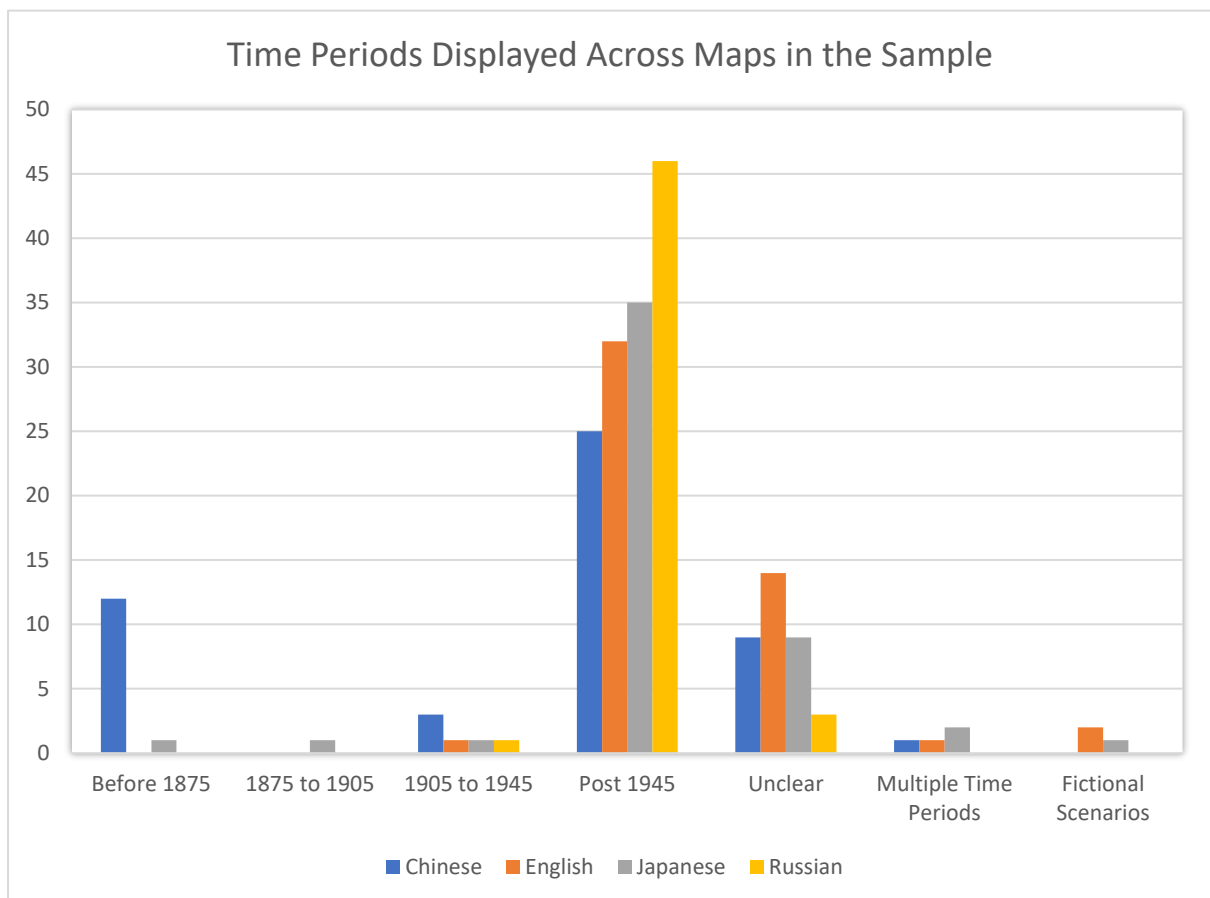


Figure 5.1: Time Periods Displayed across maps in the sample

5.2 Cultural-linguistic group results

5.2.1 Chinese Maps

The full results of the Chinese maps coding are shown in Table 5.3.

Code	Pre-1875	1875-1905	1905-1945	Post-1945	Unclear	Multiple Times	Fictional	TOTAL
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Borders at	58%	0%	33%	42%	11%	0%	N/A	38%
locations of interest	(7/12)	(0/1)	(1/3)	(10/24)	(1/9)	(0/1)	(0/0)	(19/50)
Border @ 50 th	0%	N/A	100%	0%	100%	N/A	N/A	11%
Parallel	(0/7)	(0/0)	(1/1)	(0/10)	(1/1)	(0/0)	(0/0)	(2/19)
Border @ Tartary	0%	N/A	0%	0%	0%	N/A	N/A	0%
Strait	(0/7)	(0/0)	(0/1)	(0/10)	(0/1)	(0/0)	(0/0)	(0/19)
Border @ Soya / La	100%	N/A	0%	100%	0%	N/A	N/A	89%
Pérouse Strait	(7/7)	(0/0)	(0/1)	(10/10)	(0/1)	(0/0)	(0/0)	(17/19)
	43%	N/A	0%	80%	100%	N/A	N/A	58%
Thick Border	(3/7)	(0/0)	(0/1)	(8/10)	(1/1)	(0/0)	(0/0)	(11/19)
Exclusive Border	43%	N/A	100%	60%	0%	N/A	N/A	58%
Color	(3/7)	(0/0)	(1/1)	(6/10)	(0/1)	(0/0)	(0/0)	(11/19)
	72%	N/A	100%	40%	0%	N/A	N/A	47%
Dashed Border	(5/7)	(0/0)	(1/1)	(4/10)	(0/1)	(0/0)	(0/0)	(9/19)
Fill-Colors are								
used to represent	58%	100%	100%	42%	0%	100%	N/A	44%
political control	(7/12)	(1/1)	(3/3)	(10/24)	(0/9)	(1/1)	(0/0)	(22/50)
	100%	0%	0%	0%	N/A	0%	N/A	32%
Fill Color = China	(7/7)	(0/1)	(0/3)	(0/10)	(0/0)	(0/1)	(0/0)	(7/22)
	N/A	0%	0%	0%	N/A	0%	N/A	0%
Fill Color = Japan	(0/0)	(0/1)	(0/3)	(0/10)	(0/0)	(0/1)	(0/0)	(0/22)
	N/A	100%	0%	100%	N/A	100%	N/A	55%
Fill Color = Russia	(0/0)	(1/1)	(0/3)	(10/10)	(0/0)	(1/1)	(0/0)	(12/22)
Fill Color =	N/A	0%	100%	0%	N/A	0%	N/A	14%
Russian/Japan	(0/0)	(0/1)	(3/3)	(0/10)	(0/0)	(0/1)	(0/0)	(3/22)
Fill Color =	N/A	0%	0%	0%	N/A	0%	N/A	0%
Russia/White	(0/0)	(0/1)	(0/3)	(0/10)	(0/0)	(0/1)	(0/0)	(0/22)
Sakhalin Island is								
Labeled	100%	100%	100%	83%	78%	100%	N/A	88%
	(12/12)	(1/1)	(3/3)	(20/24)	(7/9)	(1/1)	(0/0)	(44/50)
	100%	100%	100%	75%	67%	100%	N/A	86%
Chinese Toponym	(12/12)	(1/1)	(3/3)	(15/20)	(6/9)	(1/1)	(0/0)	(38/44)
	0%	0%	0%	0%	0%	0%	N/A	0%
Japanese Toponym	(0/12)	(0/1)	(0/3)	(0/20)	(0/9)	(0/1)	(0/0)	(0/44)
	42%	100%	33%	65%	56%	100%	N/A	59%
Russian Toponym	(5/12)	(1/1)	(1/3)	(13/20)	(5/9)	(1/1)	(0/0)	(26/44)
	(100%	0%	100%	40%	22%	0%	N/A	57%
Exonym	12/12)	(0/1)	(3/3)	(8/20)	(2/9)	(0/1)	(0/0)	(25/44)
	42%	100%	33%	40%	44%	100%	N/A	45%
Multiple Toponyms	(5/12)	(1/1)	(1/3)	(8/20)	(4/9)	(1/1)	(0/0)	(20/44)
Multiple Toponym	40%	0%	100%	50%	100%	100%	N/A	60%
in same design	(2/5)	(0/1)	(1/1)	(4/8)	(4/4)	(1/1)	(0/0)	(12/20)

Total Number of Maps	12	1	3	24	9	1	0	50
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Table 5.3: Results of coding Chinese maps according to Border, Fill Colors, and Toponym codes by time period displayed.

5.2.1.1 Before 1875

Twenty-four percent (12/50) of the Chinese maps depicted Sakhalin Island before 1875. All of these maps (12/50) depicted Sakhalin Island as Chinese territory by using same fill color for Sakhalin and continental China.

Of the pre-1875 maps (n=12), 58% (7/12) depicted international borders at Soya / La Pérouse Strait and no maps had borders at Tartary Strait or the 50th parallel. Of the maps with an international border, 43% (3/7) had borders which were thicker than 20% of the width of the Strait and the same three maps used border colors which were exclusive to the international border, and 71% (5/7) of the maps with a border at Soya / La Pérouse Strait used dashed border strokes.

All of the pre-1875 maps label the map with the Chinese name of the Island ([库页岛 /Kuye Dao]) when this name was considered an exonym during this time, and 42% (5/12) of those maps also labeled the Island with the Russian name. Among the 5 maps with two labels (Chinese and Russian toponyms), 40% (2/5) use the same typographic designs for the two labels.

In general, the placement and designs of borders, territorial-fill colors, and toponyms used for these pre-1875 Chinese maps implied a Chinese influence or control of Sakhalin during this time period.

