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Territorialising the Frontier: Knowledge Production and the Emergence of Modern Territoriality in China

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Declaration:

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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Statement of inclusion of previous work

I can confirm that sections of Chapter 2 were published in Li, A. H. (2022). From Alien Land to Inalienable Parts of China: How Qing Imperial Possessions became the Chinese Frontiers. *European Journal of International Relations*, *28*(2), 237–262. https://doi.org/10.1177/13540661221086486

Abstract:

This thesis examines the concept of modern territoriality through historical research on the epistemic and conceptual transformations that facilitated the emergence of modern China as a territorial state. Existing IR discussions on modern territoriality have focused on specific political and material technologies, such as cartography, border, and the concepts of territory and sovereignty. I argue that modern territoriality should be understood as a polysemic, processual phenomenon that is produced through a diverse range of technoscientific knowledge and practices that concern not only the physical environment but also its human inhabitants. By rethinking the concept of modern territoriality through in-depth historical research on China, this thesis contributes to IR by arguing that the emergence of China as a territorial state is a coeval and constitutive part of the global transformation towards political modernity, rather than the result of imperial China's passive encounter with a ready-made international system. In doing so, this thesis also contributes to existing discussions on modern territoriality by pointing out the co-production between the modern territorial state and a wider set of technoscientific knowledge and practices.

To understand how the modern territorial state is co-produced through knowledge production about people and the environment, I examine how the Qing imperial frontiers were reconceptualised as the internal frontier of the new Chinese state through knowledge production about peoples and the physical environment. Rather than simply inheriting the Qing Empire's Inner Asia territories, the Republic of China (1912 – 1949) and its successor the People's Republic of China (1949 – present) relied on specialist knowledge production that made visible specific ethnocultural and environmental qualities. In doing so, the production of social and environmental knowledge shaped the political rationalities that are used to govern the people and the environment. Drawing on official documents, academic publications, personal letters, and visual materials, my research demonstrates how people ranging from 19th Confucian statecraft scholars and 1930s Western-educated Chinese social anthropologists and meteorologists helped to shape how the physical space and the human inhabitants of China are understood.

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Chapter 1 Introduction

Rethinking the Meaning of 'China' in the History of International Relations

The territorialisation of the Qing Empire as China was an unlikely historical development in the history of modern international relations. For much of the first half of the 20th century, China was not a territorial state in the real sense but an assemblage of semicolonial treaty ports, politically autonomous polities ruled by indigenous aristocratic and religious authorities, the fiefdoms of military strongmen with national political ambitions, and a weak central state with strong technocratic institutions. Yet, despite decades of civil war and colonial intrusions during the 'Century of Humiliation', contemporary China emerged as one of the few early modern colonial powers that have retained their colonial possessions to this day. Other larger continental and maritime empires that governed diverse peoples - such as the French, Habsburg, and Ottoman empires – have since disintegrated and been replaced by smaller territorial successors. In contrast, much like the United States and Russia, the People's Republic of China (PRC) continues to preside over a vast continental empire it inherited from the Qing Empire's violent conquests in the 18th century. As other colonial empires collapsed after the end of the Second World War Chinese settler colonialism in Inner Asia and the southwestern hinterlands accelerated and transformed the social and environmental landscape of the country's vast frontier regions.

It is worth taking a closer look at China's historical trajectory towards a modern territorial state, in light of China's conflicted status as a historical non-Western imperial power and a victim of Euro-American and Japanese colonialism. In the early 20th century, both in material and conceptual terms, the territorialisation of the Qing Empire as modern China did not look like a fait accompli. However, in the discipline of International Relations (IR), compared to the attentiveness to the colonial and imperial origins of European and postcolonial states, China is often accepted at face level in its territorial, civilisational and ethnocultural configurations (Buzan, 2016; Katzenstein, 2013; Y. Qin, 2007). Framed in opposition to the 'West' either as a

historical non-Western civilisation, a future hegemonic power or a defeated Other at the hands of European imperial powers (C. Zhang, 2020; F. Zhang, 2013), China's colonial and imperial histories are often overlooked (Anand, 2019; Krishna, 2017). The positioning of the PRC as the modern successor of historical Chinese imperial formations in International Relations, the subsequent discussions on historical Chinese international systems (Kang, 2020; Y. Zhang, 2001), the Chinese encounter with European modernity, and the unquestioned Chineseness of the so-called 'Chinese IR' defined as Confucianism betrays an essentialised, anachronistic understanding of 'China' as an orientalised other (Chun, 1996).

To break out of these essentialised understandings of China that equate the contemporary Chinese state with historical imperial formations, we need to overcome two forms of essentialism: the first is the understanding of 'China' as a 'People', which manifests as an understanding of China as 'among the extremely rare examples of historic states composed of a population that is ethnically almost or entirely homogenous' (Hobsbawm, 1992:66). Although the contemporary plight of Tibetans and Uyghurs have made many aware China is a Han-dominated colonial state for many of its citizens, the subtle historical and contextual tension between Chineseness and 'Han' have not received adequate critical attention (T. Mullaney, 2012). The second form of essentialism is the understanding of China as an outlier to the Westphalian State System (Acharya, 2019; Y. Qin, 2007; Tickner, 2003:321; Y. Zhang, 2001:61), which is reminiscent of Pye's concept of the 'civilisation state' in which China 'is a civilisation pretending to be a state' (Pye, 1990:58). Both essentialised understandings fail to distinguish historical Chinese states, Chinese civilisation, cultures, and languages from the modern Chinese territorial state that emerged from the ashes of the Qing Empire.

The essentialisation of China is not only normatively problematic, as it overlooks the colonial and imperial histories that are hidden in plain sight in the contemporary PRC. More importantly, as I aim to argue in this thesis, taking China's empire to territorial state transformation for granted also negates how China's search for political modernity was a coeval and constitutive part of the larger global transformation towards modern territoriality. This PhD project attempts to overcome the tendencies to unwittingly essentialise China in IR

by examining ways through which the Qing Empire was reconceptualised as a modern territorial state with a defined physical territory and multi-ethnic nationhood in the modern era. In this thesis, I treat the historical processes and politics of territorialisation and nation-building in China as coeval and co-constitutive forces in the emergence of the modern international system, rather than a case of 'passive encounter' with a ready-made Westphalian state system. In doing so, modern China as a territorial state is seen as a contentious and contingent historical outcome, rather than the contemporary transfiguration of an ancient people and civilisation. The territorialisation of China was not the inevitable consequence of the historical Chinese state and civilisation's encounter with political modernity but was enabled by new political ideas, technoscientific practices, revolutions, and wars that remade China (Mitter, 2005a). Therefore, in the history of modern international relations, China should be primarily conceived as a quintessential modern territorial state with a physical territory (Agnew, 1994), a population whose legibility was produced through state-sanctioned knowledge production (Scott, 1998), and a colonial frontier whose indigenous inhabitants are forcibly incorporated into the imagined Chinese nation. At its core, this thesis is about how the modern frontier of China emerged as a political-geographical concept defined through its ethnocultural and environmental qualities.

In opposition to the understanding of China as a self-evident historical state, this thesis conceives China primarily as a modern territorial state. This understanding of modern China as a territorial construct as opposed to a stable historical state and people is indebted to the revisionist historiography of the Qing Empire, as well as recent works on the histories of the modern Chinese frontier regions. Since the end of the 1990s, a revisionist school known as the 'New Qing History' challenges the traditional Sinocentric understanding of imperial Chinese history from a Manchu-centric perspective using Manchu and Mongol sources (cf. Ho, 1998; Rawski, 1996). The Qing Empire, from the perspectives of New Qing History, is not a Chinese Empire, but an Inner Asian Manchu empire of which historical China was a component, rather than the imperial centre (Crossley, 2000; Dunnell et al., 2004; M. Elliott, 2014; Perdue, 1998, 2005; Waley-Cohen, 2004). The Qing Empire, which defeated its inner Asian rival, the Dzungar Empire, and brought Tibet, Xinjiang, Mongolia, and Manchuria into

the empire, was, therefore, an 'early modern colonial empire' on par with France and Britain (Cosmo, 1998; Hostetler, 2001; Millward, 1998; Perdue, 2005, 2009a).

Although New Qing History challenges the equivalence between the Qing Empire and the modern Chinese nation-state, its Manchu-centric Inner Asian focus tends to overlook how Sinophone, Han-centric conceptions of China, too, were shifting in light of momentous political, cultural, and territorial changes (Mosca, 2011, 2013). Works on Chinese ethnic politics and frontier histories during the 20th century have shown how the Chinese Nationalist and Communist leaders and intellectuals were adaptative and flexible in their notions of Chinese nationhood in light of frontier nationalist movements and ethnocultural diversity that challenges hollow claims of racial unity (Duara, 1995, 2004; Leibold, 2006, 2007; H. Lin, 2009, 2011; X. Liu, 2010, 2017). However, these works tend to take the territorialised conception of China as well as the existence of a national ethnocultural frontier for granted.

More importantly, my research is also not just about the territorialisation of China alone. The 19th and 20th China's status as a 'semi-colony' (Osterhammel, 1986), a major historical non-Western state, and the role of hybrid or indigenous concepts and forms of knowledge (Leibold, 2004; L. Liu, 2006; Zarrow, 2012) in its emergence as a modern state makes it a potentially illuminating site of empirical knowledge and theoretical insights on how modern territoriality became global. By examining how the modern Chinese frontier was produced as a geographical imagination, an object of scientific knowledge, and a governable entity defined in ethnocultural and environmental terms, I am also exploring theoretical themes that are relevant to the history of modern international relations, such as the modernist conception of territory (Agnew, 1994; Elden, 2013c; Kratochwil, 1986; Ruggie, 1993; Sack, 1983), and the role of transnational technoscientific practices in the creation of modern territorial states (Branch, 2013, 2017; Goettlich, 2019, 2021; Strandsbjerg, 2010, 2012), albeit in a different geographical, cultural, and political context from Euro-centred historiography that rendered these concepts legible.

Increasingly, scholars in Historical International Relations (HIR) are beginning to recognise the shortcomings of a narrow Euro-American empirical focus. The analytical primacy given to the territorial state in historical accounts of the international system comes at the cost of occluding a much wider variety of actors and historical processes operating at various scales (de Carvalho et al., 2021:50). A bourgeoning body of historical IR works have shown the diversity of institutions, state and non-state actors that existed before the universalisation of the territorial states (Kang, 2020; Phillips, 2016b; Phillips & Sharman, 2015b; Sharman & Phillips, 2020; Spruyt, 2020; Zarakol, 2022). More importantly, they have de-centred 'the West' by foregrounding historical forms of international relations and forms of international hierarchies that cut across state boundaries (Zarakol, 2017, 2022). Collectively these works have provided the much-needed empirical and theoretical foundations to move beyond mere critiques of Eurocentrism in IR. More importantly, by moving beyond those global histories that are the 'most entangled' with European and American history, particularly the histories of Euro-American colonialism, the 'global' is no longer automatically equated with a single centre (Drayton & Motadel, 2018:14). This thesis builds on the insights, macro-historical narratives, and conceptual relevance for IR craved out by these works and brings the empirical focus to China.

As I will illustrate in this thesis, the contemporary PRC is a quintessential modern state because its current territorial contour, the multi-ethnic conception of territorial nationhood, and the political-geographical bifurcation into the national core and the frontier were formed between the late 19th century to the mid 20th century. In other words, China did not assume its current territorial form owing to a specific set of foreign ideas about nationhood. Instead, modern territoriality in China, like in other countries, was made possible by a bundle of political technologies' which not only 'comprises techniques for measuring land and controlling terrain' (Elden, 2013c:322-324) but also techniques that made the population legible as governable subjects (Foucault, 2007; Scott, 1998). Moreover, China was not an exception to the modern state-centric scalar hierarchy that positioned each individual state within a larger planetary geographical imagination (Bartelson, 2010; Mosca, 2013). Given its size, population, and contemporary relevance, the emergence of China as a modern territorial state was a crucial part of the global transformation (Buzan & Lawson, 2015; also see

Chakrabarty, 2018b). There is no reason to adhere to the old intellectual division of labour in which 'the West' supplies Theory and 'the Rest' provides empirical or ethnographic knowledge (Chakrabarty, 2007). This thesis contends that in order to understand how modern territoriality became global, we need to examine how are made possible by the material and political technologies in different parts of the world without resorting to a single origin story based on a singular idea or a single form of technology (cf. Branch, 2013; Elden, 2013c; Ruggie, 1993; Winichakul, 1997).

The Modern Chinese Frontier: A Tale of Two Chinas

In this section, I will briefly outline the historical background of the conceptual emergence of the modern Chinese frontier and its political significance, which formed the basis of this thesis' empirical research. To illustrate how the new spatial concept of the frontier engendered epistemic and political contestations over the 'Chineseness' of frontier peoples and physical environments, I want to start with a brief story of a young ethnographic photographer in 1930s China. In 1934, the Chinese nationalist government dispatched an envoy to the Tibetan capital Lhasa on the occasion of the 13th Dalai Lama's death and funeral. The Nanjing-based nationalist government under Chiang Kai-shek was hoping to re-establish an official relationship with Tibet, which had effectively been independent since the expulsion of Chinese troops in the aftermath of the Chinese Revolution of 1912. The mission failed to gain the Tibetan government to acknowledge Chinese sovereignty (Leibold, 2005:186). Before the envoy's departure into Tibet from Chengdu, a young Shanghainese photographer by the name of Zhuang Xueben (1909-1984) tried join the envoy to gain entry to Tibet. His request was ultimately denied by the head of the mission (Zhuang, 2009:30). Despite the setback, Zhuang decided to venture into the new Chinese frontier province of Xikang to document the ethnocultural diversity he expected to encounter. The province of Xikang was then a newly established Chinese settler colony in Tibetan Khampa territories, ruled by the Sichuanese warlord Liu Wenhui (1895 – 1976) whose soldiers had been fighting the Tibetan army in a series of armed clashes since 1932 (Lawson, 2013). Despite the presence of a modernising state under the rule of the Nationalist Party (Kuomingtang), 1930s China resembled a

patchwork of different polity forms. This is an important point to consider since Zhuang was active at a time when neither the territory, the state, nor the conception of nationhood was fixed.

Figure 1. Photographs taken in Batahng, Garzē (1940)

Source:

Zhuang, X. (2009). *庄学本全全集* (H. Wang, W. Zhuang, & M. Li, Eds.). Zhonghua Book Company 中华书局. Pp.637

The fieldnotes and photographs taken during Zhuang's trip to Kham and Amdo were published as a series between 1934 and 1935 in the 'Central Daly News' – the official Nationalist Party newspaper based in the capital of Nanjing. Zhuang's visual and textual depictions of the strange and exotic frontier peoples captured the attention of Chinese urban

intellectuals and the educated middle class. Therefore, Zhuang soon became the foremost 'frontier correspondent' for a series of Chinese periodicals, including 'Young Companion' – an influential Chinese-English bilingual pictorial journal published in Shanghai. The warm reception of Zhuang's photographs was a part of the fervent intellectual and political interest in the frontier regions of the nascent Chinese republic. From the late 1920s onwards, an explosion of ethnographic and environmental knowledge fundamentally transformed how frontier peoples and environments were seen by Chinese elites. The epistemic transformations both shaped and were shaped by the metamorphosis of the Qing Empire into China as a modern territorial state. The so-called 'barbarians' were studied and identified as ethnic minorities and the 'barren and wild' wastelands were surveyed and reconceptualised as the national frontier with strategic and economic significance.

Zhuang was both a recipient of new forms of knowledge about the frontier as well as a producer of visual and textual representations of the frontier. In the foreword of a 1937 book, he suggests that he was motivated by the scarcity of ethnographic knowledge on Kham and Amdo, and these places were not as 'dangerous and barbaric' as they were typically understood (Zhuang, 2009:35). Through the vocabularies of nationhood, Zhuang viewed the subjects of his photography as 'frontier compatriots' (*bianbao* 邊胞) rather than 'barbarians' as non-Han peoples were typically portrayed. Zhuang remarked that his fellow frontier compatriots are misunderstood as 'dangerous barbarians' (ibid). However, he also viewed frontier peoples as historical relics or people who are stuck in the past (ibid). Of course, Zhuang's research was enabled by the hierarchical ordering between the Shanghainese photographer-ethnographer and his 'minority' subjects masked by the progressive nation-building vocabularies of the time. His photography cannot be abstracted from the historical context of nation-building and state-building efforts in Republican-era China. Therefore, Zhuang's photography can be read as a form of representational technology that portrays the peoples and environments as a part of 'China' to 'Chinese' viewers. By making ethnocultural diversity visible and intelligible to an audience at the 'centre', Zhuang's knowledge production activities can be seen as a part of the wider corpus of knowledge that helped to rationalise modern China's inheritance of the Qing Empire's diversities.

But the implications of Zhuang's activities exceed what can be captured by a state-centric understanding of knowledge production and individual encounters. From the outset, Zhuang was not explicitly affiliated with the Chinese Nationalist state, holding neither formal titles nor being involved in 'official' ethnographic categorisation. Furthermore, by making visible the ethnocultural diversity, Zhuang has also made it difficult for human diversity to be erased or denied by a monogenesis understanding of Chinese nationhood. Although Zhuang's photographs emphasise ethnocultural differences and exoticisation of the frontier regions (Holmes-Tagchungdarpa, 2015:358), they also highlight the existence of other polities within China by depicting indigenous institutions such as monasteries, ceremonies, militaries, and elites (see figure 1). Finally, Zhuang's knowledge production is not isolated from globally circulating scientific concepts and the networks of specialist knowledge producers. Zhuang studied with Chinese and Western ethnographers working in China and recorded detailed fieldnotes using scientific techniques and concepts of the time such as anthropometry and the functionalist theory of culture.

In sharp contrast to Zhuang's curiosity and willingness to engage with 'internal' diversity, another young ethnographer called Li Guangming (1901-1946) was troubled by the 'ignorance' of his research subjects on the frontier. Li was born as a Hui Muslim, but he was also a fervent Chinese nationalist. After graduating from university, he joined the newly established Institute of History and Philology, a centre of early state-sponsored ethnographical research in 1930s China. Like Zhuang, Li was also sent to Kham as a part of an ethnological investigation that was planned to last two years. But unlike Zhuang, Li was not interested in the cultures and languages of frontier peoples. Instead, he was chiefly concerned with what he saw as the ignorance of local officials, indigenous aristocrats and villagers about Chinese state institutions and political leadership (R. Ma, 2020:101; M. Wang, 2019:82). Despite his insistence on 'natives' being Chinese citizens, Li was extremely obnoxious and condescending towards the people he encountered. He frequently ridiculed them in his diaries and performed his advanced and modern status by brandishing cameras, gramophones, and electric torches to the locals (M. Wang, 2019:84). Failing to gain any recognition in Chinese ethnography in small part due to his ignorance of frontier peoples, Li instead became a local magistrate in Kham and served in various rural postings in the 1940s. In 1946, he became the

governor of Jinghua County, an extremely remote mountainous region that had been under the rule of indigenous Tibetan Gyalrong aristocratic authorities until 1936. The name *Jinhua* (靖化), similar to many Chinese names for frontier administrative divisions, means 'to pacify and to transform'. Tragically, Li was murdered by local Han armed gangs within a year.

The contrast in Zhuang and Li's attitudes toward the ethnocultural differences they encountered in the frontier is indicative of the tension between the creation of Chinese citizens*, and* the creation of Chinese nation(s). Li was struck not only by the lack of ethnographical knowledge in the face of visible ethnocultural differences but also by the absence of citizens who were at least aware of the existing Chinese state institution and political leadership (M. Wang, 2019:83). In contrast, Zhuang's empiricism and interest in ethnographic fieldwork meant that he was able to make the frontier's ethnocultural diversity legible to metropolitan viewers. In other words, whereas Li was invested in the production of citizens and the effective control of territory, Zhuang was more concerned with the production and legibility of ethnocultural categories (R. Ma, 2020). The tension between the construction of a homogenous Chinese citizenry and the need for a codified system of categorisation to make people's 'own' self-identities legible to the state (Brubaker, 2004a:42) shows that it was far from clear whether China was a state for a singular nation or many different peoples in the 1930s. More importantly, perhaps, the episode also highlights the co-production between scientific knowledge and political rationalities [1] through the social construction of socio-technical problems. The production of specialist or scientific knowledge does not just 'naturalise' pre-existing governmental problems, but also actively creates and shapes them (S. J. Whatmore, 2009).

[1] I borrowed the term 'political rationality' from Bruce Braun, who used the term to refer to what Foucault calls 'governmentality' (2000:12). But I do not consider that there is a singular form of political rationality, despite shared governance objects as the population or territory (Foucault, 2007). Instead, rationalities are likely to be multifaceted and encompass problem-solving, and instrumental aspect as well as normative and culturally specific concerns that define the problems in the first place (Kalberg, 1980).

Despite the claim of territorial sovereignty, the political status of the frontier spaces, the categorisation of frontier peoples, and indeed the 'Chineseness' of non-Han people were far from settled. Since the fall of the Qing Empire, there were at least three different 'official' articulations of Chinese nationhood: In the wake of the Chinese Revolution of 1912, the new Republic of Chinese was hastily rebranded as the republic of 'five races' or 'five lineages' depending on how one interprets the politically and semantically loaded Chinese concept of *minzu* (Brophy, 2012:344; Leibold, 2004:179). By contrast, the nationalist regime under Chiang Kai-shek (1928-1949) abandoned the vision of China as the union of Han, Tibetan, Muslim, Mongol, and Manchu peoples and officially shifted to a monogenesis understanding of Chinese nationhood by the mid-1940s (Leibold, 2006:202). In the 1950s, the People's Republic undertook a fundamentally different approach by portraying China as a unified yet multinational state. The shifting stance towards the relationship between the ethnocultural composition and territorial sovereignty, as well as the contrast between the Nationalist Party's monogenesis pretence and the Communist Party's endorsement of the multi-ethnic conception of nationhood, owes their origin to novel forms of knowledge that were produced during the early decades of the 20th century about the modern Chinese frontier.

Li and Zhuang's interests in the frontier regions were part of the 1920s and 1930s intellectual fascinations with the frontier's ethnocultural and environmental qualities against the historical backdrop of territorial losses and war with Japan (Z. Chen, 2016; Yen, 2017). The concept of the frontier was a new form of geographical imagination in the 1920s and 1930s that had begun to engender knowledge production and governance of China's ethnocultural and environmental diversity. The so-called Chinese frontier, or *bianjiang* (邊疆) in Chinese, is largely congruent with the territorial conquests in Inner Asia by the Manchu Qing Empire (1636-1912) in addition to the absorption of areas controlled by the Ming Empire (1368 – 1644). The Chinese frontier is understood relationally to the 'inner realm' or *neidi* (内地), which referred to the country's more populous, Han-dominated eastern provinces.

The spatial bifurcation of China into the frontier and the core was neither an imperial leftover nor an entirely indigenous idea. Instead, the *bianjiang*/*neidi* distinction was the result of 20th

century Chinese acceptance of the older European political-geographical bifurcation of the Qing Empire into *China Proper* and *Chinese Tartary* (Cams, 2014; B. Chen, 2015; M. C. Elliott, 2000; K. Huang, 2020). The geographical contour of *China Proper* corresponds to Ming-era China, which formed the basis of the so-called eighteen provinces of the inner realm (*neidi*) during the Qing-era and Republican-era. By the late 18th century, following the Qing Empire's conquests of Inner Asia, areas beyond *China Proper*, such as Mongolia, Tibet, Manchuria, Xinjiang (historically known as Dzungaria and Chinese Turkestan), and Qinghai (Kokonor) were collectively known as 'Chinese Tartary' in the European geographical conception (B. Chen, 2015:412; M. C. Elliott, 2000:625). In the Republican era, Euro-American and Japanese productions of the map of China often continued to deploy this historical-geographical bifurcation of China into 'China Proper' and the imperial territories (see figures 2 and 3). Over time, the spatial bifurcation was accepted by Chinese intellectuals and political leaders against the backdrops of a Han-centric, yet multi-ethnic understanding of China. By 1901, the concept of *China Proper* entered the Chinese lexicon first as *benbu* (本部) or 'eighteen provinces', possibly based on the Japanese usage of the term (B. Chen, 2017; K. Huang, 2020). The corresponding term *bianjiang* only entered popular usage in the late 1920s (see Chapter 3 of this thesis) and appeared to be based on the Anglophone conception of 'frontier'. The term *bianjiang*, which remains in common usage today, typically refers to areas brought into the empire through 18th century Qing imperial conquests in Inner Asia. Apart from Outer Mongolia, which became the independent Mongolia People's Republic in 1924, the People's Republic of China and the Republic of China (1912-1949) largely retained the Qing Empire's territories.

The modern concept of *bianjiang*, which connotes the liminal status of a physical space characterised by ethnocultural and ecological differences, was a spatial fix that is capable of reconciling ethnocultural diversity with claims of Chinese national unity and territorial nationhood. In a similar vein to the absorption of the territorially heterogenous, imperial spaces elsewhere through the new rationality of territorial sovereignty, the discourse of frontier emerged to set the scene for the creation of a new modern state (Kearns, 1984). The internal frontiers are understood to be unsettled, or environmentally challenging spaces that served as the de facto limit of the state's power, as opposed to the de jure limit designated

by the external frontiers (Prescott, 1965:35). Despite the abstracted understanding of China as a defined territory, the spaces Li and Zhuang ventured into in the 1930s were often governed by semi-autonomous or completely autonomous indigenous political authorities that are not depicted on maps. There were no standardised ethnocultural categories or administrative designations to make these spaces 'legible' to the Chinese state, which was in part due to the lack of empirical knowledge and the absence of state authority in these regions.

By the late 1930s, *bianjiang* had become not only a political-geographical concept used to describe politically autonomous indigenous peoples (S. Yang, 2012) but also an object of scientific research. The earlier scholarly attempts to produce applicable and empirical knowledge on the frontier regions included the 1928 Frontier Society founded at Tsinghua University which was spearheaded by mostly by natural scientists (Jin, 2006), and the 1933 Shanghai-based *la Société de l'exploration sur les frontiers de la Chine* (殖邊社) which was represented by social scientists and pundits working in the traditional genre of statecraft writing (ZBYK 1933 Vol.2, Issue 3-4:2). Throughout the 1930s and 1940s, with the support of the state, the academic interests in the frontier regions culminated in an interdisciplinary genre known as Frontier Studies, or *bianjiang xue* (邊疆學) in Chinese, and Frontier Governance Studies, or *bianzheng xue* （邊政學）in Chinese, that brought together both social and natural scientists (H. Wang, 2014b). By 1944, the first Frontier Studies departments aimed at the training of future frontier administrators were being established at universities (ibid:173). The Chinese frontier therefore not only appeared as an ideological construct used to justify nationalist claims to indigenous lands. As a new spatial concept, it also turned peoples and lands into a distinct realm of scientific knowledge and colonial governance.

As I will show in my thesis, the frontier was not simply a socially produced spatial concept used by an encroaching territorial state to control its indigenous inhabitants, it is also a physical space shaped by environmental forces. The challenging physical environment of the Himalayan mountains, Guizhou-Yunnan plateaus, and the Steppe Desert, as well as the lack of transportation, sanitation, and communication infrastructure, means that the

territorialisation of China could not simply finish with drawing lines on a map. As Elden puts it: 'terrain is where the geopolitical and the geophysical meet'(Elden, 2017:223). Efforts to control and transform the environment gave rise to new forms of technoscientific knowledge that made the environmental qualities of far-flung corners of Chinese territory legible. The understanding of the national frontier as a source of natural resources and a solution to the problem of overpopulation was not only the continuation of 19th century discourse of agricultural settler colonialism (Lavelle, 2020) or age-old concerns with overpopulation and famine. More importantly, the strategic and developmental understandings of the frontier regions were also shaped by new forms of geological, geographical, and mereological knowledge (Z. Chen, 2008a, 2012, 2016; Frank, 2019, 2021; Shen, 2009, 2013; S. X. Wu, 2015). I will demonstrate how the production of environmental knowledge, motivated by concerns of territorial sovereignty and economic development, not only made visible the unruly visible vertical and voluminous qualities of the frontier environment and its natural wealth but also 'naturalised' Chinese territory as a demarcated physical container of the Chinese state. The focus of this thesis is not on the political histories and the contestations between frontier nationalist movements, indigenous communities and actors acting under the banner of the Chinese state (see Bulag, 2006; Jacobs, 2016; Leibold, 2005; H. Lin, 2011; X. Liu, 2010; Tsomu, 2013; Weiner, 2020). Instead, the focus is on the epistemic and technoscientific underpinning of modern territoriality in China.

Figure 3. Map of China (1900)

Source:

The Fort Dearborn Publishing Co.

Chicago, ILL.

Available at: https://www.loc.gov/resource/g7820.ct005344/?r=-0.055,0.366,0.644,0.399,0

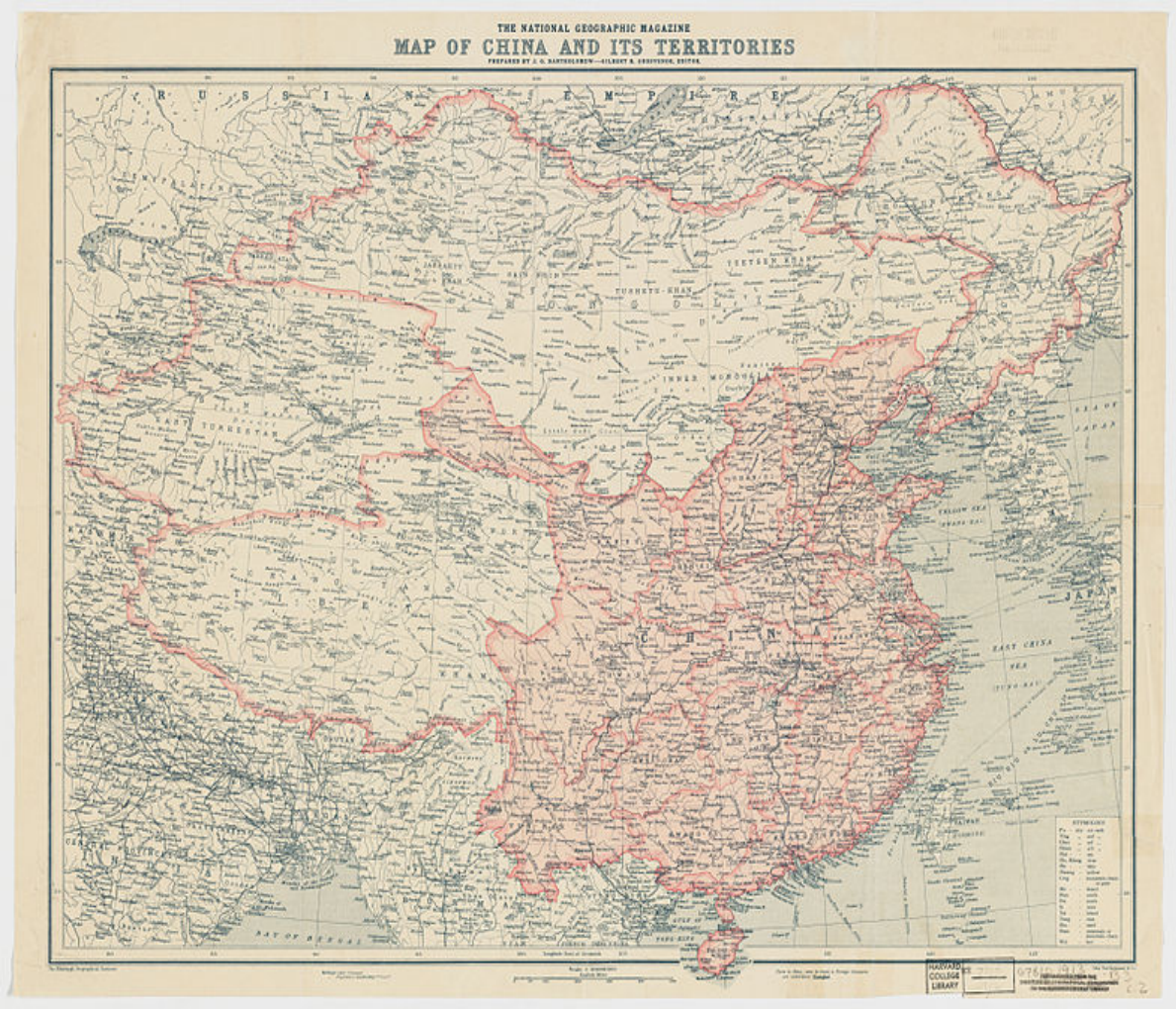

Figure 2. Map of China and its Territories (1912)

Source:

Bartholomew, J. G. 1860-1920

National Geographic Society, U.S.

Edinburgh Geographical Institute

Available at: https://commons.wikimedia.org/wiki/File:1912_China_map_from_National_Geographic.jpg

Rethinking Modern Territoriality and Overcoming the Separation of People and Territory

In this thesis, I re-examine the concept of modern territoriality by engaging with the epistemic and technoscientific underpinnings of territorialisation in China from the late 19th century to the mid-20th century. Instead of taking the modern nexus of territory, sovereignty, and nationalism for granted, I argue that we need to focus on actual historical conceptual and material practices in the creation of a state's territory. In that regard, this thesis is not just about China, as I am rethinking the very concept of modern territoriality through the territorialisation of China. I am also sceptical of a global, singular understanding of modern territoriality as a fixed set of political and material technologies, specifically because the globality of modern territorial states constitutes the modern scalar hierarchy of global-national-local that is used in social scientific studies (Brenner, 1999). Works in the History of Science have shown us that technoscientific practices are both global as well as situated (Livingstone, 2003; Naylor, 2005; Powell, 2007; Tilley, 2011). In this section, I will outline the conceptual framework I used to examine the emergence of modern territoriality in China. I will also be highlighting the problem with the conceptual separation of people and territory in existing works on modern territoriality, which this thesis intends to address.

In terms of my approach to modern territoriality, I follow Elden's recent processual and multivalent understanding of the modern state territory[2] as the composite of technoscientific knowledge, practices, and political rationalities (Elden, 2013a, 2021). Therefore, I intend to capture the multiple ways through which territory is created. Specifically, I am examining four features that characterise China as a modern territorial state: the geographical conception of China, the concept of the frontier, the multinational or multi-ethnic nationhood, and the understanding of Chinese territory as a physical, natural environment. These conceptions

[2] Elden did not use the term 'modern territoriality'. Instead, he used the word 'territory' to signify the modernist understanding of territory as mutually exclusive demarcated space typically controlled by a state (2013a, 2013c).

help to define the geographical boundary, delineate the relationship between people and land, and naturalise the understanding of China as a territory. Collectively, these conceptions about Chinese territory and Chinese nationhood constitute what we recognise as 'modern territoriality' in China by enabling the 'geographical compartmentalisation of legitimate political authority' [3] (Goettlich, 2019:204) within the geographical boundaries of the ethnoculturally diverse and territorially pluralist former empire.

None of the features mentioned above are the inevitable results of China's imperial past. On the contrary, they are common features of modern territorial states that emerged from territorially heterogenous imperial formations. For instance, a modern territory is not only demarcated on 'empty' colonial spaces but also created from and closely associated with notions of sovereignty and nationhood (Antonsich, 2009:791; Elden, 2013c). A territory is often conceived as a national homeland (Penrose, 2002) and in most countries, the notion of sovereignty is understood to be residing with 'the people' of the underlying nations, rather than with the sovereign (Costa Lopez et al., 2018:512). The geographical bifurcation of the country into a national core and an ethnic or settler-colonial frontier, too, is not limited to China. The historical and contemporary presence of a settler colonial frontier is commonplace in larger continental empires such as Russia and the United States. Likewise, the conception of a multinational state or composite nationhood, rather than an ethnically 'pure' understanding of nationhood, too, is used in modern territorial states with imperial roots, such as Britain, and Canada, as well as in the former Soviet Union, and Yugoslavia. Finally, the conception of the state's territory as a demarcated physical space that contains the state and its society is essential to the naturalness and legitimacy of modern territoriality in every single case (Agnew, 1994; Gottmann, 1975; Shah, 2012; Taylor, 2003). Gottmann, for instance, refers to the state's territory as 'the physical container that supports the body politics organized under a governmental structure' (Gottmann, 1975:29). In light of the diversity of political rationalities that can connect the state, the people, and the territory, so-called

[3] The expression 'modern territoriality' is popularised in IR by John Ruggie (1993) . The term refers the geographically defined, mutually exclusive, territorially organised forms of rule that emerged out of Early Modern Europe, which latter became the basis of the modern system of territorial states (ibid).

modern territoriality appears to be able to facilitate different forms of national, colonial, imperial governance. As Elden puts it, the territory is a bundle of political technologies' that are continuously made and remade throughout history rather than a fixed outcome (Elden, 2013b:2). Even modern state territories are not simply the products of a fixed view of spatial ordering enabled by a set of concepts and techniques, but the material effects of wider social relations (Brighenti, 2010:57; Murphy, 2012:162). In that sense, the material aspects of modern territoriality cannot be separated from social entities such as social hierarchies, peoples, populations, or nations (see Elden, 2013a:14).

In the discipline of IR and other social sciences, the materialist understanding of territory simply as the self-evident physical basis of the state (Giddens, 1985:50,57; Mann, 1986:56; Tilly, 1990:4) has been successfully deconstructed as socially produced understandings of space (Agnew, 1994; also see Murphy, 2012; Sack, 1983; R. B. J. Walker, 1993). The first generation of critics saw modern state territories not in terms of their materiality but through their spatiality, as socially produced, historically specific ways of seeing and representing socially produced state spaces as natural 'containers of society' (Agnew, 1994; Kratochwil, 1986; Ruggie, 1993; R. B. J. Walker, 1993; Winichakul, 1997). More recently, IR scholars have started to examine the historical forms of material and political technologies through which state spaces are produced and represented as demarcated physical spaces (Branch, 2013, 2017; Goettlich, 2019, 2021; Strandsbjerg, 2010). Collectively, these works have helped us to distinguish the materiality of the territory from the cartographic, demarcation, and calculative technologies that enabled the legibility, divisibility, and governability of the territory's materiality. What is unclear, as many IR scholars have pointed out, is how socially produced state territories came to be equated with the underlying physical space (de Carvalho, 2016:62; Shah, 2012:58; Strandsbjerg, 2010:10). The equivalence between the physical environment and human territory not only matters conceptually as a method of legitimation but also strategically as a method of domination, since territoriality is understood as the control of people through the control of geographical space (Sack, 1983).

The self-evident nature of the materiality of modern state territories has led scholars to focus instead on second-order problems such as the conceptual history, demarcation, and

cartographic representation of modern state territories (Shah, 2012; Usher, 2020). But the problem that remains unresolved, as Strandsbjerg puts it, is to figure out how a territory is simultaneously 'historical and social, yet material', which has to be understood in peoples' relationships to the physical environment (2012:819). The privileging of territoriality in the histories of state formation, for instance, negates the historicity of human beings as political subjects (de Carvalho, 2016:64). In doing so, the emergence of the population as the object of modern state governance (Foucault, 2007) becomes an afterthought in relation to the question of modern territoriality. In a sympathetic critique of Foucault's materialist understanding of territories, Elden argued that the modernist conception of territory emerged around the same time as the modern conception of the population (Elden, 2013a). A similar argument was made earlier by Bruce Braun that the governance of a population's welfare necessitates the governance of the territory's material qualities (Braun, 2000:12). Whereas this thesis builds on the historicist insights regarding the spatiality of modern state territories, building on recent critiques, it also seeks to reconnect the spatial and the material aspects of modern territoriality by bringing people back into the equation.

In IR and in everyday usage, territories and peoples are often thought of as separate entities. A state is typically understood to be residing over two separate things: a physical area that qualifies as land territory and human inhabitants that amount to a population (Tilly, 1990:4). The definition of 'statehood' stipulated in the 1933 Montevideo Convention, instance, includes the possession of a permanent population and a defined territory. The conceptual separation of people and territory means that modern territoriality has principally been viewed in IR and beyond as a tool of epistemic and physical oppression directed at its inhabitants, or as a source of ethnic identities and sectarian tensions (Antonsich, 2009; Heiskanen, 2020; Penrose, 2002). This conceptual separation means that the modernist conception of the territory is thought of as the universal signifier of territorial sovereignty and national self-determination (Elden, 2013c; Murphy, 2013), rather than specific ways of articulating the relationship between people and land (Strandsbjerg, 2012).

This 'outside-in' understanding of modern territoriality focuses on the geographical enclosure of political authority, rather than the internal social production of space. From the 'outside-

in' perspective, the modern international system is made up of territorial states and ordered through the reciprocal external recognitions of territorial sovereignty (see Lake, 2003:305), rather than the particularity of specific ethnocultural groups and nations. As Agnew puts it: the states are the same, it is nations that differ" (Agnew, 1994:64). The creation of political subjects, therefore, appears to be an outcome of modern territoriality, rather than a prior condition or a coeval process. Since territories are thought of as power containers (Giddens, 1985), people need to be 'reinscribed' back into a territory through forms of political subjecthood such as citizenship or ethnocultural identities. For instance, Habermas spoke of nationalism as 'Janus-faced' because the civic notion of citizenship coexists alongside primordial ethnic membership based on kinship, history, and language (Habermas, 1998 in Getachew, 2019:27). The two notions of political subjecthood appear to be irreconcilable because both are dependent on the modernist conception of territory as mutually exclusive containers of political authority and ethnocultural identity (Antonsich, 2009:800).

The conceptual separation of people and territory overlooks how people are already entangled with a territory before territorialisation through the materiality of the physical environment. In other words, human beings' boundness with the natural environment connects the spatiality of state territories with the physicality of the material environment that underlies a state's territory. Moreover, the creation of political subjects is a separate yet coeval process with the creation of territories (de Carvalho, 2016:66). The very conception of the physical environment as something that can be 'territorialised' through measurement, division, demarcation, control, colonisation, transformation, and governance, means that forms of territoriality are inseparable from the production of political subjects since the governance of people also requires the ability to regulate and control physical spaces (Elden, 2013a:17).

For instance, nationalist claims to specific territories are typically naturalised through the notion of 'homeland'. The validity of such a claim requires an understanding of human beings' relationship with divisible territories as primordial and natural (Penrose, 2002:281). Before nations were commonly understood to be historically and socially constructed in scholarly analysis in the 1960s, nations were understood to be organic and natural entities (Croucher,

2003). This biological and Darwinian understanding of nationhood can be traced back to fin de siècle political geographical thought where nations were viewed as biological entities that are bounded by their natural environments (Klinke & Bassin, 2018). Under this view, nations and territories are inseparable since nations are the natural historical outcomes of the incessant human competition for land and resources. For example, Friedrich Ratzel viewed a nation (*Volk*) as a historical organism bounded not through their ethnical or linguistical affinities, but through a common territory in which they are linked together spatially (*Verbundence*) (Ratzel, 1923:3 in Bassin, 1987:480). Here, territories are not understood as abstract spaces divided by geometric lines, but as the material bond that holds societies spatially (Usher, 2020:1022). Although the environmentally deterministic and racist understanding of human territoriality has gone out of favour, the existing scholarly aversion to the materiality of the physical environment and the focus on the social construction of territories have left the modernist idea of territories as demarcated physical environments unchallenged (Shah, 2012; Usher, 2020).

As I have shown in the literature review above, the existing scholarly preoccupation with the socially constructed spatiality of modern state territories (Agnew, 1994; Ruggie, 1993; R. B. J. Walker, 1993) and the subsequent recourse towards the technical means of territorialisation (Branch, 2013, 2017; Goettlich, 2019, 2021) in IR have generally overlooked the materiality of the physical environment upon which territory is produced and focus instead on socially produced abstracted conceptions of space. My thesis intends to bridge the conceptual separation between people and territory by examining how both the environmental qualities as well as the cultural meanings of territory are conceptualised in relation to its human inhabitants. This conceptual move is enabled by existing scholarships on the technical means through which modern territory is represented and conceptualised as the physical backdrop of human political actions. I agree with Strandsbjerg that modern territory is constructed from technoscientific means of calculation where socially constructed ideas about a space intersect with more-than-human materiality (Strandsbjerg, 2012:826). I also follow the argument that modern territoriality is enabled by forms of technical rationality and scientific knowledge that are relatively independent of more overtly political processes of nation-building and imperial conquest (Branch, 2013, 2017; Goettlich, 2019). Nevertheless, given the entanglement

between the production of modern state territories and the production of modern political subjects, I contend that modern territoriality involves a greater variety of technoscientific practices than cartographic technologies and the linearisation of borders. Therefore, I will be examining the co-production between technoscientific practices and political rationalities in the historical process of territorialisation through a greater variety of technoscientific practices including Geography, Atmospheric Sciences, Ethnology, and Social Anthropology in addition to cartography.

A Historicist Methodology

As seen from the discussions above, three concepts are crucial to understanding the emergence of China as a territorial state: modern territoriality, territory, and the frontier. These concepts help to make the transition from the Qing Empire to China legible to a contemporary academic audience in IR and beyond. There are two key sets of methodological challenges that are presented in this thesis: The first pertains to the politics of translation (Capan et al., 2021). Given the discipline's Eurocentric historiography, which has just started to unravel in the past two decades, concepts such as modern territoriality are still grounded in a disparity between how much we know about Europe and its colonial histories vis-à-vis the rest of the world. The unwitting historiographical bias towards Europe can potentially obscure the historical contexts and nuances in which Chinese concepts, ideas and practices assume political significance. The second challenge, which is crucial to my thesis, arises from the modernist separation between culture and nature (Latour, 1993b), and in the context of modern territoriality, the separation between spatiality and materiality (Usher, 2020). By bracketing off territoriality as social practices separated from the materiality of the natural environment (see Murphy, 2012), the modernist separation between culture and nature is reproduced as the conceptual separation between people and territory. Yet we know that human beings, material technologies, and socially produced discourse are never ontologically separated from entities that are regarded as pre-social or 'natural' (Haraway, 1990). Modern state territories, too, are simultaneously social and natural entities (Nightingale, 2018; Whitehead et al., 2007).

With these two challenges in mind, I approach the emergence of modern territoriality in China not through a predetermined set of concepts and practices such as territorial sovereignty or cartographic representations. Instead, I conceptualise territorialisation as a historical process through which specific geographical entities are produced and institutionalised as socially meaningful and intelligible epistemological frameworks (Delaney & Leitner, 1997; Moore, 2008). Moreover, I examine how socially produced spatial categories such as the modern state territory and a frontier space are conceptually separated from their human inhabitants and physicalised as the underlying natural environment (Shah, 2012:67).

My methodological approach in this thesis can be described as 'historicist' which is characterised by a philosophical scepticism towards both teleological narratives and grand theories (Cello, 2018:237). Concepts such as the territory or the frontier, as I will demonstrate, are embedded with meanings that are context-specific at the point of emergence. They do not enable trans-historical and trans-cultural analysis by themselves (Reus-Smit, 2008:398). The macro-historical narrative of global modernity (Buzan & Lawson, 2015), of which modern territoriality is a crucial part, comes at the cost of obscuring the local and meso-level contexts through which historical practices could be 'recovered' using present-day sociological concepts (Marcon, 2020). Concepts that enable us to write history are, upon closer examination from a different historically and culturally situated standpoint, mediated by scholars, and simply reflect the prevailing forms of knowledge at their time (MacKay & LaRoche, 2017:224). The intelligibility of the past hinges on the construction of narratives and selective omissions (Reus-Smit, 2008:401-405). Therefore, to avoid imposing Eurocentric teleology and Euro-American analytical ideal types on my historical research, I start with late 19th century and early 20th-century Chinese contexts to displace Anglophone concepts from their usual culturally and historically specific basis. In doing so, I wish to show the existence of local variance and alternative, parallel historical processes that lead to outwardly similar phenomena. The history of the modern international system is therefore understood to be multilinear and unfamiliar, especially when viewed from an alternative epistemological starting point that does not take for granted the universality of presentist concepts (Barkawi & Laffey, 2006; MacKay & LaRoche, 2017:227).

I study the territorialisation of China as a historical process (Elden, 2013a) rather than a singular event. To do that, I focus primarily on the emergence of historical concepts or epistemological framings that facilitated the emergence of Chinese territory and Chinese political subjects. The concepts and framings included, but were not limited to, the Chinese territory, the modern Chinese frontier, the multi-ethnic conception of the Chinese nation, and the understanding of Chinese territory as a physical environment. Rather than see the Chinese state as a unitary, territorialising agent, I follow what Mitchell refers to as 'the state effect', which treats the state as the epiphenomenon of capillary practices that are dispersed across society (T. Mitchell, 1991). Modern territoriality too is understood to be a part of the aforementioned 'effect' manifested in the spatial organisation by the state (ibid). To historicise these practices, I am guided by the assumption that scientific knowledge production is crucial to the production of land, people, and the environment into population and resources (Braun, 2000; Carroll, 2006:3; Castree & Braun, 2001; T. Mitchell, 2002; Scott, 1998).

The empirical chapters of this thesis, especially chapters three, four, and five are based on archival research of primary materials produced by Chinese social and natural scientists. This method of data gathering, and analysis used is known as 'historical ethnography' (Vaughan, 2004). Drawing on Vrasti's criticism of IR's fetishism with ethnographic research as a machine for more 'authentic' data extraction and the call to turn ethnographic methods towards the discipline's knowledge-making practices (Vrasti, 2008:300), the focus of my historical ethnography is on Chinese knowledge practices about Chinese territory, nationhood, and frontier. This method aims to understand the historical practices of knowledge production and the contexts that gave rise to specific knowledge claims about the world. The way this is done is by combing meanings extracted from historical materials with the historical contexts that framed individual action and meaning-making in their immediate and broader historical-political contexts (Vaughan, 2004:322). This method is well-suited to the situated nature of globally circulating scientific techniques and concepts in specific social, cultural, political, and geographical contexts (Livingstone, 2003; Shapin, 1998). The richness of the said contexts is retrieved by smaller-scale context-sensitive studies of the micropolitics of knowledge-making

(Feichtinger, 2020b:3). The findings about local specificities are then held against preconceived concepts such as modern territoriality or frontier through an iterative process of analysis, which allows prior categorisation and theoretical framework to be challenged through the 'discoveries' of historical materials and meanings that might have been occluded (Atkinson, 2007:122; Timmermans & Tavory, 2012).

Given the temporal and contextual distance between the 'field' of knowledge production practices and my position as the researcher, I have to rely on texts, such as professional peer-reviewed journal articles, personal letters, diaries, and sometimes photographs, to piece together historical practices. Of course, there is an inevitable gap between the texts and the historical practices that are connected only by my interpretations. Nevertheless, these textual and photographic artefacts are not seen as repositories of truth nor simply moments of archival 'silences' that must be restored by 'reading against the grain' (Stoler, 2008). I view them as the products of a historical more-than-human apparatus involving material practices, the physical equipment used in the production of knowledge, and printed materials such as journals and magazines etc. (Whatmore, 2006). In short, texts and images are not a 'window' but the outcomes of past material practices that are used to create specific forms of social order (Latour & Woolgar, 1986:245; Nimmo, 2011:114). For instance, in Chapter 4, the production of ethnographic knowledge points to a wider ensemble of ethnographic fieldwork, university and institutional professionalisation of state ethnographers, as well as the visceral encounters between ethnographers and their 'subjects'. In Chapter 5, the accumulation of meteorological data and the production of new climatological knowledge is not only 'textual' but also indicative of the development of material infrastructures.

In light of the public health restrictions put in place during the COVID-19 Pandemic, the border closure imposed by the Chinese and the Taiwanese Governments, and the deteriorating situation for archival access for researchers in China, particularly for materials deemed to be sensitive, I had to resort to creative means of data gathering. In this thesis, the 'archive' refers to the corpus of historical writings that are gathered by me by visiting public holdings,

accessing digitised materials, and acquiring commercially available photocopies of primary sources. Given my focus on knowledge production, the use of 'non-traditional' visual and scientific materials is not treated as a holder of neutral 'scientific truth' but reified historically contestable knowledge claims (Schwartz & Cook, 2002). Taken together, the accumulated materials on the production of the Chinese 'geo-body' (Winichakul, 1997) through cartographic representations and scientific knowledge about the ethnocultural and environmental diversity within China's territorial limit can be seen as an archive of modern territoriality in China.

My research on cartographic knowledge focuses on the first incidences of scientific surveying and mapping activities in present-day Inner Asia by Chinese, Manchu, and European Jesuit scholars and officials during the 18th century. The imperial atlas produced during the reigns of the Kangxi, Yongzhen, and Qianlong Emperors can be viewed via the digitisation project supported by the University of Macau[4]. These imperial atlases can be compared with contemporaneous world maps that were commercially available in Qing China, many of which can be accessed in the Library of Congress collection.

The bourgeoning scientific research on the Chinese frontier in the early 20th century has left behind an enormous corpus of publicly available works. In this research, I focus primarily on prestigious scientific publications from the 1930s and 1940s such as the *Frontier Affairs Journal* (邊政公論) published between 1941 to 1948, *Frontier Research* (邊事研究) published between 1934 and 1942, as well as more generalist social scientific journals such as the *Sociology Journal* (社會學界) published sporadically by Yenching University in Beijing between 1927 and 1938. Selected copies of these journals are held in European universities and public collections. These journals specialised in frontier politics and social sciences and are exemplary sources for understanding the scientific discourse on the Chinese frontier in the early 20th century. Many seminal texts of Chinese meteorologists, geographers, and

[4] The Kangxi Atlas of 1721, Yongzheng Atlas of 1728, and the Qianlong Atlas of 1766 have been digitised and are available via: https://qingmaps.org/

sociologists regarding the frontier were also published in the more generalist geography journal of *Acta Geographica Sinica* (地理學報) established in 1934. I have also acquired the complete personal correspondences, scientific writings, and diaries of Zhu Kezhen （竺可楨） who was the founder of modern meteorology in China and a patriotic scholar who was avidly involved in scientific explorations of the frontier regions. Invaluable surviving photographs, first-hand accounts and fieldnotes of the ethnographer and photographer Zhung Xueben （莊學本）too have been acquired in the form of a published catalogue raisonné. Zhuang is among the earliest frontier ethnographers and photographers who have, for the first time, produced images of the frontier widely available to literate middle-class Chinese in metropolitan cities.

The entanglement between Chinese and British colonial anthropology was a particularly important focus of my research, especially for demonstrating the transnational and polycentric nature of modern science and technology. To study the transmission and mutation of scientific knowledge, and to assess the impact of prominent anglophone social anthropologists such as Bronislaw Malinowski and Alfred Radcliffe-Brown on Chinese sociologists and ethnologists who were influential in the ethnic classification program, I went through the personal correspondence between them and Fei Xiaotong （費孝通）, Wu Wenzao （吳文藻）, and Lin Yaohua （林耀華） held by the LSE archive. The influence of Chinese functionalist anthropologists on the communist state's official ethnological theory was assessed by examining 1950s eyewitness accounts by visiting Western scholars, 1950s communist journals, and the official communist party's school textbook on ethnological theory.

Main Arguments and the Structure of this Thesis

At the outset, this thesis investigates how modern territoriality was made possible in China through a variety of technoscientific practices that made visible the geographical contour, ethnographic composition, and environmental qualities of China as a territorial state. As seen

from the discussions at the start of this introduction, through my empirical studies I argue for the reconceptualisation of China as a modern territorial state in IR rather than a territorialised spectre of an ancient civilisation or imperial formation. The territorialisation of modern China, like that of other modern territorial states, required both the making of Chinese territory and Chinese citizens who are also members of the Chinese nation. This process of subjectification was coeval with the process of territorialisation (de Carvalho, 2016; Elden, 2013a). The strongest supporting evidence for this claim is that the so-called frontier of China was a decidedly modern creation, rather than an imperial anachronism from a Sinocentric imperial hierarchy (Leibold, 2007:11). Modern China did not simply inherit its territory from the Qing Empire. On the contrary, the cultural meaning, forms of knowledge and technoscientific practices, and political rationalities that constituted the territory were shaped during the 19th and 20th centuries.

More importantly, the making of the Chinese territory and the Chinese nation was not only the purview of nationalist leaders and intellectuals who were engaged in conceptual acrobatics aimed at indigenising new imported ideas of modern territoriality and nationhood but was also actively constituted by Chinese social and natural scientists who were coeval interlocutors with their Euro-American counterparts in the early 20th century. In that regard, to understand how China emerged as a modern territorial state, we need to not only look at the premodern Sinocentric past but also at China's search and involvement in global modernity (Kirby, 1997; Mitter, 2005b, 2005a). As I intend to demonstrate in this thesis, it was far from clear what the geographical and ethnocultural contour of China would entail in the early 20th century, and the uncertainty was particularly evident in the so-called Chinese frontier. In that regard, a Eurocentric teleological understanding of China as a late moderniser or a global sociological understanding of political modernity (Buzan & Lawson, 2015, 2020) can overlook the theoretical implications of regional variance and the translated, situated nature of technoscientific practices and knowledge (W. Lin & Law, 2019; Marcon, 2020).

In addition to the theoretically minded engagement with modern Chinese history from the prism of Historical International Relations (MacKay & LaRoche, 2017), this thesis argues for the need for a polycentric and interdisciplinary approach to the universal phenomenon

known as modern territoriality that defines our existing modern international system (Kratochwil, 1986; Ruggie, 1993). Examining familiar concepts such as modern territoriality in different historical and cultural contexts can help reveal hitherto overlooked dynamics. The production of modern territories appears to have had different historical pathways and involved a greater variety of technoscientific practices and political rationalities than what was outlined by the neo-Weberian theory of state formation (Giddens, 1985; Mann, 1986; Tilly, 1990) and critical approaches that focused on the socially produced spatiality of modern territories (Agnew, 1994; R. B. J. Walker, 1993). The recovery of the polycentric origin of modern territoriality requires engagement with a wider variety of concepts, political rationalities, and practices beyond a narrow set of Euro-American concepts and material technologies (Mukoyama, 2022; Watanabe, 2018; Winichakul, 1997). Recent works in IR Theory have highlighted the productive power of multiple, intersecting international hierarchies with different political rationalities beyond the territorial state (Zarakol, 2017). Following these theoretical insights, HIR can be better served in its probing of take-for-granted phenomena in the modern international system through engagement with disciplines such as the History of Science, Science and Technology Studies, and area studies that are more attentive to the geographies of knowledge production as well as the actual content of knowledge that are produced by different people in different places (Agnew, 2007; Barry, 2013; Feichtinger, 2020a; Livingstone, 2003).

Following this interdisciplinary and polycentric approach, this thesis follows the emergence of modern territoriality at the meso-level through a wide variety of actors and technoscientific practices from 19th century Confucian statecraft scholars to early 20th-century social anthropologists, meteorologists, and geographers. The geographical compartmentalisation of legitimate political authority is not a singular form of political rationality, but a historical process that was made possible by a 'bundle of political technologies' (Elden, 2013a, 2021). The political subjects and the physical environments that constitute the modern Chinese territory were not predetermined by sheer nationalist will to power (cf. Esherick, 2006), but were co-produced with technoscientific practices that are relatively autonomous from overtly political processes (Asdal et al., 2007; Jasanoff, 2004a, 2004b). These technoscientific practices are not only shaped by pre-existing political rationalities but also reshape political

rationalities towards what resembled modern territoriality through its materially productive power (Asdal et al., 2007:9). In the emergence of China as a territorial state, Chinese territory and the Chinese nation was gradually shaped and revealed by technoscientific practices that made visible specific environmental and ethnocultural qualities. These new forms of social and environmental knowledge, in turn, produced new governable entities such as the national frontier, different climate zones, and ethnic groups, as well as political rationalities that were oriented towards the specific environmental and ethnocultural qualities of the Chinese territory and its inhabitants. To appreciate the ordering power of modern territoriality in different parts of the world, we need to examine historical forms of knowledge and practices that allowed territories to be thought of and governed as physical containers (Agnew, 2010; Steinberg & Peters, 2015:254) and national homelands (Murphy, 2013; Penrose, 2002).

This thesis contains four empirical chapters (Chapters 2-5), each dealing with a specific theoretical and historical aspect related to the emergence of modern territoriality in China. Each empirical chapter aims to bring to the fore both the historical specificities of China's path towards modern territoriality as well as the analytical tension between historical specificities and the generalist concepts we use to make sense of them. Overall, the first two empirical chapters (Chapter 2 and Chapter 3) deal with the emergence of China and the modern Chinese frontier as political-geographical concepts in the 19th and early 20th centuries. The remaining two empirical chapters (Chapter 4 and Chapter 5) focus on the production of social and environmental knowledge by Chinese scientists and technocrats that framed China's ethnocultural and environmental diversity as objects of governance. The first two empirical chapters are organised as a historicist enquiry into the phenomenon referred to as modern territoriality and the modern Chinese frontier from our present perspectives. They show that the so-called modern territoriality, which has become global as the 'sovereign state monoculture' (Phillips, 2016a) can vary significantly in each incidence of territorialisation and encompasses different locally situated forms of knowledge, practices, and political rationalities.

The last two empirical chapters focus on the co-production between technoscientific practices and political rationalities used in the governance of people and the physical environment. The situatedness and variations of technoscientific practices, knowledge, and political rationalities that lay beneath outwardly similar territories of the modern state do not mean that concepts such as the territory or modern territoriality are redundant. Quite the contrary, an analytical attentiveness to the tension between the two can generate new theoretical insights. In the cases I am engaging with in this thesis the locally situated nature of technoscientific practices, knowledge, and political rationalities that turned people and the physical environment into legible and governable entities appear to be the very conditions of modern territoriality's globality. In the remainder of this introduction, I will explain the main arguments and findings of each chapter in greater detail.

Chapter two, a part of which has been published as an article elsewhere (A. H. Li, 2022a), provides the historical context for the differences between the polyvalent Qing Empire and the Sinocentric conception of China as a state and a people. In tracing the emergence of China as a geographical concept, this chapter questions the existing Eurocentric historiography of modern territoriality as a global phenomenon that focuses overtly on European cartographic practices, concepts, and colonial histories. Drawing on existing historical works on Qing imperial history and the history of Jesuit cartographic activities in China, I show that for the imperial court and Han literati scholars, the Jesuit cartographic techniques did not produce a new 'modern' form of territoriality in Qing China. Quite the contrary, the geographical conception of China emerged nearly two centuries after the first Jesuit atlas of the empire was made. The maps themselves are insufficient in explaining the conceptual shift that equivalised the geographical contour of China with the territories of the Qing Empire. The emergence of China as a geographical concept was made possible by Han reformist statecraft writers who reinterpreted the cartographic depiction of the Qing Empire through a Sinocentric imperial outlook, despite the presence of a culturalist understanding of China. In opposition to the extant historiography of modern territoriality, this chapter argues that we need to pay attention to the locally situated nature of otherwise globally circulating material and political technologies.

Chapter three follows the emergence of the modern Chinese frontier as a political-geographical concept. This chapter examines how the diverse political and environmental configurations of the former Qing Empire's far-flung territories were reconceptualised as a singular national frontier space in the 1920s and 1930s China by natural and social scientists. I demonstrate that the new spatial concept of *bianjiang* amalgamated different kinds of frontier spaces based on different understandings of social-environmental entanglement in the Qing era into a singular, national frontier space that was then reified through its usage in the scientific lexicon. By contrasting the different ways through which the frontier spaces were conceptualised during the Qing and early Republican-era China, this chapter shows that the modern conception of 'frontier' was a socially constructed spatial concept used to make the more-than-human (S. Whatmore, 2006) materiality of the physical environment legible to the modernising and territorialising 'centre'. The socially produced spatiality of the frontier does not capture the social and environmental qualities 'as they are' but instead reflects the use of spatiotemporal scales based on observational and interpretative practices. This chapter argues that the modern Chinese frontier was not a pre-modern, imperial exception to the modern homogenous understanding of state territories, but a part of the larger global phenomenon wherein territorially heterogenous 'non-state' spaces were problematised and conceived as marginal spaces that require territorialisation.

Chapter four moves to the production of the Chinese population as a multi-ethnic or multinational entity following the 'discovery' of the Chinese frontier. I explain the contrasting attitudes towards the frontier's ethnocultural diversity by the Chinese Nationalist state and the Communist state through the productive power of technoscientific knowledge and practices. The Nationalist Party officially propagated a monogenesis understanding of Chinese nationhood despite the proliferation and accumulation of ethnographic knowledge engendered by the growing intellectual and political interests in the frontier regions (Chiang, 2013). By contrast, the Communist state that followed openly embraced ethnocultural diversity despite their commitment to territorial sovereignty which it shared with the Nationalist state. The reason for their different understandings of Chinese nationhood was not only the result of Soviet influence but also the collaboration of British-trained functionalist anthropologists with the new Communist state. Drawing on scholarly writings

and personal letters, this chapter follows the contemporaneous peers and students of British colonial functionalist anthropologists such as Malinowski, Radcliffe-Brown, and Raymond Firth in China, such as Fei Xiaotong, Lin Yaohua, Li Anzhai, and Wu Wenzao. I found that this group of Chinese social scientists challenged the monogenetic understanding of the Chinese Nation propagated by the Nationalist regime and other social scientists. Through their works, the heavily contested Chinese concept of *minzu* became central to both scientific research and territorial nationhood. The new 'scientific' articulation of *minzu* influenced and legitimised the Chinese Communist regime's ethnic taxonomy and frontier policies in the early 1950s without being openly deviant from Soviet Stalinist dogma. Drawing on the History of Science's approach that foregrounds the tension between the global circulation of scientific knowledge and local specificities (F. T. Fan, 2012; Livingstone, 2003; Tilley, 2019), I show that the internationalisation of social sciences such as anthropology can produce very different political outcomes in different places.

Finally, chapter five explores the conceptual equivalence between state territories and the physical environment through the co-production between the modern Chinese state and the modern scientific discipline of meteorology. This chapter challenges the land-based understanding of modern territoriality in IR, which is understood to be produced by historically specific forms of representational technologies. I argue that land-based imagination overlooks both the materiality of the natural environment and human technologies, as well as the political nature and historical contingency of environmental knowledge. Following recent turns in Political Geography that examine the vertical, voluminous, and volumetric dimensions of modern state territories as well as insights into Science and Technology Studies on the political and geographically situated nature of scientific knowledge, this chapter explores how modern state territories are shaped by technoscientific practices beyond cartography and surveying. After reviewing the existing approaches to territory's materiality in IR and beyond, I suggest that the co-production approach (Jasanoff, 2004a, 2004b) to environmental knowledge production is a useful methodologically to capture the complex historical interplays between the materiality of the natural environment and the spatiality of human territory. Following the emergence of modern atmospheric sciences and more specifically the establishment of meteorological

science and infrastructure in 1920 and 1930s China, I aim to offer an interdisciplinary approach to the intersections of materiality, spatiality, and modern territoriality through atmospheric sciences' entanglement with the governance of territory and population.

Chapter 2 From Alien Land to Inalienable Parts of China: How Qing Imperial Possessions became the Chinese Frontiers

During a state visit to Germany in 2014, Xi Jinping received a map entitled 'Chinese Kingdom and China Proper' (Regni Sinae vel Sinae Proprin') made by French cartographer d'Anville (1697-1782) from German Chancellor Merkel. The map, dated to 1735, was based on the information gathered by European Jesuits who worked as cartographers for the Manchu-Qing imperial court. Following European geographical convention, the area of Central and East Asia was referred to as 'Chinese Tartary'. The likely etymological source for the name was the Chinese word dada (韃靼) a name for the nomadic people in northern frontier of China in the 9th century (M. C. Elliott, 2000:625). In the map of China Proper presented to Xi, contentious parts of contemporary China including Tibet, Xinjiang are distinguished from the rest of the country and were not fully depicted. This has led to some speculations regarding the German government's hidden messages regarding China's territorial sovereignty in Chinese public discussions (Lu, 2014). The 18th century map of China raised an interesting question: how did China as a geographical entity come to encompass all of Qing Empire's territories?

Figure 1. Regni Sina vel Sina Propria (1738?)

Source:

Hase, Johann Matthias, 1684-1742,
Anville, Jean Baptiste Bourguignon d', 1697-1782
Du Halde, J.-B. (Jean-Baptiste), 1674-1743
Homann Erben

impensis Homanianorum

Heredum Nurnberg, Germany

The territorial conquests of Central and Inner Asian polities, such as the indigenous Tibetan, Khampa, Hmong, Lolo polities that dotted present-day southwestern China were hardly ancient history. The effective exercise of territorial control in this part of the country had lasted for barely a century after an arduous and lengthy history of violent frontier wars and colonisation. The hostile physical environment and physical distance in addition to indigenous resistance had challenged the various Chinese regimes that tried to 'tame' the unruly southwestern frontier. In 1951, within six months of the communist conquest of Tibet, the Chinese garission was running out of food, and supplies had to be dispatched to them via Calcutta - the faster route back then (Goldstein, 2009:258). Two centuries earlier, at the height point of Qing Imperial military prowess, the Qianlong emperor launched the empire's most costly war against the rebellious Khampa peoples in the mountains Sino-Tibetan frontier in Western Sichuan (Y. Dai, 2001:39). A railway line to the Tibetan capital would be non-existent until more than half a century after the communist conquest in 2006 due to the engineering challenges posed by altitude, permafrost, and landslides. It is worth asking why the modern Chinese state went on great lengths to actualise the abstract cartographic representation of control over a challenging environment and hostile politically autonomous peoples.

Like other modern states, the territorial nationhood of China remains a heavily contested notion both internally and externally. This chapter focuses on the emergence of China as a geographical entity with an enlarged scale that encompassed Qing's conquests in Central and Inner Asia. This scalar shift, as I will demonstrate in this chapter, helped to naturalise the claims of Chinse territorial nationhood in spite of significant ethnocultural fissures. Today, Tibet, Xinjiang and Taiwan are often proclaimed to be inalienable parts of the 'sacred territory of China' by state media outlets of the People's Republic. However, as recent as the late 19th century, two centuries after their inclusion into the Qing Empire, these places were still viewed by some Han Chinese nationalists to be outside of China (Esherick, 2006). The rejections were rooted in the historical ethnocultural conception of China centred around Han Chinese. In contrast to the geographic conception of China encompassing the entirety of the Qing Empire, the ethnocultural conception defines the geographic boundaries of China through the limits of Han Chinese dominated provinces. Nevertheless, despite widespread

prejudice and even exclusionist views towards non-Han peoples, the geographic conception of China is flexible enough to be stretched to encompass their land and render their inhabitants Chinese. The territorialised understanding of China, in turn, paved the way for the Han-centric multiculturalist notion of the Chinese nation in the face of dissenting voices and underlying ethnocultural tensions.

In recent years, scholars in Historical International Relations have begun to examine the plurality of polities and international systems that predate our present international system made up by sovereign territorial states (Kadercan, 2015a, 2015b; I. B. Neumann & Wigen, 2018; Phillips & Sharman, 2015b; Schulz, 2019; Sharman, 2019; Sharman & Phillips, 2020; Spruyt, 2020). Collectively, these works have shown that the territorialisation of world politics is by no means a simple case of convergence through European colonial expansion and imposition. Instead, the emergence of modern territorial states around the world was driven by polycentric and connected historical processes across geographical and cultural contexts. In contrast, the literature on the conceptual and cartographic origins of territorial sovereignty (Branch, 2013; Elden, 2013c) has focused primarily on European ideas, technologies, and European colonial experiences. Therefore, a corrective audit of the European colonial provenance of the modern sovereign territorial state is needed to enable scholars to both apprehend and evaluate coeval processes of territorialisation to European colonisations.

The epistemic transformation undergirding the formation of the second largest land territory in the world can offer crucial theoretical insights to modern territoriality. Framed in opposition to the 'West' either as a historical non-Western civilisation, a future hegemonic power or a defeated Other at the hands of European imperial powers, China's colonial and imperial histories are implicitly treated as secondary and local. Seldom do International Relations (IR) scholars pay attention to the early modern colonial origin of present-day Chinese territory and interrogate the conflicted notions of nationhood, territory, civilisation, and race encapsulated by the word China. This omission not only helps to reinforce a unipolar and diffusionist understanding of political modernity but also misses critical cues to the polycentric origins of the modern international system of territorial states. This chapter goes beyond merely critiquing the Eurocentric nature of the discipline's historiography and

theoretical apparatus by putting forward an argument for the polycentric origins of modern territoriality.

The emergence of China as a sovereign territorial state in the 20th century from the vast Eurasian landmass of the Qing Empire was not an inevitable process wherein the sovereign territorial state replaced its imperial predecessor. The transitions from empires to modern territorial states can be vastly different from one another. During the inception of the international system of sovereign territorial states, some empires were taken apart, whereas others, particularly those outsides of European colonial empires, had to be fused together to create new territorial states (Lentz, 2019; Winichakul, 1997). Both processes of early-modern imperial expansions and of the processes of instigating modern territoriality were historically contingent and varying rather than mere variations of a predetermined path. However, the historicist insight of modern territoriality can be lost if we treat early modern empires merely as the precursors of their modern territorial counterparts.

In this chapter, I argue that the territorialisation of China and the emergence of modern territoriality occurred in the early 19th century cartographic representation of China and political writings by the reformist Han literati scholars. In the first section, I identify the Eurocentric diffusionist historiography of modern territoriality in IR postcolonial and constructivist scholarships. This diffusionism is in part the result of a lack of engagement with non-European sources, conceptions as well as the global circulations of political technologies and knowledge, Contrary to the importance of the modernist concept of territory (Elden, 2013c) and European cartographic techniques and spatial representations (Branch, 2013), I offer a historical account that emphasises the role non-European concepts and practices played in the emergence of modern territoriality. The second section argues that China is not a singular, historically continuous polity occupying a static territory inhabited by different ethnocultural groups. Instead, modern China's inheritance of the Qing Empire's territory was characterised by an epistemic transformation in the ways in which China was conceived geographically.

The third section traces the emergence of modern territoriality through three historical phases. In the first phase, the Han literati scholars of 17th century Qing Empire continued to uphold a Sinocentric form of territoriality which defined the geographic limit of China based on the ethnocultural conception of Chinese as Han. In the second phase, I show that the introduction of European cartographic techniques and maps to China in the 17th century did not cause the Manchu court nor the Confucian literati class to adopt an 'European' geographical understanding of the world, contrary to the diffusionist understanding enabled by a 'global' perspective (Branch, 2013). Instead, the ethnocultural conception of China coexisted alongside a distinct Manchu polyvalent form of territoriality. Notably, the imperial atlases made with the help of Jesuit missionaries depicted Qing as an internally segregated and externally borderless empire. The Han literati scholars and cartographers, sceptical of the geographic knowledge introduced by the Jesuits, continued to conceive China through ethnocultural term. The final section focuses on the emergence of a geographic understanding of China as a landmass and environment, defined by the contours of the Qing Empire, in the early 19th century. This geographic conception of China developed amongst reformist Han literati scholars, which resembles modern territoriality, is distinct from the ethnocultural conception of China. Using the writings of both Wei Yuan (1794-1857) and Gong Zizhen (1792-1841), two early 19th century scholar officials whose geopolitical writings had been influential to canonical Chinese nationalist intellectuals in the early 20th century, I demonstrate that modern territoriality in China had emerged without the need for a standalone conception of territory (Elden, 2013c).

By examining the spatial reconceptualisation of China by reformist scholar officials, I demonstrate that modern territoriality had already emerged in the early 19th century. Crucially, the emergence took place prior to large-scale European imperial intrusions and the introduction of territory as an international law concept in the late 19th century. Contrary to extant Eurocentric diffusionist historical narratives on territorialisation which trace the emergence of modern territoriality to either the concept of territory and/or the adoption of European cartographic technologies, I argue that processes of territorialisation are contingent on specific historical, cultural and political contexts rather than the outcomes of a fixed set of prerequisites. The insights gained from this work serves to demonstrate that the

territorialisation of world politics is polycentric in its origins and multifaceted in its epistemic foundation, rather than a result of European colonial expansions and the diffusion of the European modernist understanding of territory.

Modern Territoriality and the Modern International System

The withering away of colonial empires after 1945 and the contemporary ubiquity of the sovereign territorial state alludes to a form of 'global sovereign state monoculture' and the triumph of Western political modernity (Phillips, 2013:642). However, the demise of territorial heterogeneity and the coalescence of border, territory, and sovereignty was not a historical inevitability (Goettlich, 2019; Phillips & Sharman, 2020). There are other ways of delimitating and controlling geographic areas and consequently other conceptions of territory (Sack, 1983:57). Territoriality, as the use of territory for socio-political purposes, can be applied to a wide range of historical contexts. In contrast, modern territoriality which refers specifically to the conception of a bounded, demarcated space controlled by the sovereign state (Murphy, 2013), or the geographical compartmentalisation of legitimate political authority (Goettlich, 2019; Ruggie, 1993), is only a historically specific form of territoriality (Sack, 1983).

Although critiques of the territorial trap aimed specifically at modern territoriality (Agnew, 1994) have become a staple in IR scholarships, relatively few attempts have been made to trace its emergence beyond the context of Europe and its colonies. Nowadays, fewer IR would see states as containers of societies and territory merely as the physical space upon which politics takes place (ibid). Whereas Agnew points out the often-fictitious nature of territory as a social fact (Agnew, 2010:782). John Ruggie looks at the various social and intellectual transformations in early modern Europe that make possible the exclusive, territorially distinguished, and functionally similar state rule, which he refers to as 'modern territoriality' (Ruggie, 1993). Ruggie's constructivist account illustrates the historical specificity of the modern territorial state, whereas Agnew's critique is aimed at its very analytical usefulness and epistemological limitation of the territorial state as a means to understand world politics.

Indeed, the pertinence of international hierarchies, varying forms of neo-colonial and imperial relations, and the instability of linear borders offer compelling arguments against taking the modern territorial state as a coherent unit of analysis in IR. However, rather than simply seeing modern territoriality as a distraction, we need to better understand its constitutive power of modern territoriality and territory in making the territorial state the privileged unit in modern international system (Murphy, 2012:168).

There are two common approaches to explaining the ascendence of modern territoriality. The first approach, which can be described as a 'critical Euro-centred approach', focuses on modern territoriality as the strategic use of the modern conception of territory (Agnew, 2010). Modern territory here is primarily an instrument of control and a function of hierarchical relations that transcend the boundaries of the territorial state. The second approach, which I refer to as the 'Eurocentric diffusionist approach' is more attentive to the constitutive power of the modernist conception of territory itself. In other words, this line of thinking is more interested in how ideas and technologies make possible the emergence of sovereign state territories. What remains to be answered, as many have already acknowledged, is how the sovereign territorial state became universal beyond Europe (Agnew, 2010; Goettlich & Branch, 2021:270). Nevertheless, very few existing discussions on the origins of the modern territorial state outside of Europe move beyond the conception of territory bundled with that of the Eurocentric notion of sovereign territorial state and engage with possible alternative epistemological starting points (Halvorsen, 2019:792). Consequently, many of the recent works in IR continue to propagate, either implicitly or explicitly, a Eurocentric understanding of the origin of the sovereign territorial state.

The first approach is commonplace in postcolonial IR scholarships. Basing their argument on the histories of settler colonies and a small number of colonial empires in Western Europe, they point to the erasure of colonial and imperial histories in the histography of concepts such as sovereignty and nation-state (Bhambra, 2016; Nisancioglu, 2020). The modernist conception of territory is principally treated as means to regulate and control space in order to maintain colonial and racialised hierarchical orders, notably through geographical separation between Europe and the colonies (ibid). These critical perspectives are important

to bring our attention to the underlying processes of racialised and colonial that gave rise to the modern territorial state in some parts of the world. However, the exclusive focus on the histories of European colonialism risks replacing one set of Eurocentric concepts with another: European nation-state to European colonial state, Westphalian sovereignty to racial sovereignty and so on (Leira & de Carvalho, 2021:239). European colonialism is no doubt a crucial part of the emergence of sovereign territorial states all around the world. However, it does not mean that the explanatory power of European historical agencies and hierarchical orderings should be inflated at the expense of the diverse historical processes beyond Europe's colonies (I. B. Neumann & Wigen, 2018; Phillips & Sharman, 2015b).

The second approach focuses on the constitutive power of modern territoriality and its associated forms of knowledge, concepts, and techniques. This approach offers a partial correction to the risk of inflated historical accounts present in IR postcolonial critiques. Principally, the understanding of territory as the outcome of power relations organised by non-territorial logics takes for granted the modern conception of territory as the physical presence of the state in geographic space (Shah, 2012). Bhambra, for instance, suggests that European nation-states should be reconceptualised as imperial states on the basis that their power extends beyond their territorial boundaries (2016). Emphasising the territorial dimension of the state, she argues, ignores the exercise of state power outside of itself (Bhambra, 2016:345). For scholars who are more attentive to the constitutive power of modern territoriality, the very understanding of geographic space as calculative, demarcated, and divisible developed through historical processes distinguishable from and predate that of the sovereign territorial state in the 19th century (Branch, 2013; Elden, 2013c, 2013a; Goettlich, 2019). Neither racial nor colonial hierarchies need to be organised territorially, let alone clearly demarcated and mapped. Moreover, polities do not need to be sovereign territorial states to be historically agential or effective in governing. Thus, the modern conception of territory is not a simple detraction from the colonial origins of the state itself. Taking territory as such not only risks overlooking the diversity of how colonial rules were organised spatially, as settler colonies, urban concessions, legal extra-territoriality, or company-states, but also important coeval concepts and practices beyond European colonial governance.

Nevertheless, whereas the postcolonial approach risks overlooking the constitutive power of modern understanding of territory and thus overstating the role of European colonialism in making modern territoriality global. In a similar vein, the near-complete negation of extra-European conceptions and practices in some of the literature focusing on the historical specificity of modern territoriality continue to rely on a simplistic diffusionist model when it comes to explaining the origins of modern territorial state (Branch, 2013; Elden, 2010, 2013a, 2013c). Zarakol has wagered that the precursors to modern territoriality have existed beyond Europe without questioning the 19th century origin of modern territoriality itself (Zarakol in Costa Lopez et al., 2018:509). I wish to push the argument a little further by questioning the very European provenance of modern territoriality itself. In the remainder of this section, I argue that the negation of extra-European concepts and practices concurrent and connected to that the European notion of territory and modern territoriality create an inflated account of the historical importance of the European notion of territory and modern territoriality.

I engage with the relatively recent works of Stuart Elden (2013c) and Jordan Branch (2013) since they have emerged as key interlocutors in IR discussions on modern territoriality. In their account, the origins of modern territoriality are associated exclusively with Europe and its colonial expansion. Elden's genealogical account of the conception of territory as space upon which sovereignty is exercised firmly locates the concept within the confines of European intellectual, political, and colonial histories. The modern idea of territory as a bounded space controlled by a sovereign is historically produced in 17th century Germany, exemplified by the political writings of Leibniz (Elden, 2013c:322). Modern territoriality, he claims, 'first extends across Europe and from there across the globe' (ibid). The non-Western world merely acted as the laboratory where ideas and techniques associated with modern territoriality were tested and introduced to Europe (ibid:243-5). In response to predictable criticisms of Eurocentrism, Elden argued that although politics and thoughts outside of Europe are important, but the word 'territory' cannot be just transposed across traditions, especially when it cannot even be used to understand Europe's own past (Elden in Minca et al., 2015:99). Territory, he reminds us, is a 'concept and a practice and the relationships between these can only be grasped historically' (Elden, 2013a:15). The importance of territory

as a concept, he contends, is that it makes possible the writing of a history of territory in the first place (ibid:17). Certainly, there is a distinction between a European concept and a Eurocentric one. What is Eurocentric is not Elden's erudite genealogical account of territory from European legal, political, and philosophical writings but the presumed link between the European conception of territory and the eventual triumph of modern territoriality around the world.

Branch's work deals with 'ancient and non-Western mapping traditions' more explicitly but nevertheless offers a diffusionist account of modern territoriality. The central claim of his work is that the elimination of overlapping forms of authority, as well as the rise of territorial sovereignty, have been shaped by the interaction between mapping technologies (Branch, 2013:34-5), geometric division of territory, and the exploration of the Americas (ibid:114). These developments eventually alternated the political organisations within Europe by the 19th century (ibid). Although he mentioned the adaptation of European techniques by non-Western polities, including China and Siam, however, territory in the modern sense was largely the result of European technological innovations and European colonial expansions. The technological diffusion from Europe ultimately changed mapping techniques in these places whose mapping traditions lacked Ptolemaic graticule and the geometric conception of space (ibid:66-7). He argues that the 'transformative adaptation of Western conceptions of space', largely propelled by European imperialism in the late 19th century, ultimately led to the adaptation of the 'constitutive grammar of Western spatiality' (ibid).

The problem is not that European concepts, colonialism and technologies did not have constitutive power on geographical knowledge or political orderings in the non-Western world. Nor is it that there were some 'non-European equivalence' of modern territoriality or modern conception of territory. I am with Elden, Branch and others on the modern territoriality as a bundle of political technologies in both conceptual and material terms (Branch, 2013, 2017; Elden, 2010, 2013a; Goettlich, 2019; Goettlich & Branch, 2021). The historical specificity of the very concept 'territory' illuminated by Elden serves as a reminder that, rather than simply outcomes of transhistorical human territoriality (Sack, 1983), political-geographical relations are different across historical and geographical contexts

(Elden, 2013c:18). The early-modern transformation of cartography and mapping across the world, therefore, shows how political-geographical relations can be transformed through technological and epistemic changes. However, in sharp contrast to the empirical richness of their European archival and historical focus, both scholars fall back onto a standard diffusionist account of scientific knowledge when faced with the challenging question of how modern territoriality becomes global.

The works of Elden and Branch can be read as reminders of the innate limitation of modern territory and modern territoriality as models of analysis given their European provenance. However, since there are so few studies that start from epistemological starting points outside of Europe (Halvorsen, 2019:792), fewer still when it comes to the modern territorial state assumed. The European provenance of the concepts themselves and the ostensible universality of modern territorial state and territorial sovereignty in today's world collectively operate to uphold the historical narrative that territory in the modern sense is the result of European historical agencies with the rest of the world being its laboratory or willing accomplice. If we start from a position that the sovereign territorial state is a 'monoculture' (Phillips, 2013) rather than the composite outcome of historical processes that are occurring at sub-global geographical scales, then we would naturally ask why other forms of territorial did not 'mature' into modern territoriality (Zarakol in Costa Lopez et al., 2018:509). The assumption would mean that there was such a singular form of modern territoriality across the globe.

In East Asia, for instance, territory as an international law concept was first translated through the classical Chinese word of *Jiangyu* (疆域) by American missionary William Martin in 1836. At first glance, the Chinese term he chose is not dissimilar from the modern concept of territory as the geographical limit of the realm (Tang, 2019:304). However, the realm under the emperor's authority is not a homogenous abstracted space as it is also inhabited by people deemed uncivilised, nor is it equal in status to the foreign space beyond. Therefore, *Jiangyu* is not the same as territory in the modern sense. Towards the end of the 19th century, a new translation was created by Japanese scholars using the Chinese characters for *ryōdo*

(*lingtu* 領土 in Chinese (ibid:311). The translation was ultimately adopted by both Chinese and Korean legal scholars. However, despite being an important international law concept, the term for territory did not appear in Chinese nor in the Japanese version of the Treaty of Shimonoseki/Maguan in 1895, which involved a series of territorial concessions from Qing China to the Japanese Empire (Watanabe, 2018:26). This simple case raises an important question: have we overlooked the actual diversity in ways of understanding space and the state in the processes leading to territorialisation (ibid:25).

In a later work, Branch seeks to conceptualise territory more loosely as processes and relations amongst ideas, practices and technologies (Branch, 2017). But the problem remains that if we start from a particular understanding of territory and what it entails, we continue to centre discussions and enquires around a European analytical ideal type. Considering the omnipresent colonial and global European empires as either a 'structure of knowledge' or a historical process, the question of how modern territoriality and the conception of territory emerge out of transnational encounters in varying forms contingent on cultural, linguistic and material specificities is regrettably stifled (Marcon, 2020). Modern territoriality as Brexit-era British, post-imperial era Chinese and Renaissance French phenomena are constituted by different ideas about peoples, territories, and the relationships between the two rather than a fixed set of ideas and technologies predetermined by modern territoriality as an analytical concept. We need to find a way forward in order to study the manifold origins of modern territorial states without referring to the European (colonial) concept and the implicit Eurocentric historiography.

It is, therefore, useful to draw distinctions between modern territoriality as an analytical concept and territorialisation as the historical processes that created specific territorial states. Taking the complex and contingent historical processes over a simplistic narrative of the convergence and diffusion of (Western) modern territoriality seriously means that we cannot dismiss the historical predecessors of present-day territorial states in the non-Western world as non-territorial or as historical legacies that would eventually be subsumed (Kadercan, 2017:161). Instead, we should pay greater attention to what the discrepancies beneath the

assumed universality of the modern conception of territory can tell us about processes of territorialisation in specific historical, cultural, and geographical contexts.

The Eurocentric diffusionist understanding of modern territoriality is aided to a significant extent by inadequate archival research and engagement with both non-European sources and histories. In this regard, IR can benefit from the foregrounding of the mediated, interactive, and circulatory nature of knowledge by historians of science and technology (Feichtinger, 2020c; Livingstone, 2003). In the remainder of this chapter, I demonstrate that non-European sources and adaptions of 'European' knowledge and technologies are not merely variations of a singular, globe-spanning form of modern territoriality, worthy only of ethnographic rather than theoretical contributions. Instead, they can advance the theoretical understanding of modern territoriality not merely as the diffusion of the coalescence of sovereignty and territory, or the ascendence of linear borders from one place, but as a polycentric, geographically, and historically uneven phenomenon. Modern territoriality observed in the form of territorial sovereign states is indeed a universal phenomenon. However, such universality need not imply a uniformity in epistemic foundation, histories of emergence, nor the mutual intelligibility of what is being territorialised.