5.2.1.2 Between 1875 and 1905

Only one Chinese map depicted Sakhalin between 1875 and 1905. No international borders at either Soya / La Pérouse Strait, Tartary Strait, or at the 50th parallel are displayed on this map. The fill color used for Sakhalin matches Russia, and Sakhalin is labeled in both Chinese and Russian with identical typographical design. This map through the use of a fill color that matches Russia, implies Russian control of the Island.

5.2.1.3 Between 1905 and 1945

Just three Chinese maps depicted Sakhalin between 1905 and 1945 (6%, 3/50). Only one of these maps showed borders at any of the locations of interest, that map placed a border at the 50th parallel. All three maps used two fill colors, with Northern Sakhalin having the same color as Russia, and Southern Sakhalin colored the same as Japan.

All three maps labeled Sakhalin in Chinese, and one of those maps also had a label in Russian in a smaller font size.

These Chinese maps recognize that Sakhalin was divided between Russia and Japan during this period, but these maps still use Chinese toponyms and do not use Japanese toponyms even while Southern Sakhalin was controlled by Japan.

5.2.1.4 After 1945

Almost half of the Chinese maps depict Sakhalin after WWII (48%, 24/50). 42% (10/24) of these maps featured international borders at Soya Strait / La Pérouse Strait. Of these ten maps: eight use thick borders, six used exclusive colors for the border, and four

used dashed borders. All 10 of these maps used the same fill color for Russia as the fill color for the entirety of Sakhalin.

83% (20/24) of post-war Chinese maps label the Island. Among these 20 maps, 35% (7/20) of the maps only used the Chinese toponym, 25% (5/20) of the maps were only labeled with the Russian toponym, and 40% (8/20) of the maps labeled the Island with both toponyms with half (4/8) of them having the same typographic designs for the Russian and Chinese names.

These post-war maps imply Russian control through the placement and design of borders and fill-colors, while the toponyms used to label the Island potentially tell an opposite story: even while China did not control Sakhalin Island after 1875, the majority (63%, 15/24) of the Chinese post-war maps use the Chinese toponym. This could not be designed for better readability because the transcribed endonym “薩哈林-Sa ha lin” in Chinese is easily pronounceable by the Chinese audiences.

5.2.1.5 Cartographic Implications of Political Control and Influence on Chinese Maps of Sakhalin

Unlike the other three cultural-linguistic contexts I will describe in the next sections, a decent portion of the Chinese maps of Sakhalin Island depicted a time period before 1875 when the Island was controlled or heavily influenced by Chinese dynasties. Borders are almost always placed on the Soya Strait / La Pérouse Strait, which implies that Sakhalin Island was controlled by regimes based on continental Asia (China or Russia), as opposed to Japan.

The largest set of Chinese maps depicted post-WWII Sakhalin. These Chinese maps recognize Russia’s legitimacy primarily through the depiction of borders and territorial fill-colors, and the implication of Japanese presence on the Island is minimal.

Across all of the Chinese maps, Japanese toponyms are never used, even on the maps depicting the time period when Southern Sakhalin was controlled by Japan.

5.2.2 English Maps

The full results of the English-language map coding is shown in Table 5.4. None of the English-language maps depicted the situation pre-1905. The majority of the maps depicted post-WWII circumstances (32/50) or it was unclear the time period being depicted (14/50), with a few exceptions.

Code	Pre-1875	1875-1905	1905-1945	Post-1945	Unclear	Multiple Times	Fictional	TOTAL
Borders at								
locations of interest	N/A (0/0)	N/A (0/0)	100% (1/1)	9% (3/32)	7% (1/14)	100% (1/1)	50% (1/2)	14% (7/50)
Border @ 50 th Parallel	N/A (0/0)	N/A (0/0)	100% (1/1)	33% (1/3)	100% (1/1)	100% (1/1)	100% (1/1)	71% (5/7)
Border @ Tartary Strait	N/A (0/0)	N/A (0/0)	0% (0/1)	0% (0/3)	0% (0/1)	0% (0/1)	100% (1/1)	14% (1/7)
Border @ Soya / La Pérouse Strait	N/A (0/0)	N/A (0/0)	0% (0/1)	100% (3/3)	0% (0/1)	100% (1/1)	0% (0/1)	57% (4/7)
Thick Border	N/A (0/0)	N/A (0/0)	0% (0/1)	33% (1/3)	0% (0/1)	0% (0/1)	0% (0/1)	14% (1/7)
Exclusive Border	N/A (0/0)	N/A (0/0)	0% (0/1)	100% (3/3)	0% (0/1)	100% (1/1)	0% (0/1)	57% (4/7)
Color	N/A (0/0)	N/A (0/0)	0% (0/1)	33% (3/3)	0% (0/1)	100% (1/1)	0% (0/1)	29% (4/7)
Dashed Border	N/A (0/0)	N/A (0/0)	0% (0/1)	33% (1/3)	0% (0/1)	100% (1/1)	0% (0/1)	29% (2/7)
Fill-Colors are								
used to represent political control	N/A (0/0)	N/A (0/0)	0% (0/1)	25% (8/32)	7% (1/14)	0% (0/1)	N/A (0/0)	18% (9/50)

	N/A	N/A	N/A	0%	0%	N/A	N/A	0%
Fill Color = China	(0/0)	(0/0)	(0/0)	(0/8)	(0/1)	(0/0)	(0/0)	(0/9)
	N/A	N/A	N/A	0%	0%	N/A	N/A	0%
Fill Color = Japan	(0/0)	(0/0)	(0/0)	(0/8)	(0/1)	(0/0)	(0/0)	(0/9)
Fill Color =	N/A	N/A	N/A	100%	100%	N/A	N/A	100%
Russia	(0/0)	(0/0)	(0/0)	(8/8)	(1/1)	(0/0)	(0/0)	(9/9)
Fill Color =	N/A	N/A	N/A	0%	0%	N/A	N/A	0%
Russian/Japan	(0/0)	(0/0)	(0/0)	(0/8)	(0/1)	(0/0)	(0/0)	(0/9)
Fill Color =	N/A	N/A	N/A	0%	0%	N/A	N/A	0%
Russia/White	(0/0)	(0/0)	(0/0)	(0/8)	(0/1)	(0/0)	(0/0)	(0/9)
Sakhalin Island	N/A	N/A	0%	41%	21%	100%	50%	36%
is Labeled	(0/0)	(0/0)	(0/1)	(13/32)	(3/14)	(1/1)	(1/2)	(18/50)
	N/A	N/A	N/A	0%	0%	100%	0%	5%
Chinese Toponym	(0/0)	(0/0)	(0/0)	(0/13)	(0/3)	(1/1)	(0/1)	(1/18)
Japanese	N/A	N/A	N/A	0%	33%	100%	100%	17%
Toponym	(0/0)	(0/0)	(0/0)	(0/13)	(1/3)	(1/1)	(1/1)	(3/18)
	N/A	N/A	N/A	100%	100%	100%	100%	100%
Russian Toponym	(0/0)	(0/0)	(0/0)	(13/13)	(3/3)	(1/1)	(1/1)	(18/18)
	N/A	N/A	N/A	0%	33%	100%	100%	17%
Exonym	(0/0)	(0/0)	(0/0)	(0/13)	(1/3)	(1/1)	(1/1)	(3/18)
Multiple	N/A	N/A	N/A	0%	33%	100%	0%	11%
Toponyms	(0/0)	(0/0)	(0/0)	(0/13)	(1/3)	(1/1)	(0/1)	(2/18)
Multiple Toponym	N/A	N/A	N/A	N/A	100%	100%	N/A	100%
in same design	(0/0)	(0/0)	(0/0)	(0/0)	(1/1)	(1/1)	(0/0)	(2/2)
Total Number of								
Maps	0	0	1	32	14	1	2	50

Table 5.4: Numbers of English maps filtered through TIME code and Border, Territorial-Color, Toponym codes.

5.2.2.1 Between 1905 and 1945

Only one English-language map depicted Sakhalin between 1905 and 1945. On this map, a thin, solid border is placed on the 50th parallel and no international borders are shown on either of the Straits. The map does not use territorial fill-colors and there are no toponyms used to label the Island. This map implies that control was split along the 50th parallel but does not indicate which countries controlled the Island.

5.2.2.2 *After 1945*

Most (64%, 32/50) of the English-language maps depict Sakhalin after WWII. Only 13% (4/32) of the maps placed borders on the Soya Strait / La Pérouse Strait, with one of them also including a border on the 50th parallel. In all these cases, the color used for the border was exclusive to those borders. Only one map used a thick border size, and another map used a dashed border. 25% (8/32) of the maps used fill colors, and all of them used the same fill color for the Island as Russia. 40% (13/32) of the maps had a label on the Island; all used the Russian toponym.

5.2.2.3 *Others*

Of the four cultural-linguistic groups, the English-language maps had the largest percentage of maps which did not fall into the four pre-defined time periods. Fourteen of the English-language maps (28%, 14/50) depicted time periods which could not be determined because of the lack of borders (1/14), fill-colors (1/14), and place names (3/14) on these maps.

One map (ID:63) was coded as TIME = Multiple because it showed the borders and toponyms of Sakhalin Island in multiple time periods. This map featured borders on both the 50th parallel and the Soya / La Pérouse Strait. It also labeled all toponyms with the same typographic design.

Two maps (ID:70, ID:71) present a fictional time scenario. One map shows both Sakhalin and Kuril Islands completely controlled by Japan, with a border placed at the Strait

of Tartary. The other map illustrates a scenario showing “Karafuto Republic” (i.e., an independent state of Southern Sakhalin).

5.2.2.4 Cartographic Implications of Political Control and Influence on English Maps of Sakhalin

Compared to other cultural-linguistic groups, there was less diversity in the time periods depicted in the English-language maps. Fewer of these maps included borders at the three locations of interest, used fill-colors to show territorial control, and labeled Sakhalin Island. Because of this, I also had difficulty identifying which time periods were depicted in many of the maps (28%, 14/50). All of the English-language maps on which I was able to decipher the time period depicted borders only at the Soya/ La Pérouse Strait, matched the territorial fill-colors with Russia, and used Russian toponyms. Two maps had borders at the 50th parallel, one of which depicted Sakhalin between 1905-1945 when the Island was divided, and another map which illustrated the Island post-WWII.

5.2.3 Japanese Maps

The full results of the Japanese language map coding is shown in Table 5.5.

Code	Pre-1875	1875-1905	1905-1945	Post-1945	Unclear	Multiple Times	Fictional	TOTAL
Borders at locations of interest	0%	100%	0%	46%	33%	50%	0%	42%
	(0/1)	(1/1)	(0/1)	(16/35)	(3/9)	(1/2)	(0/1)	(21/50)
Border @ 50 th Parallel	N/A	0%	N/A	81%	100%	100%	N/A	81%
	(0/0)	(0/1)	(0/0)	(13/16)	(3/3)	(1/1)	(0/0)	(17/21)
Border @ Tartary Strait	N/A	0%	N/A	0%	0%	0%	N/A	0%
	(0/0)	(0/1)	(0/0)	(0/16)	(0/3)	(0/1)	(0/0)	(0/21)

Border @ Soya / La Pérouse Strait	N/A (0/0)	100% (1/1)	N/A (0/0)	10% (0/16)	0% (0/3)	100% (1/1)	N/A (0/0)	57% (12/21)
	N/A	100%	N/A	38%	33%	0%	N/A	38%
Thick Border	(0/0)	(1/1)	(0/0)	(6/16)	(1/3)	(0/1)	(0/0)	(8/21)
Exclusive Border	N/A	0%	N/A	10%	66%	100%	N/A	57%
Color	(0/0)	(0/1)	(0/0)	(0/16)	(2/3)	(1/1)	(0/0)	(12/21)
	N/A	100%	N/A	75%	0%	100%	N/A	67%
Dashed Border	(0/0)	(1/1)	(0/0)	(12/16)	(0/3)	(1/1)	(0/0)	(14/21)
Fill-Colors are used to represent political control	0% (0/1)	100% (1/1)	0% (0/1)	11% (4/35)	0% (0/9)	0% (0/2)	100% (1/1)	12% (6/50)
	N/A	0%	N/A	0%	N/A	N/A	0%	0%
Fill Color = China	(0/0)	(0/1)	(0/0)	(0/4)	(0/0)	(0/0)	(0/1)	(0/6)
	N/A	0%	N/A	0%	N/A	N/A	100%	17%
Fill Color = Japan	(0/0)	(0/1)	(0/0)	(0/4)	(0/0)	(0/0)	(1/1)	(1/6)
Fill Color = Russia	N/A	100%	N/A	25%	N/A	N/A	0%	33%
	(0/0)	(1/1)	(0/0)	(1/4)	(0/0)	(0/0)	(0/1)	(2/6)
Fill Color = Russian/Japan	N/A	0%	N/A	0%	N/A	N/A	0%	0%
	(0/0)	(0/1)	(0/0)	(0/4)	(0/0)	(0/0)	(0/1)	(0/6)
Fill Color = Russia/White	N/A	0%	N/A	75%	N/A	N/A	0%	50%
	(0/0)	(0/1)	(0/0)	(3/4)	(0/0)	(0/0)	(0/1)	(3/6)
Sakhalin Island is Labeled	100% (1/1)	100% (1/1)	N/A (0/0)	60% (21/35)	44% (4/9)	100% (2/2)	0% (0/1)	58% (29/50)
	0%	0%	N/A	0%	0%	0%	N/A	0%
Chinese Toponym	(0/1)	(0/1)	(0/0)	(0/21)	(0/4)	(0/2)	(0/0)	(0/29)
Japanese Toponym	0% (0/1)	100% (1/1)	N/A (0/0)	57% (12/21)	100% (4/4)	100% (2/2)	N/A (0/0)	66% (19/29)
	100%	100%	N/A	100%	50%	100%	N/A	93%
Russian Toponym	(1/1)	(1/1)	(0/0)	(21/21)	(2/4)	(2/2)	(0/0)	(27/29)
	100%	100%	N/A	33%	75%	50%	N/A	45%
Exonym	(1/1)	(1/1)	(0/0)	(7/21)	(3/4)	(1/2)	(0/0)	(13/29)
Multiple Toponyms	0% (0/1)	100% (1/1)	N/A (0/0)	52% (11/21)	25% (1/4)	100% (2/2)	N/A (0/0)	55% (16/29)
	N/A	100%	N/A	10%	100%	0%	N/A	75%
Multiple Toponym in same design	(0/0)	(1/1)	(0/0)	(0/11)	(1/1)	(0/2)	(0/0)	(12/16)
Total Number of Maps	1	1	1	35	9	2	1	50

Table 5.5: Numbers of Japanese maps filtered through TIME code and Border, Territorial--Color, Toponym codes.

5.2.3.1 Japanese Maps Before 1875

Only one Japanese map (ID:120) depicted Sakhalin before 1875. This map did not include borders at the three locations of interest, nor did it use a fill color for the Island. It did include the Russian toponym for Sakhalin. This map depicted treaty agreements between China and Russia before 1875, and Sakhalin Island is not the primary area of interest on this map.

5.2.3.2 Between 1875 and 1905

Only one Japanese map (ID:134) showed Sakhalin between 1875 and 1905. This map used one dashed thick border placed on the Soya/La Pérouse Strait and colored Sakhalin with the same color as Russia. The Island was labeled in both Japanese and Russian names with a same typographic design.

5.2.3.3 Between 1905 and 1945

Only one Japanese map (ID:105) depicted Sakhalin between 1905 and 1945. This map did not include borders at the locations of interest, did not include fill-colors which implied territorial control, and there were no toponyms on Sakhalin Island in this map.

5.2.3.4 After 1945

Most of Japanese maps depicted Sakhalin after WWII (70%, 35/50). Of the 35 post-war maps, 16 maps included borders placed at either the 50th parallel (81%, 13/16) or the Soya/La Pérouse Strait (63%, 10/16). Of the maps with borders at either of these locations, around half of these borders are thick (38%, 6/16), and most of these borders use an exclusive color (63%, 10/16) and are dashed (75%, 12/16).

Only 11% (4/35) of the post-war Japanese maps use fill-colors to depict territory. One depicted Sakhalin with the same fill color as Russia, and the remaining three used the same fill color as Russia for Northern Sakhalin, whereas Southern Sakhalin was filled with a neutral white color.

Most (60%, 21/35) of the Japanese post-war maps labeled Sakhalin Island with around half (52%, 11/21) using both Russian and Japanese and most of them having identical typographic design (91%, 10/11). Another 43% (9/21) of the maps labeled Sakhalin only using Russian, and one map labeled Northern Sakhalin in Russian and Southern Sakhalin in Japanese.

5.2.3.5 Others

I was unable to decipher the time period depicted in 18% (9/50) of the Japanese maps. Among these 9 maps, 33% (3/9) had a border on the 50th parallel. Four maps labeled Sakhalin using the Japanese toponyms (44%, 4/9), with two of them also using the Russian toponym (22%, 2/9).

Two of the Japanese maps depicted Sakhalin at multiple time periods in one layout. The first map (ID:115) presented two map frames, one depicting the aftermath of the Treaty of Plymouth in 1905, and the other illustrating the aftermath of the Treaty of San Francisco. The second map (ID:141) was a simple reference map with no border or fill color to depict political control.

The Japanese maps included one fictional map of Sakhalin, published by the X (formerly Twitter) account `hoppou_errika`, using a persona to cosplay the official mascot of

the Northern Territories Issue Association, a non-governmental organization established to raise public awareness of the Northern Territories Issue in Japan. However, the account is a fake parody account (Hatena Blog, 2023).

5.2.3.6 Cartographic Implications of Political Control and Influence on Japanese Maps of Sakhalin

In general, the Japanese maps have the greatest variety of borders, territorial fill-colors, and toponyms. There are three Japanese maps depicting Sakhalin before 1945, but over half of them did not depict the borders (66%, 2/3), territorial fill-colors (66%, 2/3) and toponyms (33%, 1/3) of Sakhalin. The lack of relevant information makes it harder to summarize Japanese cartographic designs for the situation before 1945.

Typically, across all time periods, Japanese maps emphasized both the Russian and the Japanese division of the island by placing borders on both the 50th parallel and the Soya / La Pérouse Strait (76%, 13/17), and having both Russian (93%, 27/29) and Japanese toponyms (66%, 19/29) labeled.

However, interestingly the majority of the maps depicting the Island post-WWII did not reflect the Russian and Japanese division of the Island even when Japan asserted Russia's control of the Southern Sakhalin was "unlawful". 58% (29/50) do not have any border. Most of the maps either did not imply the political-administrative status of the island or made their maps topographical. Chinese color and toponym are absent among these 50 Japanese maps (Table 5.5).

5.2.4 Russian Maps

Nearly all of the Russian-language maps depicted Sakhalin post-1945 (92%, 46/50). The other four maps included one map depicting the 1905-1945 period and three maps that were unclear. The full results of the Russian map coding is shown in Table 5.6.