RESCUING CHINESE TERRITORY FROM THE NATION

In IR, the historiography of China as a singular and continuous entity compounded by the additional layer of essentialised Otherness works to inhabit critical enquires into the historicity of modern China and the contested nature of China as ethnic, racial, and modern territorial toponyms [5]. The isomorphism between modern China and the Qing Empire has served as a vantage point for a modern theological understanding of China as a singular national subject moving through history (Duara, 1995). Consequently, diverse forms of polities, many of which controlled by people who are linguistically and culturally distinctive from what we consider as Chinese today, have been subsumed by or referred to as 'China'

[5] There are, of course, notable exceptions, such as (Krishna, 2017; MacKay, 2016, 2019; Phillips, 2014, 2018)

and Chinese dynasties. Buzan and Lawson, for instance, treat the transformation of imperial China to modern China as a linear progression through its 'encounter' with Western modernity and imperial powers (Buzan & Lawson, 2015:25, 2020). David Kang, in his discussion of East Asian international orders, makes little attempt to distinguish the significant differences between the Ming Empire and the Qing Empire (Kang, 2020). Jordan Branch, too, conflates Ming and Qing by suggesting that Jesuit missionary Matteo Ricci (1552-1610) presented Ptolemaic mapping techniques to the Qing emperor, whereas he was only active during the reign of the Ming Dynasty (Branch, 2013:97).

The conflation or lack of attention to varying imperial formation in China negates crucial historical processes wherein different forms of territoriality were implicated in the eventual territorialisation of China. These varying forms of territoriality were not simply waiting to be transformed into modern territoriality through the fateful encounter with Europe, but also contested against, adapted to, and coexisted with each other. The defeat of the Ming Empire (1368-1644) by the Qing Empire (1644 –1912) created new territorial practices during its consolidation and expansion. By the mid-18th century, the Qing Empire had more than doubled the landmass of Ming-era China and bought into the empire diverse ecologies and peoples (Bello, 2016; Rowe, 2009:73). The vast territory and ethnic mosaics of the contemporary People's Republic of China are the direct outcomes of the imperial conquests of the Qing Empire in Inner Asia. However, despite the inheritance of Qing territories by successive modern Chinese states, the transition from empire to territorial state in China was not a simple case where the Chinese 'core' retained its imperial peripheries. Prior to the establishment of the Qing Empire in China ruled by a Tungusic people known as the Manchus in the mid-17th century, the Ming Empire was ruled by Han monarchs and Confucian scholar officials, also known as literati, who presided over an East Asian regional system based on shared Confucian political norms. The conquest of Ming by the Qing Empire, despite the preservation of Ming-era political institutions, fundamentally transformed China into an ethnocultural and geographic component of the Qing imperial hierarchies (MacKay, 2019).

Retrieving and separating the contested notion of 'China' from the contemporary Chinese territory, however, does not mean focusing exclusively on ethnopolitics. On the contrary, it

requires the conceptual unbundling between the ethnocultural understanding of China from the modern Chinese territory itself. As we are reminded by constructivist scholarship on modern territoriality, modern territory is not merely the state's presence in space but enabled by specific forms of spatial knowledge that naturalises modern territoriality and its historically novel forms of control and demarcation (Ruggie, 1993; Shah, 2012; Strandsbjerg, 2010). Without paying attention to both historical contingencies and the polycentric origins of modern territoriality in China, we risk reading history backwards via the lenses of contemporary Chinese ethnopolitics. For example, the contemporary plight of peoples referred to as Tibetans and Uyghurs might be understood as 'a centuries-long effort to annex their territory into national Chinee space' (Krishna, 2017:108). In doing so, a territorialised understanding of China is projected backwards in history, something the simplistic critical perspective against modern Chinese colonialism shares in common with the Chinese nationalist histography.

The annexation and absorption of lands inhabited by people known today as Tibetans and Uyghurs into China was a relatively recent and modern endeavour. Indeed, historians have noted that prior to the collapse of the Qing Empire, both racialism and Han nationalism explicitly called into question whether non-Han peoples would be considered as Chinese once the empire is overthrown (Esherick, 2006; Leibold, 2007; H. Lin, 2011). The Chinese republic's inheritance of most of the Manchu Qing's conquests in 1912, as opposed to a culturally more homogenous, albeit smaller China, was not an uncontested process (Esherick, 2006). Noting the contrast between Chinese nationalists and contemporaneous Turkish nationalists, Esherick coined the territorial inheritance as the 'Atatürk Counterfactual'(ibid:243). However, failing to account for the epistemic dimension of modern territoriality, China Studies scholars often resort to an ahistorical functionalist approach that overlooks the historical processes through which territorial heterogeneity was eroded and supplanted by European conceptions of modern territoriality.

Functionalist explanations are deployed to explain why 'geographical boundaries rather than cultural or racial traits' became what demarcates China (Leibold, 2007:42). The basis of the functionalist approach is ostensibly the ethnopolitical impasse between 'small China'

dominated by Han people and the rest of the empire where 'languages, cultures, customs, and religions of the native populations were distinct from those of Han Chinese' (Esherick, 2006:232). In need of alternative explanations for the inclusion of lands inhibited by non-Chinese groups, functionalist explanations, following the arguments made by early 20th century Chinese nationalist leaders and intellectuals, often run along the lines of the Inner Asian frontier's utilities in defence and economic development (Esherick, 2006:247; Fiskesjö, 2006:18; Leibold, 2007:38). The functionalist approach brings into view the historicity of modern Chinese territory and shows that the Chinese state's inheritance of the empire's vast territories and ethnic mosaics was by no means predestined nor endogenous. However, by enfolding the territorial dimension within ethnopolitics or security concerns, it neglects the epistemological dimension of modern territoriality: how *Chinese territory*, rather than Han Chinese, became the object of the Chinese state's rule.

By collapsing the ethnocultural conception of China onto the modern territorial conception of China and taking for granted the modernist conception of territory simply as space upon which state's rule is instigated, functionalist accounts overlook the epistemic transformation which enabled the conceptual separation between inhabitants and land. Moreover, failing to account for the constitutive power of China as a geographical and territorial concept, the functionalist account often falls back to a Eurocentric narrative of China's encounter with political modernity and the international system of states to explain the Qing-China territorial metamorphosis (see Leibold, 2007:46).

In the remainder of this article, I show how a geographic understanding of China distinct from the ethnocultural conception of China emerged amongst early 19th century Han literati scholars whose writings were influential to latter-day Chinese nationalist intellectuals. The latter-day Chinese nationalist leaders did not suddenly discover the value of the imperial frontiers to national defence and economic development in their attempt to retain the empire, but instead followed an existing form of modern territoriality formulated by reformist Han literati scholars in the early 19th century. This territorialised understanding of China encompassed the entirety of the Qing Empire's territory.

The next three sections trace this historical process in three stages: the first section focuses on important differences between the Qing Empire and the ethnocultural conception of China. It shows that after the Manchu conquest of China in the 17th century, an ethnocentric conception of China known as the *Hua-Yi* distinction existed among the Han literati-scholars alongside the ruling Manchu court's flexible repertoire of ideologies required to preside over diverse polities and peoples in the vast Eurasian steppe. The second section shows how the Sinocentric territoriality informed by the ethnocultural conception of 'China' existed alongside the Manchu court's unique form of polyvalent territoriality enabled by geographical and technological knowledge of diverse epistemological origins in the 18th century. Finally, a geographical conception of China, enabled by both Qing imperial conquests, imperial surveys and globally circulated cartographic techniques emerged in the 19th century against the historical backdrop of internal rebellions and external invasions.

THE HUA-YI DISTINCTION AND THE GEOGRAPHICAL LIMITS OF CHINA

The Manchu aristocrats maintained their minority rule over the Qing Empire for nearly three centuries. A key reason for their success was their adoption of bureaucratic institutions staffed by Confucian literati (Rowe, 2009:27) as well as their patronage of Han elite traditions and Confucian universalism (Guy, 2002:155; Mosca, 2020). Nevertheless, Confucianism, Chinese language and notions of Han superiority were not the basis of Qing legitimacy and rule in Inner Asia (Satoshi, 2018:223). Different administrative and legal systems were used for Han, indigenous peoples of the Southwestern highlands of Yunnan and Guizhou, Mongols, Manchus, and Inner Asian Muslims. The Manchus as a minority ruling group had strong incentives to maintain their distinction from the rest. Important civil-military appointments such as governors of important provinces and strategic postings to the frontier were off-limit to Han officials (Mosca, 2011:93; Perdue, 2005:316). More importantly, the emperor's legitimacy was articulated differently to various constituencies of the empire. The Manchu emperor was not only the ruler of China but also the Great Khan to Mongol khans, a patron of the Dalai Lama and the incarnation of *Manjusri* (文殊菩薩) in the Tibetan Buddhist world

(Brook et al., 2018:123-4; Perdue, 2009a:96). Ethnic Han people, who were largely confined to 'China Proper', resembled a constituent subject within the empire rather than the imperial overlord of the Qing empire.

The Confucian world that encompassed Korea, Japan, China, and Vietnam only formed one part of the geographical outlook of the Manchu court (Phillips, 2018:746). In the early 1700s, Chinese geographers still worked from geographical records produced during the Ming dynasty which was more territorially confined (Mosca, 2011:96,9) and frontier policies were often formulated by Mongol ministers who could bypass the Chinese language channel (ibid:93). Although by the mid 18th century, Taiwan, Xinjiang, Mongolia and parts of Tibet had all become imperial possessions, the court took measures to maintain the separation between Han and frontier peoples rather than pursuing an empire-wide Confucian civilising mission (Perdue, 2005:338, 2009b:264). The geographical limit of China, therefore, remained largely synonymous with the world controlled by the Ming empire and Han dominated political orders. China was therefore a territorial component, rather than the equivalence of the Qing Empire.

A key aspect of the East Asian Confucian international system is the *Hua-Yi* distinction, which reflects the hierarchical Self-Other delineation embedded within Confucian universalism (Tianxia). Neither the 'Hua' or the 'Yi' are fixed ethnic or spatial designation but manipulated by the literati class for political ends (Fiskesjö, 1999:154; Y. Li, 2015:35,6). The said hierarchy is justified through the distinction between the *Hua* which embodies the ideal human society and the *Yi* who does not (Satoshi, 2018:74). In such a hierarchy, Confucian civilisation had to be guarded either through cultural transformation or segregation of the Other (Perdue, 2009b:253). Depending on the specific historical context and power dynamics, the hierarchical reasoning can be used to either justify an expansionist empire or an insular and delimited kingdom with relatively fixed boundaries. Perhaps more importantly, otherness is not only defined in cultural terms but to do with recognition by and submission to the agrarian tax-based political order (Scott, 2009:120,1). For instance, in the 16th century, the Ming

Empire pursued not only colonisation in the southwestern highlands of Guizhou against indigenous peoples but also constructed what is known as the 'Southern Great Wall' to segregate 'barbarians' from the general population (Fiskesjö, 1999:148).

The distinction was often used as a vindication of a Sinocentric worldview and associated exclusively with China, despite the fact that Korea and Japan had also deployed it against Manchu ruled China as Barbaric (Perdue, 2015). The Chinese character *Hua* (華) refers to an ancient confederation of tribes called *Huaxia* (華夏) that is often said to be the forebears of China. Oppositional to the *Hua* are the *Yi* (夷)- the ancient term used to denote the tribes living east of *Huaxia* and later used to refer to foreigners, often with derogatory connotations. In the first ever English-Chinese bidirectional dictionary published in 1822, the corresponding Chinese word of China is *Zhonghua* (中華), which can be translated as '*Hua* at the centre' (Morrison, 2020:297). The term is also the official nomenclature for successive modern Chinese states. As suggested previously, the Qing empire, not unlike other early modern empires, deployed multiple forms of territoriality depending on the circumstances, and the Hua-Yi distinction along with other Sinocentric worldview continue to be deployed in the empire's Chinese official documents. During the 19th century, the use of the character *Yi* to refer to foreigners in Qing diplomatic and other official documents infuriated the British China Hands who drew equivalence between the term and the word 'barbarian'. After the Second Opium War (1856 – 1860), the use of *Yi* in Qing official records and external communications was prohibited by article 51 in the Treaty of Tianjin (1858) signed between the Qing Empire and Western powers (L. Liu, 2006:32).

The *Hua*-*Yi* distinction is not simply a form of Self-Other distinction. It is also a form of territoriality. Neither the '*Hua*' or the '*Yi*' are fixed ethnic or spatial designations but were manipulated by the literati class for political ends (Fiskesjö, 1999： 154). The character *Yi* refers not only to 'foreigners' from outside of China as illustrated in the common expression *Si Yi* (四夷) - foreigners from all four directions (Basu, 2014:930) but also to non-Han people

within the empire (Mosca, 2020). Indigenous groups within the realm that were deemed as inferior could be referred to as *Yi* (Ge, 2017:42). In Tokugawa Japan, the Chinese character of *Yi* (夷) was used to describe the indigenous Ainu people of Hokkaido, which was then known as the *Ezochi* (蝦夷地) or 'shrimp *yi* land' (B. L. Walker, 2007:307). The Nuosu people of southwestern China and South East Asia have been referred to as *Yi* people (夷族) until the mid-20th century. The *Hua-Yi* distinction, not dissimilar from forms of territoriality practiced in other large empires, is layered, heterogenous and context-dependent (Kadercan, 2015b; Stoler et al., 2014:9).

The form of territoriality based on the Hua-Yi distinction, not dissimilar territoriality practiced in other large empires, is layered, heterogenous and context-dependent rather than being defined by geographically demarcated boundaries (ibid). Unlike modern territoriality, the Hua-Yi distinction was not based on a calculative grasp of space, instead it was organised through perceived attributes of inhabitants of a specific place and forms of relationships they have with the court. This form of territoriality manifests itself through maps, political writings, poetries as well as geographic knowledge. For instance, although grid divisions based on mathematically accurate distance between points had long existed in Chinese cartography (Qi, 2016). However, foreign countries, both fictional and real, are nevertheless often depicted as islands floating in the metaphorical ocean that surrounds China up until the 19th century. Given that detailed nautical, geographical and topographical knowledge had been featured on some Chinese maps (Nie, 2019:16). Such depictions are ideological statements rather than factual representations. After all the land inhabited by *Yi* were too politically insignificant for them to be depicted accurately (Guan, 2014). When Jesuit missionary Matteo Ricci (1552-1610) was commissioned by the Ming emperor to produce a European style world map in 1602 (see Figure 2), China had to be placed in the centre of the map to conform to imperial mapping aesthetics. The earliest known world map produced by him in China in 1585, however, did not conform to such a Sinocentric outlook and China was placed at the far

eastern corner of the world (Hao et al., 2001). In a 1644 world map that incorporated new geographical knowledge of the world, Europe is greatly reduced in size and relegated to the far western corner of the map despite being depicted with relative accuracy (see Figure 3).

After the collapse of the Ming Empire, the Hua-Yi distinction was used by Han literati with dissenting views to the new ruling Manchu house. One emerging interpretation of the Hua-Yi distinction in the 17th century was that the difference between China and its Other was primarily to do with bloodline, geography, and habitat rather than cultural differences (Hsiao, 2008:7). The philosopher Wang Fuzhi who is often cited as an example of Chinese racialism suggested that the geographical difference between Hua and Yi is irreconcilable and therefore the boundary between the two must be maintained (ibid, 2008:32). The geographical boundary of Hua, in his outlook, is based on the boundaries of the Ming Empire.

As discussed before, the Hua-Yi distinction was not the only form of territoriality practiced in the Qing empire that had substantially outgrown the Ming. The multifarious sources of legitimacy and imperial relations deployed by the Manchu court to control the empire were not always legible to monolingual Han scholar-officials. For instance, the emperor's patronage

Figure 2. 坤輿萬國全圖 Kun yu wan guo quan tu (Great universal geographic map)

Source: Ricci Matteo, Beijing, 1602. Library of Congress (available at: https://www.loc.gov/resource/g3200.ex000006Zb/?r=0.408,0.432,0.377,0.188,0)

of Tibetan Buddhism was left out of the official Chinese record (Murakami in Brook et al., 2018:142). The Treaty of Nerchinsky signed with Russia on an equal basis, which demarcated the broders between Qing and Russia, was conducted in Manchu and Latin rather than in Chinese. In extreme cases, the ruling Manchu court itself was occasionally the target of Hua-Yi distinction. In 1730, Yongzheng Emperor (1678-1735) publicly rebutted claims of Manchu's foreignness by arguing that 'Yi' is merely a spatial distinction that does not concern dynastic legitimacy (Brook et al., 2018:147,8). He resorted to Confucian universalism by arguing that even areas beyond historical limits of China can produce sagely Kings (Hsiao, 2008:116). The Manchu imperial court did not banish the usage of the Yi, but instead sought to vacate its ethnocultural meaning by sanctioning it in purely geographical terms in the imperial library and edicts (L. Liu, 2006:87). In other words, the court sought to displace the Hua-Yi distinction as the dominant form of territoriality practiced by Han literati in light of their perceived foreignness. This was an interesting conceptual move since it disassociates geographical location from Confucian civility and virtue.

However, despite the court's imperial outlook and ideological flexibility, some Han scholar-officials serving the Manchu court retained an understanding of China's geographical boundary based on the Ming empire which often contradicted with the worldview of the Manchu court. During the campaign against the Dzungar Empire in 1755, emperor Qianlong (1711 - 1799) was openly criticised by his Grand Secretariat who claimed that what lay outside of the inner layer (present-day eastern Xinjiang) should be justifiably left to the Zunghar nomads (Millward, 1998:38). In response to further literati dissent to his military campaign, the emperor responded in an imperial edict in 1757 claiming that never has China presided over the Kazakhs and the Confucian scholars knew nothing of the greatness of Tianxia (see ibid:39). At least by the mid 18th century, the Manchu emperor and his Han literati officials appeared to have had different ideas about the geographical limit of the empire.

MANCHU QING AND SINOCENTRIC CARTOGRAPHIES AND TERRITORIALITIES

The Manchu court had its own unique, flexible and polyvalent form of territoriality that created an externally borderless yet internally segregated empire. Such flexibility was in part due to the practical necessities of presiding over a diverse Eurasian empire. Yet questions of practicality notwithstanding, this polyvalent form of territoriality was made possible by crucial transformations that were taking place in cartographic techniques and the production of geographical knowledge and their global circulations enabled by European Jesuits (Cams, 2017b; Hostetler, 2001; Simpson, 2021:24).

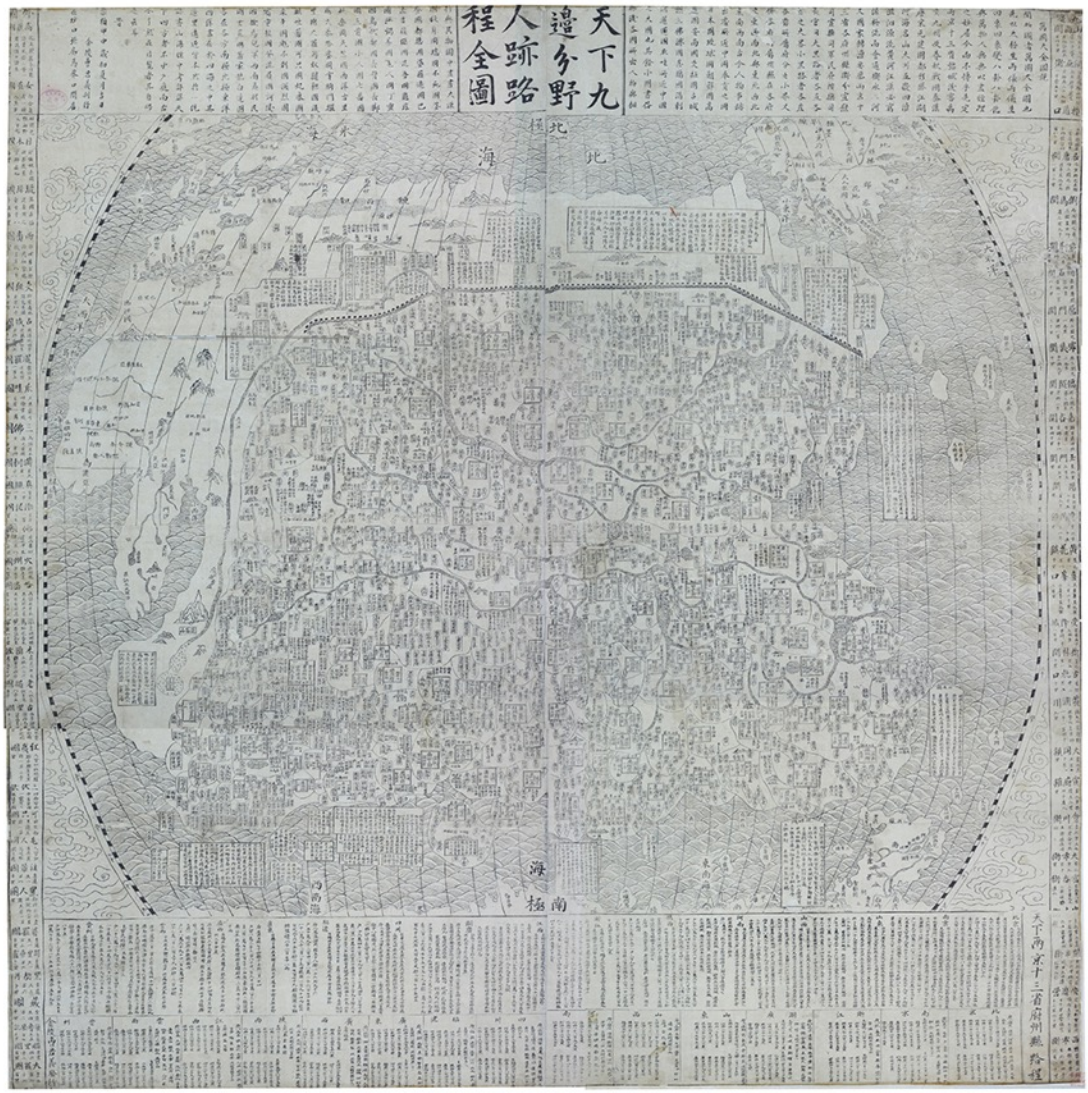

Figure 3. 天下九边分野人迹路程全图 **Tian Xia Jiu Bian Fen Ye Ren Ji Lu Cheng Quan Tu**

Source: Can Junyi, China, 1644. National Library of China (available at: http://www.nlc.cn/nmcb/gcjpdz/yt/dydy/201409/t20140903_89389.htm)

Also see: https://curiosity.lib.harvard.edu/scanned-maps/catalog/44-990086901930203941 for 1663 version produced during Qing rule

The linear, demarcated borders between large Eurasian empires, namely, Russia, Qing and the Ottomans rendered new survey techniques and maps an important set of political technologies (Goettlich & Branch, 2021:273; Perdue, 1998:265). Although it is tempting to lay claims to extra-European origins of modern territoriality based on these global connections, the historical realities were murkier than one form of territoriality simply replacing the other with the advent of new technologies. In China, the European scientific cartography had marginal effects on the maps made by literati scholars (Cams, 2017a:6; Hostetler, 2001, 2007; Perdue, 1998:278). More importantly, contrary to diffusionist assumption about the impact of European technologies and knowledge, the adoption of 'European' mapping techniques by the Manchu court did not lead to modern notion of territory. Instead, the synthesis of different epistemologies and geographical knowledge enabled a distinct imperial Manchu form of territoriality.

The Qing imperial court was amongst the earliest users of these technological innovations, and the Qing imperial surveys were among the earliest examples of state-sponsored modern cartographic surveys. From the beginning of the 18th century, military campaigns in Central Asia and border demarcation with Russia demanded new precision mapping techniques that combined Chinese measurement units with European geometrical representation based on latitude and longitude (Cams, 2017b:193). Between 1707 to 1750, the Qing emperors commissioned a series of surveys led by both European Jesuits and Chinese officials (Hostetler, 2007; Millward, 1998; Perdue, 1998). The first comprehensive survey of the empire's territories as well as Tibet and Korea were completed in 1718. The resultant imperial atlas was produced with the aid of French Jesuits trained at the Academy of Sciences in Paris. It would be another 27 years until the Cassini Map of France was produced using similar geometric representations. Subsequent emperors throughout the 18th century ordered additional surveys that covered both newly conquered areas of Central Asia and highlands of Guizhou which had often been represented by blank space in previous versions of the atlas (Han, 2015:131).

At first glance, the mapping activities of European Jesuits in Qing confirms the constructivist diffusionist claim of convergence of spatial representation (Branch, 2013:65). However,

despite the utility of maps and knowledge about terrains to military campaigns and the projection of imperial power via large-scale atlas, the new mapping techniques, and representation, contrary to the claims of Branch did not change 'what rulers saw as legitimate form of political rule' (ibid:97). Such a simplistic claim would overlook two important factors: The first concerns the sources of geographical knowledge, similar to mapping projects of European colonial projects, Qing imperial mapping too dependent on pre-existing indigenous knowledge. The imperial atlas combined geographical knowledge from sources as diverse such as Chinese maps, Manchu route books, surveys, vernacular knowledge, and commercially available maps produced in Nuremberg and St Petersburg rather than relying simply on European knowledge (Cams, 2021). The findings of Western cartography were often only used when other sources of knowledge such as those of Mongol, Islamic, Buddhist and Tibetan sources had been exhausted (Mosca, 2013:123).

The second important factor that the diffusionist claim overlooks is the nature of imperial rule in Qing. As suggested earlier in the chapter, various forms of rule from theocratic to pasture-nomadic existed within Qing. New cartographic representation, rather than changing the nature of the rule, afforded a comprehensive geographical overview to an otherwise messy assemblage of overlapping forms of rule and territoriality. The imperial atlas produced in the 18th century reflected a Manchu Eurasian imperial outlook and polyvalent territoriality that consciously separated Ming-era Han provinces from the newly conquered areas of Inner Asia Steppe (Cams, 2021:94). Whether real or imagined, the atlas enabled a form of 'imperial gaze' for the court and those at the centre of power. Seen in this light, knowledge and techniques brought by the Jesuits were a part of the discursive repertoire consisted of geographical knowledge of various intellectual origins and problems of governance that underpins Manchu's minority rule.

In the various imperial atlases produced throughout the 18th century[6], Qing territory is never depicted as homogenous, exclusive and delineated by clearly defined external boundaries. By

[6] You can access digital reproductions of these atlases via: https://qingmaps.org

the time the first atlas was produced in 1717, the Qing-Russian border was already formalised in the treaty of 1689. Yet, the border was left out in surviving versions of the imperial atlas produced throughout the 18th century. One interpretation of the omission was that areas beyond the imperial spatial ordering were subject to further conquest (Cams, 2019). In a copperplate version from 1709, the only clearly defined boundaries were the internal border walls known as the 'Willow Palisade' which separated Mongolia, Manchuria, and inner Han provinces (see figure 4 for lines highlighted in green). The absence of international boundaries and exaggeration of internal boundaries communicate an internally segregated yet externally borderless world (ibid).

Another interesting feature of atlases produced before 1760 was the separation between Chinese provinces marked with Chinese toponyms and the use of Manchu for places beyond the Great Wall and in Central Asia. Whether the use of different languages was a reflection of differentiated treatment between 'China' and the empire or lack of consistent Chinese nomenclatures is subject to further debate (Han, 2015:135). From the cognitive horizon of modern territoriality, the imperially sanctioned cultural and political distinctiveness of the various constituents of the Qing empire put into question the legitimacy of modern Chinese territory. But for the Manchu ruling class, the ambiguity and ambivalence regarding China was a deliberate strategy. Although European knowledge and techniques played important roles in facilitating the heterogeneity of Manchu imperial territoriality. However, it would be a gross simplification to suggest that the said knowledge and techniques supplemented or transformed Manchu or Han literati forms territoriality with the grammar of Western spatiality (Branch, 2013:67).

It is clear that the introduction of European cartographic techniques and representations did not prompt the court to eschew internal distinction based on ethnocultural differences. Instead, the opposite happened, imperial mapping project portrayed otherwise fluid boundaries between places and peoples as rigid administrative divisions (Cams, 2021:121; Perdue, 2005:459). The first map produced in the Jesuit Atlas series was not a complete map of the empire, but a map of the mythical Manchu homeland known as Manchuria (M. C. Elliott, 2000:622). The aim of the mapping project was to emphasis the distinctiveness of the Manchu

vis-a-vis the Han (ibid:603). Rather than integrating the Inner Asian territories into a Han ethnocentric conception of China, imperial mapping and survey functioned to demarcate the fuzzy ethnocultural fissures of the empire geographically. To be seen as the legitimate ruler over people with different worldviews and beliefs. The court had to manage and conceal contradictory claims between the abstract representation of space as well as the distinctiveness of each component (Perdue, 1998:460).

Specifically, the court's legitimacy as a Chinese dynasty to the Confucian literati rested not on its conformity to Hua-Yi distinction nor 'Western spatiality', but on its appeal of Confucian universalism (Tianxia). The Manchu Qing court had to work creatively with existing Chinese political discourses that are potentially hostile to their rule. Therefore, the Manchu emperors of 18th century, in an effort to side-line the Hua-Yi distinction inherited from the Ming Empire, pursued a discourse of universalism towards all imperial subjects known as *Zhongwai Yijia*, which can be translated as 'the centre and the outer belong to one family'(中外一家) (L. Liu, 2006:85). This emphasis on geographical differentiation created a separate unspoken category of the empire's Manchu and Mongol component as 'non-Yi', people who are situated between the Hua and the Yi (Mosca, 2020:140). Lacking the Chinese political terminology, the Manchu court deployed a 'spatial fix' of Manchu polyvalent territoriality to reconcile the empire's vast Inner Asian landmass and ethnocultural plurality with that of a Confucian Sinocentric world order. Whereas there are no limits to All Under Heaven, there are distinct spaces in the empire for the Manchu, Han Chinese, Mongol, Muslim, and Tibetan peoples depicted on maps (Millward, 1999:89).

Figure 4. Atlas général de la Chine, de la Tartarie chinoise, et du Tibet : pour servir aux différentes descriptions et histoires de cet empire

Source: Jean Baptiste Bourguignon d'Anville, 1737, reprinted 1790, Paris. Library of Congress (Available at:https://www.loc.gov/resource/g7820m.gct00075/?sp=3&r=-0.043,0.124,0.935,0.468,0)

Parallel and coeval to the imperial gaze of the Manchu court, a Sinocentric form of territoriality remained influential in privately circulated maps produced by Han literati. The dominant academic discourse known as *kaozheng*（考證）emphasised on the search of empirically verifiable philological evidence from sources deemed acceptable to the Confucian scholars (Elman, 1990:38). The textual empiricism and rigorousness paradoxically led to a

stagnation and reification of older geographical understanding (Elman, 2007:46; Mosca, 2013:39). In the 18th century, the world maps brought by the Jesuits were dismissed as fictitious claims by scholars researching and writing about geography and military planning (Elman, 2007:41).

Whether the literati scholars' distain was the result of genuine epistemological and ontological incompatibility or simply epistemic violence against competition claims is beyond the point here. What is important to note in relations to the constructivist diffusionist claim is that the arrival and even deployment of European techniques and knowledge did not lead to the wholesale rejection of 'indigenous geographical knowledge and of territoriality.

The persistence of Hua-Yi distinction and its correlated territory can be discerned from a popular genre of maps depicting 'All Under Heaven'. A version of the map made by an influential literati scholar Huang Zongxi (1610-1695) in 1673, were regularly reprinted and updated until at least 1821. Huang's initial map has not survived, but later editions that are titled 'the great everlasting Qing's complete map of all under heaven' and 'the great everlasting Qing's complete map of geography' (hereafter as the '*complete map*') still exist in relatively large number till this day(Bao, 2015). The numerous surviving examples of the map series are arguably indicative of its popularity and relative importance until at least the early 19th Century. In the 1810 version of the *complete map* (see figure 5), the inscription on the map suggests that the compliers had seen the imperially commissioned maps and were aware of the territorial gains of the empire. Nevertheless, the Ming-era territory of China remains the only area drawn with relative accuracy. Much of the world outside of Han provinces are drawn in a fictional or 'metaphorical' manner. The assortment of countries and information are not corresponding to any geographical reality. For instance, a circle representing the 'Muslim homeland also known as Hami (Qumul)' – a part of the empire – floats side by side with the island representing Europe. The jarring contrast between detailed depictions of terrain and waterways within Han provinces and the complete absence of accuracy 'beyond the pale' of Han Chinese civilisation was the result of both a genuine lack of understanding and an ideologically motivated ode to Sinocentric hierarchy. In All Under Heaven, remoteness

is a measurement of civility rather than one to do with physical distance (Ge, 2017:139; Guan, 2014:110).

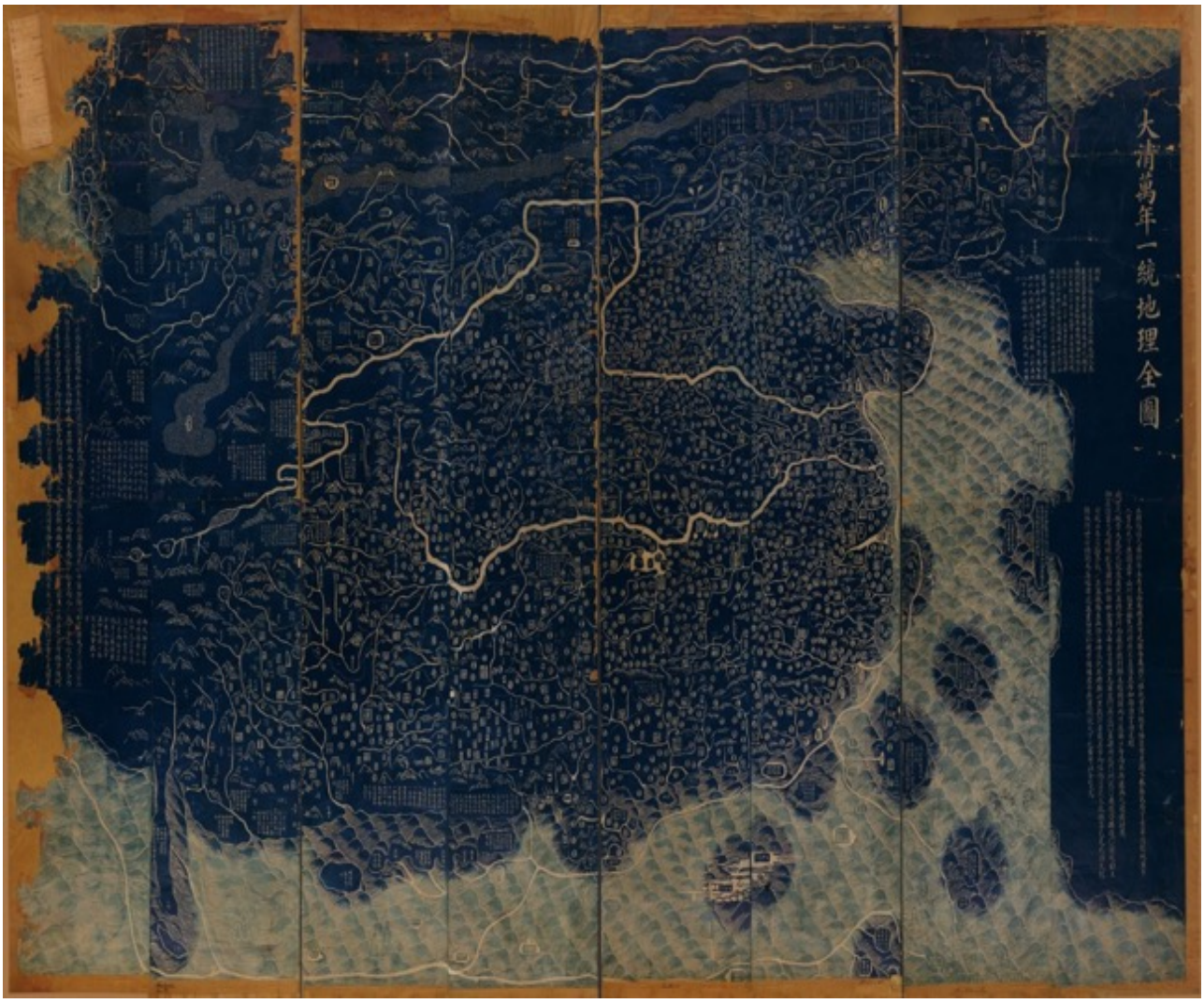

Figure 5. 大清万年一統地理全圖 Da Qing wan nian yi tong di li quan tu (Complete geographical map of the great Qing Dynasty)

Source: Haung Qianren, c.1767, revised and reprinted 1810s, China. Library of Congress (Available at:https://www.loc.gov/item/gm71005060/)

Two distinctive geographic understandings of the empire emerge when we compare the imperial atlas and the *complete map.* Rather than a case of one map being more modern, scientific, and accurate than the other, the two maps are the results of two forms of

territoriality within the Qing imperial administration. The imperial atlas made with the help of European Jesuits depicting the vast expanse of the Eurasian continent is indicative of a nomadic outlook typical of the Eurasian Steppe, rather than a sedentary understanding of space siloed in a fixed space-society relationship (Dunnell et al., 2004; I. B. Neumann & Wigen, 2018:314). In contrast to the boundless imperial vision of Eurasia, the Mongols, Manchus and Han subjects are confined to their ethnically defined administrative and geographic limits (Perdue, 1998:266, Mackay, 2015: 490). In contrast, the *complete map* focuses on depicting the bureaucratic Chinese administrative divisions of prefectures known as the *Junxian* （郡縣）system and there reflects a Sinocentric form of territoriality which produces territorial order based on the perceived civility of the inhabitants of a place. The *Junxian* system is not simply a rigid administratively defined limit of China, but also the limit of the Han Chinese world vis-à-vis the 'tribal' Other (Bello, 2005).

The Qing 'state', therefore, functions as both a 'Chinese' empire legitimated by the emperor's authority voer All Under Heaven and an Inner Asian steppe empire presiding over smaller Mongol and Central Asian polities and peoples. Manchu Qing polyvalent territoriality selectively built on Sinocentric, Eurasian Steppe and European Jesuit conceptions of space to smooth out competing and potentially incompatible sources of legitimacy within the empire. Therefore, the flexible and approach to the different forms of territoriality within the Qing Empire was a part of the Manchu ruling class's repertoire of legitimation and rule tailored to various ethnocultural components of the composite empire.

THE 'MODERN TERRITORIALITY' OF LATE-QING STATECRAFT WRITING AND THE TERRITORIALISATION OF CHINA

By the early 19th century, a 'modern' form of a geographically defined conception of China as the area controlled by the Qing empire emerged alongside the ethnocultural conception of China as the inner Han province. Both the geographical and ethnocultural conception of China

helped to create a new form of Sinocentric territoriality that saw China as a bounded space with a Han dominated core. This understanding of China found amongst late Qing reformist literati thinkers closely resembles the modern conception of the sovereign, territorial state.

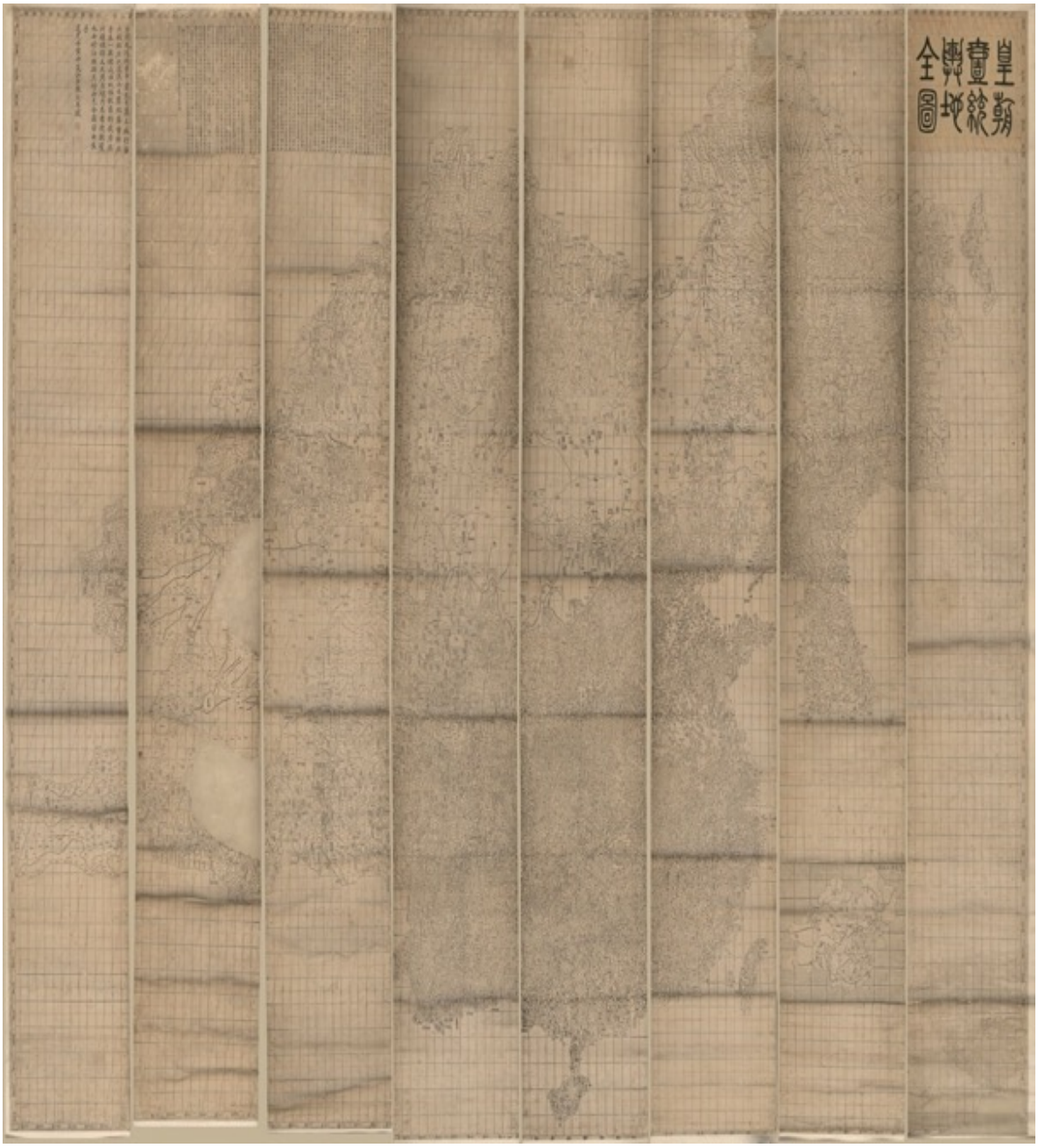

Figure 6. 皇朝一統與地全圖 Huang chao yi tong yu di quan tu (Qing Empire's complete map of All Under Heaven)

Source: Li Zhaoluo. 1832, reprinted in 1842 China. Library of Congress (Available at: https://www.loc.gov/resource/g7820.ct003405/?r=-0.236,-0.083,1.573,0.787,0)

The emergence of this form of 'modern territoriality' occurred as the Han literati class gradually gained access to the imperial atlas and became alerted by impending threats of European imperialism. However, far from a passive acceptance of European norms, the late Qing literati form of 'modern territoriality' was the outcome of both new geographical knowledge and the conceptual reworking of Manchu polyvalent territoriality and universalism with a distinctively Sinocentric outlook. This new form of Sinocentric 'modern territoriality' predates the formal introduction of territory and sovereignty as Western international law concepts. In this section, I illustrate the late-Qing 'modern territoriality' through the both changes in cartographic techniques, and more importantly, the emergence of a literati statecraft writings on the Inner Asian frontiers of the Empire.

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Han literati scholars' role in the governance beyond the Han-Chinese provinces was restricted in the earlier years of the empire. However, many of them gained employments in the imperial institutes of learning. As a result, many scholars were directly involved in, or were given archival access to court survey maps and official documents of Inner Asia (Mosca, 2011:102). By the 1830s, imperial atlases began to publicly appear on the commercial print market available to common readers (X. Zhang, 2020:130). The example shown here is an 1842 reproduction (see figure 6) of an 1832 map titled '*Imperial Qing Geography Map*'. The author of the map is Li Zhaoluo (1769-1841), a member of the prestigious *Hanlin* Academy that served the emperor's scholarly and secretarial needs.

The map was made based on a copy of an 18th century imperial atlas by an official who was overseeing a legal code revision (X. Zhang, 2020:130). The commercial reproduction of this map would be the first time for many people outside the inner circle of power to be able to visualise the relative size of the frontier area. The map marked the locations and names of frontier groups in Inner Asia, Sakhalin and Taiwan. Since it is no longer a map of All Under Heaven, only the Qing Empire and Joseon Korea are depicted. Neighbouring foreign countries are only marked by their names along the external borderlines of the empire. Some of these names are archaic and do not correspond to the political realities of neighbouring countries. Nevertheless, in the map, the Qing empire is both territorially demarcated and geographically finite. More importantly perhaps, the inner provinces are no longer distinguishable visually from the frontier regions.

The shift in the geographic understanding of China was concurrent with an imperial crisis induced by both internal and external foes. By the beginning of the 19th century, the Qing Empire was engulfed by economic depression, corruption, and a series of large scale ethnic and peasant rebellions. The narrow historical window between the perceived start of imperial decline and the first Opium War in 1842 saw the emergence of a body of statecraft writings known as *Jingshi* (經世) by Confucian literati scholars which covered issues such as political economy, war and hydraulics (Rowe, 2009:159, Kuhn, 2002:19-20). These reform-minded thinkers were seen by latter-day Chinese revolutionary thinkers as the precursors of China's modernisation. Here I engage with two of the more famous reformist literati scholars, Gong Zizhen (1792-1841) and Wei Yuan (1794 – 1857). Their geographic writings have been formative to the prominent political thinkers Kang Youwei (1858-1927) and Liang Qichao (1873-1929) involved in both late-Qing constitutional reform as well as the founding of the republic (P. Wang, 2014a).

The imperial atlas left a strong impression on Gong who worked as a clerk in the court's printing office in 1812. He remarked in a poem that the atlas was historically unprecedented (X. Zhang, 2020:129). Gong wrote extensively on geography and the empire's non-Han frontier regions. Although he was a low ranking official, his influence was bolstered by his

association with more prominent political figures such as viceroy Lin Zexu (1785-1850) – the official who later became the scapegoat of the first Opium War and was banished to a frontier post in Xinjiang in 1841. His 1820 treatise suggesting that Xinjiang should be converted into a Chinese province in light of the Muslim rebellions led by Jahangir Khoja (1788-1828) has been seen by later day Chinese nationalist thinkers as prophetic.

In this treatise entitled 'A Proposal For Establishing a Province in Western Regions' (西域置行省議), Gong locates China at the eastern end of the Eurasian continent rather than the centre of the civilised realm and notes that there are 'numberless countries in the Four Seas' and that China albeit the greatest of them all, is just one amongst many (Gong, 1820:633). He then goes on specifying that the 'Country of the Great Qing' is the same as China since ancient time (ibid). Gong's proposal not only predated and foreshadowed the intensification of Qing colonialism in the Inner Asian frontiers in the latter half of the 19th century, but also heralds a larger shift that was taking place in Han literati scholars' conception of China and Sinocentric territoriality.

More importantly, the Sinocentric understanding of China did not disappear with the newfound geographically defined boundaries of China. Instead, Gong synthesised the Manchu polyvalent territoriality with a Sinocentric view over the entire empire. On one hand, following Manchu Qing imperial discourse of universalism, Gong Zizhen explicitly extended the older, and more ethnocentric conception China by suggesting that earlier (ethnocultural) conceptions of China do not encapsulate the vastness of the Qing Empire (ibid:664). On the other hand, Gong continued to use the term China, *Zhongguo,* to distinguish between Xinjiang and the Han inner realm. Whereas this dual usage of China as both the empire and the ethnic core might seem confusing to a contemporary observer, for Gong, the territorially defined conception of China stretching into Inner Asia and the ethnocultural notion of China as inner provinces were not mutually exclusive.

Instead of extending the ethnocultural conception of China to non-Han peoples, Gong used environmental difference between Inner Asia and Eastern parts of the country as well as topographical features including waterways and mountains to define the external boundaries of Chinese territory. However, this does not mean that Gong is adopting a non-hierarchical understanding of peoples within the empire, since the prerequisite for Xinjiang to be converted into a province from a military colony is the relocation of excess population from all over China and the establishment of Confucian bureaucratic administration in the frontier. Gong was aware of the 'tribes' and 'Muslim areas' of Xinjiang, but in his vision, they would eventually come under the forms of regular administration used in the inner provinces (ibid:671).

Gong's treatise is included in an 1826 volume of statecraft writing compiled by Wei Yuan. Wei was a classmate of Gong who studied with him under the auspice of a distinguished scholar in Beijing (Elman, 2010:382). Wei is chiefly known for the first significant Chinese scholarly work on European maritime empires in the wake of the First Opium War. He knew Li Zhaoluo - the maker of the 1832 map - well and was influenced by him intellectually. He devoted a significant portion of the aforementioned 1826 volume to affairs of the Empire's Inner Asian frontiers. In the 1826 essay entitled '*A Response to Questions Regarding the North-western Peripheral Regions*' (答人問西北邊域書), he argued against the proposal to abandon key cities in Xinjiang including Kashgar and Yarakand to the Muslim rebels by the military governor of Xinjiang (P. Wang, 2014b:79).

Like Gong, Wei too was influenced by textual and cartographic records of the frontiers and had a geographically bounded conception of the empire. He admitts in his writing that he has never been to the frontiers in person and based his entire argument solely on books and maps. In the essay, Wei outlines the various peoples living along the empire's frontiers and defined the country's land boundaries with neighbouring countries. Interestingly, the essay makes an explicit remark on the enormity of Russia and states that it has never belonged to China historically. Like Gong, he also uses the word 'China' to refer to both the entirety of the Qing empire and the Han provinces specifically. For example, Xinjiang is said to be a solution to

overpopulation and unemployment in 'China', which is full of people and running out of land (Wei, 2013).

Wei gave a comprehensive geographical overview of Chinese territory in his 1842 book '*A Military History of Celestial Dynasty*' (聖武紀) describing regions from Sakhalin Island in the North Eastern Pacific to the Tibetan frontier with Gurkha (P. Wang, 2014a:80). Wei, for the first time in Chinese sources, presents a total and coherent geographical understanding of China that not only discarded the earlier segmented view of the frontier regions, but also shows that beyond the realm lays a connected outside world (Mosca, 2013:271). To understand China's positioning within this interconnected world, the empire itself is reconceptualised as a spatially contagious and geographically defined entity surrounded by potential foes and allies.

CONCLUSION

The epistemic transformation that occurred in late Qing Sinophone discourse gave rise to a distinctive understanding of China as a territory, in addition to a people and a state. This geographical reimagination of China proved to be influential in providing the conceptual vocabularies for latter-day canonical nationalist thinkers to both deny and conceive of the Chinese nation in multicultural and multi-ethnic terms based on a territorialised understanding of China. The revolutionary intellectual Liang Qichao, for instance, defined the Chinese nation based on China's geography conceived in terms of the Qing Empire's territories (P. Wang, 2014b). The geographic conception of China, and spatial bifurcation between Han and non-Han areas of the country informed in part by Qing imperial spatial ordering of various ethnocultural constituents, helped to engender the Nationalist and Communist regimes' problematisations of ethnocultural diversity within China, I will further explore this historical transition in chapter 3 and 4.

The theoretical implications of forms of knowledge and practices outside of the 'Western' world go beyond narrow, albeit important, critiques of Eurocentrism. However, since modern territoriality in IR has often been swept under the straitjacket of European colonialism, the polycentric origins of modern territoriality are often negated. Concepts such as modern territoriality are often both moored in European analytical ideal type and the disparity between how much is known about the histories of the 'West' compared to the 'rest' (Drayton & Motadel, 2018). Despite the ostensible universality of territorial sovereignty, modern territoriality is not enabled by a predetermined set of conceptual and material apparatus which can be used to explain the transformation of the international system into a system of territorial states. Instead, when studied 'from below' and autochthonously, a polycentric understanding of modern territoriality appears to be more convincing than a diffusionist account that privileges a specific epistemology. Contrary to (Branch, 2013) and (Elden, 2013c)'s articulations, the emergence of modern territoriality in late-Qing China required neither the Sinophone equivalence of 'territory' nor the adoption of the 'Western grammar of spatiality' (Branch, 2013:667). It is possible to be trapped territorially even without the word 'territory' itself (Watanabe, 2018).

Seen in this light, the latter-day Chinese nationalist leaders were not forced to adopt modern territoriality in the face of European imperialism but followed a pre-existing territorialised understanding of China in their experiments of nation-building and state-building. This suggests that modern territoriality has multiple, albeit connected origins around the world rather than emerging from a singular epistemic or technological transformation. The seemingly 'global' character of modern territoriality, the ability for cartographic technologies and geographical knowledge to travel does not elude the local contexts within which knowledge, technologies and political practices occur. The problem with mistaking the global geographical scale as the equivalence to the *level* or comprehensiveness of historical analysis runs the risk of reproducing well-trodden tales of European political modernity. The risk is particularly accurate considering that much of the 'global history' are derived from the temporal markers of European modernity and tend to valorise the transnational histories to global only when they are most entangled with Euro-American histories (Drayton & Motadel, 2018).

Recognising the imbedded polycentricity and heterogeneity of a phenomenon that is global in its geographical scope does not mean that the concepts and theories derived from non-Western societies and cultures can readily transcend the ethnocentrism of IR (cf. Acharya, 2016). Critics of Global IR are critical of the inadvertent reification of the irreconcilable binary between the West and the non-West (Murray, 2020). However, rather than reifying a new global imaginary (Anderl & Witt, 2020), by engaging with 'local' or 'regional' narratives that put into question the historiography of homogenisation and universalisation of European institutional forms around the world, 'Global IR' can also highlight the limit of concept and theory with universal aspiration to explain historical transformation on a smaller geographical scale (Phillips, 2016a). Engagement with the situated character of seemingly global forms of knowledge and practices in historical contexts that do not automatically privilege anglophone or European histories can carve out a way between incessant critiques and the essentialising rhetoric of inclusion and diversity. One way to do this is by engaging with archival sources, visual materials, and writings in non-European languages that might have relatively little to say about how devasting and omnipresent European colonialism has been.

Chapter 3 NATIONALISING THE FRONTIER: GEOGRAPHICAL IMAGINATION, SCIENTIFIC KNOWLEDGE, AND THE MAKING OF THE MODERN CHINESE FRONTIER

In the ensuing years after the collapse of the Qing Empire, the Republic of China under the leadership of the Chinese Nationalist Party (1928-1949) and its successor the People's Republic of China destroyed most other competing nationalist movements and the diverse forms of polity in the former Qing Empire (Brophy, 2016; Feng, 2012; X. Liu, 2010; Weiner, 2020). From a global historical perspective, the territorialisation of China can be seen as a part of the larger historical process of rational state-building (Buzan & Lawson, 2015). This process of territorialisation is predicated on the destruction of premodern political communities, in particular of the political autonomy of the nomadic, 'tribal', and other indigenous polities (Levin, 2020). On the surface, the destruction of indigenous political autonomies, and the re-imagination of the Qing Empire's frontier spaces as the new national frontier, resembles the fate of other colonial frontiers elsewhere in the world, typified by the American frontier immortalised by Frederick Jackson Turner (F. J. Turner, 2011). However, such a global historical narrative not only overlooks the historical indeterminacy of China's territorialisation. More importantly, it also overlooks the creation of a national frontier (*bianjiang*) in modern China by Chinese intellectuals in their quest for political modernity and territorial statehood.

The geographical conception of China, as I argued in the previous chapter, had already been extended to the entirety of the Qing Empire by the late 19th century. The Chinese nationalist thinkers and leaders, such as Sun Yat-sen and Liang Qichao, were already formulating a multi-ethnic conception of Chinese nationhood by the 20th century (Wang, 2014, 2015). Therefore, the conception of the Chinese frontier was not a historical inevitability, considering that there are other ways of conceiving the frontier spaces as colonies or indigenous homelands. Moreover, the creation of a national frontier is not the only way to resolve the challenge to territorial sovereignty posed by the presence of other ethnocultural groups. The colonial frontiers of white settler colonies such as the U.S. and Australia, were territorialised in no small part through the mass killings and forced assimilation of the indigenous populations (Wolfe, 2006).

The 19th century geographical reconceptualisation of the Qing Empire as China (*Zhongguo*) among some Han literati scholars did not automatically lead to the emergence of the new national frontier. Instead, older political geographical concepts such as the North-West (*Xibei* 西北), the 'Western Realm' (*Xiyu* 西域), and other ethnocultural spatial designations for Mongolia, Tibet, and the so-called 'tribal' regions in the Southwest were the common toponyms for what became the modern Chinese frontier. Whereas the existence of the Chinese imperial frontier was evident to the European observer, as seen in terms such as 'China Proper' or 'Chinese Tartary' (M. C. Elliott, 2000). The concept of 'China Proper' (*Sinae Propriae*), depicted in the 18th-century Jesuit map of the Qing Empire made by French cartographer d'Anville (1697-1782) was largely congruent with the territories of the Ming Empire. The corresponding Chinese concept of 'China Proper', in the late 19th century, was 'eighteen provinces' (十八省) according to the 1874 version of the English-Chinese Dictionary (Williams, 1874). At the time, the term refers to the 18 provinces that have significant Han residents and are governed primarily by the Confucian Chinese bureaucracy. There was no corresponding political-geographical concept for the frontier spaces of the empire. The political status of what became the frontier regions was an unresolved issue for the Chinese nationalists. For instance, Mongolia, Tibet, and 'Muslim area' are referred to as 'three barren wilderness' that should be eft to their own accord in a 1907 article that, rather ironically, also coined name of the future Chinese Republic (Zhang, 1907).

By the late 1920s, however, the 'barren wildernesses', as well as Manchuria and the non-Han area within the 18 provinces, started to be referred to collectively as the frontier or *bianjaing* (邊疆) in Chinese. The emergence of the term coincided with the rise to power of the Nationalist government under Chiang Kai-shek. In its first years in power, the regime undertook various attempts to establish de jure or de facto territorial sovereignty over frontier spaces that were either under the governance of larger frontier polities such as Tibet or local 'chieftains' ruled areas across frontier regions and hinterlands of Chinese provinces (H. Lin, 2011). Throughout the 1930s and 1940s, the 'discovery' of frontier China, and its ethnocultural and environmental diversity saw bourgeoning debates over both ethnopolitics

and strategies of state-building among political leaders and intellectuals. This new political-geographical conception of China laid the conceptual and geographical scope for contemporary Chinese ethnopolitics by bifurcating China into 'frontier China' and 'China Proper' or *neidi* (内地) in Chinese. The terms through which non-Han peoples are incorporated into the nation-state and the political transformation in East Asia and Chinese Central Asia are all closely connected to the spatial bifurcation of modern China (K. Huang, 2020). How did this concept emerge and why did the conception of the Chinese frontier become an important political-geographical concept used to legitimise Chinese territorial claims?

In this chapter, I trace the emergence of the frontier as a political-geographical concept that is defined through ethnocultural and environmental terms to the social and scientific community of the 1920s and 1930s China. The modern conception of the Chinese frontier, which encompassed more the 60% of the country's territory and over 100 million human inhabitants, remains without doubt a socially constructed geographical imagination that is reductive to the diverse peoples and ecologies 'on the ground'. Of course, the political marginality of the modern Chinese frontier is not an inherent property of the so-called frontier spaces themselves but instead the outcome of territorialisation and the modernist scalar hierarchy (Brenner, 1999). The main aim of this chapter is not only to trace the conceptual emergence of the modern Chinese frontier, but also to understand how the frontier is simultaneously social as well as material in ways that are not entirely reducible to social constructions.

This chapter proceeds in two parts: in the theoretical section, I start with a critical discussion on the concept of the frontier. I argue that whereas frontier is a problematic term embroiled in the modernist teleology of modern state formation, we should see its heuristic value in studying the historical disappearance of the 'in-between', territorially heterogeneous, politically ambiguous, and 'non-state space' (Scott, 2009). The Eurocentric and colonial triumphalist historiography of the Anglophone concept of 'frontier', and the diverse social and environmental conditions that gave rise to different historical forms of frontier space,

mean that the frontier is not a suitable analytical concept to retrieve the social and environmental conditions before territorialisation. Instead, I distinguish between frontier as a category of analysis and a category of practice (Brubaker, 2004b; Moore, 2008) . In doing so I argue that by focusing on the creation of a frontier space, we can understand how frontier-making, as a category of practice, make visible and politicise specific social and environmental qualities to produce politically marginal spaces that require territorialisation. Drawing on theoretical insights from Political Geography, I demonstrate that the frontier space is a political-geographical concept produced through a specific spatiotemporal scale. The production of the spatiotemporal scales helps to organise and 'encode' otherwise messy socionatural processes into geographical imaginations that can observed, interpretated, and governed (Moore, 2008; Rangan & Kull, 2009).

Using the analytical framework devised in the theoretical section, the empirical sections examine the more-than-human Qing imperial frontiers and their conceptual transformation into the new national frontier in the early 20th century. I demonstrate that the modern meaning of the Chinese term for the frontier, *bianjiang*, is indebted to its usage in the 20th century rather than the term's classical root. Instead of a singular conception of frontier space, the Qing Empire had a range of different frontier spaces that were construed from different sets of socionatural configurations. The modern spatial bifurcation of China into the frontier and the national core was therefore not an inevitable outcome of China's empire to nation-state transformation. Instead, it was a relatively recent invention that was made possible through the observational and interpretative scale used by social and natural scientists in 1920s/30s China. Rather than a simple nationalist claim of indigenous lands, the geographical contour of the frontier, and its defining ethnocultural and environmental qualities were the effects of novel forms of social and environmental knowledge.

THE CONCEPT OF 'FRONTIER'

Recent works in Historical IR have recognised that for much of modern history before 1945, world politics is characterised by heterogenous polity forms (Phillips & Sharman, 2015a;

Sharman & Phillips, 2020). These polities, many of which were invariably characterised tribal, traditional, or 'indigenous' were in areas that witnessed the bulwark of European, Japanese, and American colonial expansions. The international order up until the late 19th century, as Phillip and Sharman observed, is based on diversity rather than uniformity (Phillips, 2016a; Phillips & Sharman, 2015b). The diversity in polity forms, characterised by 'territorial heterogeneity[7]' were put to an end by the encroaching empires, settler colonies, and later, modern territorial (nation) states. The end of indigenous autonomies in North America, Australasia, to a less extent Russian Fareast and Spanish Americas was marked by settlement and territorialisation (Belich, 2009; Schulz, 2019; Sunderland, 2004). In Inner Asia, the Russian conquest of Bukhara and Kokand in the 1860s (Morrison, 2020; Pierce, 1960), and the establishment of Xinjiang as a Chinese province in the 1880s (Millward, 1998) marked the end of independent Central Asian khanates. The establishment of territorial states predicated on the destructions of territorial heterogeneity is not only the prerogative of large continental empires but also of smaller postcolonial states (Michaud, 2000, 2009; Shneiderman, 2010). The global transformation from overlapping, territorially heterogenous political authorities to geographically compartmentalised modern territorial states, was made possible by processes of territorialisation around the world.

The modern international system made up of territorial states, is therefore contingent on the 19th and 20th-century 'mass extinction' of alternative polity forms at the hands of colonial, imperial, and national states. At least until the late 19th century, the modern territorial state did not look like a historical inevitability (cf. Giddens, 1985), a significant portion of the world's landmass was either devoid of the presence of an organised polity that resembled what the intruding colonial powers deemed to be a 'state', contested by settlers and indigenous inhabitants, or were in-between ambiguous fringes of larger continental empires. The formal disappearance of this 'third space', between the European colonial empires and the greater 'Eastern' empires, is currently missing from the master histography of the modern

[7] Here I borrow Kadercan's definition of 'territorial heterogeneity' as the variation in legal, administrative, economic, cultural, and source of political legitimacy within geographical scape claimed by one polity (Kadercan, 2015b:147)

international system (see Buzan & Lawson, 2015). This negation produces two subsequent problems: the first is the perpetuation of the modernist conception of the territorial state as a regulative ideal when the state is produced through dispersed spatial and material practices rather than a unitary entity (T. Mitchell, 1991a); the second problem is the ignorance of the continuous existence of spatial and material practices that defy the 'rational', 'centralising', and indeed territorial political rationalities of the state, especially along the fringes and margins of the state (Das & Poole, 2004). The combination of the two problems means that the so-called 'global sovereign monoculture' (Phillips, 2016a:6) emerged not necessarily through 'rational state formation' in 'alien spaces' (cf. Buzan & Lawson, 2015:3) but through the formal *de jure* disappearance of spaces beyond territories of the modern state.

The different forms of fuzzy, in-between spaces that lay beyond the effective state control have had different historical functions and symbolic meanings: Some are homelands of indigenous peoples or nomads who practice forms of territoriality that are not based on exclusive control of a geographical area (MacKay et al., 2014; Shadian, 2010). Some are located at the margins of empires where forms of rule are often indirect and mediated by non-state forms of political authorities (Hopkins, 2020; Pekka Hämäläinen, 2010; Schulz, 2019; R. White, 1991) or where state forces simply cannot penetrate (Giddens, 1985; Scott, 2009). Other state territories-in-waiting through territorial demarcations by colonial powers (Branch, 2013; Goettlich, 2021). Some are scarcely populated and relatively untapped natural environments that are then transformed through agriculture, urbanisation, and state formations (Richards, 2003). Finally, there were also nominal state territories that are controlled by extractive industries in pursuit of natural resources, commodities, and profits (Tsing, 2003). Despite being situated in different historical, geographical, and cultural contexts, many of the fuzzy, in-between spaces were referred to using the concept of 'frontier': such as the vague 'frontier' between premodern states (Goettlich & Branch, 2021; Kopytoff, 1989), the imagined imperial 'frontiers' of savagery and unruliness (Hopkins, 2020; Manchanda, 2017), the inter-cultural or inter-civilisational frontiers (Gardner, 2021; Schulz, 2019), the 'internal frontier' of hostile social and natural environments (Giddens, 1985:50), and the frontiers of resources extraction and exploitation (Richards, 2003; Tsing, 2003).

Effectively, the term frontier is being used as a descriptor for phenomena that defy the geographically compartmentalised understanding of state authority or the neat, mutually exclusive coalescence of sovereignty, territory, and the state (Goettlich, 2019). The confusing dual meaning of the term 'frontier', as a pre-modern zonal form of political boundary, and as an imperial geographical imagination of a space inhabited by uncivilised/primitive/non-state peoples, is the outcome of late 19th century political geographical thoughts on territorial boundaries specifically those of Frederick Jackson Turner and Lord Curzon (Newman & Paasi, 1998:189). In the anglophone context, a discussion of the frontier often starts with a reference to Frederick Jackson Turner. The American West was immortalised in Turner's 1890 essay as a geographical, cultural, and spiritual realm where the 'most rapid and effective Americanization' of the European settlers took place through their (dis)placement amidst wilderness and savagery (F. J. Turner, 2011). The Turnerian frontier refers to a politically ambiguous space that is 'unsettled', whereas Curzon's 'scientific theory of the frontier' contains a typology of political boundaries that included the Turnerian frontier (Curzon, 1907). According to Curzon, a frontier between polities can either be natural, artificial, or demarcated. Given the intricacies involved, frontier management is a 'scientific' endeavour, and therefore Lord Curzon favoured a frontier demarcation guided by scientific knowledge, ethnological, and topographical considerations (ibid:53).

Together, Turner and Curzon's views encapsulate the modernist teleology of state formation wherein the external state boundaries become clearly defined and the internally unsettled area disappears. Both viewed the fuzzy, politically ambiguous frontier through a logic of the disappearance of both the original indigenous inhabitants and the polity forms. In Turner's historiography, the American Frontier had already been a thing of the past as indicated by the disappearance of a contiguous unsettled area in the 1890 U.S. census (F. J. Turner, 2011). Although Lord Curzon was more ambivalent about the persistence of loosely demarcated boundaries, he was nevertheless hopeful that the demarcated frontiers based on 'scientific knowledge and international law would turn frontiers into an instrument of peace rather than dispute' (Curzon, 1907:54). The existence of frontier spaces is only relevant to political communities civilised enough to be deemed as a state, since 'tribal' peoples do not have frontiers but simply formed a part of the 'wilderness' (Connolly, 1994). The notion of the

frontier is therefore not only a Eurocentric geographical imagination but also a state-centric conception that relegates 'non-state' peoples to the margins of political histories.

The proliferated usage of the frontier as both a political boundary, the object of territorialisation by an encroaching imperial, colonial, and national state, and a form of geographical imagination creates a conceptual challenge: how can we conceptualise forms of territoriality beyond the exclusive control of geographical space (Elden, 2013; Murphy, 2012; cf. Sack, 1983) without reproducing a Eurocentric teleology of political modernity? As Aditi Saraf observes, the shared socially constructed notions of marginality and difference enable the comparison of frontier spaces across different contexts, yet the exact social and environmental configurations of different frontier spaces require case-specific research and detailed contextualisation (Saraf, 2020). In the remainder of this section, I argue that one way out of this conundrum is to distinguish between frontier as a category of analysis used to understand the social and environmental qualities of the in-between, marginal, non-state spaces, and frontier as a category of practice that was used in the social production of geographical imaginations, administrative practices, and cultural sensibilities.

The problem with using the word frontier as a category of analysis, just as using loaded terms such as 'nation', or 'identity' as categories of analysis (Brubaker, 2004b; Brubaker & Cooper, 2000), is that they continue to be used in reductive and problematic ways as explanations of social phenomena by practitioners who deploy these terms. The term frontier, too, continues to be used in everyday life to imply conquest in the same triumphalist settler-colonial discourse of mankind against nature, such as the framing of the ocean or outer space as the 'new' frontiers of our time. The debate over the usage of the term 'frontier' in History is illustrative of the shortfalls with the term frontier as a category of analysis. Some historians, who are interested in retrieving the complex histories of the territorially heterogeneous and culturally pluralistic in-between space beyond the master narrative of conquest tried to resurrect the term frontier. For instance, to address the statist historiography imbued in the term frontier, Adelman and Aron reconceptualised a frontier as a borderless zone of interactions characterised by neither hierarchy nor group rigidity (Adelman & Aron, 1999:815). Frontier, in their view, captures the *borderless* world before the transformation of the inter-

imperial borderlands into bordered lands (Altenbernd & Trimble Young, 2014:139). However, there are other terms can be used to capture the borderless, in-betweenness, and culturally plural space. In U.S. borderland history, for instance, scholars have increasingly turned their attention away from the triumphalist expansion suggested by the term frontier toward the notion of 'borderlands' as a meeting place of both empires and peoples (Hämäläinen & Truett, 2010). The term 'borderlands' here refers not to the modernist understanding of borderlands as territories near a demarcated international border but as a 'middle ground' for diverse peoples, empires, and cultures in a world where demarcated territory makes little sense (ibid). Outside the US borderland history, Scott's 'nonstate space' in Southeast Asia serves as another example of alternatives to the word 'frontier'. The nonstate space, which constituted the frontiers (political boundary) of premodern Southeast Asian states, was the result of challenging social and environmental forces that made the establishment of state power based on settled population and sedentary agriculture unviable (Scott, 2009:13).

Nevertheless, rejecting the frontier as a category of analysis does not mean that we should overlook the 'realness' or the materiality of the social and environmental forces that constituted the so-called frontier. In IR, discussions of frontier spaces as in-between, cross-cultural contact zones or natural frontiers are rare. Instead, frontiers are either viewed as boundaries between premodern states [8] or viewed as socially produced representations (Hopkins, 2020; Manchanda, 2017). For example, in Hopkins' recent work which surveyed different national and colonial frontiers in the late 19th century, the frontier is treated as 'conceptual rather than physical spaces' (Hopkins, 2020:15). The frontier spaces are defined by a shared set of administrative and legal practices known as 'frontier governmentality'. These shared set of government tactics constructed frontiers are peripheral spaces including indirect rule based on supposed indigenous traditions, sovereign pluralism, economic dependency, and imperial object which was based on the supposed barbarous or savagery quality of the frontier inhabitants (ibid:18). The so-called 'frontier spaces' are therefore a particular type of orientalised geographical imaginations that are used to legitimate

[8] See (Goettlich, 2019; Goettlich & Branch, 2021; Kratochwil, 1986; Phillips & Sharman, 2015a; Ruggie, 1993; Spruyt, 2002)

differentiated treatment through racialised and gendered cultural tropes of savagery (Hopkins, 2020; Manchanda, 2017, 2020). The shortfall with these works that focus on the politics of representation is that by resorting to well-trodden postcolonial critiques of European geographical imaginations as cultural artefacts, the constitutive roles of the social and environmental forces of the so-called frontier spaces themselves are obscured.

If the usage of the Turnerian frontier as a category of analysis is embroiled in the modernist teleology of territorialisation, the rejection of frontier spaces as real places risks overlooking the social and environmental forces that necessitated differential methods of governance and the 'exceptional' status. As a category of practice, the usage of the term frontier across different late 19th and 20th-century political contexts points to the historical contingencies and shared political and material technologies (Branch, 2017; Elden, 2010; Murphy, 2013) that gave rise to our modern 'cookie-cutter' conception (Billé, 2020:3) of state territories as a demarcated physical environment (Shah, 2012). The modern territorial states we recognise today, are often made through the territorialisation of specific 'unsettled', 'natural', 'unruly', or 'tribal' frontiers. In that sense, frontier-making is not just a top-down process, it is deployed to make sense of specific circumstances. Treating the frontier space as a category of practice means that we should be focusing on how the frontier is produced as a geographical imagination, institutionalised through administrative subjects, and treated as a theme of cultural and scientific knowledge production. In short, the creation of a frontier space helps to organise and problematise social and environmental processes into a realm of political actions.

Coming up with a universal analytical concept of the frontier that encapsulates the shifting social, environmental, epistemic, and political configurations of all the different frontier spaces across history is a difficult task. Moreover, the phenomenological similarities and conceptual entanglements between different frontier spaces do not explain the exact constellation of the geographical scope, epistemic foundation, cultural legibility, socio-environmental condition, and political motivation behind the emergence of a specific frontier space. The Southeast Asian 'Zomia' (Scott, 2009), the Qing frontier spaces (Bello, 2016), or the Japanese colonial frontier of Hokkaido (B. L. Walker, 2001) might be united in their shared

historical experiences of colonisation, conquest, and eventual territorialisation, but neither their 'frontier' status nor the processes of territorialisation are generalisable to other forms of in-between, peripheral, non-state spaces. Therefore, we need to understand frontier-making as specific historical practices. This means we need to view the closure of the European settler colonial frontiers as a culturally and ecologically specific variant of a much broader pattern of state-building and environmental transformation in hitherto challenging social and environmental settings (Pomeranz, 2009).

The recognition of the frontier space's unique qualities besides its peripheral status to the imperial centre is not a new conceptual move but a return to an earlier approach that is now outdated owing to its geographical and ecological reductionism. Owen Lattimore, for instance, tried to explain the emergence of the Great Wall as a form of frontier delimitation, or borderland, via the presence of a 'frontier reservoir' (Lattimore, 1937:546). In the Inner Asian frontier space beyond China, the ecological niches and ethnic fluidity created a population of 'partly Sinicised nomads' and 'semi-barbarized Chinese' that defied cultural and geographical demarcation between China and the Steppe (ibid). Lattimore was influenced by the Turnerian frontier but conceived the Inner Asian frontier differently from the Euro-American colonial context (M. Elliott, 2014:340). In contrast to the Turnerian frontier, which ceased to exist after the destructions of native polities, the Inner Asian frontier was itself a complex zone of human-environment interactions between Steppe nomadic peoples and irrigated agriculture societies, rather than merely being the borderland between China and Russia (Lattimore, 1947).

Whereas Lattimore's works help us to see how the materiality of the social and ecological forces constituted the Chinese frontier, we remain beholden to the marginal spatiality of the so-called Chinese frontier. The territorialisation of China as a modern territorial state might be a self-evident demonstration of the modernist teleology of state formation through China's 'encounter' with the modern international system. However, despite the emergence of China as a geographical concept in the late 19th century, which I covered in the previous chapter, the creation of modern China as a multi-ethnic territorial state was far from predetermined owed to resistance to and concurrent projects of territorialisation (Liu, 2010).

More importantly, the conquest and the disappearance of in-between spaces and indigenous polities do not necessarily require the conceptual emergence of a 'national frontier'. In other words, whereas the historical experiences of conquest and colonialism in the process of state-building might be generalisable phenomena, the concept of a frontier space is not a prerequisite of conquest and colonialism.

Seen in this light, the concept of frontier does not help us to retrieve the alternative political histories of territorial heterogeneity, ethnocultural diversity, and the agential properties of the physical environment. Other concepts, such as the indigenous conceptions of territoriality (Karppi, 2001; Müller-Wille, 1989; Robertson et al., 2020), terrain (Elden, 2017, 2021), and nonstate space (Scott, 2009) are better suited for such purposes. Instead, the concept of frontier, when properly contextualised against the historical and political backdrop of its cultural and epistemic legibility, can tell us how specific social and environmental conditions are understood as 'exceptional' and problematised as objects of governance. In other words, whereas the frontier is by no means a concept that can be used to explain social and environmental dynamics of territorialisation and state-building 'as they are', it nevertheless offers a way of understanding the said social and environmental dynamics were understood and politicised. In the next section, I offer a way of analysing the frontier as a form of geographical imagination that makes visible and orders social and environmental material realities as the characteristics of a particular place (Daniels, 1990, 2011).

FRONTIERS AS SOCIONATURAL ENTITIES

Frontier spaces are undeniably geographical imaginations that organise cultural sensibility, bodily experiences, and empirical knowledge about a physical space into a knowable entity (Daniels, 1990, 2011). The socially constructed spatiality and the more-than-human materiality of the physical space are therefore interwoven into a power-laden political geographical concept. The so-called 'non-state space', or 'empty land' are socially constructed geographical imaginations that reflect the designation of an exceptional or peripheral status from an imperial or nationalising centre. Nevertheless, the anthropocentric framing of the

frontier space, which centres the effectiveness of control over a physical space, risks obscuring the materiality of the natural environment.

In this section, I argue that processes of territorialisation – the transformation of non-state spaces into modern state territories – required both discursive practices of place-making (ibid), and the material transformation of the underlying physical environments (Nightingale, 2018; Parenti, 2015). The epistemic and material transformations involved in the making of modern state territories mean that the modern territorial state is not a pre-existing territorialising actor, but an entity that is configured in the process of territorialisation. The transformation of 'non-state' spaces into 'state spaces' involves both the social construction of specific political-geographical concepts, as well as material transformations that reproduce social and environmental configurations that are amenable to state governance. Although the roles of the material environment in the making of state territories are not reducible to an anthropocentric narrative, the framing of the material environment as an object of political contestation and governance requires the social production of geographical imaginations, concepts, and spatiotemporal scales that can be used to make environmental configurations legible. Therefore, the modern territorial state should be conceptualised as socionatural entities that overcome the anthropocentrism of modern territoriality without losing sight of the entanglement between the spatial and material dimensions of territories.

In Environmental History, the dialectical relationship between the state and the environment looms large, in which new state forms came into being through the transformation of the natural environment and in turn dependent on and constrained by the underlying environmental forces that are never fully controllable nor understood. In this state-centric historiography, the historical emergence, spread, and subsequent dominance of large, centralised, 'state-like' political authorities were accompanied by the expansion of human settlements, intensification of agriculture, and the extraction of fuel and commodities in 'frontier spaces' that were transformed by states (Beinart, 2000; Beinart & Hughes, 2007; Burke III & Pomeranz, 2009; Crosby, 1986; Richards, 2003). The 'frontier spaces', therefore, disappear over time as central state authorities expand into 'empty land' suitable for large-scale population settlement and agricultural development (Richards, 2003:622).

The framing of the materiality of the non-human environment as an object of anthropogenic domination is crucial to the social construction of frontier spaces. Nowadays, since all habitable lands are said to be governed by territorial states, the frontiers of our time are increasingly found in the Arctic, outer space, and the ocean. Against the backdrop of state-centrism, the politics of the 'untamed' natural environment is understood through environmental forces' challenge to political authorities exercised by the state. Therefore, in the modernist teleology of the state, as the state's capacity to extract resources from its land and population improves through the monopolisation of coercive power (Giddens, 1985; Mann, 1986; Tilly, 1990), the state's boundaries should become more clearly defined as the fuzzy natural limits are replaced by clearly delineated borders. The neo-Weberian sociologist Anthony Giddens, for instance, understood 'natural boundaries' to be a feature of 'traditional states' (Giddens, 1985:50). The so-called frontier spaces are the natural limits of a state that is unable to control unruly peoples and environments along its fringes or in the interiors. Unlike the rationalised and homogenised territory of the modern state, territories of 'pre-modern' or 'traditional' states are held together by centrifugal forces that emanate from centres of power and become weaker gradually over physical space owing to a diminishing ability to control people and the environment (Scott, 2009).

This modernist conception of territoriality as the control of people through the control of physical space (Sack, 1983) reproduces an anthropocentric view of the physical environment and therefore overlooks the co-constitutive relations between the materiality and spatiality of human territoriality. In the modern international system, the universalisation of modern territoriality is self-evident in the geographical compartmentalisation of states' political authority (Goettlich, 2019:205). The exclusive claim and control of a physical space not only gives the modern state a physical presence but also a population. The state's territory is therefore understood as something that is deliberated and created to control resources and people for specific social and political ends (Murphy, 2012:164). But this understanding of territories as the state's physical presence in 'nature' helped to reduce territories to resources and environments that are pre-social and therefore unquestionably material (Shah, 2012:66). In doing so, not only does the modernist understanding of territory overlook the 'more-than-

human' qualities of the physical environment's geophysical and biophysical properties (S. Whatmore, 2006), but also how the unquestionable materiality of state territories might itself be an effect of socially constructed knowledge (Castree & Braun, 2001). In other words, whereas the non-human environmental forces are not reducible, entirely controllable, nor comprehensible to human beings, the physicality of environmental forces can be understood and narrated in ways that 'naturalise' the human political communities (R. White, 1999).

Historical processes of territorialisation undeniably involved attempts to transform or 'tame' the physical environment into a governable 'state space' (Scott, 2009). In Environmental History, the notion of 'frontier' is commonly used to describe a location where a colonial and national state encounters a social and natural environment that is inhospitable to effective state governance of people and the physical environment (Bello, 2016; Haines, 2015; Redclift, 2006; Richards, 2003; Scott, 2009). For instance, the Southeast Asian Massif or 'Zomia' is depicted by James Scott as a 'frontier' of autonomous 'non-state' people residing in sparsely populated areas where sedentary agriculture is unviable (Scott, 1998:5). The Qing frontiers, as Bello shows are located among the forest, steppe, and mountains where 'a fully monocultural or anthropocentric imperial system was impractical' (Bello, 2016:2). Environmental transformations, therefore, form the necessary preconditions to create the resource base and population required for the emergence of modern territorial states that can effectively control the people and physical environment. For example, the relative success of European settler colonies has been attributed to the ability of European settlers to transform the colonies into ecological 'Neo-Europe' through 'Ecological imperialism' (Crosby, 1986; Pekka Hämäläinen, 2010; Piper & Sandlos, 2007). The changes in the non-human environment, are not only the outcomes of territorialisation, but also in turn (re)shape the state's physical presence through the emergence of specific geographical and socioeconomic configurations. The political and economic urban centres of the modern Thai, Burmese, and Vietnamese states, for instance, owed their existence to the taming of the great river deltas of Southeast Asia: the Irrawaddy Delta, the Chao Phraya Delta, and the Mekong Delta, which had been sparsely populated swaps and forests until the early 19th century (Adas, 2019:192).

The processes of territorialisation involve knowing, claiming, demarcating, and ultimately controlling a physical environment by the political authority that would become the 'state' (Brenner & Elden, 2009; Carroll, 2006; Elden, 2021:177; Scott, 1998). In doing so, the modern territorial state produces administrative and managerial schemes that are used to conceptualise the territory as a demarcated natural environment (T. Mitchell, 1991a; Scott, 1998). In short, although the non-human environment is not reducible to human political rationalities, the *politics* of the non-human environment tend to be conceived through socially constructed frames. More importantly, the modern territorial state does not predate its population or territory, instead, it is constituted by the historical emergence of population and territory as governable entities (Elden, 2013a; Foucault, 2007). The governance of the population, and the embeddedness of life in the natural environment, means that interaction and management of the natural environment help to produce the physical territory and the population from the natural environment and its inhabitant (Nightingale, 2018:691). Since modern territorial governance has become the primary way through which society-nature relationships are mediated and governed (Nightingale, 2018; Whitehead et al., 2007), the techniques and concepts used by territorial political authorities to frame state-nature relations have also become important ways through which the materiality of the non-human environment is understood (Brenner & Elden, 2009:373; Shah, 2012:66; Whitehead et al., 2007:55).

The historical constellation of environmental forces, cultural legibility, economic incentives, and socio-political circumstances involved in the taming of each so-called frontier space or indigenous homeland is unique (Saraf, 2020). Therefore, the contours of the more-than-human forces involved in the constitution of a specific frontier space must be understood in their historical singularity. Nevertheless, what the frontier spaces that disappeared in the 19th and early 20th did share was their designations as an object of territorial annexation, colonisation, and eventual absorption into colonial and national territories by the 20th century. It is against this political backdrop of territorialisation that the materiality of the frontier spaces is understood through their strategic, economic, and epistemic influence in the creation of modern territorial states. It would not be possible to write about the environmental history of the political ecology of a frontier space without the notion of the

frontier space as a state space in waiting. This understanding of the territory as the pre-social, material 'container' (Agnew, 1994; Giddens, 1987 in Elden, 2010:800) reflects the late 19th century environmental determinist tradition of Political Geography in which the control of territories is equated to the accumulation of national power (Bassin, 1987). The impetus to territorialise 'unsettled' land and the rationalisation of the natural limit of political authority through clearly defined borders reflected the Social Darwinist and environmental determinist understanding of human territoriality that was prevalent during this time (Kearns, 1984:28).

Frederick Jackson Turner, for instance, was well-versed in the works of the likes of Frederick Ratzel, Halford Mackinder and Ellsworth Huntington (Block, 1980:34). Seen in this light, we need to pay closer attention to how socially constructed geographical concepts such as the 'frontier' and their spatiotemporal scales are produced historically to make the non-human environment the object of political transformation and governance (Rangan & Kull, 2009).

There is a myriad of concepts that capture the ontological entanglement between social, technological, and natural forces, such as technopolitics (T. Mitchell, 2002), Hybrids (Latour, 1993b), Cyborgs (Haraway, 1990), socionature (Swyngedouw, 1999). Since my focus here is on how epistemic and material transformations involved in the creation of modern state territories provided the very conceptual vocabularies such as 'frontier' or 'non-state space' that are used to understand the entanglement between social and natural forces, the concept of socionature (Swyngedouw, 1999) is particularly useful due to its focus on the production geographical entities through material and discursive practices. Following Latour and Lefebvre, Swyngedouw views the social production of 'nature' as a material and a discursive process, through which material conditions are transformed and gave rise to new ways of representing, understanding, and interacting with 'nature' (Swyngedouw, 1999:447). Through a case study on the late 19th-century Spanish state initiatives to reshape agriculture and rural society through hydraulic infrastructures, Swyngedouw demonstrates the inseparability of science, technologies, discourse, political visions, and environmental forces involved in the governance of modern state territory (ibid). The geographical divisions and their scales are neither entirely social nor 'natural' but instead produced through the material, discursive, and ultimately administrative practices.

The notion of socionature can help us to overcome the understanding of human territoriality as simply anthropocentric strategies of control (cf. Sack, 1983). As Elden puts it, territoriality should be understood as the condition for territory, rather than simply a mode of territory's production (Elden, 2013c:3). Political-geographical entities such as modern state territories, frontier, or 'non-state' spaces, therefore, can be thought of as socionatural entities with specific scale (Brenner, 1999; Swyngedouw, 1999, 2004) beyond the spatiality/materiality divide. In doing so, the so-called 'non-state' spaces can be understood as concepts through which socionatural entanglements become legible and politically actionable, rather than objects of the inevitable processes of territorialisation. I will engage with how the politics and geographies of environmental knowledge shape the ways through which the materiality of a territory is understood and governed in greater detail in Chapter 5. Here, the analytical focus is on the social production and effects of scale that make demarcation, observation, and governance of the physical environment possible. The materiality of the physical environment is characterised by elemental forces that are fluid and messy (Steinberg, 2009; Steinberg & Peters, 2015:248). These forces do not reveal themselves in ready-made concepts or static socially produced spatiotemporal scales (Bocking, 2015; R. P. Neumann, 2009). The 'natural' environment, therefore, is revealed through mediated, and often power-lade socially produced concepts and scales that organises otherwise messy non-human forces (Castree & Braun, 2001). Seen in this light, we need to examine the politics of socially produced scales and concepts used to make sense of the environment (Bocking, 2015; R. P. Neumann, 2009; Rangan & Kull, 2009).