Code	Pre-1875	1875-1905	1905-1945	Post-1945	Unclear	Multiple Times	Fictional	TOTAL
Borders at								
locations of interest	N/A	N/A	100%	4%	0%	N/A	N/A	6%
	(0/0)	(0/0)	(1/1)	(2/46)	(0/3)	(0/0)	(0/0)	(3/50)
Border @ 50 th Parallel	N/A	N/A	100%	0%	N/A	N/A	N/A	33%
	(0/0)	(0/0)	(1/1)	(0/2)	(0/0)	(0/0)	(0/0)	(1/3)
Border @ Tartary Strait	N/A	N/A	0%	0%	N/A	N/A	N/A	33%
	(0/0)	(0/0)	(0/1)	(0/2)	(0/0)	(0/0)	(0/0)	(1/3)
Border @ Soya / La Pérouse Strait	N/A	N/A	0%	100%	N/A	N/A	N/A	66%
	(0/0)	(0/0)	(0/1)	(2/2)	(0/0)	(0/0)	(0/0)	(2/3)
Thick Border	N/A	N/A	100%	50%	N/A	N/A	N/A	66%
	(0/0)	(0/0)	(1/1)	(1/2)	(0/0)	(0/0)	(0/0)	(2/3)
Exclusive Border	N/A	N/A	100%	100%	N/A	N/A	N/A	100%
Color	(0/0)	(0/0)	(1/1)	(2/2)	(0/0)	(0/0)	(0/0)	(3/3)
	N/A	N/A	100%	50%	N/A	N/A	N/A	66%
Dashed Border	(0/0)	(0/0)	(1/1)	(1/2)	(0/0)	(0/0)	(0/0)	(2/3)
Fill-Colors are								
used to represent political control	N/A	N/A	0%	4%	33%	N/A	N/A	6%
	(0/0)	(0/0)	(0/1)	(2/46)	(1/3)	(0/0)	(0/0)	(3/50)
Fill Color = China	N/A	N/A	N/A	0%	0%	N/A	N/A	0%
	(0/0)	(0/0)	(0/0)	(0/2)	(0/1)	(0/0)	(0/0)	(0/3)
Fill Color = Japan	N/A	N/A	N/A	0%	0%	N/A	N/A	0%
	(0/0)	(0/0)	(0/0)	(0/2)	(0/1)	(0/0)	(0/0)	(0/3)
Fill Color = Russia	N/A	N/A	N/A	100%	100%	N/A	N/A	100%
	(0/0)	(0/0)	(0/0)	(2/2)	(1/1)	(0/0)	(0/0)	(3/3)
Fill Color = Russian/Japan	N/A	N/A	N/A	0%	0%	N/A	N/A	0%
	(0/0)	(0/0)	(0/0)	(0/2)	(0/1)	(0/0)	(0/0)	(0/3)
Fill Color = Russia/White	N/A	N/A	N/A	0%	0%	N/A	N/A	0%
	(0/0)	(0/0)	(0/0)	(0/2)	(0/1)	(0/0)	(0/0)	(0/3)
Sakhalin Island is Labeled	N/A	N/A	100%	61%	67%	N/A	N/A	62%
	(0/0)	(0/0)	(1/1)	(28/46)	(2/3)	(0/0)	(0/0)	(31/50)
Chinese Toponym	N/A	N/A	0%	0%	0%	N/A	N/A	0%
	(0/0)	(0/0)	(0/1)	(0/28)	(0/2)	(0/0)	(0/0)	(0/31)

Japanese	N/A	N/A	0%	0%	0%	N/A	N/A	0%
Toponym	(0/0)	(0/0)	(0/1)	(0/28)	(0/2)	(0/0)	(0/0)	(0/31)
	N/A	N/A	100%	100%	100%	N/A	N/A	100%
Russian Toponym	(0/0)	(0/0)	(1/1)	(28/28)	(2/2)	(0/0)	(0/0)	(31/31)
	N/A	N/A	100%	0%	0%	N/A	N/A	0%
Exonym	(0/0)	(0/0)	(1/1)	(0/28)	(0/2)	(0/0)	(0/0)	(0/31)
Multiple	N/A	N/A	0%	0%	0%	N/A	N/A	0%
Toponyms	(0/0)	(0/0)	(0/1)	(0/28)	(0/2)	(0/0)	(0/0)	(0/31)
Multiple Toponym	N/A	N/A	0%	0%	0%	N/A	N/A	N/A
in same design	(0/0)	(0/0)	(0/1)	(0/28)	(0/2)	(0/0)	(0/0)	(0/0)
Total Number of								
Maps	0	0	1	46	3	0	0	50

Table 5.6: Numbers of Russian maps filtered through TIME code and Border, Territorial--Color, Toponym codes.

5.2.4.1 Between 1905 and 1945

The one Russian map depicting Sakhalin between 1905 and 1945 used a dashed and thick border on the 50th parallel, with exclusive stroke color, and used the Russian toponym for Sakhalin.

5.2.4.2 After 1945

Almost all the Russian maps (92%, 46/50) illustrate contemporary Sakhalin Island (i.e., after WWII), yet only 4% (2/46) of these maps have any borders in any of the locations of interest. In these two cases, the borders are only placed at the Soya / La Pérouse Strait and use an exclusive color. In one map, the border was a thicker dashed stroke while the other map used a thinner and solid line. Only two maps, (4%, 2/46) used the same color as the rest of Russia. Sixty percent of the Russian post-war maps were labeled using only Russian toponyms (28/46).

5.2.4.3 Cartographic Implications of Political Control and Influence on Russian Maps of Sakhalin

Almost all Russian maps depict Sakhalin in the post-war period. Among these maps, placing borders and using territorial fill-colors were clearly not common practices. All of the Russian maps, regardless of time period, represented exclusively used Russian place names.

5.3 Representing Sakhalin before WWII

In this next section, my focus is on the cartography patterns used for the maps based on the time period depicted in the map, rather than on the differences between cultural-linguistic contexts. Only 10.5% (21/200) of the maps depict Sakhalin before WWII. In this section, I examine these pre-WWII maps and investigate to what degree these maps reflect political control of Sakhalin before 1945.

5.3.1 Before 1875 – Chinese Era

The results of the coding of this time period are shown in Table 5.7. Thirteen maps in the set depict Sakhalin Island before 1875 (6.5%, 13/200). Twelve of these maps (12/13) were in the Chinese cultural-linguistic group, and one was Japanese (1/13). In these 13 maps, borders are only placed at the Soya/La Pérouse Strait (58%, 7/13). The placement of the border here indicates political control of Sakhalin by either Russia or China (i.e., states on the Eurasian continent) and not Japan, and indeed, Sakhalin was arguably controlled and influenced by at least several Chinese dynasties during before 1875. The control was minimal

because, for most of the time, tribes on Sakhalin Island only tributed to Chinese and Mongolian officials at outposts in the lower Amur.

The fill colors used in these 13 maps align with the color used for China. Thus, both borders and territorial fill-colors suggest Sakhalin was controlled by China before 1875.

Maps within different groups have different representations of toponyms. All of the Chinese maps use Chinese toponyms. Interestingly, 42% (5/12) of these Chinese maps also included Russian toponyms, as a contemporary reference name of the island. The one Japanese map used Russian toponyms.

Design	Chinese	Japanese	Total
Border @50 th parallel	0% (0/12)	0% (0/1)	0% (0/13)
Border @ Tartary Strait	0% (0/12)	0% (0/1)	0% (0/13)
Border @ Soya / La Pérouse Strait	58% (7/12)	0% (0/1)	54% (7/13)
Fill Color = China	58% (7/12)	0% (0/1)	54% (7/13)
Fill Color = Japan	0% (0/12)	0% (0/1)	0% (0/13)
Fill Color = Russia	0% (0/12)	0% (0/1)	0% (0/13)
Toponym = Chinese	100% (12/12)	0% (0/1)	92% (12/13)
Toponym = Japanese	0% (0/12)	0% (0/1)	0% (0/13)
Toponym = Russian	42% (5/12)	100% (0/1)	46% (6/13)

Table 5.7: Border, territorial color, and toponym placements of all maps depicted Sakhalin prior to 1875

5.3.2 *Between 1875 and 1905 – Russian Era*

Only two maps depict Sakhalin between 1875 and 1905, one is Chinese, and the other is Japanese. These results are summarized in Table 5.8. Only the Japanese map depicts a border at the Soya/La Pérouse Strait. Both maps suggested Russian control of the Island by using the same fill color for Russia and Sakhalin Island. Both maps use the Russian toponym for the Island label, however each map also used the toponym of the cultural-linguistic group being depicted in addition to the Russian one. Both maps clearly illustrate Russian control of

the island by using the Russian fill-color and Russian toponyms. This makes sense because Russia held the entirety of the Island, according to the bilateral Treaty of Saint Petersburg that Russia signed with Japan in 1875, until the end of Russo-Japanese war in 1905.

However, both maps placed exonyms (Chinese and Japanese name of Sakhalin)—perhaps to make the maps most useable to their specific readers.

Design	Chinese	Japanese	Total
Border @50 th parallel	0% (0/1)	0% (0/1)	0% (0/2)
Border @ Tartary Strait	0% (0/1)	0% (0/1)	0% (0/2)
Border @ Soya / La Pérouse Strait	0% (0/1)	100% (1/1)	50% (1/2)
Fill Color = China	0% (0/1)	0% (0/1)	0% (0/2)
Fill Color = Japan	0% (0/1)	0% (0/1)	0% (0/2)
Fill Color = Russia	100% (1/1)	100% (1/1)	100% (2/2)
Toponym = Chinese	100% (1/1)	0% (0/1)	50% (1/2)
Toponym = Japanese	0% (0/1)	100% (0/1)	50% (1/2)
Toponym = Russian	100% (1/1)	100% (1/1)	100% (2/2)

Table 5.8: Border, territorial color, and toponym placements of all maps depicted Sakhalin between 1875 and 1905

5.3.3 *Between 1905 and 1945 – Russian/Japanese Split Era*

Only six maps in the set illustrate Sakhalin Island between 1905 and 1945. The results of the coding of these six maps are summarized in Table 5.9. These include three Chinese maps, one English map, one Japanese map, and one Russian map. None of the maps include borders at Tartary or the Soya/La Pérouse Strait; however, half of these maps include a border at the 50th parallel, suggesting a division between Northern and Southern Sakhalin as the Treaty of Portsmouth called for.