The discussion in Political Ecology on the politics of scale can be useful to make sense of what makes spatiotemporal extent *political* beyond simply seeing a scale as historically contingent and socially constructed (R. P. Neumann, 2009:399). The spatiotemporal extent of a phenomenon is both the outcome of the characteristics of the phenomenon under observation, as well as the choice of scale used in observation (Sayre, 2005). Whereas Political Ecologists are more interested in the interaction between the ontological properties of the ecological phenomenon under observation and the politics of the choice of observational scale, Political Geographers are more attuned to how the epistemological choice of scale is interwoven with the production of the socionatural configurations at a certain

spatiotemporal scale (Swyngedouw & Heynen, 2003:904). The use of scale, as an epistemological frame to make sense of social and environmental interactions, is a category of practice that is used by political actors to organise social and environmental phenomena into spatiotemporal containers (Moore, 2008). For instance, the so-called modern territoriality is dependent on the supposed naturalness of modern national territories as static physical containers of societies within its societies (Agnew, 1994; Brenner, 1999:46). The production and use of scale are therefore central to the means through which social and environmental processes are made political within a given epistemological frame (Rangan & Kull, 2009).

In the context of the social production of a frontier, the socionatural qualities of non-state spaces alone do not explain their eventual territorialisation by the imperial and nationalising centre. To explain how the non-state spaces are turned into state territories through the material and spatial transformations, we need to identify the moments through which socionatural phenomena are understood as the subject of political actions or how 'natural' environmental qualities are problematised as the object of governmental intervention using a specific scale. Rangana and Kull's typology of scale is particularly useful in understanding how the social production of scales can enable certain ecological and social changes to be understood as 'disruptive, transformative, or evolutionary' (Rangan & Kull, 2009:30). They conceived scale as the combination of 'space, time, and power into different forms, functions, measures, symbols, and sensibilities' which are 'used to articulate relations, controls, and representations of social and biophysical landscapes' (ibid: 36,7). They organise scales into three categories: operational scale, which is the result of the materiality of socionatural processes; observational scale, which is produced through measurement and control by scholars and policy-makers to study and/govern the materiality of socionatural processes; and finally interpretative scale, which is produced as a normative order that allows for certain scales to be understood as real, legitimate, or scientific (Rangan & Kull, 2009). The production of interpretative scales, such as the nested hierarchy that places the 'global' as a higher level of analysis over the 'local' (Delaney & Leitner, 1997), turns certain observational scales into generalisable categories and concepts that present a realistic depiction of socionatural phenomena at a potentially larger spatiotemporal extent (Rangan & Kull, 2009:41). In doing

so, specific socionatural phenomena made visible by specific observational scales are interwoven with normative commitments and cultural sensibilities, and interpreted in ways that warrant political actions.

The late 19th century anglophone notion of 'frontier' (Curzon, 1907; F. J. Turner, 2011) can be understood as a form of interpretative scale that order certain historically and geographically specific phenomena such as the absence of centralised political authorities, sedentary agriculture, or demarcated political boundaries into generalisable representations of the non-state spaces that were then observed. In a similar vein, the emergence of the modern Chinese frontier, too, entails the historical production of specific observational and interpretative scales that allow for socionatural phenomena in parts of the former Qing Empire to be politicised and problematised. Whereas there might have been a late 19th century transnational discourse of 'frontier' that orders centralised state-like political authorities above nomadic and decentralised political communities, the spatial extent and cultural sensibility of the specific frontier spaces might differ across different historical, political, and cultural contexts. In the following sections, I will trace how cultural sensibility, normative commitments to Chinese nationhood, and observational practices framed the diverse ecologies and societies of the Qing Empire as the frontier of the modern territorial state known as China.

From Qing Imperial Frontiers to the Modern National Frontier

The legibility of frontier spaces or non-state spaces does not travel smoothly across cultural and political contexts, despite the shared historical experiences of territorialisation by empires and nation-states. In this section, I focus on the shifting cultural and political meanings of the Chinese term *bianjiang*, which is typically translated as 'frontier' in contemporary sources. Although the term has been used throughout history to designate the peripheries or boundaries of the Chinese state in Sinophone texts, its contemporary meaning as the ethnocultural and geographical frontier of the Chinese nation is decidedly modern. The older meanings of the term did not suggest the existence of a fixed geographical scale nor the

existence of a singular frontier space of historical Chinese states. Instead, the Qing Empire presided over a range of non-state or frontier spaces with distinctive socionatural configurations. In other words, the Qing Empire had many frontier spaces that were construed from the amalgamations of different interpretative, observational, and interpretative scales (Rangan & Kull, 2009). Contrary to the term *bianjiang*'s singularity and a spatiotemporal scale that ordered the frontier regions of modern China as the historical-geographical peripheries of the Chinese empire, the Qing Empire did not have a singular imperial 'frontier'. Instead, there were different conceptions of frontier or non-state spaces through which natural environments and autonomous local polities were problematised and distinguished from core provinces and prefectures of the empire.

The Chinese term *bianjiang* was an indigenous term that it was used prior to 19th-century modernisation efforts, rather than a modern neologism that was introduced by the Japanese like many other 'modern' terminologies in the 19th century. Nevertheless, in its contemporary usage, it is unequivocally understood to be the counterpart of the Anglophone word frontier (M. Elliott, 2014:343). According to the contemporary Chinese frontier-*bianjiang* studies scholar Lü Wenli, the term *bianjiang* refers to three different types of space: 1) The geophysical space: where landscape and environmental features, such as forests, and rivers create a natural divide. This understanding is similar to the 'natural frontier' referred to by Curzon (1907) and the frontiers of pre-modern polities understood by Giddens (Giddens, 1985); 2) The constructed historical-geographical space: where a historically continuous polity referred to as China evolved territorially and absorbs other ethnocultural groups; 3) A subjective, culturally grounded geographical imaginary: where types of self-other relations such as nationalism, political technologies such as linear borders, and survey techniques reorder the first and second types of space (Lü, 2019). Lü's view is known in Chinese academia as '*bianjiang* constructivism' that views *bianjiang* as a spatial concept that reflects historically shifting forms of territoriality and political community. A contesting view, known as '*bianjiang* realism' views *bianjiang* primarily in material terms as the peripheral territories and/or overlapping strategic interests of modern territorial states (Yang, 2018). Both views saw their usage of the word *bianjiang* as analogous to the word frontier in Anglophone scholarship. Therefore, if we start with a contemporary understanding of *bianjiang*, we are almost

certainly reading history backwards and taking the semantic equivalence between the Sinophone and Anglophone words for granted.

Without superimposing the histories and meanings of the Anglophone 'frontier' onto its Chinese counterpart or taking their conceptual equivalence for granted, I will start the discussion with a brief discussion on the cultural significance and history of the Chinese notion of 'frontier'. The modern Chinese term bianjiang – is made up of two characters, the first character *bian* 边 means peripheral to space or time, or a limit; the second character *jiang* 疆 can either mean boundary or land (Billé, 2012:25; M. Wang, 2016). Compared to adjacent terms such as *bianjing* (borderland) or *bianjie* (border), which are legal and administrative terminologies, *bianjiang* is more informal but refers to a greater spatial extent that can be understood as 'peripheral territories' (S. Zhang & Gong, 2004:5). Although, in the academic context, the term is seen as the closest (albeit different) Chinese parallel to the other frontier spaces in the world such as the Turnerian American West, the Roman military frontier, and even European colonial frontiers (D. Li, 2018; D. Yao, 2019; S. Zhang & Gong, 2004), in everyday usage the term refers almost exclusively to a loosely defined portion of the Chinese territory that is not considered as a part of 'China Proper' or *neidi* (内地) in Chinese. A resident of *bianjiang* provinces such as Xinjiang or Tibet, for instance, would would refer to a coastal province and major Chinese metropolitan areas as *neidi*. More importantly, *bianjiang* is primarily determined by its perceived ethnocultural differences, Hong Kong, Macau, and Taiwan, for example, despite being outside of Mainland Chinese borders, are not considered to be from *bianjiang* provinces.

In popular imaginaries, the term is often associated with exotic, faraway land populated by ethnic minorities (Fan, 2017). But in addition to ethnocultural diversity and marginality, the term is often also used to evoke a vast, sparsely populated, under-developed, yet resource-rich portion of China's land territory (see Luo, 2018:49). In that sense, *Bianjiang* only functions as a romanticised, and nationalist claim to indigenous homelands, but also operates as an interpretative scale the orders parts of Chinese territory as problematic, backward, and in need of protection and development (Roche et al., 2023; J.-H. Z. Wang & Roche, 2022; Yeh.

Emily, 2013). Calling a place *Bianjiang* therefore not only suggests that the said place is geographically peripheral, but also temporally backwards. Nevertheless, despite *bianjiang*'s problematic gendered, racialised, and colonial premises, examining the emergence of *bianjiang* as a geographical imagination and a scale allow us to study how the disjunctures between the modernist ideal of legible and homogenised state space and the complex socionatural realities 'on the ground' is understood and politicised in China.

The importance of representing indigenous homelands as the peripheral territories or 'contact zone' between historical Chinese states and the outside world to Chinese nationalist historiography of unity has been observed by many scholars working on China (Leibold, 2007; Oakes, 2012). The historical usage of *bianjiang* in older sources can lend legitimacy to a Sinocentric historical narrative that interactions between historical Chinese states and surrounding polities were the interactions between an imperial centre and its peripheries or subordinates. The term *bianjiang* is indeed ancient and can be traced to the 4th century BC chronicle 'Zuo Zhuan' and entered general usage from the 3rd century AD onwards to refer to the peripheral areas of various historic Sinophone polities or 'Chinese dynasties'(D. Li, 2018). Nevertheless, the spatial extent of the so-called *bianjiang* and its 'hardness' as the boundary between Chinese states and its surrounding polities within present-day China shifted throughout history (Ge, 2018). More importantly, the cultural meaning and geographical scope of the term have also been changed by the territorial expansionism of the Manchu-Qing Empire and through its modern-day translation as 'frontier' (M. Elliott, 2014). The combination of the term's supposed ancientness and its modern usage as the geographical and ethnocultural periphery of China has allowed for the projection of modern Chinese territory backwards in history to support the nationalist historiography of Sinicisation (Ho, 1967) or as it is known in Chinese 'Han-ification' (*Hanhua*).

The historical usage of *bianjiang* and Han-centric Chinese historiography creates the impression that there was a premodern geographical boundary that divides Han-China from the rest of the empire. However, the term *bianjiang* in the modern sense did not exist in the Qing era. Although the term frequently appeared in official usage during Qing, it referred to military frontiers that encompassed parts of 'China Proper' and the maritime frontier (Lü,

2019). There were no political-geographical concepts that neatly ordered the empire into Han and non-Han portions. Instead, there was a myriad of terminologies used to describe the relationships between the imperial court and the autonomous and semi-autonomous polities within the former Qing Empire such as *fan*, which was primarily used for Xinjiang, Mongol and Tibetan polities, and *tusi*, which referred to hereditary 'chieftains' in Southwestern China (Cosmo, 1998). Most interestingly, the Hua-Yi distinction has been eschewed within the empire by the imperial court as non-Han people were referred to as belonging to the inner land (Mosca, 2020:118), and the northeast was being reimagined and sanctified as the Manchu homeland (M. C. Elliott, 2000). Seen in this light, although the Republic of China inherited all of the Qing Empire's territory, at least in name, in 1912, it did not inherit a pre-existing political-geographical concept that encompassed all of modern China's frontier regions. As I will show in the final section of this chapter, *bianjiang* only acquired its contemporary geographical scope and meaning as the ethnocultural frontier of the Chinese state in the late 1920s. In the remainder of this section, I focus on the political-geographical concepts used by the Qing state in its governance of places where centralised political authority could not be established due to topographical socionatural configurations.

Instead of a singular frontier space, the Qing Empire governed a series of internal and external frontier spaces dotted around the empire. After the defeat of the Dzunghar Khanate in the mid-18th century, the Qing emperors enjoyed suzerainty or authority over a range of Inner Asian polities, from the Kashag in Tibet, the steppe nomads, to the Muslim cities of Altishahr in present-day Xinjiang. The incorporation of these new territories led to the establishment of a new bureaucracy to manage the complex system of rituals and protocols called the *Lifan yuan*[9] (Brook et al., 2018; Schorkowitz & Chia, 2017). This bureaucracy managed not only relations with suzerains but also with Russia. The geographic scope of the *Lifan yuan*'s work can be interpreted as the existence of an external frontier dominion from the Manchu court's perspective (Di Cosmo, 2012). The non-Han areas of the empire, like the other imperial and colonial frontiers of its time, were governed through a system of indirect rule and a

[9] For a detailed discussion of this institution see Schorkowitz and Chia (2017); for Qing's relations with various central Asian polities ses Brook, van Praag and Boltjes (2018)

differentiated legal system (Cosmo, 1998). The use of suzerainty and heterogeneous forms of political authority was not only found in Mongolia, Xinjiang, and Tibet but also used extensively in the interior Chinese provinces. In the southwestern provinces of Guizhou, Hunan, Sichuan, and Yunnan, indigenous groups including Hmong, Tai, and Nuosu peoples were ruled through the 'native chieftain system' (*tusi*). Significant parts of these provinces, including the entirety of southern and western Sichuan, were under indigenous rule in the 17th century (Herman, 1997:35; Sutton, 2006:190).

Even as novel geographic knowledge and the improved availability of maps of China and the world gave rise to a new geographic conception of China among the Han literati scholars, the internal and external frontiers of the Qing were still not yet conceptualised as a singular, contiguous entity in the 19th century. The rationale behind this is not hard to fathom. The Qing Empire governed diverse ecologies and political communities that spanned across the Eurasian continent. An understanding of the empire simply as an abstract, homogenous state space where human-environment relations are governed through unformed political rationalities simply did not make sense (Bello, 2016; Perdue, 2009b). Instead, territorial heterogeneity and differentiated spaces were needed to govern places with challenging terrain, semi-independent indigenous polities, and other topographical and microbial features. The resultant political diversity within the empire, which at the outset took on the form of ethnocultural differences, as environmental historians of Qing have noted, reflected deeper, complex more-than-human forces that constrained the imperial state's effective control of the physical environment (Bello, 2005, 2016; Marks, 2011:239; Perdue, 2009b; Schlesinger, 2012:29). The socionatural challenges across the empire to effective governance required specialist approaches, which were organised through the production of specific political-geographical concepts with distinctive spatiotemporal scales that helped organise social and environmental forces into legible and governable entities.

The 1886 version of the 'Regulations of Appointments' (铨选则例) of the imperial Ministry of Personnel (吏部) regulated the promotions and appoints of imperial ministers across the empire. It contains a taxonomy that divided local magistrates into 'inner realm (neidi),

insalubrious regions (yanzhang), and various other frontiers/*bianjiang*[10]. The so-called 'insalubrious regions and various other frontiers" were then further divided into Miaoo, maritime, yi, and insalubrious regions. There was also the so-called *Hui*-frontier (*huijiang*), or Muslim frontier, which referred to areas of Xinjiang that were governed by local Muslim officials (*beg*). The term *bianjiang* referred to both external boundaries with foreign countries as well as 'internal frontiers' with semi-autonomous polities within the empire. The types of frontier spaces included ethnocultural frontiers such as *Miao* or *Yi* which referred to chieftain-ruled or autonomous indigenous communities in southwestern interior provinces. The insalubrious regions referred to southwestern subtropic regions that were thought to be pestilential due to the local climate and ecology, where the imperial bureaucracy struggled to fill official posts due to frequent sicknesses and deaths (L. Dai, 2022).

The resilience of the frontier polities in China was to a significant degree, the result of more-than-human entanglements that precluded the possibility of outright domination limited by military, transportation, agricultural, and communication technologies, despite the imperial state's settler colonial initiatives. More importantly, the persistence of the non-state spaces was often deliberate policy choices in the aftermath of social and environmental failures caused by agricultural settler colonialism in Taiwan, Southwestern China, Mongolia, and Central Asia (Fiskesjö, 1999; Herman, 1997, 2018; Perdue, 2009a; Schlesinger, 2017). Therefore, the political-geographical visibility of these frontier polities or non-state spaces within the empire was not simply the outcome of challenging environmental and social forces but built on socio-ecological spatial scales' (R. P. Neumann, 2009:402) that helped to frame the materiality of social and ecological processes spatially. The social ordering power of frontier spaces as political-geographical concepts was not simply imagined nor imposed from above. Instead, their existence reflected the materiality of social practices in that place, which produced an 'operational scale' based on the combination of time, space and power that shaped both social and environmental processes into specific recognisable entities (Rangan & Kull, 2009).

[10] The original phrase in Chinese is "内地及烟瘴并各边疆" ((Ministry of Personnel 吏部, 1886; D. Yao, 2019:176)

Here I will delve into Xinjiang in greater detail to illustrate how operational scale, observational scale, and interpretative scale work in tandem to order socionatural processes as objects of governance. The existence of the so-called 'Muslim frontier' (*huijiang*), which administratively manifested through the local autonomy of Muslim officials known as *beg* (Cosmo, 1998), was at least in part due to the failures of Han settler colonial agriculture. Prior to the Qing conquest, the Dzungar Khanate built cities and developed agriculture in Dzungaria or present-day northern Xinjiang (Perdue, 2005). However, the war-induced depopulation of north Xinjiang, created the need for migration and repopulation (Perdue, 2005, 2009a). Turkic Muslims from the southern oases and north cities of Turpan and Hami were therefore needed to provide tax revenue and support Qing military garrisons given their agricultural skills and proximity (Lavelle, 2020:46,61; Millward, 1999:24). Turkic Muslim population was important to the governance of Xinjiang in part due to failed attempts to set up agricultural colonies using Chinese labourers. An imperial survey of unclaimed arable land in Kashgaria aimed at attracting Han settlers in 1844, for instance, ended up granting 95% of the land to Turkic Muslims (Liu & Fan, 2011). The importance of Turkic Muslims to the economic viability of Xinjiang as a Qing dominion in practice was observed by government gazetteers and land surveyors (Millward, 1999), and the emphasis placed on agriculture, sericulture, and cultivation as a marker of civility (Lavelle, 2020:24) allowed Xinjiang's socionatural configurations to be imagined and governed as a 'Muslim frontier' of imperial subjects from whom agricultural tax revenue can be extracted (ibid:45).

The ways of representing the ecological barriers to effective governance, however, did not always reflect the underlying material realities. The social construction of a biophysical environment known as 'insalubrious regions' (*yanzhang*) was an illustrative example wherein distinctive socionatural configurations were reimagined as the geographic spread of a disease known as *zhangqi*. David Bello's study of malaria and the construction of the native chieftain system in the Southwestern provinces of Yunnan, Guizhou, and Guizhou shows that the ethnocultural space of *yi* (tribal or barbican) peoples was a compromise in light of the malarial environment (Bello, 2005, 2016). Bello nevertheless cautioned that geographical scale mattered to understanding the biophysical power of malaria to the political autonomy of

indigenous 'wild tribes' (Bello, 2016:190). The term *zhangqi*, which emerged prior to the discovery of malarial parasites, was based on the Chinese miasma theory of diseases that designated a much larger area in Southern China as insalubrious based on vegetation, climate, and diseases (Mou & Wang, 2003). The problem was not that the malarial landscapes themselves were imagined, but rather that the observations of the so-called insalubrious vapour (*zhangqi*) in Southern China, which included meteorological phenomena such as fog and lightning (ibid), were interpreted through racialised hierarchies against southern indigenous peoples who were thought to be uncivilised and animal-like (W. Zhang, 2005). In doing so, the diverse range of phenomena considered as insalubrious was observed to be correlated with not only malaria, but also flu, cholera, and discomforts associated with acclimatisation (Mou & Wang, 2003). The interpretative scale based on racial hierarchy, the observational scale based on a wide range of phenomena, and the operational scale based on the establishment of local chiefdoms and official appointment system in 'insalubrious regions' created the insalubrious frontier as a political-geographical concept.

Seen in this light, the emergence of *bianjiang* as the political-geographical concept for non-Han area of China, based on the observation of ethnocultural diversity, the establishment of administrative divisions, and the cultural understanding of China as a multi-ethnic nation with a historical homeland, did not take place in the Qing-era. Therefore, *bianjiang* is not a historical discourse of frontier that is anachronistically resurrected to justify Chinese territorial claims. The contrast between its relative historical insignificance and its contemporary commonplace usage suggests that it is a modern political-geographical concept that emerged in the 20th century. In the next section, I explore how the plethora of indigenous polities, and the environmental, economic, health, and military challenges to effective state control come to be conceptualised as a singular 'frontier question' (*bianjiang wenti*) by the 1930s.

THE 'DISCOVERY' OF FRONTIER CHINA

The bifurcation into *bianjiang* and *neidi* occur in the 20th century and is key to understanding how modern Chinese territory and population were construed as governable entities by modernising Republican and Communist states. The political-geographical concept of *bianjiang* allowed China to become a Han-centric multi-ethnic state with a historical claim to Qing Empire's territory. If the political marginality of places like Tibet and Xinjiang is to be understood as a power-laden social construction, then we cannot take for granted the spatial bifurcation as a self-evidence spontaneous conceptual move by the Chinese nationalist leaders motivated by territorial concerns. In doing so, we risk losing sight of the power-laden, contingent construction of 'China', and indeed the notion of 'Han' itself in the modern era. Historians of modern China have noted the frontier discourse' spatiotemporal ordering power which allows the 'historical barbarians' to be reconstructed as 'national minorities' through their inclusion in the Sinocentric geographical and therefore historical space (Leibold, 2007:11). Nevertheless, these critical historical accounts tend to overlook the historical process through which *bianjiang* became the Chinese equivalence of the Anglophone concept of frontier, in addition to taking its spatiotemporal scale for granted (Leibold, 2007; H. Lin, 2011; X. Liu, 2010).

In this section, I trace the historical emergence of *bianjiang*'s modern meaning as a political-geographical concept that is defined through ethnocultural terms and encompasses all of the former Qing Empire's frontier spaces. I treat the modern conception of *bianjiang* not as a self-evident nationalist spatial concept but as an epistemological frame that construes the complex socionatural phenomena in the former Qing frontier spaces as a field of political actions for territorialising the Chinese state. As I intend to show in this section, the term was not used by nationalist political leaders in the early years of the Chinese Republic but was later popularised by the scientific community in the late 1920s. Following the emergence and popularisation of the term in 1920s – 1940s China, I argue that the conceptual emergence of *bianjiang* was simply a response to the perceived crisis of territorial losses. The exact geographical contours, the environmental and ethnocultural phenomena that defined it, and the interpretative schemes used, were produced through novel forms of scientific knowledge. In other words, the concept of *bianjaing* was produced through the use of specific operational, observational and interpretative scales by policymakers and scientists. Moreover, the new

national frontier was not simply constructed by the new territorial state in its search for governmental legibility or legitimacy in the former Qing frontier spaces. Instead, the modern Chinese frontier was brought into being as a geographical entity through the forms of knowledge that not only made visible but also ordered the social and environmental qualities of the non-state spaces into the national frontier.

In the wake of the revolution, the new Beijing government tried, but failed, to maintain the Qing-era practices of indirect governance through official recognition of frontier political and religious authorities. The Mongolian and Tibetan Affairs Commission was established as the Republican-era institutional successor of the *Lifan yuan* and continued many of the Qing-era protocols of suzerainty(Bulag, 2006:265). The Republican government's territorial claim over Inner, Outer Mongolia, Kokonor, and Tibet continues to be based on the ill-defined notion of suzerainty (Y. Y. Zhu, 2020). But even before the effective independence of Tibet and Outer Mongolia amidst the chaos of revolution, the Qing imperial frontiers were already being transformed by the dual forces of settler colonialism and the political autonomy of indigenous communities.

The diversity of frontier spaces and the more 'accommodating' attitudes towards territorial heterogeneity did not last until the end of the empire. The indirect imperial rule of the Qing's many frontier spaces started to unravel in the latter years of the empire, as the Sinocentric proprietary conception of the Qing Empire's geographical spread began to gain political momentum from the 19th century onwards Click or tap here to enter text.Click or tap here to enter text. continue to be used in the earlier years of the republic. A crucial political-geographical concept that was used in the 1910s and 20s was North-West *(Xibei*), which referred to Inner Asia regions including Tibet, Mongolia and 'Muslim' regions (Tighe, 2009:59, 2011). The term did not include regions such as Tibet and the Southwest. Instead, other frontier regions were often referred to using specific ethnocultural designations(Feng, 2012:287). For instance, in a 1921 article in the Chinese magazine *Science* (*kexue*) by the prominent geographer and meteorologist Zhu Kezhen on the importance of geographical knowledge of Tibet, Mongolia, and Xinjiang, the word *bianjiang* did not appear at all (Zhu, vol.1 1921:338). Even in a 1924 journal entitled 'Frontier/borderland Affairs (*bianshil*)', which

was dedicated entirely to Mongolian and Tibetan issues, the term *bianjiang* did not appear a single time.

It appears that the academic community at Tsinghua played a crucial role in the popularisation of the term *bianjiang* in the late 1920s. The earliest usage of the term *bianjiang* in the modern sense by a prominent figure that I came across in my research of sources written in the 1920s was by the first chair of agriculture at National Tsinghua University in 1925, who suggested that 'frontier (*bianjiang*) work' should be an important aim in the school's pedagogical approach (Yu, 1925 in Jin, 2006). In 1928, the lecturers and students at Tsinghua University formed the 'Manchuria-Mongolia Research Society' ostensibly prompted by clashes between Nationalist Chinese and Japanese armies in the Jinan incident rather than territorial losses on the frontiers. Later that year, it was renamed '*Bianjiang* Research Society' with the English word frontier as the official translation of the Chinese term. The society's charter states that the danger of Japanese, British, and Russian imperialism meant that safeguarding the interior calls for research into the frontier (*bianjiang*) regions' geography, society, natural resources, politics, and other important issues (E. Ding et al., 1928). The society organised a series of lectures and published articles in the university journal on a wide variety of topics including Tibetology, Xinjiang folklore, geology etc. by Chinese and Western academics (Jin, 2006). The exact historical process through which *bianjiang* became the official translation of the Anglophone term frontier requires further studies. However, it appears that the conceptual entanglement between the Chinese and English terms was enabled by U.S.-educated intellectuals at Tsinghua.

More notably, the *Bianjiang* Research Society at Tsinghua University was formed not only by social scientists such as historians and sociologists, but also by natural scientists' geologists, geographers, and chemists too were prominent figures. One of the founders, the geology professor Weng Wenhao (1889-1971), was credited for the discovery of China's first oilfield in the Northwestern frontier. Throughout the 1930s, he was closely involved in geological surveys aimed at understanding mineral deposits and hydroelectric potentials in the frontier provinces (X. Li, 2003). In another essay on 'the frontier/*bianjiang* problem' (邊疆問題), the

chemist Yuan Hanqing (1905-1994) coined the famous slogan of the Republican-era 'to the frontier/*bianjiang*!' (到邊疆去) (Ma, 2016:66) and critiqued the presence of racialism against frontier peoples (Yuan, 1928). Some political leaders within the nationalist party too seized on the term to emphasise the importance of knowledge production for resolving the frontier crisis and the open-ended question of ethnocultural diversity. The Minister of Information and the director of the National Archive Dai Jitao (1891-1949) organised academics and nationalist party members to form the New Asia Society dedicated to research on cultures of various ethnocultural groups (*minzu*) within China and the rest of Asia (Leibold, 2007:118; H. Wang, 2014b:103).

By the early 1930s, a wide range of publications dedicated to frontier/*bianjiang* research proliferated and the geographical scope of frontier*/bianjiang* converged with not only borderland regions but also interior areas under indigenous rule (H. Wang, 2014b). Among the first journals dedicated to the frontier regions as a whole was the Shanghai-based journal *Frontier Exploration Monthly* (殖邊月刊) established in 1932[11]. Most articles in the first issue of the journal used the term *bianjiang* to refer to the frontier regions as a collective. The editors also specified the scope of the frontier regions to Chinese interior and borderland provinces with significant non-Han populations (ZBYK Vol.1, Issue 1, 1932:35).

From the beginning, the notion of *bianjiang* was a way to tie the production of scientific knowledge with political concerns regarding frontier minority populations and national defence. The strategic concerns for territorial integrity in the face of imperialism and frontier nationalism were no doubt a key driving force in the valorisation of frontier regions in the late 1920s. Nevertheless, these concerns had been present since the start of the 20th century with the Independence of Tibet and Outer Mongolia. Therefore, territorial concerns alone are not

[11] The character 殖 in the name of the journal can also be translated as 'colonial' or 'colonisation'. In one editorial written in 1933, the author explained that the official name of the society is *la Société de l'exploration sur les frontiers de la Chine* (殖邊社), and that the cultivation of the frontier by Chinese nationals are fundamentally different from colonialism by imperialist powers (ZBYK 1933 Vol.2, Issue 3-4:2).

a sufficient explanation for the emergence of frontier-*bianjiang* as a geographical entity. Instead, what was new about the late 1920s discussions on the frontier region was the involvement of new types of actors: social and natural scientists. The discussion on *bianjiang* differs from other types of political commentaries or late-Qing statecraft scholarship owing to the emphasis on *scientific* methods. The editors of *Frontier Colonisation/development Monthly* for instance, limited the type of article submissions to applied social and natural scientific research in the frontier regions and, neighbouring countries in Asia (ZBYK 1932:35). The emergence of *bianjiang* as a political-geographical concept that encapsulates *all* of the former Qing Empire's indirectly governed frontier spaces was far more than a simple addition to the Chinese lexicon. The term created *bianjiang* as a distinct realm of governmental actions by bringing together the operational scales of administrative division, the observational scales used by social and natural scientists, and the interpretative scales of nationhood and modernity.

The burgeoning community of social and natural scientists in China was the result of a transnational network of Chinese scholars based mainly in Europe, North America, and Japan. Their political activism, professionalisation, and intellectual endeavour toward indigenous scientific methods and theories of their respective scientific discipline coincided with the establishment of new scientific institutions with the support of the new nationalist government that came to power in 1928(S. Chen, 1998; F. Fan, 2007; Z. Wang, 2002a). The conception of a singular national frontier space that was distinct from the rest of China yet within the territorial boundary of China was a conscious political move during the production of ethnographic and environmental knowledge. In doing so, the new scientific knowledge that made visible the specific environmental and ethnographic qualities of the frontier regions (Chen, 2008, 2012, 2016; Yen, 2014, 2017) also helped to reify the frontier as a political-geographical entity. Although 'traditional' forms of ethnographic and environmental knowledge also represented frontier peoples and the environment in exotic manners[12], they were tied to older Qing frontier political-geographical conceptions. The new scientific

[12] See (Elvin, 2004) for representations of Guizhou; (Hostetler, 2001) for the Miao Album; (Newby, 1999) for literati representation of people and the environment in Xinjiang

knowledge operated with the scalar hierarchy of the international system and reduced the frontier spaces to a political-geographical component of the Chinese territorial state. In chapters 4 and chapter 5, I will cover the co-production between the territorialisation of the frontier and the scientific categorisation of frontier minorities and climates in detail. Here I will provide a summary of how *bianjiang* was construed as a socionatural entity through the production of social and environmental knowledge by the scientific community.

The academic research into China's ethnocultural diversity, for instance, started to be studied and categorised as a phenomenon associated with the frontier region. By 1928, the term 'frontier ethnocultural groups' (*bianjiang minzu*) was used as the collective nomenclature for non-Han peoples (Yuan, 1928). The term was politically palpable at first since the official nationalist stance was the homogenous or monogenesis notion of the Chinese nation (Leibold, 2007). Therefore, the nationalist state institutions tried to prohibit the usage of ethnonationalist toponyms such as Mongolian, Hui or ethnic minorities in favour of *bianjiang minzu* to prevent inadvertent recognition of non-Han nationalist claims (S. Yang, 2012). However, social scientists who worked with the regime also strengthened ethnocultural distinctions by devising typologies and categories for frontier peoples using culture, language, or physical attributes (M. Wang, 2019; S. Yang, 2012). In doing so, the visibility of ethnocultural diversity in frontier spaces vis-à-vis a supposedly more homogenous Han space in turn helped to consolidate the spatial bifurcation through ethnocultural essentialism. For

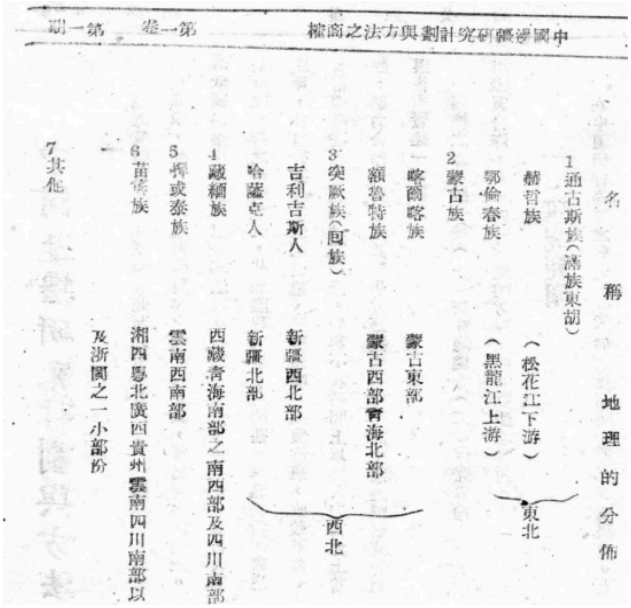

Figure.1: '*minzu* classification '（民族的分類法）

Source:

Ke Xiangfeng

BZGL, Vol.1 (1), 1941:48

example, in a 1941 article in the journal *Frontier Affairs* (邊政公論), sociologist Ke Xiangfeng

(1900-1983) provided a typology of frontier ethnocultural (*minzu*) groups including Tungus, Mongol, Turkic, Tibetan-Burmese, Shan or Thai, Miao, and Other. (Ke, BZGL, Vol.1 (1), 1941:48). Each group corresponds to a designated geographical area, and collectively the geographical distribution of the groups determines the contour of the frontier as a political-geographical entity (see Figure 1).

Natural sciences, such as Geology, Geography and Meteorology, too, were actively involved in the construction of the frontier as a natural political-geographical concept. These natural sciences partook in the construction of the national frontier in two crucial ways: the first is through the 'discovery' of Chinese nationhood in deep natural history, landscape, and ecology (Chakrabarti, 2020); the second is through turning the frontier space into field sites of empirical knowledge:

In the field of geology, the production of knowledge about the physical and historical 'depth' of Chinese territory was connected discursively to mastery and control over the natural environment (Shen, 2009; X. S. Wu, 2015). The National Geological Survey, which was overseen by the Bureau of Mines in 1916, became the leading force in geological and palaeontological research in China involving both Chinese and foreign scientists, research institutions and financial backers (Yen, 2015:24). The head of the Survey, Ding Wenjiang, was also a founding member of the frontier society at Tsinghua. In 1921, the Swedish geologist Johan Gunnar Andersson, who was a mining advisor of the Survey, discovered the Peking Man skull near Beijing, which was determined to be over half a million years old. The existence of the Peking Man, used in the 1920s as evidence for a new hominid genus, provided 'scientific' evidence to radical nationalist ideologues that Han Chinese shared an autochthonous ancestor with frontier peoples (Leibold, 2007:129). The ethnocultural diversity within China was therefore said to be caused by environmental diversity, rather than fundamental biological differences (ibid).

The emphasis on empirical research and scientific methods also made the natural environment of the frontier: ecology, natural resource, and climate, into specific realms of

policy-making and political actions. In the late 1920s, frontier travels and empirical field investigation became a crucial way through which the new geographical science is distinguished from the old ones (Z. Chen, 2016:145). In 1928, the Survey, the new Research Institute of Geology, planned for extensive fieldwork in understudied frontier areas (Shen, 2013:114). Although the production of environmental knowledge is not explicitly associated with the term *bianjiang*, the truth claim, and prestige of their 'scientific' status nevertheless contribute to the social construction of *bianjiang* as a political-geographical concept through the legibility of *bianjiang*'s distinctiveness from the inner realm. The emergence of the national environmental frontier was particularly evident in the discussions regarding frontier settler colonialism. Since the late 19th century, the north-western frontiers had been imagined as an agricultural frontier capable of absorbing the excess population. The natural scientists of the 1920s/30s, most notably in geographical sciences of meteorology, geology, and geography, vehemently opposed settler colonialism based on the frontier's distinct environmental qualities. Weng Wenhao, a founding member of the Tsinghua *Bianjiang* Society and later the head of the National Defence Planning Commission for Chiang Kai-shek was a prominent and vocal opponent to the turning the north-western frontier into the inner realm through agriculture and urbanisation (Wang, 1932 in J. Ding et al., 2021). To him, frontier migrations should only be carried out after scientific governmental surveys and the training of experts. Instead, he emphasised the north-western frontier's potential in terms of its geographical position as a transportation corridor as well as its depository of minerals, fossil fuels and hydropower (X. Li, 2005). The accumulation of scientific environmental knowledge helped to popularise the recognition of the political significance of the frontier's unique physical environments.

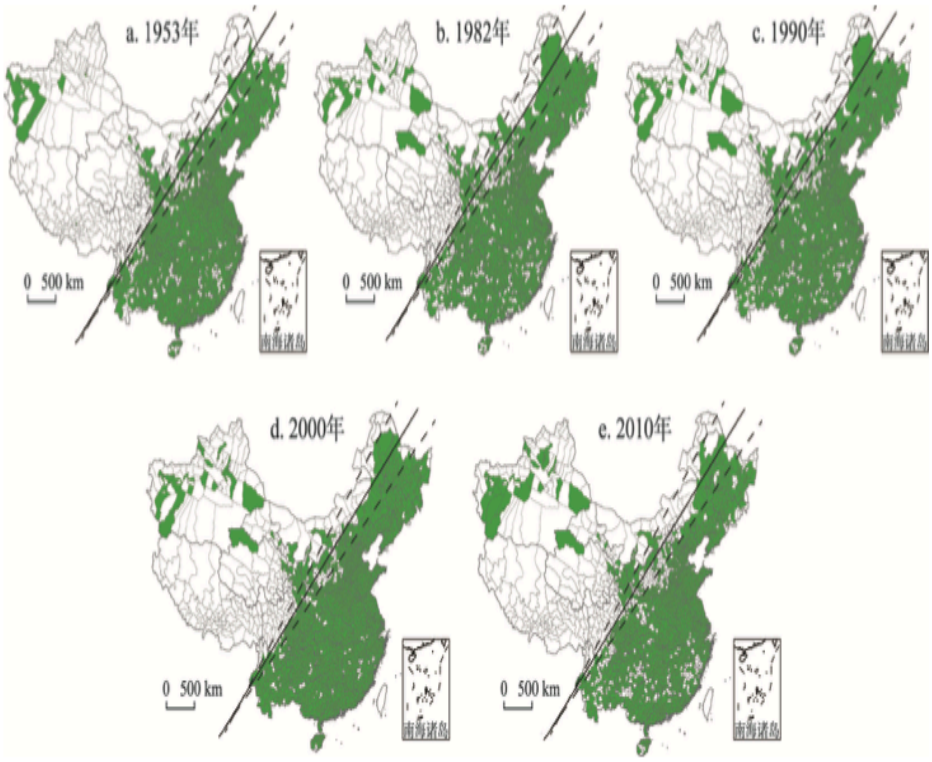

Figure. 2

'The spatial distribution of counties whose population cumulatively reaches 94% of national population in different periods, in relation to 'Hu-line'

Source:

Li, J., Lu, D., Xu, C., Li, Y., & Chen, M. (2017). Spatial heterogeneity and its changes of population on the two sides of Hu Line 胡焕庸线两侧人口的空间分异性及其变化. *Dili Xuebao/Acta*

The visibility and legibility of the frontier's environmental qualities were understood not only 'in themselves' as descriptive knowledge but also shaped by existing political issues such as the neo-Malthusian concern with China's population and the Qing-era vision of settler colonialism. By the early 1930s, improved availability of meteorological data, regional census, and understanding of frontier peoples enabled a more sophisticated understanding of the interaction between ethnocultural differences and environmental forces. The difference between the frontier and the inner realm was further entrenched as the frontier was discovered to be an ecologically fragile space unsuitable for large-scale migration. Following the meteorologist Zhu Kezhen, who I will cover in greater detail in Chapter 5, and geologist Weng Wenhao, the geographer Hu Huanyong (1901-1998) 'discovered' the most canonical ecological division between the frontier regions and the rest of the country. Hu concluded that racial distributions within the country converged with population distribution (Hu, 1935). The eastern and western divisions of the country, he observed, are mainly populated by Han except for the southwestern highlands where 'alien groups are intermingled (with Han)', and Manchu, Mongol, Tibetan and Muslims inhabited lands that consisted largely of barren desert

and frozen icecap (ibid). To demonstrate this distributional imbalance and its root in environmental constraints, he shows that only 6% of the Chinese population (mostly non-Han) is scattered across 64% of the country's land area using a diagonal line known as the 'Hu' line (see figure 2.). The 'Hu line' is the most prominent socionatural concept that bifurcates the country into a frontier and the core. To this day, the Hu line remains an influential geographic concept in China in discussions involving frontier development, urbanisation, and population growth. By comparing the Hu Line illustrated in figure2 with the location of Chinese ethnic autonomous administrative units shown in figure 3, we find that the western side of the Hu Line largely overlaps with the locations of the ethnic minorities' administrative divisions.

Figure. 3

'China Communist Autonomous Administrative Units'

Source:

Central Intelligence Agency, 1958

Washington, D.C.

Available at:

https://www.loc.go

After the outbreak of the Sino-Japanese War (1937-1945) and the relocation of the nationalist government and Chinese political and intellectual elites to the frontier regions, frontier *bianjiang* regions became the most politically salient objects of knowledge production. During the war, the military needs for transportation, medicine, and resources helped to further knowledge about geophysical, meteorological, and public hygiene conditions of the frontier. For instance, the Chinese and U.S. air force's need for high-altitude meteorological data in the mountainous southwestern regions propelled the development of observatory infrastructures in the frontier regions where data had been extremely scarce (F. Liu, 2018, 2021). The availability of regional climate knowledge improves the ability of the state to control physical space concerning agricultural development and transportation. The discovery of malaria, alongside other prolific infectious diseases in much of the southwestern frontier and the development of domestic production of vaccines and medications during the war, also improved the ability of state forces to penetrate hitherto challenging microbial environments (Brazelton, 2019).

The conceptual emergence of *bianjiang* and the collaboration between the state and scientific communities transformed the frontier regions from marginal, non-state spaces into a strategic hinterland. However, as I have demonstrated, neither military concerns nor frontier separatisms alone could explain the emergence of a singular national frontier as a political-geographical concept that was used in the production of scientific knowledge. The conceptual emergence of the new 'frontier question' did more than naturalising the state's territorial claim in the face of diverse polities and political autonomy in the non-state spaces and far-flung regions. Through the use of observational scales that categorised human and environmental phenomena, the scientific community helped to constitute the political significance of the national frontier as a distinct ethnocultural and environmental entity that requires a differentiated approach to governance (Wu, 1941:3,4 in BZGL Vol1,5-6). The legibility of the phenomena that set the frontier apart from the inner realm, namely environmental qualities and ethnocultural differences, was understood through the normative interpretative scales of scientific modernity and nation-building. In doing so, the accumulation of new 'scientific' knowledge produced a frontier that is characterised by ecological *fragility* and ethnocultural *diversity*, which in turn, re-defines the understanding of

China itself as an overpopulated yet ethnoculturally diverse country that is low in terms of economic development and living space.

CONCLUSION

By the 1930s, the new national frontier had started to displace older political-geographical conceptions of barren lands inhabited by Mongols, Tibetans, or Muslims. In this 1931 pictorial map (figure 4) designated for secondary and university students in Chinese Manchuria, the territory of China is not only depicted as a container for administrative divisions and population centres, but also as peoples, architectures, plants, animals, and topographical features. Annexed territories and independent polities such as Taiwan, Tibet, and Outer Mongolia are all depicted as a part of China. More importantly, the ethnographic and environmental knowledge depicted on the map, such as the location of minority groups and isotherms of the Asian continent, suggests that the cartographer had consulted up-to-date social and natural scientific works. This map, which was compiled by a Russian émigré orientalist scholar residing in Manchuria, is an example of how scientific knowledge production, representative technologies, and political concerns about territorial sovereignty can produce an understanding of Chinese territory as an organic socionatural entity defined by human and environmental diversity.

In this chapter, I traced the conceptual emergence of *bianjiang* as the Chinese equivalence of the Anglophone concept of 'frontier' to the social and natural scientific community of 1920s China. This new political-geographical concept encompassed the geographical scope of spaces outside of direct state governance during the Qing Era and was brought into being through the combination of administrative, observational, and interpretative practices that categorised the socionatural configurations of the frontier spaces to be qualitatively different from the inner realm. The socionatural configurations that characterised the frontier spaces, namely the combination of ecological fragility and ethnocultural diversity, made legible by

the modern scientific community, reshaped understandings of China as both a physical environment and a population.