Only three Chinese maps used territorial fill-colors to illustrate political control. All three Chinese maps used different territorial fill-colors for Northern and Southern Sakhalin, with the color of Northern Sakhalin aligning with Russia and Southern Sakhalin aligning with

Japan. These three maps also used either Chinese toponyms only (66%, 2/3) or a combination of Chinese and Russian toponyms (33%, 1/3) for Sakhalin; even Sakhalin was divided between Russia and Japan on these maps. This makes sense because Russia ceded Southern Sakhalin to Japan (as known as Karafuto), regulated in the Treaty of Portsmouth in the aftermath of Russo-Japanese war, until 1945.

While the use and design of borders and territorial fill-colors suggest a separation of Northern and Southern Sakhalin between Russia and Japan, the toponyms do not reflect that same divide. All the Chinese maps still placed Chinese toponyms, the Russian map placed Russian toponyms, and no Japanese toponyms were used.

Design	Chinese	English	Japanese	Russian	Total
Border @50 th parallel	33% (1/3)	100% (1/1)	0% (0/1)	100% (1/1)	50% (3/6)
Border @ Tartary Strait	0% (0/3)	0% (0/1)	0% (0/1)	0% (0/1)	0% (0/6)
Border @ Soya / La Pérouse Strait	0% (0/3)	0% (0/1)	0% (0/1)	0% (0/1)	0% (0/6)
Fill Color = R/J	100% (3/3)	0% (0/1)	0% (0/1)	0% (0/1)	50% (3/6)
Toponym = Chinese	100% (3/3)	0% (0/1)	0% (0/1)	0% (0/1)	50% (3/6)
Toponym = Japanese	0% (0/3)	0% (0/1)	0% (0/1)	0% (0/1)	0% (0/6)
Toponym = Russian	33% (1/3)	0% (0/1)	0% (0/1)	100% (1/1)	67% (4/6)

Table 5.9: Border, territorial color, and toponym placements of all maps depicted Sakhalin between 1905 and 1945

5.3.4 Summary of maps depicting Sakhalin before WWII

The history of Sakhalin Island was shaped by three regimes adjacent to the Island over the past several centuries. What was clear from my coding is that generally the map design and toponym use supported the larger international story about control of the Island depending on time period and international treaty agreements. Sakhalin Island was controlled

by China before 1875 and Russia between 1875 and 1905, and finally between 1905 and 1945 Sakhalin Island was divided between Russia and Japan.

For each time period, the cartographic usage of borders and territorial fill-colors match these histories. However, the labeling and use of toponyms varied and did not necessarily match these histories in the same way. This could be because these maps were made to depict certain time periods.

5.4 Representing Sakhalin after WWII

Contrary to the depiction of Sakhalin in pre-war maps, post-war maps must contend with the active and ongoing territorial dispute over Sakhalin Island between Russia and Japan since 1945 and the Treaty of San Francisco in 1951. In this section, I synthesize the results of my content analysis of the 132 post-war maps in my dataset to better understand how Russian and Japanese territorial views of Sakhalin are represented in the placement and design of borders, territorial fill-colors, and toponyms. I first summarize how maps represent Russian stances in 5.4.1, and I then summarize how maps represent Japanese stances.

5.4.1 Representing Russian de facto control of all of Sakhalin.

Russia has technically controlled all of Sakhalin Island since 1945, the end of WWII. Russian control and administration of Sakhalin is recognized by most countries in the world and the United Nations. In this session, I summarize the results from the content analysis to

illustrate how borders, territories, and place names are used to represent Russia’s administration of the Island (Table 5.10).

Group Name	Post-war Maps with Pro-Russian Border Placement	Post-war Maps with Pro-Russian Territorial Fill Color Placement	Post-war Maps with Pro-Russian Toponym Placement
Chinese	100% (10/10)	100% (10/10)	25% (5/20)
English	67% (2/3)	100% (8/8)	100% (13/13)
Japanese	19% (3/16)	25% (1/4)	43% (9/21)
Russian	100% (2/2)	100% (2/2)	100% (28/28)

Table 5.10: Usages of border, fill-color, and toponym on supporting Russian’s administration on the entire Sakhalin Island across cultural-linguistic groups

5.4.1.1 Pro-Russian Border Placement

In maps that intend to illustrate Russia’s control of all of Sakhalin, only one border should be placed at the Soya / La Pérouse Strait, and maps should not place other international borders at the Tatory Strait or the 50th parallel. This section is only intended to summarize how borders illustrate Russian control and so I do not include any maps without borders at those locations in this analysis. All the Chinese and Russian post-war maps place a border at this location supporting the representation of Russia’s control of the entire Island. Similarly, some of the English post-war maps (67%, 2/3) and a few Japanese post-war maps (19%, 3/16) fully acknowledged Russia’s control by having the only border placed at the Soya / La Pérouse Strait.

5.4.1.2 Pro-Russian Territorial fill-color placement

To represent Russian’s undisputed governance of the Sakhalin Island post-1945, maps should use one single color for all of Sakhalin Island which matches the rest of Russia. Of the post-WWII maps with fill colors indicating political control, all of the maps, with the

exception of three Japanese maps, illustrated Sakhalin with a fill color to align with the rest of Russia. I discuss the Japanese maps in a later section.

5.4.1.3 Pro-Russian Toponym Placement

For a map to imply Russia's administration and political control over all of Sakhalin Island, place names should be displayed as Russian originating, and no exonyms should be placed. In the post-WWII maps, the use of toponyms highly vary across different cultural-linguistic groups. All the English and Russian post-war maps used Russian-originating place names. However, only 43% (9/21) of Japanese post-war maps and 25% (5/20) of Chinese post-war maps used only Russian place names.

5.4.1.4 Summary of post-war cartography illustrating de facto Russian control of Sakhalin

Unsurprisingly, all the Russian maps undisputedly represent Russian control through the use of borders, territorial fill-colors, and toponyms. Similarly, almost all English post-war maps showed the same by representing Russia's control of Sakhalin using borders, fill-colors, and toponyms placement, with only one exception.

The Japanese and Chinese post-war maps however show something a bit different. Of all of the cultural-linguistic groups, the Japanese maps are least likely to use borders, territorial fill-colors, and toponyms placements to represent Russian territorial control. This is not entirely surprising. Perhaps what is more surprising is that despite the 1971 notice from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Ministry of Education, 2001) and the general understanding that Japan does not accept Russia's control of Southern Sakhalin, 19% and 25% of the Japanese maps actually did represent Russia's

full-control of the Island in aspects of the way borders and territorial fill-colors were rendered. Finally, the Chinese maps acknowledge Russia’s administration of Sakhalin through the use of borders placements and fill colors, but instead of using the Russian toponym they used the Chinese toponym or a combination of both. The Chinese depiction of Sakhalin could suggest Chinese mapmakers disagree with Russia’s control over the entire Island or the use of Chinese toponyms could be an indication of trying to make maps as accessible as possible to potential audiences.

5.4.2 Representing the Japanese Political Stance

Japan officially renounced its claim on all of Sakhalin Island in 1951 through the Treaty of San Francisco. However, the Japanese government does not acknowledge Russia’s legitimate control of Southern Sakhalin. In this section, I discuss how the results of the content analysis illustrate how borders, territories, and place names support Japan’s political stance (Table 5.11).

Group Name	Post-war Maps with Pro-Japanese Border Placement	Post-war Maps with Pro-Japanese Territorial Fill Color Placement	Post-war Maps with Pro-Japanese Toponym Placement
Chinese	0% (0/10)	0% (0/10)	0% (0/20)
English	33% (1/3)	0% (0/8)	0% (0/13)
Japanese	44% (7/16)	75% (3/4)	57% (12/21)
Russian	0% (0/2)	13% (3/24)	0% (0/28)

Table 5.11: Usages of border, fill-color, and toponym to support Japanese political and diplomatic stances on the Southern Sakhalin Island across cultural-linguistic groups

5.4.2.1 Pro-Japanese Border Placement

The 1971 notice by the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Ministry of Education, 2001) guided cartographers as to how to represent Japan's official political stance regarding Sakhalin. In the notice, cartographers were instructed to place two international borders at the Soya/La Pérouse Strait and at the 50th parallel on Sakhalin Island as the double border placement. Despite the notice, surprisingly only 44% of Japanese post-war maps placed borders at both locations. Also, one of the English maps showed both borders. That specific English map (No. 89) was published by GSI Maps, the Japan's state land surveying and Geospatial Information Institute of Japan. As might be expected, none of Chinese and Russian post-war placed borders at these locations.

5.4.2.2 Pro-Japanese Territorial Fill-Color Design

The 1971 notice states that Japanese governmental maps using fill colors to illustrate the territorial-control status of Southern Sakhalin should be filled with a white color indicating that this area is neither controlled by Japan nor Russia. The results showed that most of the Japanese post-war maps (75%) followed the 1971 notice. The Japanese were unique compared to the other cultural-linguistic group post-war maps, which did not use this fill-color design.

5.4.2.3 Pro-Japanese Toponym Placements

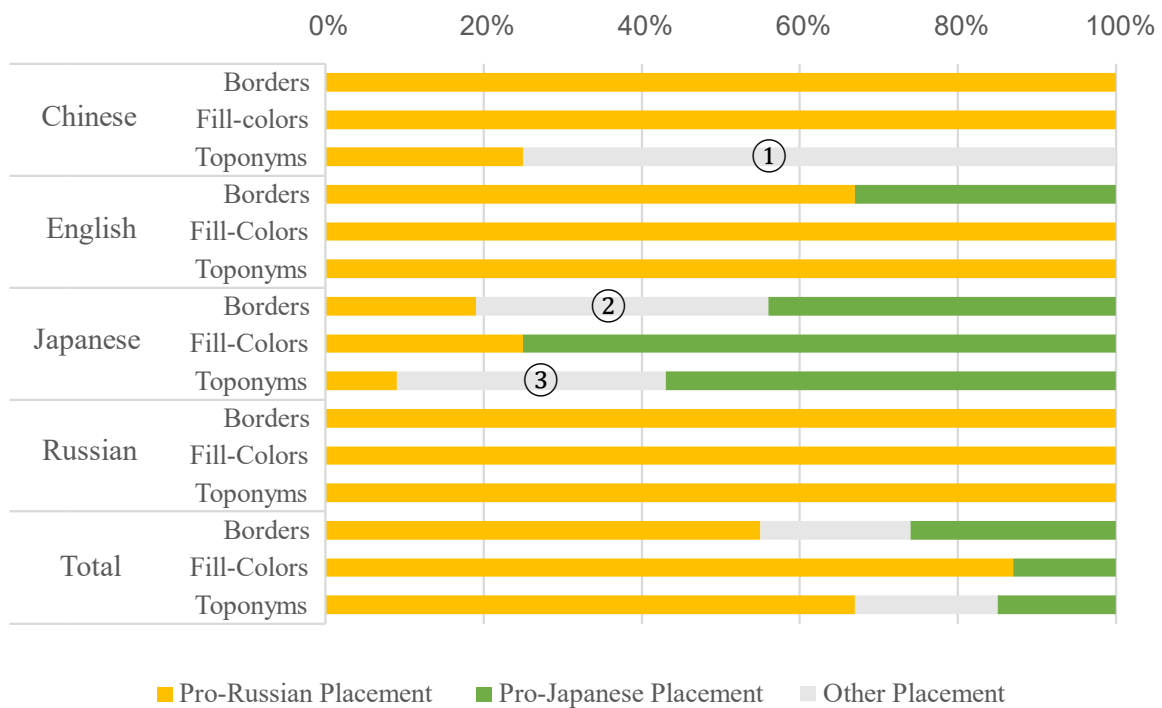
The 1971 notice did not describe the types of toponyms to be used on Southern Sakhalin. Because the Japanese government did not offer suggestions as to the use of toponyms, I define *pro-Japanese toponym use* as using double labeling by including place

names in Russian *and* Japanese on Southern Sakhalin. None of the Chinese, English, and Russian post-war mapmakers label Southern Sakhalin with both Japanese and Russian place names. Even the Japanese maps only use both Japanese and Russian-originated toponyms 57% of the time.

5.4.2.4 Summary of post-war cartography to illustrate Japanese stances of Sakhalin

Figure 5.2 illustrates how the post-war maps within each cultural-linguistic group used borders, fill-colors, and toponyms to represent either pro-Russian or pro- Japanese political stances. Compared to maps illustrating Russian control of Sakhalin, far fewer maps follow the Japanese 1971 notice by displaying borders at the Soya/La Pérouse Strait and at the 50th parallel on Sakhalin Island and by using a white fill color for Southern Sakhalin to illustrate neutrality. Most of the maps that did follow the 1971 notice were Japanese except for one English-language map published by a Japanese state institution. Interestingly, unlike the Russian maps illustrating Russia's control over all of Sakhalin, not every Japanese map illustrates the Japanese views on territorial control of Sakhalin. These maps could be divided into two categories. The first category of Japanese maps adopted designs that recognized Russia's control of Sakhalin Island by placing the only border on the Soya/La Pérouse Strait, using Russia's territorial fill-color, and/or using only the Russian toponym. The second category of Japanese maps do not represent Russia's administration of the Island, but also do not align with the Notice's suggestions. Some of them only placed the border at the 50th parallel but not the Soya/La Pérouse Strait, and other of these were only labeled with the Japanese toponym but not the Russian one. These maps did not use the neutral representation

of Sakhalin by using white for Southern Sakhalin, placing borders at both the Soya/La Pérouse Strait *and* the 50th parallel, nor do they use double toponym labeling in Japanese and Russian.



- ① Chinese maps also labeled Chinese toponyms or a combination of Chinese and Russian toponyms for Sakhalin.
- ② Japanese maps also placed only one border stroke on the 50th parallel without featuring the second one on the Soya/La Pérouse Strait.
- ③ Japanese maps also labeled Japanese toponyms only.

Figure 5.2: A Stacked Bar Chart of sampled post-WWII maps according to the placements of borders, territorial fill-colors, and toponyms divided into three categories: Pro-Russian Placements, Pro-Japanese Placements, and Others, and four groups of Chinese, English, Japanese, and Russian.

5.5 Representing Uncertainty

Conflicts over politically contested territories are often dynamic and fluid. To represent this fluidity, sometimes cartographers use designs on maps that imply uncertainty through the visual variables employed (MacEachren, 1992; Monmonier, 2006. Retchless and Brewer, 2016). In this section, I discuss six of the codes from my coding scheme, which were designed to better understand how uncertainty could be represented in political reference maps. The six codes of interest were Border Stroke, Border Color, Border Arrangement, Fill Color, Toponym Number, and Toponym Design. The quantitative results of these codes are shown in Table 5.12.

Uncertain Design	Chinese	English	Japanese	Russian
Thin border size	20% (2/10)	66% (2/3)	63% (10/16)	50% (1/2)
Non-exclusive border color	40% (4/10)	0% (0/3)	38% (6/16)	0% (0/2)
Dashed border	40% (4/10)	33% (1/3)	75% (12/16)	50% (1/2)
Indication of Border				
Uncertainty	33%	33%	59%	33%
Southern Sakhalin displayed with white fill-color	0% (0/10)	0% (0/8)	75% (3/4)	0% (0/2)
Double labeling	35% (7/20)	0% (0/13)	57% (12/21)	0% (0/28)
Double labeling with identical design	57% (4/7)	0% N/A (0/0)	83% (10/12)	0% N/A (0/0)
Indication of Toponym				
Uncertainty	46%	0%	70%	0%

Table 5.12: Border, fill-color, and toponym designs indicating uncertainty with indication values calculated from the means of each three border uncertain designs and two toponym uncertain designs.

5.5.1 Six uncertain designs.

The **Border Size** code was designed to separate out maps which used thick noticeable international borders vs. maps that did not use thick borders. Thin line strokes push the

borders lower in the visual hierarchy, which downplays their importance. The sample size of Russian and English-language maps is small and so I was not able to clearly see a pattern in the use of stroke size for international borders on these maps. However, 63% (10/16) of the Japanese used thin border strokes. Comparatively, Chinese maps have fewer maps using thinner strokes 20% (2/10).

The **Border Color** code was used to identify when a unique color was used for international borders or when the border colors matched other linear features on the map such as roads and coastlines. Similar to border size, when border colors are unique these lines are elevated in the visual hierarchy by being more noticeable and identifiable. All the Russian and English-language maps used unique colors for the international borders when they were shown, while only 60% of the Chinese maps and 62% of the Japanese maps used a unique color for these borders.

The **Border Arrangement** code was designed to identify the maps that used solid vs. dotted or dashed lines. Dashed lines are often used to illustrate uncertain, porous, and dynamic geographic information (Drecki, 2007; Kelly, 2019). Only one map had dashed or dotted borders in each of the Russian and English-language groups, and the sample size within these groups are very small anyways. In comparison, 75% (12/16) of the Japanese maps used dashed or dotted borders, whereas only 40% (4/10) of the Chinese maps used this type of border arrangement.

The **Fill Color** code served many purposes, and when it comes to uncertainty, maps that had two fill colors including white for Southern Sakhalin suggest that Southern Sakhalin

is not controlled by either Japan or Russia. Only some of the Japanese maps used this design, which follows the 1971 Japanese Ministry of Education's notice. None of the maps in any of the other cultural-linguistic groups used this fill color design.

The **Toponym Numbers (TN)** code was used to identify maps that labeled place names in Sakhalin Island using both exonyms *and* endonyms. Cartographers can imply uncertainty about control when both are used at the same time. Only the Chinese and Japanese post-war maps adopted this practice of double labeling. Chinese post-war maps tend to label Sakhalin in 薩哈林島 (Sa-ha-lin Dao, transcribed Russian endonym) and 库页岛 (Kuye Dao, Chinese exonym). Japanese post-war maps tended to label Sakhalin with サハリノ (Sa-ha-rin, transcribed Russian endonym) and 樺太 (Ka-ra-fu-to, Japanese exonym).

Finally, the **Toponym Differences (TD)** code was used to identify differences in design of the two labels when double labeling was used. Uncertainty is implied when label designs are identical for both toponyms. It is hard to identify which toponym form the cartographer is trying to imply is more important. Of the Chinese and Japanese maps that used double labeling, Japanese maps have a higher percentage (83%, 10/12) of using identical designs on both placenames than those on Chinese post-war maps (57%, 4/7).

5.5.2 Comparing uncertain designs.

In conclusion, more than any other group, the Japanese post-war maps, tend to be more likely to use uncertain designs for borders, fill-colors, and toponyms. Interestingly, the 1971 notice only depicted the design of fill-colors and the location of borders, but not their

design, yet uncertainty is implied through the design of the borders as well in many of the maps. The English and Russian post-war maps do not express uncertainty through these metrics, whereas the Chinese maps represent certain uncertainties through borders and double toponyms.