Although the exact histories and socionatural configurations of the Chinese frontier differ from other parallel colonial, national, and imperial frontier spaces, the modern Chinese frontier was not dissimilar from other frontier spaces in terms of the presence of territorial heterogeneity, politically autonomous non-state communities, and the absence of large-scale sedentary agriculture and urbanisation.The materiality of the socionatural configurations of the so-called frontier spaces is real in the sense that they posed effective challenges to the homogenising and centralising impetus of the modern territorial states. Nevertheless, the legibility of and indeed the political rationalities of a frontier as a governable entity and realm of political actions are made possible by socially constructed geographical imaginations (Daniels, 2011) and concepts with distinct scales (Bocking, 2015; R. P. Neumann, 2009; Rangan & Kull, 2009; Sayre, 2005). The cultural legibility, geographical scope, and the exact operational, observational, and interpretative scales used by Chinese social and natural scientists in the construction of the modern Chinese frontier are not republicated from an ideotype frontier. To understand how the more-than-human forces matter in the histories of territorialisation, we need to pay attention not only to the spatiality of human territories but also to the socially constructed understandings of the environment's materiality (Castree & Braun, 2001).

In the case of the modern Chinese frontier, the legibility of the frontier's human and environmental diversity, specifically the visibility of the frontier's inhospitable environment and ethnocultural diversity, reshaped the conception of China as a physical environment and China as a nation. The types of scientific knowledge produced in the 1920s and 1930s about the frontier space were shaped by the ongoing neo-Malthusian concerns with overpopulation, the political significance of territorial cohesion, and the construction of Chinese nationhood. Having said that, the types of knowledge also in turn reshaped or challenged the political rationalities used in frontier governance, specifically in the areas of ethnocultural research and environmental knowledge production. In the following chapters, I will examine closely how the frontier's ethnocultural diversity engendered conceptions of Chinese nationhood

(Chapter 4), and how the frontier's arid climates lent scientific support to population control and discretions against settler colonialism (Chapter 5).

Figure. 4 象形中華民國人物輿地全圖 (Pictorial Compilation of People, Animals and Geography of the Republic of China / Map of China

Diakoff, John (1931)

Chapter 4 MALINOWSKI IN BEIJING: SCIENTIFIC KNOWLEDGE AND THE COMMUNIST ETHNOGRAPHIC STATE

By the 1930s, growing academic and state-led interest in the hitherto overlooked frontier regions of China led to an explosion of ethnographic knowledge about its human inhabitants. Nevertheless, the accumulation of ethnographic knowledge on frontier ethnocultural diversity did not automatically lead to improved legibility of ethnocultural diversity for the state. On the contrary, the textual and visual data about frontier peoples exposed the ignorance towards frontier peoples on the part of the Chinese political and intellectual elites. The 'discovery' of the frontier space and its ethnocultural diversity by Chinese elites ignited political discussions on the tension between a territorialised understanding of Chinese nationhood and the existence of difference cultural and linguistic groups within China (Jenco, 2019).

The visibility produced by the new political-geographical concept of frontier and ethnographic knowledge production meant that the frontier and its diverse human inhabitants became a technoscientific concern as well as a political one. Before the frontier's human diversity could be 'tamed' or 'ordered' through state sanctioned ethnographic categories, it had to be studied. The ethnographic fieldnotes and publications of the 1930s on frontier peoples were full of surprising discoveries of cultural heterogeneity of frontier groups and admissions of the lack of knowledge (M. Wang, 2019). By 1937, there were at least more than a dozen cultural or racial typologies for the people living in China available in Chinese language materials (S. Yang, 2012:100). The co-production of ethnographic knowledge and the political rationalities of the state, which ultimately redefined Chinese political subjecthood through a multi-ethnic and composite understanding of Chinese territorial nationhood by the start of the 1950s, shows the modern territoriality is not just about land but also about the production of political subjects through the legibility about the territory's human inhabitants (Scott, 1998). In this chapter, I focus on how the new political-geographical concept of *bianjiang*, engendered knowledge production on ethnocultural diversity and the creation of national

minorities as a form of political subjecthood defined through their state-sanctioned ethnocultural identity.

The Communist Party of China (CPC), despite the rhetoric of national self-determination, is commonly understood to have shared the nationalist party's stance on a singular conception of the Chinese nation based on modern Chinese territory (Leibold, 2007; X. Liu, 2017). After the establishment of the People's Republic of China, the political leadership of the CPC distanced itself from the Soviet system of federalism, opting instead for a 'multi-minzu unified' understanding of Chinese nationhood (X. Liu, 2010). However, this account of the territorial continuity between Nationalist and Communist China, which hinges primarily on the rhetoric of political leaders, is unable to explain to contrasting approach the People's Republic of China (PRC) state undertook regarding ethnocultural taxonomy. The Republican-era governments (1912-1948) did not instigate any official taxonomic ethnographic investigation or categorisation of the Chinese population as a whole (T. Mullaney, 2010a).

In contrast to the Nationalist State, after the victory in the Chinese Civil War (1946-1949), the new PRC regime not only sought recognition from various peoples in the frontier regions, but also sponsored extensive research projects intending to confirm, classify, and in some cases identify the people and distinguishing them using officially recognised toponyms. By 1954, 38 ethnic groups (*minzu* 民族) were confirmed, using a mixture of self-identification through census, as well as the use of the Soviet Central Asian classification scheme (Brophy, 2016:257,8; Tong & Li, 2001:13), Republican-era classification in the southwestern provinces (T. Mullaney, 2010a:68), and quite possibly ethnographic knowledge about peoples in Manchuria and Mongolia produced by Russian and Japanese scholars (Christmas, 2016:33; Duara, 2004:182, 2006). The remaining groups were classified through fieldwork conducted after the establishment of the PRC. The ethnographic fieldwork and research, which lasted for 30 years, mainly due to the interruption of the Cultural Revolution, gave rise to the current state-sanctioned multinational understanding of China made up of 56 officially recognised ethnocultural groups. The Chinese concept used to encapsulate internal cultural diversity is

minzu, which is officially translated as nationality due to the early influence of the Soviet Nationality Policy.

The Chinese ethnographic state, ushered in by census, fieldwork, ethnological theory, and encyclopaedic ethnographic volumes, produced two primary outcomes that laid the historical roots for current ethnic tensions and Chinese state repression in Inner Asia against minorities. The first is the creation of *minzu* as an institutionalised ethnocultural category that all citizens are assigned. One's *minzu* is indicated on the national ID card alongside name, date of birth, gender, and address. The ethnographic state had created an immutable and institutionalised ethnocultural identity for all Chinese citizens. The Constitution of the PRC confers official status to 'all nationalities' as well as guaranteeing their rights to self-government and autonomy (Constitution of the People's Republic of China, 2004). However, the visibility and immutability of *minzu* identity also renders minority groups particularly vulnerable to discrimination and governmental problematisation. Moreover, by rendering the human diversity within the former empire as knowable and finite, the identity of the majority Han is stabilised against the internal other. In doing so, the ethnographic state helped to institutionalise the world's most populous ethnocultural category. The second crucial consequence of the classification project is the establishment of *minzu* as a scientific concept deployed in research and governance. Where did this ethnocultural taxonomy come from?

Aside from the obvious soviet influence and dogma of Stalinist theory of nationalities, the *minzu* theory (Jiang & Huang, 1994; Stalin, 1929), the architects of the communist state's official ethnological theory of *minzu* were heavily influenced by the principles of British Functionalist Anthropology. In the 1950s, the Functionalist anthropologists at the service of the PRC ethnographic state, surreptitiously introduced elements of British colonial anthropology and their own views on the question of ethnocultural diversity into the ethnological dogma of the PRC. By the end of the 1930s, Functionalism became a canonical school in British academia in part due to the entanglement between the search for scientific legitimacy of indirect rule in British Africa and anthropologists' quest to discover a universal scientific schema of culture through intensive fieldwork (Turner and Maryanski, 1979, Foks, 2018, Mills, 2005). The aim of Functionalism was to provide universal laws that can be used

to observe and categorise different functional aspects of a given culture (Turner and Maryanski, 1979:47). The functionalist understanding of culture evaporated the temporal hierarchy between advanced cultures and 'primitive' cultures by emphasising on shared social institutions required to fulfil functional needs.

The Functionalist influence in the Communist ethnographic state is not hard to fathom. After the defeat of the Nationalist regime in 1949, many prominent academics left Mainland China for Taiwan. In contrast, some scholars chose to remain in China after the end of the civil war in 1949 and formed the bulwark of the Communist regime's ethnographic research team. Among them were left-leaning scholars affiliated with foreign missionary universities in China, in particular the sociology department at the Yenching University of Peking. Prior to the Communist takeover, this group of scholars had developed a specific understanding of ethnic differences in China in opposition to the nationalist party's hegemonic claims of racial homogeneity. Their understanding of ethnic differences was shaped by the methodological penchant for intensive fieldwork and informed by the Functionalist's theory of culture (Wang, 2010).

Therefore, in the early days of the Communist state, ethnographic knowledge production was a Functionalist influenced endeavour rather than a Chinese variation of the Soviet Stalinist dogma. The participation of the Chinese social scientists provided not only the technical expertise needed to constitute human diversity in China as a governmental problem for the socialist revolutionary state but also established a substantialist understanding of *minzu* as ontologically equal and culturally distinctive groups. The new 'scientific' articulation of *minzu* influenced and legitimised the Chinese Communist regime's ethnic taxonomy and frontier policies in the early 1950s.

Many social scientists involved had been directly taught by Anglophone Functionalist anthropologists or studied under the tutelage of their students. The sociologist and anthropologist Lin Yaohua (1910-2000), for instance, was supervised by Alfred Radcliffe-Brown and wrote his PhD thesis using Radcliffe-Brown's Functionalist approach to the

sociological concept of the clan (Freedman, 1963). Fei Xiaotong (1910-2005) obtained his PhD from the LSE under the supervision of Bronisław Malinowski and formed a close friendship with Raymond Firth, who took over from Malinowski as the chair of LSE's anthropology department in 1944. Today, Fei Xiaotong's ideological cum anthropological theory of China's unity in diversity is often cited as the intellectual authority of ethnocultural policies by top Communist officials, including Xi Jinping (Xinhua, 2019). The Tibetologist Li Anzhai was a lesser known but nonetheless influential Functionalist scholar who aided and shaped the frontier/ethnicities of the nascent Communist state. In 1950, prior to the invasion of Tibet by the People's Liberation Army, Li led his entire faculty of the frontier research institute at the West China Union University to form the policy unit of the Communist 18th army (Sun and Wang, 2019:61).

This chapter focuses on the co-production between the global circulation of scientific knowledge and specific state-building projects. I argue that to better understand the significance of scientific knowledge, we need to pay attention to the situated and hyperlocal nature of scientific practices despite their global appearance (Livingstone, 2003, 2005). This focus will allow us to understand how specific forms of scientific knowledge became established through its imbrication with political rationalities undergirding modern governmental problems such as diversity, nutrition, air quality etc. The uneven political landscapes upon which scientific ideas circulate and are implemented by specific practitioners of science show that the political significance of a globalising Science lies not in the production of international order through convergence (cf. Allan, 2018). Instead, the global circulation of knowledge enabled by the networks of professionalised scientific practitioners can be implicated in the production of heterogeneous political orders with global consequences down the line.

The chapter is based on my historical research on 1930s Chinese social science journals and personal letters in the LSE Archive undertaken in 2021. I use the development of 1930s Chinese social anthropology and the production of ethnographic knowledge as an example to demonstrate the importance of local practices and contexts which enabled modern Social Science into a global phenomenon. The site of encounter and exchange in 1930s China was

not only located between China and the West but also situated within the context of Chinese nation-building, settler-colonialism, and the real possibilities of territorial disintegration at the hands of frontier nationalist movements and Japanese imperialism. The global mobility of scientific methods and theories, the transnational professional networks of specialised scientific disciplines, and the entanglement between knowledge production and political orders help to organise specific human or nonhuman phenomena as objects of scientific inquiry. In the 1930s, the focus of ethnographic knowledge on 'native peoples' and the political salience of applied anthropology meant that ethnographic knowledge production was a critical site through which the demographic units of international politics were understood and constructed. Republican-era China (1912 – 1949) was not an exception to the wider global process. However, the historical process examined in this chapter shows that the political effect of globally circulating forms of knowledge needs to be understood in combination with the situatedness and contingency of specific knowledge claims in action.

In the first section, I outline what IR can learn from the granular and decentred approach towards the study of modern science as a global phenomenon, as well as what IR can offer to the impasse posed by the disjunction between suitedness of science in practice and its global mobility. Through a discussion on the contingency and the symbiotic relationship between globally circulating ethnographic knowledge and various state-building and empire-building projects, I argue that the concept of the ethnographic state encapsulates the co-production between ethnographic knowledge and the state. The empirical section proceeds largely in a thematically organised chronological fashion. In the first section, I demonstrate how and why the British Functionalist School became influential among Chinese social scientists. In the second section, I argue that both the monogenesis as well as the multicultural understanding of the Chinese nation had their groundings in distinctive and divergent scientific claims and forms of ethnographic knowledge. Nevertheless, despite the political marginalisation of the Functionalists in China under the Nationalist Government, they were able to survive owing to their connection to transnational support and intellectual exchanges. Finally, I demonstrate how the Functionalist understanding of culture, envisioned as a part of the scientific approach to British colonial administration, has managed to find its way into the Communist ethnographic state.

LOCATING THE HISTORY OF SCIENCE IN THE HISTORY OF INTERNATIONAL RELATIONS

Recent IR works that deal explicitly with modern science have shown how scientific developments are not only shaped by imperial expansion and state-building but also configured by the changes taking place in the international system. There are two notable approaches to understanding the co-producing relations between science and political order (Jasanoff, 2004). The first approach, as seen in Yao (2021), follows the established IR approach to the political effect of knowledge and continues to conceptualise the influence of modern Science in terms of its effect on subjects' attempt to navigate the hierarchical and unequal terrain of international institutions and scientific explorations. The second approach focuses on the emergence of governance objects such as the economy and climate – how knowledge, artefacts, physical phenomenon, and practices are combined to create forms of problematisation that the states can address (Allan, 2017a:13). The cosmological transformation ushered in by the scientific revolution in Western Europe, Allan claims, is responsible for the (re)orientation of state purposes towards the improvement of governance objects like the 'economy', 'society' or 'climate' (Allan, 2018:24).

The governance object research approach based on the idiom of co-production between science and political order (Jasanoff, 2004) can help us understand how taken-for-granted units/objects in the modern international system are constituted historically. The contested and evolving scientific status of specific knowledge claims is not merely instrumental to or derivative of political orders but shows how historically contingent ways of constituting and understanding objects of governance can give rise to different ways of control and governing (Braun, 2000; Foucault, 2007; Scott, 1998). The instrumentalist understanding of science, aptly termed by Peter Dear as the ideology of modern Science, allows for the myriad of distinct and contingent forms of instrumentality to be seen as proofs of the universality of scientific claims (Dear, 2005). In IR's historiography of the modern international system, the ideology of modern Science manifests itself via the coalescing of scientific technologies with political technologies. Buzan and Lawson, for instance, attribute the emergence of Global

Modernity to a configuration of industrialisation, rational state-building, and ideologies of progress (Buzan & Lawson, 2015:35). Without evoking the term modern science explicitly, the emphasis on technological advancement, rationality, instrumentality, and progress all closely connected with the modern ideology of science (Dear, 2005; Tilley, 2019).

The territorial state, as I argued in Chapter 2 and elsewhere (Li, 2022), is an example of how political transformation cannot be separated from nor colluded with technological innovation and epistemic shift. Modern territoriality as the coalescence of sovereignty, state, and territory has been the defining feature of the modern international system (Elden, 2013; Murphy, 2013). Intuitively, the development of modern science and technologies has been detrimental to the universalisation of the modern territorial state as well as its subsequent decline in prominence. Modern territory as the calculative and volumetric understanding of space (Elden, 2010) is dependent on the political ascendency of technological innovation such as geometric surveying and cartography (Goettlich, 2021; Goettlich & Branch, 2021). The conception of the state as the instrument of anthropogenic control over a demarcated physical landscape is dependent on the distinction between human beings and nature (Latour, 1993b; Whitehead et al., 2007). The understanding of territory simply as a demarcated material backdrop or physical landscape suggests that human beings are conceptually separated from the natural environment through the separation between social and natural sciences (Castree & Braun, 2001). The landscape is first separated and only then to be inscribed with *social* meanings and political significance (W. Mitchell, 1994). Seen in this light, modern territoriality cannot be separated from the underlying technological and epistemic foundations of modern science (Branch, 2017).

Allan's conceptualisation of the role of modern Science via its transformative effect on the basic political unit of the modern international system – the state, as well as the shift towards governance object, offers a rewarding research direction away from the subject-centred, instrumental view of science. In doing so, we can better distinguish scientific and technical knowledge from political knowledge and extrapolate the constitutive effect of scientific knowledge (Barry, 2013; T. Mitchell, 2002). These insights cannot be gained by colluding scientific knowledge with subjectivities and hierarchies. However, as Chapter 2 demonstrates,

neither the adoption of European cartographic technologies nor the modernist conception of territory could explain the emergence of a territorialised understanding of China. Political processes and epistemic transformations that are ostensibly global, upon closer observation, are contingent on specific historical, cultural and socio-political contexts rather than being the outcome of a fixed set of prerequisites. Can we simply explain the global political transformation through the (now debunked) classic Eurocentric narrative of the history of science as the Scientific Revolution, Darwinian evolution, and scientific racism, and finally culminating in the scientific and technological supremacy of the contemporary United States (Delbourgo, 2019)? Allan's recent work appears to have offered an affirmative answer in the absence of any attempt to consider the coeval extra-European process as well as transnational and transcultural exchanges beyond the West/non-West binary (Allan, 2018; F. T. Fan, 2012; Feichtinger, 2020c; Marcon, 2020). Instead, his mechanism of how cosmological shift diffuses through the international system remains anchored in an unjustified archival and methodological privileging of certain core European sites of knowledge production and associated networks (ibid:54).

What Allan has not engaged with is the situated, hyper-local, and unstable nature of scientific knowledge (Haraway, 1988; Livingstone, 2003). Here IR can benefit from the History of Science's engagement with the contradictions between the universality of scientific knowledge and the local and contingent nature of knowledge in practice. To resolve the ostensible contradiction between the global coverage of modern Science and its Eurocentric provenance, historians of science are focused on the processes through which modern Science becomes global. One approach in the History of Science that consciously opposed Eurocentric diffusionist understanding is to foreground imperial and colonial practices of science (Anderson, 2018; Chakrabarti, 2021; Tilley, 2010). Another approach is to focus on networks and circulations that cut across geographical scales and political binaries (Feichtinger, 2020c; Raj, 2007, 2013, 2017). The notion of ‘circulation’ has been deployed to address explicitly the globality of science and the importance of European power without reproducing a Eurocentric teleology of progress. More importantly, focusing on networks of circulation helps us to understand how the local variations are connected to the seemingly universal applicability of scientific methods and knowledge (Roberts, 2009). Both intellectual

developments have pushed the works in the history of science towards local conditions wherein globally circulating ideas, people, material technologies and objects interact in politically uneven yet co-constitutive manners (Chambers & Gillespie, 2000). The mobility of scientific knowledge and practices measured through circulation between metropoles and colonies, across and between colonies, renders not only the notion of a distinctive form of colonial science but any geographical provenance of modern science a contestable position (Tilley, 2011:11).

The devasting challenge to the diffusionist understanding of science as European/Western in the history of science comes from the empirical richness of works that show scientific practices is situated and fragmented (Anderson, 2018). Rather than treating modern science as an immutable monolith, the circulatory approach shows that scientific knowledge is produced through encounters and interactions between different epistemological communities and displaces the teleological understanding of science by granular historical reconstructions of the mutability of scientific knowledge and practices (Feichtinger, 2020, Marcon, 2020, Raj 2013).

The recognition of the fragmented, incommensurable, and multiple histories of modern science as a global phenomenon challenges the subliminal Eurocentric approach that recognises non-Western forms of knowledge only when they contribute to the planetary North American and European notions of modern Science (Chakrabarti, 2021)or conform to the sacrosanct philosophical and epistemological status of capital S Science (Latour, 2007). The problem that emerges from the recognition of the heterogeneity of knowledge production activities and the incommensurability between the geographical and cultural contexts within which these activities are situated is the contradiction between global mobility and local fragmentations (L. Roberts, 2009). The problem with the Latourian network approach, as Anderson points out, is that the '*thin descriptions of conventional hydraulics*' such as flow, circulation and networks negate the uneven and messy political and hierarchical landscape upon which knowledge, objects, and people traverse (Anderson, 2018:F; Fan, 2012:252). Moreover, by focusing overtly on the global and the circulatory, we lose sight of the differentiated political effects this knowledge produces locally as well as their co-

production with political circumstances that place specific. As I have shown in Chapter 2, the same set of technology can produce very different arrangements, scientific texts and practices do not travel in the same way. Scientific artefacts such as maps and texts might appear to be immutable mobiles, their meanings are always mediated and subject to local interpretations and dependent on the individuals and historical contexts that facilitated their mobility (Livingstone, 2003, 2005)

One strategy forward appears to be a recognition of the reductive effects our interpretative categories, however critical and emancipatory, can have on the nuances and complexity of historical contingencies (Marcon, 2020). The term 'science', for instance, when deployed uncritically, can erase the disparate activities that constitute its global and universal character (Livingstone, 2003:15). Another insight is to recognise that the mobility of scientific knowledge does not dissolve its local character, although forms of knowledge are not constrained by power relations, the scientists, institutions, and the material infrastructure that enable scientific practices nevertheless are contingent on the unevenness of social relations (Jordheim & Shaw, 2020:8).

The impasse posed to the historian of science by the political processes through which certain knowledge becomes reproduced, circulated, and reified as scientific ones (Fan, 2012; Jordheim & Shaw, 2020; Latour, 1993a) is what interests us IR scholars. The turn to hybrid entities such as the economy or climate shows how specific scientific ideas, practices and technologies are politically salient in the constitution of governmental problems and the underlying normative assumptions of the international system (Allan, 2017a, 2018). Nevertheless, the sweepingness of IR scholars' concern with globality means that the answer, paradoxically, is inevitably a partial one owed to its negation of the 'local' and the 'particular' which the historians of science are more willing to engage with at the cost of destabilising the concept of science itself. For now, the international, or the ‘transnational’ appears to be a more comprehensive approach to approaches that focuses on a smaller geographical scale. However, as I have argued in Chapter 2, inadequate attention to ‘local’ variations misses crucial historical cues about the autochthonous and polycentric origins of larger global

historical processes and the legibility of the global or the international as a geographical scale and a taken-for-granted object of inquiry.

The analytical strategy I wish to propose here, rather unoriginally, is to combine the granular approach towards local specificities and global circulation in the History of Science with IR's attentiveness to political effects of global significance. In the next section, focusing on the production of ethnographic knowledge by modern social science disciplines, I argue that the global circulation of ethnographic knowledge and the need for different political authorities to demarcate and categorise their populations create a symbiotic relationship between ethnographic science and the state. More importantly, the global circulations and the constitutive effects of scientific practices and expertise have on specific forms of political rationality means that the symbiotic relationship can give rise to different forms of ethnographic states around the world.

ETHNOGRAPHIC KNOWLEDGE PRODUCTION AND THE ETHNOGRAPHIC STATE

The political salience of sociological categories such as nation, race, and ethnicity are closely associated with the global spread of self-determination and popular sovereignty in the twentieth century (Brubaker, 2017; Calhoun, 2003). Knowledge about what these entities are, the relations between them, and their inner workings from the understanding of the basic makeup of world politics. The scientific status of knowledge of human diversity is therefore constantly contested due to the ability of the 'object' of ethnographic knowledge to object to what is said about them, and the myriad of political projects based on conflicting categories of inclusion and exclusion.

Although much of today's social scientific efforts are focused on deconstructing or historicising such categorisations, at one point or another in history, these notions had been the subject of reputable scientific activities. The question of national character (*volksgeist*) first emerged in the ninetieth century German Romanticism move toward cultural relativism

(and nationalism) can still be found in the seminal work on the Japanese national character by Franz Boas's student Ruth Benedict in the wake of the Japanese defeat in the Second World War (Eriksen and Nielsen, 2015). The disputation of the biological and hierarchical understanding of race, as Brubaker notes, relies on the scientific authority of biology and the shift from typological thinking to population and statistical thinking (Brubaker, 2017:49). As Barry argues, it is not enough to only pay attention to the political effect of knowledge, but we should also pay attention to the content of specific claims to scientific knowledge that have acquired political salience (Barry, 2013).

In other words, we need to examine how specific forms of scientific rationality are constitutive to, rather than merely instrumental political rationality (Braun, 2000). On the one hand, the political effect and indeed even scientific credentials of these categories are tied closely to processes of colonial expansion and state-building. Yet, on the other hand, the changing status and meaning of these categories are also dependent on the shifts in scientific practices and theories (Brubaker, 2009:29). The academic shift from an objectivist understanding of ethnicity as a cultural phenomenon to inter-group dynamics (Barth, 1969) paved the way for the subsequent governmental orientation towards the pluralistic promotion of ethnic and cultural differences and the rendering of ethnicity as the object of affirmative action in the U.S. (Dorman, 1980).

Both colonial empires and nation-states relied on codified and institutionalised forms of difference to either maintain hierarchically or the right-based principle of political participation (Cooper, 2005). The processes of identification, the taxonomy used in codification, and the epistemic foundation for understanding differences between people are all dependent on the production of ethnographic knowledge by travellers, missionaries, agents of state institutions, as well as ethnographers. What I mean by ethnographic knowledge refers to the textual description/translation of holistic descriptions and experiences gathered through fieldwork (Vrasti, 2008:282) as well as the analysis of culture or society. Given the political implication of identifying, categorising, and understanding forms of difference between human beings, it is not difficult to conceive why the emergence, professionalisation and indeed the demise of scientific disciplines concerned with the

production of ethnographic knowledge are intimately linked with national, imperial, and colonial state-building efforts.

The symbiotic relationship between the consolidation of political authority within a territory and scientific endeavours geared toward the accumulation of ethnographic knowledge can be captured by the notion of the 'ethnographic state'. Unlike a colonial state or a nation-state, the ethnographic state does not describe a specific type of governance. Instead, in its original conception by Dirks, it describes the historical processes of co-production between academic, social knowledge and colonial rule (Dirks, 2001). As with other relations of co-production, the ethnographic state is both accidental as well as by-design. In Dirk's study of ethnographic knowledge production in colonial India, the institutionalisation of the caste system in India was made possible by the entanglement between colonial administration, census, and Indian anthropology. Rather than a case where ethnographic knowledge was merely put to the service of colonial governance, the opposite was perhaps true. The entanglement between ethnographic knowledge and the colonial state was enabled by people who acted as the conduit between administrative and academic forms of knowledge (ibid:53). The caste system as an object of colonial governance was then reified and reproduced by post-war academic anthropology of India in an ironic bid to overcome colonial and Western understanding of India (ibid).

The relationship between caste in postcolonial India and the colonial ethnographic state shows not only that knowledge can have unintended impacts on state-building, but the variety of state-building projects can also influence the scientific claims of ethnographic knowledge. Ethnographic knowledge is not a substitute or proxy for political power, but it is sometimes accountable for the specific configuration of colonial, imperial and monarchic rule in different parts of the world. Human diversity can be conceptualised and problematised in different manners, allowing for different forms of ethnographic knowledge and state responses. Steinmetz's study of the German' native policy' shows how different understandings of the colonised peoples can lead to drastically different policies, ranging from 'Sinophilia' in Qingdao to genocide in Namibia (Steinmetz, 2008)In the case of Morocco, the French colonial ethnographic missions helped to construe a distinctive Moroccan Islam

that was utilised as a source of legitimacy by the Moroccan monarchy after independence (Burke III, 2014)The opposite can also be true, where the type of state-building can determine the type of ethnographic knowledge that becomes reified as scientific fact. The anthropologies of empire, for instance, are different from the anthropologies employed in nation-building owed to the contrasting focus on 'darker skinned natives' and the internal other (Stocking, 1982:172). Whereas ethnographic knowledge has aided the European colonial empires to demarcate distinctions between the colonisers and 'natives', the Soviet Union employed the same technologies of ethnographic research for demarcating Soviet nationalities within the former Russian Empire (Hirsch, 2005).

Terms such as nation, race, and ethnicity are invoked to explain world politics because they are at once analytical terms used in the production of ethnographic knowledge as well as categories of political practice (Brubaker & Cooper, 2000:4). The relationship between scientific analysis of difference and the political practices based on difference, as the diversity of different forms of ethnographic state has shown, must be understood in its specific historical and local context. Nevertheless, the production of ethnographic knowledge is not siloed in their specific national and imperial circumstances and is done in isolation from each other. Instead, ethnographic knowledge productions were connected not only by the historical backdrops of imperial hierarchies and nationalisms but also by the global circulation of practices, ideas, and people that constituted modern ethnographic scientific disciplines such as anthropology, ethnology, and sociology. The circulation of scientific concepts, as well as their associated theories and practices, have enabled terms such as race, nation, and ethnicity to become global.

The universal appearance does not imply that these terms mean the same thing and are used in the same way globally. At first glance, the global coverage of concepts such as race, nation, and ethnicity and their centrality to the dominant political unit of our time: the nation-state suggests the instigation of an international order organised by the coalescence of popular sovereignty, demarcated territory, and centralising state authority. However, the universal categories of nation, ethnicity, and race are differentially constructed in different states (Gladney, 1998b, 1998a). Not all states are nation-states, many states of our world today are

often styled as multiethnic, multicultural and/or multinational from the vast Eurasian empire such as Russia to the smaller ethnic mosaics such as Laos (Hirsch, 2005; Pholsena, 2002). Far from generating a singular configuration between territory, population, and political authority, the proliferation of mutually exclusive ways of conceiving human diversity enabled by the production of ethnographic knowledge and its global circulation appears to be producing different ways of ordering the relationship between a (diverse) population and demarcated territory. Far from being a stabilising factor to the sovereign territorial state, ethnographic knowledge can also be used to create national, ethnic, and indigenous claims that challenge both territorial demarcations and popular sovereignty.

The contrasting historical trajectories of different state-building projects and their associated forms of ethnographic knowledge can be seen in the emergence of distinctive national traditions in anthropology (de L'Estoile et al., 2005:17). The problem with over-emphasising the circulatory nature of knowledge is that we miss how the same conception about human diversity can end up producing different objects of governance from national minority to indigenous 'first nations' depending on the specific context within which the knowledge is deployed. In a similar vein, taking the dependence of the scientific community on state support and institutionalisation too literally means that we might miss how the empiricism and productive power of scientific practices can undermine and transform the institutional setting (Tilley, 2011:23). In a study of 1930s French colonial ethnologist Conklin shows that although the ethnologist was dependent on the racist practice of imperial governance to advance professionally, they nevertheless produced knowledge that would destabilise colonial rule (Conklin, 2013:192).

This contingent, bottom-up, polycentric character of transnational scientific practices' effect on political orders will be lost if we discard the insight that all scientific practices are inevitably situated. Bentley Allan's study of how the influence of the Functionalist school of Anthropology on the British Colonial Office ultimately transformed the 'ideational and institutional structure of international order' is an example of how the productive effect of scientific practices can be obscured by the abstraction required to conceive the said effect through the equally abstract notion of 'international order' (Allan, 2018). The central tenant

here is that the new social knowledge and expertise, typified by Malinowski and his associates at the LSE, eventually altered the stance towards the development of the colonies from indirect rule based on evolutionism to an interventionist stance directed at new objects such as the economy and public health (ibid). In doing so, the state's purpose is transformed into the development of human welfare (ibid:203). Allan's observation is compelling in capturing the productive effect of scientific knowledge and its constitutive role in *specific* forms of political rationality. Nevertheless, the reliance on a Eurocentric definition of international order simply as British colonial order and post-war international organisations means that he overlooked the concurrent processes of state-building where the very same scientific theory and practices also played a role, albeit perhaps a very different one. There is no singular international order but various ways of ordering the relationship between the demarcation of territory and the demarcation of population based on shared categorisation and global circulation of objects, people, and knowledge. The diversity of orders tends to be visible at the meso-level, which is in the context of the modern international order. Different state-building and imperial projects have deployed ethnographic schema and theories of nation and race for different political purposes (Conklin, 2013; de L'Estoile, 2008; Duara, 2006; Kerr, 2017; Mattson, 2014).

The main issue I have here with Alan's fascinating case study is not in his conclusion. The Functionalists' emphasis on ethnographic empiricism and the scientific approach to colonial governance based on their specific understanding of culture did impact British colonial discourse and international politics at large (Tilley, 2011:311). Instead, the limitation of his work stems from the geographies of knowledge (Livingstone, 2003, 2005, 2010; Naylor, 2005; Powell, 2007) within which these globally circulating scientific theories are utilised. The flattening of contexts enables the inflation of a singular case as the microcosm of international order at large. Yet a closer examination of the British Functionalist School's influence reveals that its symbiotic relationship with colonial discourse hinged on particular and situated historical contexts that are simply not applicable beyond the contestation between white settler rule and indirect rule (Foks, 2018). I will outline two omissions in Allen's work that are crucial to the political salience of the ethnographic knowledge produced by Functionalist anthropologists: In the colonial context, the omission of African and Caribbean

scientific interlocutors of the Functionalists, who later became prominent politicians, reduced the colonial subjects to figures capable of only producing anti-colonial polemics, rather than scientific co-producers of the ethnographic knowledge crucial to the development of Functionalist theory (Matera, 2010). In the metropolitan context, the political salience of Functionalist theory cannot be separated from the supporters of indirect rule and financial support from the Rockefeller Foundation which advocated against colonial rule based on narrow national interests (Foks, 2018). As I intend to demonstrate in my case study, in a different political context, the Functionalist School's approach to culture and human diversity can yield a very different type of political order and different forms of political rationalities.

This chapter is concerned with how the Functionalist theory of culture travels in the international context of the 1930s and 1940s. The influence of Functionalism cannot be divorced from the concurrent efforts of state-building and nation-building beyond the European colonial world. In Malinowski's scientific theory of culture, all human cultures can be explained via a universal scheme that sees different societies as differential arrangements of universal social institutions that are responsive to the same basic instrumental needs (Malinowski, 1944). In the British colonial context, this approach to culture, as Allan suggests, can displace 'race' and 'nation' as the target of policy interventions. However, in the context of nation-building, the ontological equivalence ascribed to all cultures can challenge the problematisation of cultural differences in the name of development. Instead, the emphasis on the utility of ethnographic knowledge to governance can transform cultural groups into objects of governance. Seen in this light, Allan's claim that Functionalist ideas have simply altered state purpose at the international level is comparatively modest to the possibility that the global circulation of ethnographic knowledge may have played a constitutive role in determining the basic units used to understand the demographic makeup of the world.

In the following sections, I show the development of Social Anthropology in 1930s China was entangled with the global circulation of scientific concepts and practices, principally the

British Functionalist School[13]. The methodological and theoretical approach deployed by the Chinese social anthropologists in their research of cultural diversity in China has not only provided the ethnographic expertise and scientific basis for the multinational conception of China promulgated by the Communist regime in China, but in doing so, they've also established the largest ethnic group in the world as a scientific fact. Before I do that, however, some contextual knowledge about the concept of *minzu* is needed.

MINZU AND THE MULTINATIONAL CONCEPTION OF THE MODERN CHINESE NATIONHOOD

Both the content and political consequences of categorisation of people based on notions such as nation and race differ across historical and geographical contexts (Brubaker, 2009:30). The semantic incongruence caused by translation is just the first order of the problem when it comes to the significance of terminological differences. Terms such as nation, ethnicity, and race cannot simply be transplanted into different linguistic and historical contexts with reductionism. Moreover, the categorisations and their reification by political and/or scientific authorities in one place are dependent on practices elsewhere (Goldberg, 2009).

The Chinese term *minzu*, not dissimilar from race, ethnicity, and nation, is indicative of the close association between knowledge production about the *perceived difference*s between people and the histories of empires and nation-states. The term, which emerged in the ninetieth century, shares the same etymological roots with its Japanese and Korean equivalences as a neologism for the German word *volk* (Morris-Suzuki,1998; Leibold, 2004:165). Depending on the historical period and context, *minzu* can be translated into English as the nation, nation-state, people, ethnicity, and nationality (Crossley, 1990). In its early twentieth-century usage, *minzu* had also been the term through which racialist and biological conception of the Chinese is expressed (Dikötter, 1996). For some Han nationalist

[13] The Chicago School of Sociology, and the concept of *ethnos* articulated by Russo-Chinese ethnologist Shirokogoroff too are important globally circulating scientific knowledge that shaped latter-day Chinese ethnological theorising of *minzu.*

thinkers, the term *minzu* was deployed to support a homogenous Han republic against the inclusion of Tibetans, Mongolians, and Muslims in China (Esherick, 2006; Zhang, 1907). In a different usage, first articulated by the constitutional monarchist intellectual Liang Qichao, who coined the modern term for the Chinese nation (*Zhonghua minzu*), the Chinese *minzu* will become the largest *minzu* in the world through fusion and assimilation(Jia, 2018; Leibold, 2004). In his explicitly anti-colonial articulation of the term based on the principle of national self-determination, the term *minzu* used by nationalist leader Dr Sun Yat-sen becomes the collective term for all Chinese people (Leibold, 2004).

Despite its complicated history and potentially incendiary meanings, the term not only forms the contemporary nomenclature of the Chinese nation but also the name of the academic discipline of ethnography (*minzu xue*) and is used for the administrative designation of separate ethnonational groups (such as Uyghurs and Tibetans). In the official discourse, the Chineseness of people categorised as Tibetans and Uyghurs is unquestionable. The Constitution of the People's Republic defines China as a 'unitary multinational state created jointly by the people of all its nationalities' (Constitution of the People's Republic of China, 2004), and the Han ethnic majority is only one among the fifty-six recognised ethnonational groups.

The multinational understanding instituted by the Communist regime in 1949 contrasts sharply with its Nationalist predecessor. Chiang Kai-shek's regime was ideologically committed to the monogenesis conception of the Chinese nation (T. Mullaney, 2010a:26). Starting in 1928, the Nationalist government began to abolish special administrative status granted to frontier peoples and established provinces in places such as Inner Mongolia, Kham and Kokonor. In 1942, in a bid to seek to limit the usage of ethnocultural taxonomy given to non-Han peoples, the state ordered that all non-Han groups should be collectively referred to as frontier *minzu* rather than minority *minzu* (S. Yang, 2012). Of course, in practice, the enfeebled Nationalist regime had to rely on the collaboration of both frontier aristocratic elites and Han military strongmen (Leibold, 2005, 2007; H. Lin, 2011). Nevertheless, the regime advocated for a monogenesis understanding of the Chinese nation and denied the existence of different cultures within China. Chiang's ideological treatise *China's Destiny,*

which was published in 1943, proclaims that all Chinese citizens share the same bloodline as prehistoric ancestors (Chiang, 2013).

The Communist leaders had a different ideological disposition towards the question of diversity. In Mao Zedong's treatise '*The Chinese Revolution and the Communist Party of China* ' (Mao, 1939), China is said to be a country made up of different *minzu* despite the variation in the level of civility (*kaihua*). What is worth noting is not just the contrasting approach towards human diversity between the Nationalist government and the Communist state but also the keen interest in delimitation. Mao was notably uncertain about the number of *minzu* in China in his description of the Chinese nation and named only eight different groups. After the establishment of the People's Republic in 1949, the Communist regime not only advocated for a multi-minzu understanding of China it was also committed to identifying and delimiting the exact number of *minzu* living in China.

The state-sponsored endeavours of theorisation, ethnographic investigation, and administrative confirmation, commonly referred to as the '*Minzu* Classification Project', involved a series of collaborations between the Communist state and social scientists in determining the ethnonational composition of China (T. Mullaney, 2010a). By 1979, the number of *minzu* had been established at fifty-six. By radically shifting the meaning of *minzu* as nationality and establishing the multi-*minzu* conception of China as a scientific fact, the Communist regime defined the terms through which human diversity in China would be articulated politically and sociologically. Where did this taxonomy come from? Why did the Communist State become invested in determining the *exact* and *finite* ethnographic composition of China? In the following section, I demonstrate that while the influence of functionalist anthropology was instrumental, its latter-day political salience cannot be separated from the political and academic vision among Chinese social anthropologists and ethnologists during the 1930s, which saw an explosion of ethnographic knowledge production.

THE INTRODUCTION OF BRITISH FUNCTIONALIST ANTHROPOLOGY IN CHINA

The person responsible for the introduction of the Functionalist School of Anthropology in China is Wu Wenzao, who obtained his PhD in 1929 from Colombia University in Sociology and studied under Franz Boas. Wu had become concerned with frontier issues and the political implications of cultural diversity in China during the 1920s. In a 1926 essay, he advocated for a multinational understanding of China rather than the view of China as a nation-state. *Minzu*, in Wu's formulation, is primarily a cultural and psychological concept, and only then a political conception (M. Wang, 2000).

In 1933, Wu was appointed as the head of Sociology at the University of Yenching – a prestigious Anglo-American missionary university that was financed by the Rockefeller Foundation in conjugation with Harvard and Princeton universities(Guldin, 1994) Using his position and influence, Wu introduced and promoted the then-nascent discipline of social anthropology, particularly the British Functionalist school. In 1935, Alfred Radcliffe-Brown, a major intellectual interlocutor of Malinowski and the chair of anthropology at Oxford University, lectured for several months in Peiping (now Beijing) under the invitation of Wu.

Wu was drawn to the empiricism of the Functionalist methodology of intensive fieldwork in his efforts to indigenise social science for China's own circumstances. Malinowski argued that since colonialism was a form of sociological and cultural engineering, then colonial officials must understand the daily lives, languages, customary law, and comparative institutions of the natives (Malinowski, 1929; Tilley, 2011:267). The conception of anthropology as a practical science and the valorisation of 'native' knowledge was empowering to indigenous intellectuals from the British African colonies (Matera, 2010). In the context of China, however, it was empowering in a somewhat different sense. For Wu, the emphasis on respect for native culture and institutions by Functionalism runs parallel to his own emphasis on the importance of Chinese traditions (Liu, 2007). Moreover, the principles of Functionalist colonial governance were also applicable to China’s own ethnocultural frontiers. The 'enlightened colonial policies' advocated by applied anthropology, according to Wu, should be adopted by China in its administration of the frontier regions (BZGL, 1941, vol:5-6:2).

The intellectual exchange between the Anglophone anthropologists and their Chinese counterparts was not simply a Chinese replica of metropolitan Science. The Chinese social anthropologists were attempting something that both Radcliffe-Brown and Malinowski were also hoping to achieve: the transfer of anthropological methods of investigation from 'primitive' to 'complex' societies (Freedman, 1963:3). Wu's interest in Functionalism was not divorced from the practical concerns arising from the collapse of the Qing Empire and what he saw as the incongruence between the teleological understanding of political modernity culminating in the form of a nation-state and Chinese particularities. However, he professes that considering the state as the most powerful form of human organisation in the era of nationalism, the very survival of Chinese culture is dependent on forging a nation-state (Wu, 1938:230). In an introduction of Malinowski's theory of culture, which was not yet published even in English, Wu confesses that the Functionalist conception of cultural differences as the outcomes of specific arrangements of social institutions to meet specialised needs, rather than inherent divergence, is particularly suiting to understanding the changes taking place in China (Malinowski, 1944:40; Wu, 1938:237).

Malinowski appears to be impressed with Wu and his associates' sociological endeavour or at least found the application of Anthropology to ‘complex society in tandem with his own scholarly agenda. In his preface to Fei Xiaotong's *Peasant Life in China*, he wrote:

"… some two years ago I received the visit of a distinguished Chinese sociologist, *Professor Wu Wen-Tsao of Yenching University, and learnt from him that independently and spontaneously there had been organised in China a sociological attack on the real problems of culture change and applied anthropology, an attack which embodies all my dreams and desiderata.*" (Malinowski in Fei, 1939:xxii).

The status of anthropology as a scientific discipline, to him, was dependent on the study of the 'changing native' as well as the 'in-between' cultural formations (Matera, 2010:397).

China was a fascinating location for the study of cultural change - the primary theoretical focus of the Functionalists. The changes that were taking place in China were not only in traditional Chinese societies, influenced by its contact with Modernity but also between different cultures within China itself. In the late 1930s, Raymond Firth, who gained fame through detailed accounts of the 'complexity' of primitive life (Eriksen & Nielsen, 2015), was planning to conduct joint research with Wu and his pupils on the Chinese frontiers between 1937 and 1938. The ambitious fieldwork plan was thwarted by the outbreak of the Sino-Japanese War (1937-1945). Nevertheless, in the correspondence between Firth and Chinese scholars, the planned fieldwork locations were chiefly small rural communities of the frontier areas (Wu, 1937, in Firth/6/2/1). The purpose of such an investigation was for a systematic analysis of the existing social institutions in that area in view of their adaption to their specific geographical and ethnical setting' (Fei, 1938 in Firth/6/2/1).