CHAPTER VI

DISCUSSION

In this section, I discuss the results I presented in the prior chapter. My goal here is to highlight what the results show us in terms of how political stances for contested areas are represented on maps. In addition, I looked into how these uncertain designs can be implemented beyond the Sakhalin Island issue. In the end, I note some limitations of this research and potential future research directions to potentially remedy those limitations as well as to encourage research related to the cartographic designs of politically contested areas.

6.1 Cartographic Design to Imply Certain & Uncertain Political Stances

This thesis research has addressed how maps represent political control through the placements of borders, territorial fill-colors, and toponyms. I also examined how the specific cartographic design decisions are made on these maps to imply uncertainty. It was clear that post-war maps that imply Japanese political stances typically use cartographic designs meant to imply uncertainty. These maps thus use dashed/dotted borders, a white fill-color for Southern Sakhalin, and matching double toponym labeling. These uncertain designs could not be found elsewhere besides the Japanese maps.

By comparing the Japanese maps, I analyzed in this study to the preliminary research I did of Japanese printed atlases which I described in the Background section, there is more variety in the designs of the online maps than those found in Japanese atlases. In addition, these imply more varied political stances compared to the printed atlases which typically

adopted the practices recommended by the 1971 Notice published by the Ministry of Education. Several factors could explain this difference. Firstly, printed maps and atlases typically go through a reviewing process to be published. During this process, the content of the printed maps and atlases are examined carefully to make sure that cartographic designs of these products comply with the relevant standards and regulations exercised by the state, such as the 1971 Notice. As a result, most atlases and maps in Japan adopted similar designs such as placing two borders to separate Southern Sakhalin, using a white fill color, and adopting double labeling. On the contrary, publishing or uploading a map to the internet is easier and simple. Cartographers have a larger freedom to apply certain styles or designs based on personal preferences, objectives, or narratives they would like to convince the audience. Thus, I observed a broader diversity in designs across the collected Japanese online maps which implicitly imply a variety of political stances, with some of them implying Russia's control over the whole Island, and some of them following the designs of the government atlases which illustrate Japanese views.

Post-WWII maps representing and implying Russian political control tend to use cartographic designs which convey certain information and minimize uncertainties by applying solid and obvious borders, using fill-color aligning with Russia, and label only with the Russian toponym. It is also evident that there is less variety among Russian online maps in the representation of Sakhalin through placements and designs of border, territorial fill-colors, and toponyms than the Japanese maps. Among all post-war Russian maps, I only found one form of border placement, one form of territorial fill-color across all time periods,

and one form of toponym placements across all time periods. This high homogeneity in design might indicate a lack of discussion of the Sakhalin Island territorial conflict in the Russian Internet space or that a higher portion of the Russian maps I analyzed being scanned pictures of printed atlas pages, with more standardized cartographic designs.

6.2 Bridging Historic Narratives and Toponym Design

In this section, I revisited historical narratives of control over Sakhalin advanced by China, Japan, and Russia. My goal here is to illustrate how the toponym-labeling strategy reflected historical presence of a certain regime that can be used to signal other contested areas around the world.

All of the Chinese maps in the sample that represent Sakhalin prior to 1875 used designs to illustrate Chinese control of the Island during this time. They implied this control through using Chinese territorial fill-color and the use of the Chinese toponym for Sakhalin Island. Even Chinese maps that depicted Sakhalin after China lost control of the island (after 19th century), Kuye Dao, the Chinese toponym, is still used to label Sakhalin on the Chinese maps. This implied to me that Chinese cartographers or authorities above them intend to keep this historical narrative from disappearing. In particular, Chinese authorities require cartographers to label Sakhalin in both Russian and its Chinese name and enforce this policy on all maps published in China (The State Council of P.R.C., 2023). As such, Chinese maps (and the powers behind the maps) commonly use toponyms to represent and emphasize

China's historical presence in Sakhalin even while other aspects of design represent the island's de facto control by Russia.

The historical narratives of control over Sakhalin are also part of the cartographic story of maps designed by cartographers in Russia and Japan. Unlike China, a state without any territorial control nor demand of Sakhalin in the modern era, Russia and Japan have more recent contested stances over the Island. Historical narratives are used to justify territorial legitimacy (Murphy, 1990), and using their own toponyms to assert historical presence is also an important part in representing Sakhalin on Russian and Japanese maps. For example, more than half of post-war Japanese maps (57%, 12/21) and all post-war Russian maps (28/28) chose to label Sakhalin with the toponym of each cultural-linguistic group respectively.

While Chinese maps and Japanese maps use Chinese and Japanese toponyms, they did not erase the Russian ones. In fact, all Japanese post-war maps (21/21) and more than half of the Chinese post-war maps (65%, 13/20) adopted the Russian toponym too, sometimes with their own toponyms using the double-labeling practice. Thus, in the case of Sakhalin, drawing attention to a country's historical presence in contested areas does not necessarily undermine or erase the local endonym but instead serves to promote a more inclusive toponymic labeling.

Jordan (2023) described how exonyms are preferred when the exonym is better for local audience to pronounce, or the exonym is used in historical maps or materials. Unlike European contexts where the majority of Latin script letters are pronounced differently in various European languages, which complicates transliteration, both transcribed endonyms of

Sakhalin (Sa-ha-lin, Sa-ha-ri-n) are easily readable or pronounceable in Chinese and Japanese. Also, from the results, we have seen that the exonyms of Sakhalin (Kuye Dao, Karafuto) have been used outside of the historical contexts. Thus, this research implies that the preservation of exonyms serves to highlight the historical administration of the territory. It usually constitutes part of a territorial-claim justification, but also could appear without active opposing an existing territorial arrangement (China in case of Sakhalin). Quantifying double labeling and the use of both endonyms and exonyms on maps can be used to assess how a regime might be historically connected to a foreign territory. Toponym usage can also be used to provide context and understanding of political power or emphasize historical connections, such as the United Kingdom influence on Irish place names (Dublin/Baile Átha Cliath) or Germany's influence Polish Silesian place names (Breslau/ Wrocław), even if there is no ongoing territorial conflict on the ground.

In general, placing exonyms in the case of Sakhalin is not necessarily used to propose and justify the territorial claim but rather to signify historical presence. Both China and Japan controlled at least a part of the Island at particular points in history, and they used their respective toponyms to emphasize the narrative of historical control.

6.3 Bridging Territorial Conflicts, Neutral and Uncertain Design

For Russo-Japanese conflicts over Sakhalin Island, there are two confronting narratives that differed due to each side's understanding of the Treaty of San Francisco in 1951. Unlike a traditional territorial conflict where two confronting states actively demand a

territory, Japan's twofold political stances have guided their mapmakers to adopt the neutral designs of borders and territorial fill-colors. The 1971 Notice disseminated from the Ministry of Education in Japan noted that international borders need to be placed on the Soya /La Pérouse Strait and the 50th parallel on Sakhalin Island, and Southern Sakhalin should be filled with a white color indicating these areas are neither controlled by Japan nor Russia. These designs can be found in the sampled Japanese maps depicting Southern Sakhalin as neutral territory, rather than a region controlled by Russia or Japan. In these maps, Southern Sakhalin is an area that no one claims.

This cartographic tradition has been practiced for centuries, where a white or light-colored territory that is separated from other countries indicated a lack of a sovereign state controlling an area (Figure 6.1). However, modern maps seldom use this design for areas other than Antarctica. This thesis illustrates a special case where this neutral area (Southern Sakhalin, Figure 6.2) could be represented on maps to facilitate a certain political claim, distorting the fact that this area is de facto controlled by a particular political regime. While this practice undermines the legitimacy of a regime's control over the territory, changes in the cartographic representation of borders and fill-colors still reflects political power arrangements, as Biggs (1999) suggested.



Figure 6.1: Turkey in Asia (1909) from *The New Encyclopedic Atlas and Gazetteer of the World*. A neutral separated territory of ARABIA in the middle.



Figure 6.2: 地図タペストリー 世界の言葉ありがとう A0 シルバー. 地図製作会社. <https://shop.tcgmap.jp/products/taa0s>. A neutral separated territory of Southern Sakhalin in the middle.

In this thesis research my goal was also to connect the use of uncertain cartographic designs with political claims and stances. For instance, many of the Japanese maps used thinner dashed borders rather than thick solid borders to imply the ambiguous status of Southern Sakhalin. The selection of uncertain designs is dependent on a political powers' understanding of a territory. It also illustrates that state control is demonstrated through the use of visual variables rather than individual-level embodiment experiences that feminist and critical cartographers such as Kelly (2019) and Van-Essen (2019) foreground.

6.4 Limitations and Future Research Directions

While my results indicate a connection between historical narratives, political stances, and cartographic design of Sakhalin Island, there are also limitations to this research. I elaborate on these limitations here and provide suggestions for future research that could address these limitations.

6.4.1 Coded Cartographic Elements

In this thesis I coded borders, territorial fill-colors, and toponyms as factors used to represent territorial control on maps. Although borders, territorial fill-colors, and toponyms are some of the most universal elements that signals territorial control, other elements of map design, including layouts, titles, scales, visual hierarchies, annotations, and other map information such as highways, rivers, and oil pipes could imply administrative status or territorial claims. Muehlenhaus (2013) used an aggregated analysis to suggest how data, layout structures, and visual information influence the persuasiveness of map communication with readers. Fish (2021) interviewed cartographers to figure out what cartographic elements they view as important to make maps compelling and vivid in the climate change context. Future research would be well served by extending this content analysis to include other cartographic elements and content to illustrate the connection between maps and political-territorial ideas and ambitions.

6.4.2 Land vs. Maritime Borders

One key aspect of Sakhalin geographically is that it is an island. Inherently, cartographic borders are placed differently on land than in the water. Land boundaries are usually demarcated with border strokes, while maritime boundaries are often not placed at all (Blake, 1995). The implication of maritime borders is that water is inherently the border between states. Thus, while border lines are often placed across the Strait of Tartary and the Soya / La Pérouse Strait, these borders are also just as often left off because they are viewed as inherently understood, and the results of the content analysis in this thesis could be influenced by those inherent, but not explicit, borders. Also in this study, I investigated the border size, border color, and border arrangements in the same way across the boundaries placed on the land and on the sea. However, while the land boundaries are usually continuous and demarcated, maritime boundaries might be more represented as dashed in segments or thinner lines, regardless of whether they represent certain or uncertain placements. In future studies, I would subcode my results based on comparisons between other borders on the map and the borders encircling the politically contested area.

6.4.3 Source of Collected Online Maps

I coded the webpage sources in the metadata codes however this research did not expressly evaluate the connection between sources of the maps and the designs I saw. However, I was able to see some general patterns among all 200 collected maps as many of them are used in the social media, news websites, and image sharing websites such as

Pinterest. Some of these websites, such as X (formerly Twitter), Reddit, or Wikipedia where maps are posted, have a higher public exposure than other websites, making some of the maps well-known to the public. In future research it might be helpful to analyze the connection between source of collected online maps and design. This might include evaluating the website's traffic and users' reactions to help me better understand what maps, and stances are implied through these maps, which types of maps are more prevalently circulated than others.

In this research one aspect of who produced and published the maps made clear that there was a scarcity of maps from governmental agencies websites. While state governments expressing their territorial claims and concerns, official map visualizations of their claims made by these agencies are fewer than expected. This finding raised questions about the perceived importance of maps to express political stances of states, and about state regulations and censorships of maps in general.

6.4.4 Map Regulation and Censorships

It was clear from my research that Russian maps represented Russian political stances and Japanese maps represented Japanese stances. This is not surprising, but it would be helpful in future studies to investigate map regulations in Russia and Japan, and how these regulations are proposed, passed, and enforced. Understanding the prevalence of these map designs is a useful first step to assess representation, and a future study might be able to identify how much of this is dictated by the government versus cartographic convention

within these cultural-linguistic contexts. Directly interacting with cartographers might help us answer these types of questions.

6.4.5 Indigenous Mapping

Among all 200 sample maps, not a single map focused on the indigenous groups of Sakhalin, the Ainu people and Tungusic peoples. No indigenous settlements are highlighted, and there is no indigenous place naming represented. All the sampled maps instead depicted oversea settlers: Chinese, Russian, and Japanese. Future research in cartography on the depiction of Sakhalin would be well served by specifically investigating the erasure of the indigenous presence on Sakhalin Island through maps, and how this erasure is situated and has interacted with state violence by Russian and Japanese powers towards indigenous groups.

6.4.6 Comparative Studies

Narratives of territorial claims are often case-specific, constructed through histories, contention, and the states involved. However, options to represent contested territories including visual variables of border strokes, territorial fill-colors, and choices of toponym labels on maps are more general, where a specific cartographic design could be adopted for many different types of cases. In the case of Sakhalin, dashed border strokes and white/neutral fill-color were often used by Japanese mapmakers to question Russia's control while double labeling was used to assert historical presence, but it remains unclear whether

dashed border strokes, white/neutral fill-colors, and double labeling convey identical narratives in maps of other contested areas. A future comparative analysis of two or more territorial disputes which share similarities with the Sakhalin issue may be beneficial to better understand and extend this research to make it more generalizable.

6.4.7 Perception of Contested and Uncertain Cartographic Design

In this study I qualified and quantified the use of borders, territorial fill-colors, and toponyms for politically contested areas. However, there are open questions related to how map users perceive these cartographic designs on maps of politically contested areas. Future research such as a user study should be conducted to explicitly assess how these designs influence map users' emotions and opinions in politically contested areas. Maps of contested areas adopted different designs, and certain groups of people might experience different emotional responses or have different views and understandings of cartographic placements and designs of borders, territorial fill-colors, and toponyms on maps. Studying how these designs lead to emotional responses and understanding of place and control can help researchers to unravel how political powers manipulate these designs to construct narratives towards a contested area. The results of a user study could also be beneficial to better understanding the connection between the persuasiveness of map designs and their use in depicting territorial conflicts. Lastly, by assessing users' feedback toward cartographic designs in the politically contested areas, cartographers can target and implement certain

design languages that are most likely to protect themselves from political accusations made by map users, states, and institutions.

CHAPTER VII

CONCLUSION

Maps have been used extensively as an instrument for visualizing political contested territories and territorial disputes (Wood, 1994). In this study, I investigated the specific case of Sakhalin Island, a place where Chinese, Japanese, and Russian political stances have been in conflict for over two centuries. Specifically, I set out to answer two research questions by using content analysis of 200 maps equally divided across four cultural-linguistic groups (Chinese, English, Japanese, and Russian) to better understand how cartographic design is used in this politically contested context.

7.1 Answering Research Questions

How are cartographic designs, including a) border strokes, b) territorial fill-colors, and c) toponym labels, used differently on Chinese, English, Japanese, and Russian maps of Sakhalin Island and how do these differ depending on the time period depicted in the map?

Although most sampled maps depicted Sakhalin after WWII, placements and designs of borders, territorial fill-colors, and toponyms varied across four cultural-linguistic groups, and this was also based on the time period depicted in the map. For border strokes, most maps with borders placed one singular border at the Soya / La Pérouse Strait. A border on the 50th parallel is also commonly found in maps depicting Sakhalin between 1905 and 1945 and also Japanese maps depicting Sakhalin after 1945. For fill-colors, the majority of maps with colors across all groups use the Russian color on the Island, with a small portion of Japanese

post-war maps using the neutral white color to represent Southern Sakhalin. For toponyms, Chinese maps and Japanese maps across different time periods often adopted double labeling – labeling Sakhalin in both exonyms and endonyms for the Island, with Russian and English maps labeling only the singular Russian toponym.

In what ways do the cartographic designs of border strokes, territorial fill-colors, and toponym labels, in the case of Sakhalin Island, imply political contestations or uncertainty of political control?

It was clear from the content analysis that there was a connection between the implications of contestation, uncertainty and cartographic design elements. The Japanese maps used more uncertain designs for borders, territorial fill-colors, and toponyms, such as dashed border strokes and double toponyms labeling, to question Russia's control and to legitimize their political narratives and stances. By contrast, Russian and English maps used more certain cartographic designs and placements such as solid borders, fill-colors which clearly aligned with Russia, and singular toponym labeling. The Chinese maps were an unusual case; many of these implied de facto control through borders and fill colors, but nearly always used Chinese toponyms.

7.2 Cartographic Practice from a Cartographer

From my perspective as a practicing cartographer, I noticed how the conflict over Sakhalin Island is ignored in every major Western published map and atlas. While the

contestation exists based on differences of how the Island was depicted on maps across different cultural-linguistic groups, as a cartographer, in addition to the design of borders, fill-colors, and toponyms I mentioned within this research there are several other aspects of map design which I plan to implement in my future maps.

1. Annotation: within all the sampled maps from this study, no annotations or notes were used to signal or explain the contestation over Southern Sakhalin. Annotations have been discussed in the cartography field as a powerful narrative tool for storytelling (Caquard & Cartwright, 2014; Kraak et al., 2023). By describing the contestation over Southern Sakhalin with annotations map readers will be better able to understand the larger narrative of contestation in the area.

2. Hatching: while the visual variables of color are used for polygons and color, size, or arrangement of line strokes are used in the maps I analyzed in this study, none of the maps used hatching on Southern Sakhalin. By applying a hatching which included the fill-color used for Russia over a white background, the map could potentially translate information more accurately about the contestations between Russia and the Japanese view that Southern Sakhalin is contested, rather than being merely neutral (White color) or Russian.

3. Point-of-view (POV): web map providers such as Google Map, present different map designs and labels depending on a map users' settings and location because the online nature of these maps allow for this type of functionality. This could also be adopted more broadly across many different types of maps by varying placements and designs of borders,

territories, and toponyms based on the location of the audience. Map makers can also produce multiple versions for map readers to select if the audience is huge and varied.

4. Varying scripts: For a map displaying toponyms in multiple scripts, it could be a useful technique to provide multiple labels of different scripts. For instance, in the case of Sakhalin multiple labels could be displayed with Japanese originated place names written in Japanese scripts, and Russian-originated place names written in Cyrillic script. For the audience literate in Russian, they could only understand Cyrillic but not Japanese, whereas Japanese audiences can comprehend Japanese but not Cyrillic.

Not limited to the specific case of Sakhalin, I believe these practices could be also adapted into narratives of other contested areas in general. I plan to think about implementing some of these practices to illustrate different contested areas across the world for better comprehension and clarity of contentious scenarios.

7.3 Concluding Thoughts

Through this thesis study, it is evident that historical and political narratives shaped cartographic representations of borders, territorial-fill colors and toponyms. By connecting uncertain cartographic designs with the political narratives across time, this thesis also illustrated how political contestation on maps is largely dominated by the cultural-linguistic context from which a map originates. It was clear in this research that double toponym labeling is used by Chinese and Japanese maps to signal their historical presence on the contested territory. It is also clear that the neutral and uncertain design of the border and the territorial fill-color adopted in Japanese maps serves to question the sovereign-control status

of a contested area. The point is that the quantitative deconstructions of border strokes, territorial fill-colors, and toponyms can deepen understanding of the relationship between cartographic representations and underlying political-territorial ideologies and ambitions.

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