Under the Chinese Nationalist government (1928-1949), the type of long-term fieldwork based on small rural communities was perceived to be of little value to the state and the academics who collaborated more closely with them (Wang, 2017:95). However, many collaborators indicated in the planned joint research later became principal figures in the Communist state's ethnographic state. Two of them, Fei Xiaotong and Lin Yaohua, who were sent aboard by Wu to obtain their PhDs from the LSE and Harvard, respectively, became prominent theoreticians of the *minzu* theory for the state. A third student included in the proposal, the renowned Chinese scholarly authority on Tibet, Li Anzhai, later became the head of the policy unit attached to the Communist military operation in Tibet in 1950. As the war with Japan intensified and China's major educational institutions relocated to the frontier hinterland, both Fei and Lin worked with the field research station for frontier research set up by Wu with the funding of the Rockefeller Foundation and Sino-British Indemnity Commission (Wu, 1938, in Firth/6/2/1, Leibold, 2007:134). Both Lin and Fei undertook fieldwork research in remote frontier indigenous communities in the Southwest in a Functionalist fashion early in their career.

'Can the Chinese Nation Be?' Chinese Social Scientists and the Production of Ethnographic Knowledge in Wartime Nationalist China

The Functionalists were, in fact, latecomers to the ethnographic knowledge production in China. In contrast to their importance after the Communist takeover, they had been relatively marginalised politically under the Nationalist government. In this section, I show how the Functionalist school came to become established in China despite their political marginalisation owed to both transnational networks of scientific collaborations as well as the personal political and intellectual commitments of the social scientists concerned. More importantly, I demonstrate the division between multinational and monogenesis understanding of the Chinese nation were both responses to the explosion of ethnographic knowledge in 1930s China.

Despite the different theoretical and methodological orientations, Chinese social scientists of the 1930s, supported by the Nationalist Government's Tibetan and Mongolian Commission, Academia Sinica, as well as various provincial governments, carried out extensive research all over the frontier regions of China. A principal aim of the state-sponsored research effort is to investigate the demography, geography, and socioeconomic lives in areas that are under indirect indigenous forms of rule in Southwestern China, Tibetan regions, and Xinjiang (Zhao, 2018:28). The explosion of knowledge production activities on cultural diversity in China, as scholars observed, started to challenge the nationalist dogma of Chinese nationhood, such as the assimilationist stance towards minority groups and the monogenesis understanding of the China nation (Leibold, 2007:134 ; Huang, 2016; Jenco, 2019).

The search for the historical connections between various frontier groups and the Han by ethnologists had the paradoxical effect of raising awareness of cultural diversity within China. In 1939, amidst the wartime political importance of national unity and heightened concerns of frontier nationalism and separatism, a public debate broke out regarding the nature of the Chinese *minzu*. The historian Gu Jiegang, influenced by his Sinophone Muslim intellectual interlocutors, proposed the Chinese nation as an internally plural and emancipatory political

project (Jenco, 2019). In his ()famous 1939 newspaper column, he argued that China is neither a racial concept nor a cultural concept and criticised nationalism owed to its collusion of racialism and culturalism (Gu, 1939). He is critical of the term *minzu* because it is an 'elitist' terminology rather than one used by common people. The cultural groups within China are socially and historically entangled rather than a mutually exclusive form of belonging (ibid). The progressiveness of Gu's civic articulation of Chinese nationhood, according to Jenco, is that he emptied the nationalist's assimilationist approach of its ethnocentrism (Jenco, 2019).

Gu's article ignited an outright confrontation between establishment scholars at the Academia Sinica and critics of Gu's alleged denial of ethnic and cultural diversity. The Sinophone Uyghur Marxist intellectual Jian Bozan criticised Gu for the erasure of minority groups as an example of Han chauvinism (K. (Max) Huang, 2016). Wu Wenzao and Fei Xiaotong also publicly refuted Gu's claim from their scholarly perspective. Fei invoked Malinowskian empiricism in his critique and referred to *minzu* as a scientific category based on observable fact. For him, the histories of interaction between different groups cannot eliminate the cultural, linguistic and physiological distinctions which demarcate the various *minzu*. It is not the existence of *minzu* that causes separatism. Instead, the causes of separatism need to be understood via the relationships between different *minzu* (Fei, 1939b). The empiricism and depoliticisation of *minzu* expressed in Fei's critique already herald the latter-day approach to cultural diversity in the early days of the Communist regime (Fei & Lin, 1956).

The establishment scholars were alarmed by Fei and Wu's cultural relativism and ethnographic activities. The head of Academia Sinica's Institute of History and Philology, Fu Sinian wrote in private correspondence that Wu's research activities should be banned for using the 'advanced colonial scientific methods' to sow the seeds for tribalism (Fu, 1939 in K. Huang, 2020:20). The politically charged nature of the debate between academics is not hard to fathom. The production of ethnographic knowledge by Chinese social scientists had been entangled with the nation-building and geopolitics of the Chinese Republic since its inception. The Japanese conquest of Manchuria and the establishment of Manchukuo headed by the former Qing emperor in 1931 elevated the political significance of frontier ethnographical

knowledge. In Manchukuo, Japanese ethnologists, following Russian imperial ethnic/racial taxonomy, had forged an ancestral link between indigenous peoples of North-eastern China and the Russian Fareast with Japanese and Koreans through the notion of the Tungus race (Duara, 2004:186). Sino-Muslims in Japanese imperialist discourse were also presented as culturally and racially distinct from the Han Chinese and closer to Arabs (Hammond, 2020:60). The rise of pan-Thai nationalism and racial ideology of the Phibun regime in the 1930s alarmed the borderland Chinese authorities in areas inhabited by a substantial *Tai* population. The Thai military dictatorship, employing the same British colonial taxonomy of peoples in Southern China that was later used by the Communist ethnographers, disputed Chinese control of southwestern provinces (Chan, 2019:330).

In terms of the view on human diversity within China, the social scientists of the 1930s and 1940s were divided between the ethnologists affiliated with Academia Sinica and the social anthropologists working at universities established by Euro-Americans and funded by foreign backers such as the Rockefeller Foundation or the Sino-British Indemnity Commission[14]. The key figures of ethnology associated with the Academia Sinica were more amenable to evolutionary and diffusionist theories of cultural differences. They were interested in providing a systematic and historically grounded explanation of cultural variance within a territorially defined China.

In the 1920s, due to the intellectual influence of the environmental determinism of Elsworth Huntington, the relations between Han Chinese and frontier peoples were often articulated in overtly racialised terms of Han superiority (Chen, 2012). The founder and the first president of Academia Sinica, Cai Yuanpei, coined the Chinese translation for ethnology using the word *minzu* (*minzu xue*). The choice of terminology was a sign of a deliberate attempt by Cai to interject and leverage scientific authority in the wider debate on Chinese nationhood (T.

[14] The division is also referred to as the North-South divide, with the Academia Sinica (based in Nanjing) being the 'Southern School' and the Yenching University (based in Beijing), which was the hub of the British Functionalist school of Anthropology being the 'Northern School'. See Wang Mingming's works for an excellent genealogy for the intellectual divide (M. Wang, 2010a, 2010b).

Mullaney, 2010a:750). Influenced by his training in ethnology in 1920s Germany, Cai distinguished ethnology, which studies ethnic cultures, from anthropology, which he defines as the study of mankind from the perspective of zoology (M. Wang, 2010b:63). In doing so, Cai was trying to wrestle the term *minzu* away from race and emphasising its meaning as *ethnos* (T. Mullaney, 2010a:73). For him, the study of *minzu*, or ethnology, is a historical and comparative science for studying people on the margins of civilisation (M. Wang, 2017:102). Influenced by the evolutionary school and diffusionism, Cai advocated for the search for the origin of cultural practices among people seen as 'backward' (Guldin, 1994:31). In his view, the notion of cultural transmission provides a useful tool in understanding the immense cultural differences within China (M. Wang, 2010a:13).

The head of the academy's ethnological division appointed by Cai, Ling Chunsheng, is a representative figure of the diffusionist school in the 1930s and 1940s China. Ling's ethnographic research often took place in areas that hold significant political importance for the state. His first monograph in 1934 was based on his empirical and historiographical research on the small Heze people in Manchuria. Drawing the connection between field research and imperial-era Chinese records, he put forward an ethnocentric argument that the cultural practices of Tungusic peoples can be traced back to the interactions between local tribes, Manchu and Han peoples (Ling, 1934; M. Wang, 2010b). In a bid to refute the pan-Thai claim to parts of Southwestern China, Lin argues that the so-called Thai race had become sincised in Southwest China and Thailand itself, potentially extending Chinese territorial claim to Thailand itself (Chan, 2019). In 1942, Ling published a thesis that systemically divides the cultures of China into five categories and seeks to attribute the cultural differences between Han and non-Han, despite shared origins, to environmental differences (Ling in BZGL, 1942, vol 11-12:62).

In comparison to the ethnologists at the Institute of History and Philology, the social anthropologists were not primarily concerned with cataloguing and categorising the various *minzu* of China. Instead, they were more interested in the synchronic analysis of social institutions and ethnographic research on small Han rural and remote non-Han communities. Their theoretical and methodological orientation facilitated a de-politicised understanding of

culture as a scientific understanding of human diversity. Drawing their data primarily from empirical fieldwork instead of archival research of imperial records and local gazettes, the social anthropologists were hoping to apply their research to practical and contemporary socioeconomic issues rather than the historical construction of a singular Chinese nation. In letters and academic writings of the 1930s and 1940s, this group of scholars referred to minority groups using terms such as native and 'aboriginal' juxtaposed against 'Chinese'.

THE COMMUNIST ETHNOGRAPHIC STATE AND THE BRITISH FUNCTIONALIST ANTHROPOLOGY

After the Communist Party took over the country in a devasting civil war, the new state dispatched investigation teams made up of social anthropologists, ethnographers, and party cadres to frontier regions between 1950 and 1952. The purpose of these trips was to establish political contact with frontier groups on behalf of the new regime, as well as for the social scientists to gather ethnographic data for the ethnic identification project. In Tibet, the research unit led by Li Anzhai attached to the Communist military formulated the initial Communist policies aimed at the preservation of Dalai Lama's government in Lhasa (X. Wang, 2003). Between 1950 and 1954, 38 minority *minzu* groups were identified by state-sponsored ethnographic projects. The ethnographic fieldwork conducted by the ethnographic state accumulated over fifteen million Chinese characters' worth of data in addition to a large quantity of visual and cultural artefacts (The Ethnic Publishing House, 2009). The ethnographic research produced not only fifty-six recognised *minzu* but also a vast academic corpus dedicated to the cultures and histories of the minority *minzu*. Moreover, the theoretical work done by scholars who worked with the new regime helped to provide the appearance of scientific validity to the party's own ethnological theory.

The production of ethnographic knowledge by Chinese social scientists was overseen by the state since almost all pre-Revolutionary university social science faculties and disciplines, except for ethnology, was deemed to be bourgeois. Nevertheless, the Communist ethnographic state cannot simply be dismissed as social engineering by a revolutionary Leninist party-state. There are two main reasons: the first is that the classification and

identification efforts required not only ethnographic expertise but also social scientific theoretical and conceptual prowess, which the Communist cadres lacked (T. Mullaney, 2010b). The anthropological theories and fieldwork methodology deployed by the social scientists were in many cases directly accountable for the creation/identification of a minority group (G. Ma, 2017).

The second reason is that the training, as well as theoretical and methodological orientations of the social sciences, were dependent on the mobility of scientific theories and exchanges between scientific communities. Even after the official abolition of many social science disciplines, the theoretical and methodological orientations simply continued under a different name through the involvement of pre-revolution social scientists. Social anthropologists and sociologists found employment in the newly established 'Central Institute of National Minorities (CIN) led by Fei Xiaotong in 1954. The institute was responsible for not only the training of minority cadres but also the development of official theory and research on national minorities (Whyte & Pasternak, 1980). The influence of British Functionalism was imbricated into the Communist ethnographic state through the institutionalisation of ethnographic knowledge production.

The constitutive power of ethnographic science in the case of China lies not in terms of its ability to create national minorities by 'identifying' groups. The participation of social scientists in the ethnopolitics of the Communist state does not explain the multinational understanding of the Chinese nation in lieu of the agency of the state and minority groups (Qin, 2013). The social scientists did not create groups out of thin air. The most populous minority groups known today as Uyghurs, the Hui Muslims, Mongolians, and Tibetans had been well-organised politically and required little in the way of 'identification' rather than state recognition and inclusion into the representative political system of the new regime with promises of affirmative actions and equality (Weiner, 2020). Most of the 'new' groups were identified mostly in the subtropical provinces of Yunnan and Guizhou (B. Yang, 2009), an area that was a part of James Scott's 'non-state' space, where historically the Chinese 'state' had been unable to penetrate and establish itself until very recently (Scott, 2009).

Instead, the political significance of the state-sponsored ethnographic research lies in the articulation of *minzu* as culturally distinguishable and ontologically equal groups. The classification project and the collusion between ethnographic knowledge and state categorisation mean *minzu* is not only an institutionalised individual attribute ascribed by the state but also the object of scientific research. The scientific claim of *minzu* means that regardless of population size and administrative territory, each *minzu* is ontologically equal in the sense that their group identity pertains to a certain objective, observable, substantialist attributes. In doing so, individual *minzu,* as well as the cultural diversity of China, are constituted as governance objects by the ethnographic state. The scientific and categorical understanding of *minzu* enabled the absorption of ethnic taxonomy of British colonial (T. Mullaney, 2010a), Japanese imperial (Christmas, 2016:33), Soviet Central Asian (Brophy, 2016), as well as frontier nationalist origins into a single concept. Moreover, by designating minority groups negatively against the majority Han, the largest ethnonational group is stabilised against the internal Other within the multinational Chinese nation.

The articulation of *minzu* as a nationality in Communist China, as Mullaney puts it, required the ethnological conceptualisation of *minzu*-as-*ethnos* and the Communist conceptualisation of *minzu*-as-*natsia* together to form the twin pillars of the new 'unified, multinational country' (T. Mullaney, 2010a). The articulation would not have been possible without the theoretical sophistication of the social anthropologists involved. Although in practice, neither the Soviet ethnographers nor their latter-day Chinese counterparts followed the rigid evolutionary Stalinist definition of nation/*minzu* Hirsch, 2005:108; Yang, 2009:766; Mullaney, 2010a). Nevertheless, in Stalinist dogma, the conception of the nation (*natsia*) is an evolutionary concept that describes a society that has reached the capitalist stage of development. There could be no nations in the precapitalist period owed to the absence of national economic and cultural centres (Stalin, 1929:5)[15]. In 1950s China, a strict application of Stalinist dogma would

[15] The Soviet and imperial Russian ethnography were both influenced by the cultural evolutionary theories of Lewis Henry Morgan and Edward B Tylor (Crossley, 1990:16; Hirsch, 2005:44). Societies are placed on an evolutionary scale at different stages of development: clans (rodovyj), tribes (plemenyj), nationalities

put into question the very status of Han as a nation given its ostensible precapitalist developmental stage (Nari, 2020).

To resolve the semantic and conceptual issues around the term *minzu* in light of the Stalinist-evolutionary schema, Lin Yaohua, now a professor at the newly established institute, set out to add a historicist dimension to *minzu* and steered it away from the concept of race in a bid to render it compatible with the Stalinist orthodoxy. Lin reduces the conceptual cleavage between the Chinese term and its German and Russian equivalences to a matter of translation. In a convoluted essay, Lin argues that the Stalinist conception of precapitalist societies *Narodnost* shares the same etymological root with *narod* or nation. The difference between them concerns historical stages rather than the characteristics of the human collectives themselves (Y. Lin, 1963). Therefore, *minzu* would be an accurate translation of these concepts since it also refers to human collectives throughout history (Nari, 2020). In fact, *minzu,* as articulated by Lin, fundamentally differs from Stalin's evolutionism. By resorting to semantics, Lin was able to evaporate the historical distinctions between human societies at different stages of development.

Lin's articulation of the radical developmental potentials of *minzu* had been referred to by Mullaney as 'futurological' since the ability of *minzu* to become full-fledged nationality depends on state intervention (T. Mullaney, 2010a:90). All *minzu* possess some form of language, culture, territory etc., according to Lin, and they can become fully developed through state intervention in the form of media, representative government, education and language planning (ibid:84). Rather than Soviet-influenced, Lin's theory of *minzu* bears an uncanny resemblance to British Functionalist Anthropology's theory of culture and Malinowski's conception of the 'changing native' who is influenced by European culture (Malinowski, 1929). The importance of state intervention resembles the colonial governance

(narodnosti), and nations (natsia), nationhood is therefore reserved for societies reaching capitalism and socialism (Nari, 2020).

model Functionalist anthropologists proposed in light of the centrality of the 'changing native' (Allan, 2018:195).

In 1957, Lin Yaohua and Fei Xiaotong set out an ambitious research program that would serve as the basis of government policy toward national minorities. Their essay had been reprinted in the mouthpiece *People's Daily* as an official endorsement of their ethnological theory which set out the key characteristics of *minzu* (Arkush, 1981:235). Without openly critiquing the Stalinist principle of national classification based on common language, territory, economic life and psychosocial makeup, Lin and Fei stressed the need for an integrated and situated understanding of these characteristics for each group (Fei & Lin, 1956:4). In a Functionalist fashion, they suggested that there is no sufficient scientific evidence to support that all groups must follow the same developmental trajectory. This argument is similar to what Malinowski made in the *Scientific Theory of Culture* regarding the lack of scientific criteria for observation and identification of otherwise universal functions that are shared by all cultures (Malinowski, 1944:67-70).

In this piece, the European influence on 'primitive cultures' discussed by British anthropologists had been replaced by contact between minority *minzu* and Han. Lin and Fei Xiaotong wrote that the reason for some *minzu,* such as Mongolians and Uyghurs, to advance significantly from primitive to feudal society was probably due to their contact with the Han, who are 'relatively more advanced' (Fei & Lin, 1956:12). British functionalist anthropologists were opposed to the destruction of non-Western indigeneity and represented the colonised groups as capable of self-governance within the bounds of the European empires (Foks, 2018:54). In a similar vein, both Lin and Fei argued in favour of the potentiality of *minzu* to develop on its own terms and trajectory (Fei & Lin, 1956:10).

Indeed, one of the primary goals of the ethnographic state had been the formalisation as well as the creation of written languages for individual *minzu*. The Chinese adoption of functionalism viewed culture as a 'tool' rather than something that is sacrosanct and immutable, which provided a pretext for change that can be accommodated by the various

constituent parts of culture (Wong, 1979:29). In 1957, a visiting Norwegian anthropologist remarked that the approach to cultivating individual *minzu*'s languages, customs, arts etc as a means to unify the country reflected a mechanical view of the cultural characteristics (Gjessing, 1957:53).

Another resemblance between the social scientists working for the Communist ethnographic state and Malinowskian Functionalism was the emphasis on the preservation of 'primitive culture'. Concerned with the destruction of native culture by the expansion of European influence, Malinowski asserts that the anthropologist must 'reconstructs laboriously a savage who does not exist anymore' (Malinowski, 1929:37). Similarly, Fei and Lin also emphasised the importance of conducting fieldwork prior to the disappearance of *minzu* characters due to socialist reforms (Fei & Lin, 1956).

CONCLUSION

The ubiquity of ethnographic states and the different ways through which ethnocultural diversity within (and beyond) the territorial boundaries are understood in relations to nationhood shows that we need to foreground not only the production of territory but also the production of the territory's political subjects in the historicisation of the modern state. We cannot cordon off the question of ethnocultural identity by focusing entirely on techniques of territorial demarcation or vice versa. The spatial convergence between state and nation, and the unreflexive equivalence drawn between state, territory, and nation in state formation literature have created the conflation between territorial demarcation and nation-building (Goettlich, 2021:912). The construction of modern Chinese nationhood, for instance, is typically explained through the logic of territorial acquisitions of minorities' land (Leibold, 2007:2). Indeed, the artificiality of modern state territories is often explained through a strange double move that first separates the territory from the people through a focus on demarcation, and only then reinscribe the people back onto the territory via their particularistic ethnocultural identities.

In the discussions of empire, the modernist understanding of territory is treated as a conceptual barrier to uncovering the imperial relations that cut through territories. However, despite the ostensible critiques of 'territorial traps' (Barkawi & Laffey, 2002:111), there remains a latent geographic understanding of ethnocultural differences in discussions of empire and imperialism. For example, postcolonial critiques tend to foreground the historical primacy of imperial relations that cut across demarcated territories as opposed to relations *between* demarcated territories that formally populate the international system (Barkawi, 2017; Bhambra, 2016). Nevertheless, the people-territory nexus still sits at the core of the postcolonial critiques since the ethnocultural identities of peoples determine the nature of rule and relationships between different political-geographical entities. An empire is understood to be a state that dominates over populations beyond its ethnocultural homeland in more-or-less taken-for-granted territories (see Bhambra, 2016:344). Despite the well-warranted critiques against the negation of imperial relations in mainstream historiography of the international system, the people-territory nexus is at the centre of analytical frameworks such as metropole-periphery or empire-colony (Barkawi, 2017). This latent territorialisation of political communities, despite the use of terms like society or people, ends up perpetuating the Euro-American ideal-typical understanding of imperialism (Bayly, 2021:358).

We need to go beyond merely treating territory as either a source of constructed ethnic identities or ethnic conflicts or nationhood as a detraction from territorial demarcation (Antonsich, 2009). It is the conceptual isomorphism between nation, state, and territory that needs to be questioned, not the constitutive relations between territorial nationhood and modern territoriality. None of these phenomena are reducible to each other. The territory is not simply a prison of nationalism, methodological or otherwise, but produced through a bundle of political technologies, including the production of ethnographic knowledge.

Although no human societies are simply 'floating' above natural environments and therefore are always geographically bounded in some ways (Soja, 1971). Nevertheless, this does not

mean that the geographical dimensions of social lives always take on the form of territory that is clearly defined and readily intelligible to outsiders. Consequently, we need to separate analytically the de jure modernist understanding of territory and the geographical dimensions of social organisations. What is lost by focusing on the territory or ethnocultural identity in their singularity is the involvement of both social and environmental qualities in the delimitation of territories. In other words, state territories are not simply produced by lines on a map or by categorising people into discrete territorial nationhood. Instead, the production of modern state territories involves a wider array of knowledge other than land surveying, mapping, and border demarcation done at the national scale. Neither the territory nor the population preceded one another in the emergence of the modern state.

In this chapter, I focus on the role of scientific knowledge production in the visibility and legibility of ethnocultural diversity in modern Chinese territory. What I learnt is that the demarcation of the territory alone does not determine the contours of nationhood. The concerns about territorial cohesion and frontier separatism run through the entirety of modern Chinese history whereas the understanding of 'who are the Chinese' have shifted dramatically over time: from Han to the composite 'republic of five races', followed by the monogenesis Chinese race of various lineage, and finally reaching the current composition of 56 *minzu*. The territorialised nationhood of China is not an 'internally homogenous' space with a clear distinction between inside and outside. Quite the contrary, the 'discovery' of ethnocultural diversity and its institutionalisation by the ethnographic state helped to engender the modern frontier through the implementation of ethnic identification and ethnic autonomous administrative divisions.

To understand how knowledge or the visibility of ethnocultural diversity shapes the governance of the territory, we need to move from a politics of identity towards the politics of knowledge. This move requires paying attention to the historical contingencies in how social problems are construed prior to their problematisation in governance. The participation of Chinese social anthropologists in the ethnographic state and their Functionalist affinity have helped to deploy applied anthropology's approaches to colonial governance in China's nation-building. Consequently, the Functionalist opposition to the

destruction of indigeneity and its replacement by settler colonial political imaginary (Foks, 2018:21) found its way into the Communist ethnographic state and the associated multinational vision of Chinese nationhood. The creation of *minzu* as national minorities by the ethnographic state and the demarcation of ethno-territorial units, at least at face level, have precluded overt assimilationist stance towards minority groups in the earlier years of the PRC.

Although the Communist leadership had promised recognition and equality to minority groups prior to their ascendency to power in part owed to Soviet influence. Nevertheless, the coproduction between social anthropology and nation-building under the Communist regime took place not via hegemonic imposition but through 'indigenous' scientific efforts amidst political as well as scholarly contestations over ethnocultural diversity and nationhood after the collapse of the Qing empire. The identification, recognition and ethnographic knowledge production organised by a scientific understanding of *minzu* as objectivist and substantialist group attributes gave rise to a version of Chinese nationhood based on a taxonomic understanding of human diversity. This specific configuration of nationhood had important long-term consequences that bear directly on the range of permissible actions towards the national minorities.

However, this does not mean that the multinational understanding of China established by the ethnographic state in the 1950s remains unchallenged. Increasingly, *minzu* is being critiqued within China as a foreign and historical social construction that undermines the cohesion of China as a historical state. The separate education system, 'autonomous' territorial units and limited affirmative actions that distinguish minorities from the Han have been criticised for creating a 'binary understanding' of national belonging (R. Ma, 2010). The dissolution of the USSR and Yugoslavia as well as the problematisation of *minzu* identity have led to many dissenting voices against *minzu* categorisation and legal autonomy (Leibold, 2013). Moreover, the momentary ascendancy of the multinational articulation of Chinese nationhood and its political ordering does not mean the elimination of competing approaches to the problematisation of human diversity. In an ironic recourse to the 1930s debate, critics in the 2010s blamed ethnic tensions in Xinjiang and Tibet on the indoctrination of *minzu*

theories (R. Ma, 2017). Nevertheless, even in the present era of intensified state repression against minorities characterised by both settler colonialism and cultural destruction, the multi-*minzu* configuration of the Chinese nation cannot simply be terminated. Instead, the administrative and discursive constraints imposed by the *minzu* establishment within the Chinese state tasked with promoting minority rights have prompted the leadership under Xi Jinping to pursue an assimilationist strategy via other party organs (T. Zhao & Leibold, 2020) and state security apparatus (Allan, 2018; S. R. Roberts, 2018).

The ethnographic state of the PRC should be considered a world-historical phenomenon and a 'core site' of international order since the production of *minzu* as a scientific category has repercussions for the lives of not only more than 100 million people classified as ethnic minorities but also more than 1.3 billion majority Han. The Chinese utilisation of applied anthropology intended for British colonial administration in the context of post-imperial nation-building shows the mobility, fluidity, and instability of scientific theories that travel across political contexts. Although the emergence of a global form of technoscience has altered 'state purpose' everywhere (Allan, 2018) through the entanglement between scientific knowledge production and the state's quest for legibility (Scott, 1998), the forms of political order and political rationalities shaped by scientific knowledge and expertise are by no means uniform. On the contrary, it appears that the globality of scientific concepts such as ethnicity or race, across political and cultural contexts, is made possible by the situated relations of co-production production between scientific knowledge and the modern territorial state. This relations of coproduction between science and the state, are not only confined to the production of overtly 'political' knowledge but also characterise the production of environmental knowledge. In the next chapter, I will focus on how the co-production between political rationalities and environmental knowledge can reshape the political rationalities used in the governance of both population and the physical environment.

Chapter 5 'Territorialising from above': Atmospheric Sciences, Techno-territoriality, and the Making of the Chinese Territory's Vertical Dimension

Introduction

In 1934, a delegation from the Nationalist Government in Nanjing attempted to re-establish nominal Chinese authority over Tibet using the opportunity of the 13th Dalai Lama's death and the ongoing border conflicts between the Tibetan Kashag government and Han settler-colonial warlord forces (Leibold, 2005). The mission failed in getting the Tibetan government to recognise that Tibet was a part of China's 'Republic of Five Races' (ibid:186). However, a humble weather observatory based on the rooftop of the Chinese delegation's residence became one of the first institutional presences of the Chinese state in the Tibetan capital Lhasa since the 1912 Chinese revolution, when the Chinese army garrison was forced out of Tibet. The observatory provided scientific instrument readings of wind direction, wind speed, temperature, and rainfall level in the Tibetan capital to the Institute of Meteorology in Nanjing via wireless telegraphy (Zhu, vol 22, 1934:692). The Lhasa observatory was a part of the ambitious plan for an extensive network of weather stations across China by the then-nascent Institute of Meteorology established in 1928. In warlord-controlled frontier regions such as Kokonor, Kham, and Xinjiang, weather stations were some of the few state institutions under the direct guidance of a Nanjing-based national institution. Yet the significance of metrological science to the territorialisation of the frontier regions is not merely confined to its symbolic value. By the mid-1930s, the instrument recorded rainfall data and new scientific knowledge of high-altitude atmospheric circulations would reshape understandings of China's environmental and population governance.

Throughout the 19th and 20th centuries, the development and the use of atmospheric sciences went hand-in-hand with the establishment and governance of colonial, imperial, and national territories across the world (Baker, 2018; Coen, 2018; Mahony & Endfield, 2018; Mahony & Randalls, 2020; Morgan, 2018). The novel forms of knowledge about the interaction between

atmospheric circulations and geophysical features made visible the vertical dimensions of territories and shaped the understanding of climate variations' impact on human societies (Coen, 2020). The development of modern atmospheric sciences enabled the 'territorialisation' of vertical space and in return, the political and geographical suitedness of scientific knowledge and material practices also 'territorialised from above' by reshaping environmental knowledge and political rationalities used in the governance of both territories and population. In the context of the modern Chinese frontier, atmospheric sciences such as meteorology and climatology not only provided ideological justifications for racial theories about the Chinese Nation (Z. Chen, 2012) or environmental justification for the geographical bifurcation (see Chapter 3) but also fundamentally transformed how Chinese territory is understood as a distinct physical environment against larger, planetary atmospheric forces. By the 1930s, the Chinese frontier came to be viewed as a fragile environment that is unable to support large-scale migration. The discourse of environmental fragility was supported by the scientific legitimacy of climatic determinism and was later used in the justification of population control known as the 'One-Child Policy' by the canonical geographer Hu Huanyong.

Following the co-production approach to scientific knowledge and political rationalities in Science and Technology Studies (Jasanoff, 2004a) and reconceptualisations of state territories' materiality in voluminous, vertical, and volumetric terms in Political Geography (Billé, 2020; Elden, 2013b; Peters et al., 2018), this chapter examines the role of atmospheric sciences in the remaking the vertical dimension of modern Chinese territory in the 1920s and 1930s. Empirically, I trace the historical development of meteorological infrastructure after the establishment of Academia Sinica's Institute of Meteorology (ASIM) – the predecessor to China's state meteorological service in the 1920s and 1930s. The establishment of new meteorological infrastructures controlled by the Institute, as well as existing French, British, and Japanese colonial meteorological networks, provided invaluable data for Chinese scientists to better understand the correlations between regional weather patterns and larger atmospheric phenomena above China and beyond. The statistics of temperature, air pressure, wind direction, and precipitation allowed for the visualisation of atmospheric conditions above the country as well as climatic variations within the country. Moreover importantly, the emergence of novel environmental knowledge, specifically the East Asian Monsoon, and

new representational techniques, specifically the use of isohyets helped to reshape the political rationalities in the governance of the Chinese frontier and population. Most notably to contemporary observers, the new meteorological knowledge provided the scientific basis for the bifurcation of the country's populous eastern part and the arid, sparsely populated frontier regions through an ecological and demographic divide that is known as the 'Hu Line'.

The production of meteorological knowledge offered a new way to conceptualise and potentially naturalise the environmental diversity of China's vast territory. This is done in two ways: 1) The visibility of larger environmental objects such as the East Asian Monsoon helped to domesticate regional climatic variation in China as the result of complex interactions between topographical features and atmospheric circulations. Therefore, the socially constructed spatiality of the modern Chinese territory is naturalised through the materiality of Chinese territory; 2) The use of geographical scales in meteorological knowledge production is not a 'neutral' reflection of how atmospheric and weather phenomena should naturally be divided. Weather is always experienced in place and in time through visceral experiences. The understanding of weather and climate as geographical phenomena inevitably required abstractions and the use of geographical scales to organise data. Yet the geographical scales used in knowledge production by scientific experts may reflect existing forms of geographical imaginations and scales.

This chapter is divided into theoretical and empirical sections to help explicate the conceptual framework used in the historical research. The theoretical discussion starts from my dissatisfaction with the flat ontology of a static, land-based understanding that characterises much of contemporary IR's works on modern territoriality. I argue that the focus on cartographic representation and border ignores both the role of environmental knowledge and nonhuman forces in the creation of *specific* territories. The modern state territories are voluminous material entities as well as historically contingent spatial entities that are constituted via the interaction between anthropogenic ordering and nonhuman environmental forces made visible via specific forms of environmental knowledge. In that sense, modern state territories should be reconceptualised using the notion of 'techno-territoriality' (Carroll, 2006). The effective governance of the population by the modern

territorial state is inseparable from the effective governance of the physical environment. In that regard, processes of territorialisation require the amalgamation of the physical environment, people, and material technologies into 'techno-territoriality' through the use of technoscience in state governance. Therefore, to understand the political rationalities used in the governance of modern state territory, we should not take the materiality of the physical environment for granted (Elden, 2021; Peters et al., 2018) but instead pay attention to the politics of environmental knowledge and its relationship to political authorities (Braun, 2000). Building on existing works in the History of Science, I demonstrate the historical co-productionist relationships between atmospheric sciences, the planetary conception of climate, and modern territorial states.

The empirical section looks at the establishment of China's first large-scale national weather service: the Meteorological Institute of Academia Sinica. Following the co-production approach to the constitution of scientific knowledge and political rationalities used in Science and Technology Studies (Jasanoff, 2004a, 2004b), I trace out how the socially constructed spatiality of modern Chinese territory is embedded in knowledge production about the 'vertical' dimension of Chinese territory. More importantly, the visibility of the vertical dimension of Chinese territory also reshaped understandings of the territory's materiality and the political rationalities used in the governance of frontier regions and populations. Following the intellectual trajectory of the canonical 20th-century Chinese meteorologist Zhu Kezhen and his influence on geographer Hu Huanyong, I demonstrate that the understanding of China as a fragile overpopulated environment is constructed through the advent of meteorological science and infrastructure.

Situating Spatiality and Materiality Within Modern Territoriality

The modern concept of territory is conventionally imagined to be a two-dimensional proprietary landscape demarcated using linear borders and claimed by a political authority, typically a territorial state. Yet from the colonial plantations to the artificial islands in the South China Sea, it is apparent that the constitution of state territories involves

environmental forces and technological infrastructures that extend beyond underneath and above flat earth. Political geographers and scholars of Science and Technology Studies have long paid attention to the presence of technoscientific apparatus and environmental forces in the creation of human territories. The materiality of territories is multi-dimensional and dynamic, and the attempts to study and secure the dimensionality of territories have always been a primary concern for centralising political authorities (Scott, 2009). Nevertheless, IR has yet to come to terms with the theoretical implications of the territory's materiality. At present, discussions on the so-called modern territoriality remain mired in the cartographic representation of territories and the universalisation of linear borders (Branch, 2013, 2017; Goettlich, 2019, 2021; Goettlich & Branch, 2021; Ruggie, 1993).

Generally, IR literature on modern territoriality operates with a flat ontology of territory simply as land is represented on maps. Very few attempts have been made to examine how the physical materiality of the territory itself is prefigured in the emergence of modern territoriality. The emergence of modern territoriality cannot be separated from the control of both natural environments and peoples via not just regimes of land ownership or processes of dispossession, but also novel forms of knowledge about exotic natural environments (Caraccioli, 2018; Grove, 1997). However, despite the critical inquiries into the epistemic and technical foundations of modern territoriality, the physical environmental qualities of human territories are relegated to the backdrop in the conception of modern territoriality. Consequently, there have been relatively fewer attempts to study how other forms of scientific knowledge, beyond cartographic knowledge, and the environmental qualities of territories are imbricated with the production of state territories (see Strandsbjerg, 2012 for an exception).

This section seeks to move beyond the flat and anthropocentric myopia in the understanding of modern territoriality in IR. I do so by highlighting the importance of both geophysical features as well as the production of knowledge about the natural environment in how a *specific* territory is conceptualised as an object of governance. Recent works in IR have shown how knowledge not only shapes the beliefs and interests of actors but also creates objects such as the economy or climate that are governable by actors (Allan, 2017b, 2017a).

Techniques of demarcation and the geometrical cartographic representations of territories are only a part of the bundle of technologies that produced modern state territories (Elden, 2010). Territories are not only created by borders but also made knowable and governable through knowledge about their physical qualities such as landmass, landscape, climate, biodiversity, and geological features etc. (Braun, 2000:12). However, these features of the natural environment are not always visible nor understood in ways that are amenable to become governmental issues. Therefore, technoscientific activities produce knowledge and concepts that are materially productive, in the sense that they not only make visible but also structure how things are thought about and interacted with (Asdal et al., 2007; T. Mitchell, 2002). Therefore, given the dual importance of environmental features and environmental knowledge, modern territoriality can be more productively reconceptualised as 'techno-territoriality' (Carroll, 2006:6). The term refers to the role technoscientific knowledge and infrastructure play in the governance of both the physical environment and the population (Ibid). This conceptual shift helps researchers to bring to the fore the forms of knowledge, and material practices that undergird the modernist conception of state territories as demarcated natural environments (Shah, 2012).

In the remainder of this section, I demonstrate the conceptual value-add of this approach by examining the conceptual oversights in the four existing approaches to the materiality of modern state territories. I argue that many existing conceptions of modern territoriality reproduce an anthropogenic understanding through which nonhuman material qualities are deliberately evaporated in favour of an abstracted understanding of the territory as an anthropogenic spatial ideal. Instead, I follow the recent scholars in Political Geography and adopt a more-than-human approach that views human territory as embedded within a dynamic and changing physical environment (Elden, 2021; Usher, 2020). The territory of the modern state is not simply defined by forms of enclosure or static cartographic representations. Instead, the modern state territory is characterised by an ever-greater effort in the continuous designation and differentiation of earth's geophysical features and the management of socio-natural relations between the population and the territory's environmental qualities. The focus of my analysis of modern territoriality is not on the philosophical discussions of nature and its social construction (Demeritt, 2002; Latour, 1993b;

Pollini, 2013). Instead, the analytical focus is on the historical contingency of environmental knowledge and its constitutive roles in shaping how territories are viewed and governed. The entanglement between environmental knowledge and territorialisation, I argue, shows that the environmental qualities of territories are not simply a matter of techniques or legibility, but the outcome of the co-production between environmental knowledge production and state-building processes.

The first approach to the territory's materiality, which might be termed the 'critical historicist' view, challenges the equivalence between territory and the physical environment itself. The analytical focus is instead on how modern territory is understood as a demarcated physical environment that serves as the material basis for the state's governance of a population (Shah, 2012:65). A territory is therefore a regulative ideal associated with the modern sovereign state rather than the underlying material conditions of rule (ibid). The objective of this sort of historicisation largely follows the premise set out by John Agnew of modern territory as an epistemological and ontological 'trap' (Agnew, 1994; Reid-Henry, 2010). In other words, the notion of territory as the physical environment controlled by a state negates both the imperial and transnational nature of state power as well as the historical peculiarity of the territorial state itself.

Building on the critical historicist approach, the technologist approach focuses on the technical and representational means through which the physical environment is surveyed, demarcated, and represented as a territory. Under this view, modern territoriality is not dependent on a singular conception of territory but instead on the outcome of historically specific forms of ideas, technologies, and practices (Ruggie, 1993). Therefore, the focus is on how modern territoriality is shaped by specific ways of demarcating the boundaries of and representing the space within (Strandsbjerg, 2010:11). Within this line of reasoning, technical means such as border, surveying, and cartography are historicised as the necessary technical precondition for the emergence of modern territoriality (Branch, 2013, 2017; Goettlich, 2019, 2021; Strandsbjerg, 2012). However, the physical environment itself is largely absent since the focus is on the production of an abstracted anthropogenic space superimposed on nature. Stransbjerg, for instance, argues that the Artic is produced as maritime territories by the

calculative and representation techniques of scientific cartography (2012). But the involvement of other forms of environmental knowledge which makes visible specific qualities of the Arctic is negated. The combination of the critical historicist and technologist approach forms the bulwark of IR's approach to modern territoriality. Since the focus is on the histories and political effects of modern territoriality as a political ideal of control, the physical environment itself is seen as the disguise of the territory's supposed naturalness and inevitability (see Shah, 2012:66).

The analytical privileging of spatiality over materiality, and the avoidance of materialist understanding of territory is in part due to the notoriety of environmental determinism (Usher, 2020). The scientific justifications for racial and imperial hierarchies provided Environmental Determinism formed a part of the discursive repertoire of imperial expansions (Livingstone, 2011). In the early 20th century, geopolitical thinkers such as Semple, Ratzel, and Mackinder were debating the extent to which the political trajectories of human societies were shaped by the natural environment they found themselves (Ashworth, 2011; Hutchings & Owens, 2021:350). The impetus to circumvent environmental determinism and its associated materialist understanding of the territory as the underlying natural environment means that territory has largely been examined as an ideological and spatial entity.

However, the wholesale rejection of the materialist understanding of territory has paradoxically erased the historical link between modern territoriality and the specific understanding of the natural environment. Fin de siècle geopolitical thinkers did not view territory as mere abstracted physical space. Quite the contrary, they viewed territory as dynamic socio-ecological systems through naturalistic portrays and organic metaphors (Barua, 2018; Usher, 2020). Taking the territory's materiality seriously means that it is not just a demarcated and mapped physical landmass, but also an environment that is cultivated, colonised, settled and made legible through vernacular as well as 'formal' written knowledge. In contrast to an abstracted space, an environment is a concrete physical reality which varies across different locations. An environment is not just land, it is 'simultaneously nature, space and atmosphere' (Steinberg in Peters et al., 2018:88).

The third approach, which I call the strategic interactionist approach, considers the materiality of the environment as well as the importance of technological means and the historicity of modern territoriality as a political ideal (Elden, 2013b, 2017; Scott, 2009). The focus of the strategic approach is therefore on the role of the physical environment in the production, control, and resistance to modern state territories. The challenges of surveying, demarcating, managing, and controlling complex terrain mean that territory is understood as a perpetual process rather than an outcome (Elden, 2021). The territory of the modern state is not simply a historically specific political ideal enabled by a fixed set of technologies traceable to a point and place. Instead, the modern state territory is understood as the outcome of a historically continuous process involving a 'bundle of political technologies' technologies consisting of various calculative techniques used to enable the mapping, bordering, and control of physical space (Elden, 2010, 2013b:36). The vertical dimensionality and dynamism of the territory's natural and built environments, including geophysical and organic forces. are understood to be constitutive of the state's strategic calculations in the governance of the territory (Brenner & Elden, 2009; Elden, 2013b). As opposed to the flat ontology of territory that characterises the first and the second approach, this approach pays specific attention to the volume and dimensionality of the natural environment as well as the technological means to understand and govern the territory 'volumetrically'.

The materiality of the territory under this view, however, is understood to be external to the modern conception of territory itself (Elden, 2013c:17, 2021:174). Instead, the relationship between the physical environment such as uneven landscapes and subterranean spaces with human territories are understood as interactions necessitated by human political-strategic concerns (Elden, 2021). Elden, for instance, does not view the physical landscape as a standalone factor in how a territory is instigated but instead contextualised through its political-economic, strategic, legal, and technical implications (ibid:174). The dynamism of a territory's vertical and fluid dimensions is where 'the geopolitical and geophysical meet' by making possible specific strategic interactions (Elden, 2017:25).

In contrast to the strategic interactionist approach's focus on the strategic concerns in the governance of the territory, the post-humanist approach is especially critical of subordinating materiality to anthropocentric political-strategic concerns. Instead, this approach foregrounds the constitutive roles of dimensionality and geophysical features in shaping the territories of the modern state. Here, territories are understood as more-than-human entities where anthropogenic and non-human forces are already enfolded without the need to be activated by human beings. The materiality of the state territory exceeds what can be captured by political imaginaries, cartographic or otherwise, and unfolds in unexpected, elemental, and visceral manners (Billé, 2020; Boyce, 2016; Squire, 2016). On the surface, it seems that from the South China Sea to the North Pole, we live in an era where the environmental features such as the ocean, high-altitude mountains, and ice sheets have succumbed to a land-based, cookie-cutter imaginary of state territory (Billé, 2020:5). However, the flattening of the natural environment into abstracted, ontologically flattened state territory overlooks how the properties of environmental features such as rocks, rainfall, and deserts cannot simply be ordered through technological fixes but actively partake in the construction and contestation of human territories in ways that are never fully comprehensible to human beings (Boyce, 2016; Squire, 2016).

The voluminous nature of the physical environment such as the ocean means that the territory of the state itself is contained by the voluminousness of the natural environment rather than serving as the container itself (Steinberg & Peters, 2015:254). The role played by the ocean in atmospheric, biological, and planetary climatic conditions, for instance, is contingent not only on the depth and surface quality of the ocean itself but also on its dynamic molecular properties. Other geophysical features such as the atmosphere, ice, and seashore, which constitute the environments of state territories challenge the notion of territory as the control of solid, static, surface-level landmass (Peters et al., 2018). The contingency and fluidity of environmental features that escapes human ordering and comprehension puts into question the understanding of modern territoriality as anthropogenic attempts at control (cf. Sack, 1983). The underlying materiality of a territory cannot be reduced nor ordered by the geometric representation nor subordinated to the anthropogenic control but instead serves as the physical substratum that sustains life, and therefore politics itself.

The post-humanist approach, therefore, views the modern state territory as a socio-natural entity where topographical features, including non-surficial elements such as weather and geothermal activities, constantly shape and reshape the territory's qualities (Billé, 2020; W. Lin, 2018). The materiality and dynamism of these spaces configure the ways through which the state secures and governs its territory, not simply as a demarcated physical environment, but as 'volumes' (Billé, 2020). In doing so, this approach reverses the strategic interactionist understanding of the natural environment as the object of human technological fixes and strategic calculations by highlighting the active role of non-human materiality in shaping how a state's territory is experienced, understood, and governed. In the case of the Himalayan border between China, India and Pakistan, the impossibility of actualising the anthropogenic political boundaries in high-altitude and frosted no man's land forces state authorities to deploy costly technological fixes despite the terrain's inaccessibility to human bodies (Harris, 2020:82). In the case of Iceland, the unruly landscape can serve as geothermal and hydropower sources which engender a volumetric understanding of territory that enables the state's outreach beyond the surficial territory through scientific explorations and infrastructure initiatives (J. Clark & Jones, 2017:131).

The approach I wish to advocate for follows the concept of 'co-production' used in Science and Technology Studies (STS) and conceptualises the materiality of a state's territory through the concept of 'techno-territoriality' (Carroll, 2006). The concept of 'co-production' describes an analytical approach that focuses on the emergence of new facts, things, and systems of thought through the entanglements, co-constitutions, and interactions between scientific knowledge and political rationalities (Jasanoff, 2004a:19). Conceiving modern state territories through the lenses of techno-territoriality requires us to focus on 'scientific and governing activities that targeted land, people, and the built environment' (Carroll, 2006:13). Instead of conceiving territory's material qualities as technical or strategic concerns as in the case of strategic-interactionist approach, or self-evidently voluminous or volumetric as in the case of the post-humanist approach, the focus is on forms of knowledge and material practices that construed and made visible a territory's physical qualities.

The co-productionist approach builds on the insights of existing approaches to modern state territory's materiality and is attentive to both the constitutive role of environmental features as well as the historicity of modern state territory as a regulative ideal and its technological foundations. Without hollowing out the territorial state in favour of a more diffused and circumstantial understanding of the territory's materiality as in the case of strategic-interactionist and post-humanist approaches, the focus remains on the state territory itself. More importantly, following the emphasis placed on the historical contingency of both regulative ideals and environmental knowledge by critical-historicist and technologist approaches, the co-productionist approach treats state territory as an outcome of specific forms of knowledge claims and material practices. Therefore, the co-productionist approach maintains the analytical distinction between state territories as spatial entities that are socially constructed and the physical environment as material entities that is not reducible to human political rationalities (Usher, 2020:1031).

Taking the materiality of state territory seriously means that we need to consider a wider array of technoscientific means that help to make a territory governable beyond representational and calculative technologies such as surveying and cartography. If modern state territory is indeed governed as a demarcated physical environment (Shah, 2012) then we need to examine how 'nature' itself is construed as the technical or strategic concern of the state. Nature is not neatly partitioned into distinctive objects that can simply be measured and calculated. The activities of surveying and measurement require scientific concepts that identify natural phenomena such as forests or rivers as discrete entities that can be studied (Bocking, 2015). The ways through which the territory's materiality is governed and understood are contingent on the intelligibility of nature itself (Braun, 2000:13). The production of environmental knowledge, however, is inseparable from each stage in the historical processes of territorialisation: in the conquest, colonisation, demarcation, study, and governance of a territory (Macleod, 2000; Tilley, 2011). In that regard, despite the veneer of universality, scientific knowledge production about the environment cannot be analysed in isolation from the social construction of space (Livingstone, 2003, 2005; Powell, 2007).

The understanding that environmental knowledge and the political rationality of modern territorial states are embedded in each other is not particularly novel. Already in Foucault's discussion on governmentality, population, and territory, references are made to the productive role of environmental knowledge. In the lecture on the emergence of the population as a governmental problem, Foucault notes the imbrication of environmental knowledge with the political rationality used in the governance of the population:

' The sovereign deals with a nature, or rather with the perpetual conjunction, the perpetual intrication of a geographical, climatic, and physical milieu with the human species insofar as it has a body and a soul, a physical and a moral existence; and the sovereign will be someone who will have to exercise power at that point of connection where nature, in the sense of physical elements, interferes with nature in the sense of the nature of the human species, at that point of articulation where the milieu becomes the determining factor of nature'(Foucault, 2007:38).

In other words, the population is not governed in isolation but through the materiality of the territory itself. The material qualities of territory, or '*milieu'*, according to Foucault, '*is a set of natural givens – rivers, marshes, hills – and a set of artificial givens – an agglomeration of individuals, of houses etc'* (ibid:36).

From a critical historicist perspective, Foucault's materialist understanding of the territory as the geophysical and biophysical basis through which a population of human beings is conceptualised and governed inadvertently reproduces the modernist understanding of the territory as a demarcated natural environment (Shah, 2012:66). This critique, however, colludes the scientific apparatus that enabled the legibility of the natural environment with the deployment of scientific knowledge as a tool of extractive and managerial statecraft. As Braun notes, Foucault suggests that the understanding of the territory's materiality or its qualities is entangled with the problem of population and its improvement (Braun, 2000:12). Yet in contrast with the historicisation of the population, Foucault does not make clear the sources of knowledge regarding the territory's quality. In doing so, he creates an impression that the materiality of the territory resides outside of history and renders him vulnerable to critiques of ahistorical materialism (ibid:13).

The understanding of the territory's materiality as the underlying natural environment is derivative of the modern conception of nature as a pure, pre-social object waiting to be uncovered through the production of scientific knowledge (Latour, 1993b; Whitehead et al., 2007:18). This modernist understanding risks overlooking two ways through which the materiality of the territory is a socio-natural hybrid. The first oversight is the entanglement between anthropogenic political histories and environmental histories. The histories of imperial expansions and colonisations in the early modern period have altered 'the wilderness' through intensive agriculture, settlement, and forest clearance (Richards, 2003). The various starting dates for the Anthropocene or the anthropogenic planetary alterations of ecosystems and climates - the first atomic bomb test in 1945, the colonisation and genocides of indigenous people in the Americas, and industrialisation (Fagan, 2019) - were all historical moments linked to the universalisation of territorial states and the decline of alternative forms of territoriality. It is difficult to separate the history of the territory from the history of the environment. I have discussed this point extensively in Chapter 3.

The second oversight concerns the historical contingency of environmental knowledge or the specific understanding of how people are related to non-human forces. The histories of natural science too cannot be separated from the political histories of the modern territorial state. The production of environmental knowledge is tied to the production of modern state territories in two ways: the first is via the gathering and stabilising of scientific knowledge about nature via state-sponsored scientific activities; the second is through the deployment of this knowledge in the governance of the territories' natural environment (Whitehead et al., 2007:16). The diverse range of agents, objects, and concepts involved in the production of environmental knowledge means that the state territories are both shaped as well as contested via the contingency of knowledge (ibid:54,5). Moreover, the dynamism and uncontrollability of non-human forces mean that the governance of state territories and the population is dependent on changing concepts, knowledge, and techniques that can render some aspects of the nonhuman world knowable and manageable (Nightingale, 2018).

We do not simply *see* the qualities of territory but understand such qualities through material practices, artefacts, instruments, and concepts. For instance, geological qualities are made visible through topographic surveys, the analysis of minerals and fossils, and the historicisation of the landscape itself (Braun, 2000). The discovery of such qualities is not simply knowledge about the pure, pre-social environment subjects, but can become imbricated within the governance of population and environmental management. The geologisation of the Canadian landscape in the 19th century, Braun argues, helped to create state apparatus and a population that is more attuned to not only the economic potentials of mining, but the management of population attributes (race, health, employment) centred around mining (ibid). The legibility of environmental objects is not separated from the cultural and political context of their time. The environmental object known as permafrost, often depicted as at the peril of climate change, owes its origin to the co-production of state-led industrialisation and the politics of scientific knowledge in the Soviet Union (Chu, 2015). Despite alternative understandings of frozen earth as neither permeant nor an object, but instead a process or an epiphenomenon, permafrost was established as a spatial and geophysical concept due to its compatibility with the demand of Soviet engineering and industrialisation (ibid).

The historical contingency of environmental knowledge, the active participation of more-than-human forces in the creation and contestation of state territories, as well as the state's attempt to 'territorialise' three-dimensional fluid environments need to be incorporated into how modern territoriality is conceptualised. To do so, we must move beyond IR's reduction of modern territory to an enclosed and flattened land-based spatial imaginary through a narrow focus on cartographic representation and surveying techniques. The historical entanglements of territorialising projects by modern states and colonial empires, nonhuman forces, and the production and contestation of environmental knowledge need to be examined. As Clark observes, the more the specific qualities, dynamics, and processes of the natural environment are revealed, the harder it is to reduce the materiality of the nonhuman world as the effect of human techno-political apparatuses reveals them (N. Clark, 2017:221). The production of environmental knowledge, therefore, not only makes visible certain qualities of the physical world but also shapes *how* they matter politically.

In the next section, I will demonstrate that the planetary phenomena we refer to as the climate is a historically specific scientific understanding that emerged from the advent of meteorology and classical climatology connected to the creation of colonial, imperial, and state territories since the 19th century. The production of meteorological knowledge on these new geographical scales of colonial, national, and imperial territories not only made visible the environmental qualities of a specific 'place' but also the connections between weather phenomena across a large distance. The global maritime and large continental empires collected statistical data that gradually made visible the climate as a regional, national, and soon planetary phenomenon (Coen, 2011:47, 2016). The phenomenon known as teleconnections, for instance, is made visible by statistical analysis of weather data that connects weather anomalies in one place to another across space-time as parts of an interconnected climate system (Adamson, 2020). These statistical and instrument-dependent data about the weather displace visceral, descriptive, and vernacular forms of knowledge about the weather, and in doing so naturalised large-scale geographical entities. Thinking about 'natural' phenomena on these scales, therefore, is the outcome of co-production between science and state building (Coen, 2016:309).

Atmospheric Sciences and the Territory's Vertical Dimensions: From Modern Territoriality to Techno-territoriality

In this section, I illustrate, using the insights from the History of Science and Science and Technology Studies, that the planetary conception of climate is intimately linked with the historical creation and governance of specific territories by imperial, colonial, and national political authorities since the 19th century. Following the co-productionist approach to the entanglement between environmental science and environmental governance, I argue that the production of meteorological knowledge and the emergence of the planetary conception of climate were inseparable from the modernist conception of territories as demarcated physical environment controlled and claimed by specific political authorities. Existing approaches to the climate in IR have focused on its vertical and therefore de-territorial

qualities. In doing so, they have overlooked the co-production between the geographical scales used in knowledge of the vertical dimension and territorialised political orders. Through a brief survey of existing works in the History of Science on the geographies of atmospheric sciences and knowledge about weather and climate, I wish to demonstrate that the current understanding of climate is the (unintended) result of the complex histories between meteorological knowledge production and state governance of people and the environment through techno-territoriality.

On the face of it, the conception of a singular, planetary climate is the antithesis of the anthropocentric and methodologically nationalist understanding of the world as discrete territories that are (in most cases) demarcated. The contemporary conception of the climate is made possible by modern climate science as a geophysical science concerned with the interactions between atmospheric circulations and the physical properties of the planet. The technoscientific and conceptual tools of modern climate science facilitate the emergence of a new planetary spatiality and temporality which synchronises otherwise distant but interconnected atmospheric phenomena into a single frame of Earth's climate. The planetary conception of climate is upon close examination assembled by knowledge and material infrastructures that are situated in diverse historical, political, and cultural contexts. The panoptic view of planetary climate is not simply produced through small privileged epistemic communities based on international governance frameworks but is also enabled by worldwide observational networks operated by different states and institutions. The production of meteorological knowledge on a planetary scale requires global infrastructures and the standardisation of observational practices (Edwards, 2006). Weather needs to be captured locally, and only then aggregated and abstracted into regional and global indicators of climate (Hulme, 2008:7).

The historical connections between the emergence of climate as a global environmental object, Cold War military technologies, and the technoscientific authority of international organisations such as the IPCC has been well documented (Heymann & Achermann, 2018). The use of computational global climate modelling has allowed climate science to be understood as an invention by the Global North, chiefly the United States (Coen, 2020;

Mahony & Hulme, 2018:407). Recent STS-inspired works in IR, too, have followed this specific histography of atmospheric science by attributing the geophysical understanding of planetary science to technoscientific and political developments in the Global North (Allan, 2017b). In doing so, the local and regional understandings of climate were understood to be displaced by the contemporary planetary conception of climate (ibid:143). However, this narrative overlooks the historical processes through which the concept of climate, the modern science of meteorology, and the establishment of meteorological technoscientific infrastructures became global.

Atmospheric science such as meteorology and climatology are concerned with atmospheric phenomena such as wind, humidity, temperature, and other weather phenomena that are neither static nor confined to a predetermined geographical area. Yet the knowledge about the state of the atmosphere is often organised through geographical scales that correspond to existing land-based geographical conceptions. The use of weather instruments, statistical analysis, weather cartography, the standardisation of measuring practices, and the establishment of national and international meteorological institutions, created a territorialised representation of weather phenomena that are often disassociated from the visceral and cultural understandings of weather and climate (K. Anderson, 2005; Hulme, 2008; Mahony & Calioti, 2017). Nowadays, we can 'view' numerical representations of weather phenomena anywhere in the world, which was made possible by the World Weather Watch which integrates data provided not only by civilian vassals and aircraft but also by land stations and meteorological satellites operated by the weather services of individual territorial states (Edwards, 2006). The current panoptic planetary gaze of the climate made visible through statistical indices such as 'global temperature' is predated and contingent on 'older' and territorially organised forms of meteorological knowledge.

The historical entanglement between modern atmospheric sciences and the modern territorial state has been occluded by the supposed naturalness of a 'globalised atmosphere' (Hulme, 2008:6). Atmospheric sciences such as meteorology and climatology did not suddenly become politicised in the era of anthropogenic climate change. Instead, the institutionalisation and standardisation of these disciplines were closely associated with

political efforts to study and govern specific territories (Mahony & Calioti, 2017). Both weather and climate were made visible and consolidated as parts of the environmental governance at the scale of various territorial authorities through the use of technoscience in state governance (Mahony, 2014:120). Modern state territories are produced by historically specific forms of knowledge and material technologies (Braun, 2000; Elden, 2007, 2013a). These forms of knowledge and material technologies are not necessarily earthbound. The governance of the population and the economy requires knowledge and technologies that engage with the atmospheric, geological, and microbial dimensions of the territory. These dimensions are invariably negated in the cartographic representation of the modern international system.

Meteorological science is a site through which geographical imaginations of the vertical space, the climatic qualities of national territories, and the rationales of environmental governance are produced. In that regard, knowledge of weather and conceptions of climate are inseparable from the social construction of space, territories and the imbrications of power relations in geographical imaginations (Coen, 2011, 2018; Grove, 1997; Hulme, 2008; Mahony & Randalls, 2020). Ideas about weather and climate were often parts of the social construction of distinct geographies (K. Anderson, 2005; Boia, 2005; Mahony, 2014). More importantly in the context of modern atmospheric sciences, the standardisation and instrument-dependent knowledge about weather and climate, which displaced older visceral, descriptive, and vernacular forms of weather knowledge, can help to naturalise larger geographical scales of state territories alongside other space-making knowledge and technologies. The technical sophistication and the geographical and temporal scales of coordination require a form of centralisation that cannot be replicated by individuals or actors operating on a small geographical footprint (K. Anderson, 2005:2). Seen in this light, the dominant way through which we capture the physicality of climate through ground weather indices - temperature, precipitation, wind speed etc - are not simply disinterested scientific pursuits but constitutive in the making atmospheric phenomena over a certain physical space visible to people. Moreover, the representations of weather as predictive and manageable natural phenomena and the causal understandings of the relationship between human

societies and climatic variations were entangled with political concerns ranging from economic management to the maintenance of racial hierarchies (Livingstone, 2002).

Nevertheless, whereas the geographical scale of the territory, the instruments, and the scientific concepts might be manmade, the environmental forces and human beings' embeddedness in them are not. The physical environment of the territory is not simply a space through which human political power is unconditionally exercised (J. Clark & Jones, 2017:125). Instead, the materiality of the state territory is prefigured in the attempts to control it (Elden, 2017). Modern state territories, therefore, are created through techno-territoriality, or the combination of knowledge and material technologies that make possible the governance of the human political order's embeddedness in the natural environment. The emergence of metrological government reflects not just the dependence on agriculture, transportation, commerce, health, and military planning. More importantly in the context of this section, the use of meteorological knowledge by state authorities also suggests that the territory's voluminousness is governed through volumetric means of calculating, measuring, and managing the atmosphere's physical properties (Billé, 2020:5; J. Clark & Jones, 2017:131; Elden, 2021:8).

The political, personal, and institutional entanglements between atmospheric sciences and modern states and empires mean that activities of meteorological knowledge production are grounded in specific geographical, historical, and cultural contexts (Mahony & Calioti, 2017:2). In that regard, meteorological knowledge is territorialised. The meteorological knowledge of a specific territory is determined not only by the atmospheric forces and geophysical features but also by the territorial boundaries and the ideological underpinnings of the political authorities. In the 19th century, meteorologists in European countries understood that to make reliable and timely forecasts they needed to collaborate and share data across borders using telegraphic data exchange (Edwards, 2006:231). In large continental empires such as Russia and Austro-Hungarian Empire, the government divided the imperial territories into climatic zones as a part of projects of population management and agricultural development (Coen, 2011:47). The combination of environmental specificities and ruling ideologies can give rise to specific forms of metrological knowledge and focuses on the specific atmospheric

phenomenon. In British India, the Indian Meteorological Department focused on monsoon forecast, an impossible endeavour, owing to the requirements of governance in a 'tropical' geographical setting (Carson, 2021). In the study of atmospheric sciences in Habsburg Austria, Coen demonstrates how a distinctive approach to dynamic climatology – attentive to local climatic variations and trends can be conceptualised at a larger geographical scale as 'unity in diversity' (Coen, 2018:123). As a part of the imperial efforts to fend off the challenge of nationalism to the multifarious Habsburg Empire, the empire's climatic diversity was represented as crucial to its economic self-sufficiency (ibid:56).

But meteorological knowledge is also constitutive of the knowledge about the environmental qualities of a specific territory, and therefore the political rationalities used in the governance of the territory. In that regard, knowledge about atmospheric phenomena and their impact on a specific physical environment helps to territorialise a specific geographical space 'from above' through the territorially organised visibility of weather patterns and their surface-level impacts. The concept of climate understood as the long-term characteristics of weather in a specific place is not simply transferable across different geographical scales (Hulme, 2008:6). Until the mid-20th century, climatologists placed great emphasis on local diversity presented in detailed local data and were sceptical of generalised explanations on a global scale (Heymann & Achermann, 2018:610). Large continental and maritime empires were the first to find out about the climatic diversity, and over time, the connections between regional variations in weather patterns (Coen, 2018; Grove, 1997; Heymann, 2019; Mahony, 2016). The atmospheric forces and the causes of a territory's climatic character do not correspond neatly to territorial boundaries (Cullen & Geros, 2020) nor a panoptic imperial vision (Mahony, 2014, 2016:36; Naylor & Goodman, 2020:42). The service of meteorology and climatology in empire-building in the 19th century have unexpectedly unveiled the operation of large-scale pressure systems and global-scale atmospheric circulations (Heymann, 2019). The nascent planetary conception of the climate has turned the vertical dimensions of specific territories into a demonstration of the arbitrariness of political boundaries. But paradoxically, the presence of environmental forces that traverses national territories also helped to cement the idea of modern state territories as the demarcated natural environment (Shah, 2012). In doing so, the complex historical roles played by meteorological knowledge, and by implication

other environmental knowledge about the territory's materiality, in constituting the political rationalities used in the governance of environment and population can be overlooked.

The histories of territorialised national weather services and the bureaucratisation of environmental knowledge production remain under-researched. Nevertheless, by the late 19th and early 20th century, major national, colonial, and imperial powers such as the U.S. (Baker, 2018, Austro-Hungry (Coen, 2018), British India (Carson, 2021; Cullen & Geros, 2020; Mahony, 2016), Japan (Morris-Suzuki, 1998; Takarabe, 2020), and Argentina (Dimas, 2022) have begun to organise the collection of meteorological data on the scale of large territorial states and colonial empires. By 1935, 54 countries and territories had one or multiple meteorological services that obtained membership in the International Meteorological Organisation (Gregg, 1935). The historical emergence of 'meteorological governance' not only reflects a standard of civilisation based on the control of the environment (J. Yao, 2021) but also made visible specific human-environmental entanglements and is constitutive of the specific political rationalities that are used in environmental governance (Whitehead et al., 2007).

By the early 20th century in East Asia, the science of meteorology was closely connected to the territorial aspirations of both nation-states and colonial empires. In Japan, the institutionalisation of meteorology went hand-in-hand with Japanese colonialism. The first meteorological observatory was established in Hakodate, Hokkaido in 1872, followed by the establishment of a central observatory in Tokyo. The Hokkaido Observatory was established with the help of the Smithsonian Institute which recruited American scientists and engineers for Japan's colonisation efforts in Hokkaido (Takarabe, 2020). During the Second World War, Japanese 'tropical climatology' formed a part of the discursive repertoire that justified Japan's southward territorial expansion through the climatological determinism of Ellsworth Huntington (Zaiki & Tsukahara, 2007). Increasingly, the control and monopoly of weather data in a specific region became a marker of the state's territorial claim. In the late 19th century, the Royal Hong Kong Observatory sought to monopolise typhoon warnings in the territory and tried to stop Spanish Jesuits in Manila from doing so in Hong Kong (M. Zhu, 2020). The ability to accurately forecast adverse weather events was a crucial part of the state's scientific

competence to render the natural environment legible and amenable to governmental intervention.

The collection of meteorological data was not only politically significant in a technical sense as weather forecasting was crucial for agricultural development, maritime and aviation transportation, and military planning. Moreover, the emphasis on both variation and interconnectedness enabled by the multi-scalar and geographic connotation of climate can challenge and support territorial division through 'natural' climate regions. As a result, the development of meteorological science and the accumulation of data was important not only to the state's technical ability to govern its territory but to the representation of a territory as a distinct natural environment. It is impossible to state categorically how meteorological knowledge shaped the political rationalities of state governance, beyond the placeholder statement that knowledge about the weather and the social impacts of climate matter in the management of socioeconomic lives. In that sense, meteorological knowledge helps to structure how a territory is governed and contested by making visible the ground-level impacts of its vertical dimension through volumetric indicators such as perception, temperature, and potentially disastrous weather phenomena.

In China, the control and collection of meteorological data became the domain of governmental concerns with weather forecasting, agricultural production, aviation, military intelligence, and disaster prevention in the early 20th century under the new modernising state. The efforts of centralisation and extension of meteorological infrastructures can be interpreted as one way to actualise control over the sovereign territory of China. In the following sections, I analyse the scientific works of meteorologists such as Zhu Kezhen and Hu Huanyong. They were critical figures in both meteorological knowledge production and state-sponsored scientific activities. I demonstrate that their voluminous understanding of Chinese territory via the interactions between atmospheric forces and geophysical features not only reshaped the understanding of China's alleged problem of overpopulation but also naturalised the ethnocultural frontier as an ecological barrier. The development of meteorology in China can be understood as part of a larger narrative about the development of modern science or even meteorological science. Nevertheless, as I will demonstrate

through my empirical research, the geographical scale that is used by scientists as well as the underlying political rationalities mean that the visibility of a territory's environmental qualities is part and parcel of the territorialisation process itself.

Meteorological Sovereignty and the Institute of Meteorology in Republican-era China

The exclusive 'control' over meteorological data and the ability to issue weather forecasts in the name of the modern Chinese state was a matter of national sovereignty in early 20th-century China. Before the establishment of Academia Sinica's Institute of Meteorology in 1928, meteorological knowledge production was the exclusive realm of colonial and private agencies operating in China's coastal and river colonial enclaves (Bickers, 2016). French Jesuits, Japanese, German, British, and Russian colonial administrations all established their own observatories and territorial weather services (Bickers, 2016; Wang & Ding, 2014; Zhu, 2020). When the Central Mereological Observatory of Japan hosted a conference for the directors of weather services in the Far East to discuss the standardisation of radiotelegraphic data transmission and cyclone forecast in 1913, the nascent Chinese Republic which lacked a national weather service was not invited to the conference. The development of meteorological infrastructure in China was largely concurrent with the demand for colonial settlement and maritime trade links from agents of European and Japanese colonial powers. The most comprehensive and integrated networks of weather stations in coastal and riverine locations were centralised and standardised by the Jesuit-ran Zikawei (徐家匯) Observatory in the French Concession of Shanghai (ZHU, vol.2 1929:2). Yet the primary concern of the colonial meteorological network was the study of cyclones that frequented China's coasts (Bickers, 2016; Williamson & Wilkinson, 2017). During the Qing era, the coastal meteorological system and its pivot towards the global scientific networks were distant from the Qing government's concern regarding droughts, flooding, and agricultural output in the interiors. In other words, the external orientation of the colonial meteorological network was not fully compatible with the need of the Chinese state to govern its agricultural heartland and frontier regions.

The significance of the establishment of a national weather service was not simply the provision of legibility and the control of nature within the territory of the modern Chinese state (Scott, 1998). Even before the era of aviation, the visibility and knowledge of the vertical dimension of the territory are connected to the knowledge and governance of 'earthly' matters from population health, and agriculture, to questions of morality and 'national characters' (Livingstone, 2002). The spatiality of human knowledge production on atmospheric phenomena means that atmospheric knowledge is invariably geographical, in the sense that it is tied to specific geographical imaginations including imperial and state territories (Mahony & Randalls, 2020). The production of meteorological knowledge is inevitably bound to exist forms of geographical imagination, cultural legibility, and material realities. Nevertheless, the visibility of the dynamism and interconnectedness of the vertical dimension can also reshape geographical imaginations, cultural legibility, and even material realities.

In the remainder of this chapter, I will follow how the establishment of an extended network of weather stations, the application of new atmospheric scientific practices, and most importantly the imbrication of scientific activities and political rationalities in the 1920s and 1930s China helped to reshape the understanding of China as a natural environment situated within larger atmospheric forces. The visibility of the impact of atmospheric forces on the Chinese environment, such as climatic variability manifested chiefly as the variation in annual precipitation fundamentally changed the static understanding of Chinese territory simply as a 'landmass' waiting to be exploited and colonised. Instead, the Chinese environment came to be conceived based not on the assumed sameness of the nation, but through its internal environmental diversity. More importantly, the novel understanding of the territory's vertical dimension provided by modern meteorology reshaped the political rationalities used in the governance of frontier regions, agricultural development, and population management.

The production of new *scientific* understandings of China's environmental qualities was dependent on the global circulations of scientific ideas, material technologies, and the

transnational network of scientific experts. But the global circulatory nature of modern scientific practices does not erase their situatedness (Haraway, 1988; Livingstone, 2003) and their entanglements with political forces (Jasanoff, 2004b). Therefore, to study how scientific practices are adapted and translated into new contexts, I focus on the intellectual and professional histories of key individuals (Feichtinger, 2020c). Here, I follow the scientific and political works of Chinese meteorologist Zhu Kezhen, who was not only the scientist who introduced modern climatology to China but also a technocrat chiefly responsible for the establishment of the Institute of Meteorology at Academia Sinica（中央研究院氣象研究所）in 1928. Before the establishment of the state's metrological bureau due to war efforts in 1941, the Institute of Meteorology was the de facto state meteorological service in China.

Zhu Kezhen, also known as Chu Choching, is the foremost scholar in meteorological and climate sciences in early 20th century China (Amelung, 2021). He was a crucial figure in the scientific nationalist movement and among the many Euro-American educated scientists who wielded an outsized influence on the Chinese state's scientific policies and external relations through their international networks and cultural capital (Z. Wang, 2002b). One of his mentors at Harvard was Robert D Ward, the first professor of climatology in the U.S. and a translator of Julius Hann's canonical handbook of climatology (Amelung, 2021; Ward, 1928:94). Like his contemporaries, Zhu was deeply influenced by the environmental determinism of Friedrich Ratzel and the climate determinism of Ellsworth Huntington – who was also a student of Robert D. Ward. Zhu played a part in the popularisation of environmental determinism in 1920s China (Z. Chen, 2012:78, 2016:150).

Through his scholarly political activism, Zhu was advocating for the development of an extensive national meteorological network owing to their practical utilities as well as symbolic importance. The concerns for territorial integrity and effective governance were the key focus of Zhu's advocacy for the development of meteorology in the 1920s. The absence of observatories in the frontier area and the monopoly of meteorological data by foreign colonial powers was a major concern for Zhu. In a 1921 article calling for the establishment of more weather stations, he wrote:

'the superiority of various nations in the world today can be determined by the ability of their countrymen to control the natural environment' (ZHU vol1 1921:344).

He laments that the French-run Zikawei Shanghai Observatory could compile meteorological data from all over China via wireless telegraphy and therefore effectively substitute the Chinese state (ibid). He was particularly alarmed by the publication of weather data from the Central Observatory in Tokyo and bemoans that the climate of China thus becomes the climate of Japan. For him, the value of meteorological data to national defence, commerce, and agriculture means that the collection of meteorological data by foreigners amounts to an invasion that must be resisted. (ZHU Vol.2 1928:24).

The extension of territorial logic to scientific data in China was not isolated to meteorology alone (Z. Wang, 2002b). In the 1920s, a community of Chinese scientists had been pressuring the central state to limit access to historical and cultural artefacts, biological specimens, and other forms of scientific data on Chinese territories to foreign researchers. As a result of their effective petition, in 1929 the new Nanjing government consulted Academia Sinica to formulate a policy that would help regulate foreign research activities in China. As a result of the consultation, foreign research teams had to submit detailed proposals to the Chinese government for approval, and China reserved the right to send its scientists to participate in joint research (S. Chen, 1998:117). Zhu used the fervent nationalist sentiment of the time to gain access to meteorological data produced by foreign researchers.

In 1927, Swedish geographer and explorer Sven Hedin's planned expedition to Mongolia and Xinjiang was met with strong opposition from the Chinese scientific community (The New York Times, 1927). A compromise was reached, and five Chinese scientists (including one meteorologist) joined. The location of the expedition in an area where Chinese sovereignty remained, by and large, fictional as well as its sponsorship by Lufthansa was particularly alarming for the Chinese scientists. When the team returned, two boxes of meteorological data collected in Xinjiang and Gansu by the Swedish and German scientists were handed to the Institute of Meteorology for inspection before repartitioning to Europe. Zhu instructed the institute to pay particular attention to the data on high-altitude atmospheric conditions

because of their significance to 'not only science but also aviation' (ZHU vol.22 1930:343). The episode of the Sino-Swedish Scientific Expedition is an example of how global technoscientific practices were bound up with the territorial logic of specific states. In this case, the scientists of republican-era China, ostensibly a weaker state, could actively partake and shape forms of knowledge and decision-making within China through their position vis-à-vis the Chinese state and the transnational network of scientists.

Zhu's professional connections and knowledge were instrumental in the establishment of China's first national meteorological observation network. After he was appointed the head of the newly established Institute of Meteorology in 1928, Zhu came up with an incredibly ambitious plan that envisioned over 1,000 weather stations across China (ZHU vol.2 1929:25). The plan was perhaps unrealistic given the dire financial circumstances as well as the inability for the government to establish effective control in the Central Asian frontiers. China lacked the technology, equipment as well as trained professionals for the task Zhu envisioned. But Zhu's connection with the transnational network of experts meant that he could leverage his professional network for technical assistance and knowledge transfer. For instance, the director of the Manila Jesuit observatory, Father Selga, was an acquaintance of Zhu (Amelung, 2021), and Zhu sent his assistants to the Jesuit observatory in Manila for training (ZHU vol.2 1929:2). Zhu purchased advanced equipment from Europe, and acquired a comprehensive collection of scientific reference materials, including editions of canonical meteorological journals in German as the Austrian journal *Meteorlogische Zeitschrift* and the German *Petermann's Mitteilungen* (ibid). Through the collaboration between Chinese, Swedish, and German scientists during the various expeditions led by Hedin between 1927 and 1935, seven weather stations were established in Xinjiang and Gansu (X. Chen, 2012) and valuable high-altitude meteorological data were gathered from the Gobi Desert (F. Liu, 2021). By 1936, the number of weather stations had increased from 50 in 1929 to 80 in 1936 (X. Chen, 2012).

Nevertheless, Zhu was frustrated by the absence of meteorological infrastructure in the frontier regions since most stations 'are contracted within a narrow belt along the coastal regions and in the Yangtze valley' (ZHU Vol.05 1929:3). The 'interior parts of the country such as Tibet' he laments are left 'almost blank' (ZHU Vol.05 1936:285). In a 1931 plan for the

investigation of climate in the Northwest, Zhu notes that there are only four weather stations in the Western half of the country's landmass (ZHU Vol.22 1931:343). Reflecting the contemporaneous concerns with the lack of control over the frontier regions, Zhu argued that the nationwide coverage can facilitate agricultural settlements which can in turn help with territorial defence (ibid). Crucially, Zhu's personal view regarding the prospect of settler colonialism in the frontier regions would change in a few years as more data on the climatical variations within China were gathered. Moreover, as we will see from Zhu's writing on climatic variation within China and atmospheric conditions above China, the scarcity of data and lack of observatory coverage in the frontier regions did not prevent Zhu from applying the theory and knowledge about climate to the entirety of the country. More importantly, the understanding of climatic variability within China was interpreted through the cultural legibility of China's ethnocultural geographic division. In the next section, I show through a close reading of Zhu's theory of climatic provinces of China, how the choice of specific geographical scales helps to 'naturalise' the territory of China.

Naturalising the Territory: the Climatical Provinces of China and the Politics of Geographical Scales

By the mid-19th century, the Russian and Austro-Hungarian empires were divided into climatic zones for population control and agricultural development (Coen, 2011:47). The influential climate classification scheme developed by the German-Russian meteorologist Wladimir Koppen, which is still in use today, was first developed for agricultural and medical planning (Coen, 2020). Zhu had been particularly concerned with the standard of living and population growth in the rural areas where most of China's population resided at the time. Following the examples of Western countries, he suggested that China, too, should be divided into various climatic zones to determine what types of crops, forestry or livestock are best suited for each region. In 1922, Zhu notes in the magazine *Kuxue* (Science) that climatic zoning and meteorological data were already used in European and the colonies for agricultural planning and forecasting. Using Koppen's climate classification, he demonstrated the climatical reasons behind the regional specialisation of crops in China (ZHU Vol.01 1922:398).

The '*Climatic Provinces of China'* of 1929 was the first scholarly attempt to devise a climatic subdivision specifically for China 'from a purely meteorological point of view' (ZHU Vol.05 1929:161). In this canonical work, Zhu surveyed a range of existing classificatory schemes of world climates, including that of Koppen. The territory of China and the traditional forms of spatial division in China operated as the backdrop of Zhu's schema as he deliberated which climatical features should be the basis for climatic zoning. He emphasised that 'the separate division should agree with the *natural regions* of the country, and if possible, with the political units of the first order (ibid). A '*natural region*' is determined by a particular combination of natural characteristics such as topographic, climatic, and vegetational which they exhibit – it is determined by the 'intrinsic conditions' which tend to be permeant (Roxy, 1926:379). The regularities of certain environmental qualities are not 'natural' qualities in themselves, but indicative of the regularities established by the observer at certain geographical scales. Some patterns are only observable on specific scales, and the choice of ecogeographical scale is, therefore, an important epistemological moment (Sayre, 2005:280).

Zhu's choice of geographical scales which corresponds to traditional geographical entities such as the north-south divide, and ethnocultural geographical units such as the Steppe or Tibet, therefore, determines the regularities he establishes. The 'intrinsic' climatical conditions considered by Zhu were temperature, precipitation, and annual distribution (ZHU vol.05 1929:167). He adopted temperature for the climatic zoning in 'China Proper' because 'where the rainfall is abundant, temperature becomes the vital factor'. Rainfall was chosen to be the dominant determining factor for 'Mongolia, Manchuria and Sinkiang' because of the alleged limited precipitation in these regions (ibid). The a priori use of existing geographical division was suggestive of the territorial concerns and pre-existing beliefs that undergirded Zhu's typology of climates in China. Interestingly, in the Chinese translation of the same text,

the word ‘China Proper’ was erased from the same passage owing to its potentially divisive nature (ZHU Vol.02 1929:12).

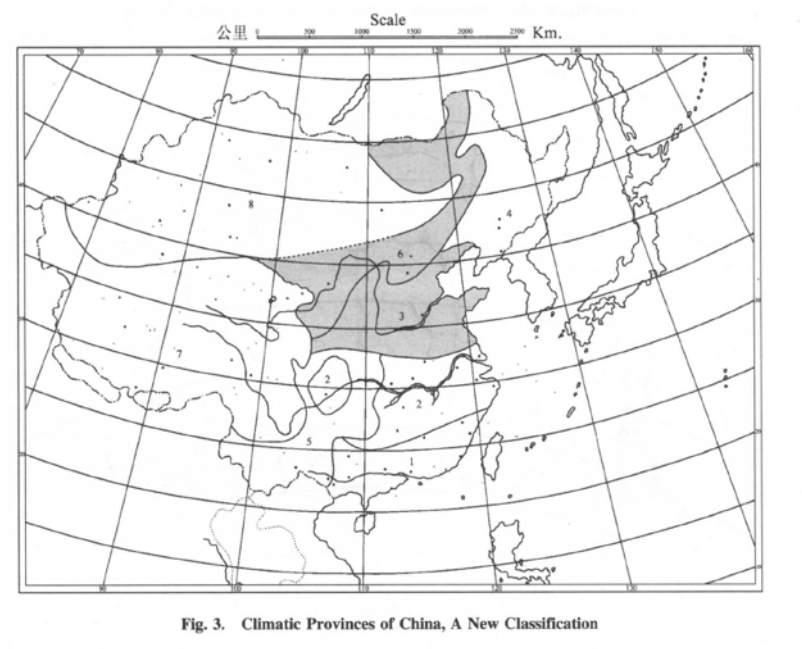

Fig. 3. Climatic Provinces of China, A New Classification

Figure 1. ‘Climatic Provinces of China, A New Classification’ (1929)

Source: Chu Choching

Institute of Meteorology

Nanjing, China

Available at: ZHU Vol.05 1929:173

The decision to selectively prioritise the geographical distribution of variations in rainfall and temperature was a political move. In 1929, the data on recorded temperature and rainfall in Mongolia, Xinjiang, and Tibet were extremely scarce in the absence of weather stations. Zhu admits in writing that the distinction between the Steppe climate and the Mongolian climate could not be determined and that he is still waiting for the data on Xinjiang from the Hedin expedition (ibid: 178). The distinguishing feature of Tibet was its altitude rather than data on rainfall and temperature. The reductionism applied to a vast area erases otherwise diverse forms of vegetation, variation in soil types, and precipitation that can be found in Tibet. In the

mountainous area, the microclimates can vary dramatically depending on atmospheric thermodynamic interaction with the topographical features. From Zhu's other writings, we know that he had consulted Western explorers' accounts of Tibet (ZHU Vol.01 1927:570), especially Sven Hedin's description of his 1903-1908 expeditions to Tibet (ZHU Vol.02 1934:166). Hedin's accounts contained many references to the variation in precipitation, vegetation, and animals across Tibet that are difficult to ignore (1922, 1934:82). From Zhu's work on historical climate in China, we know that he can derive the underlying climatical conditions through botanical and animal proxies in historical records. Nevertheless, Zhu chose to circumvent these details by operating at a political and geographical scale that deliberately ignores embodied experiences of microclimatic variations. As Coen puts it, the choice between emphasising or de-emphasising diversity, as well as between presenting a coherent overview or patchwork of localised details are strategic political decisions (Coen, 2018:11,2).

The reduction of Tibet's climate to altitude is perhaps indicative of the influence of Julius Hann's approach to generalised mountain climates in his *Handbook of Climatology* (Coen, 2010:855) – a canonical work in which Zhu was well-versed (Amelung, 2021:8). Hann's generalisation, which makes possible large-scale climatic overviews of topographically complex regions, was a part of Habsburg Austria's imperial approach to climatology that viewed Habsburg territory as both a coherent unit of study as well as a natural historical unit (Coen, 2010:861). The political context that belies Zhu's climatic provincial station of Tibet was not dissimilar. The climate determinism of Ellsworth Huntington in the 1920s and 1930s China provided a scientific way of naturalising both the ethnocultural diversity as well as Han superiority within China (Z. Chen, 2012, 2016). Seen in this light, Zhu's division of China into South China, Central China, North China, Manchuria, Yunnan plateau, Steppe, Tibetan, and Mongolian climate zones corresponded neatly with existing forms of geographic division of the country based on ethnocultural differences. The 8 zones, according to Zhu, not only determine the physiology, health, and cultures within them but also demonstrate the vitality and adaptability of Chinese people (ZHU Vol.02 1937:396).

Thus far, we have seen how territorial logic is imbued in Zhu's use of geographical scale in his theorising of China's climatic variations. Moreover, the legibility of China's physical

environment, conceived through culturally legible geographical entities and scales, allowed for Chinese territory to be 'naturalised' as an amalgamation of different types of climates. The use of pre-existing geographical and cultural designations allowed for the ethnocultural entities of China to be enfolded within a scalar hierarchical framework and viewed as a constituent of a large climate system at the national geographical scale/level. In doing so and with the support of environmental determinism, the climatic variations as well as the resultant differences between different ethnocultural communities appear to be the natural outcomes of China's vast territory.

What is equally important is that this territorialised understanding of climatic variations operates not only through geographical scales but also through a temporal hierarchy. Zhu is not only a natural scientist but also an environmental historian. Zhu took advantage of China's extensive historical records of meteorological knowledge and reconstructed the climatic history that operated through the geographical scale defined by the modern nation. Using what is known as proxy data, such as botanical or agricultural observations, Zhu reconstructed 5,000 years of climate history (K. Zhu, 1972). Zhu's research on the historical climates of China places the climatic changes in Central Asia within the overall climate system of China. Combing the principle of teleconnection in atmospheric conditions with the geographical extent of modern Chinese territory, Zhu demonstrated that dynastic declines and invasions from nomadic peoples in China were correlated with historical droughts and famine in Central Asia (ZHU Vol.05 1925:466). A territorialised understanding of China is, therefore, projected backwards in history and the embeddedness of human beings in the ecological and environmental process, therefore, becomes a vindication of the historical links between China and Inner Asia.

'Territorialising From Above'

By the 1930s, atmospheric sciences entered the era of vertical dimensionality owed to the application of the principles of thermodynamics to the atmosphere itself and the availability of aeronautical technologies that can transfer real-time data from the upper atmosphere. The

concept of climate gradually shifted from an earthbound geographical concept to a dynamic atmospheric physical phenomenon (Coen, 2020; Heymann & Achermann, 2018). This shift in scientific theory and material technologies also allowed for geographical imaginations to be extended into the vertical dimension. The visibility of atmospheric physical properties challenged the static, land-based understanding of climate and territory's materiality. The fluid properties, verticality, and continental scope of atmospheric circulations visibly defy the territorial boundaries and existing geographical imaginations and scales. Therefore, the visualisation of a territory's climatic qualities requires the territory to be reconceptualised as a voluminous space: a place where the three-dimensional land-based environmental features interact with thermodynamic atmospheric forces that operate on a large r geographical scale. This meant that Chinese territory was no longer perceived as a landmass with distinctive climatic qualities but rather as an environment that is the result of dynamic interactions between surficial and atmospheric forces. In doing so, the Chinese territory is extended into the vertical dimension. In this section, I demonstrate how the discovery of the atmospheric causal mechanism behind China's climatic variability gave rise to not only a voluminous understanding of Chinese territory but also highlighted its *qualities* as an overpopulated, fragile environment. Since the territory is equated to the physical environment, new forms of environmental knowledge also reshaped the rationalities that undergird the governance of the territory through centralised planning and population control.

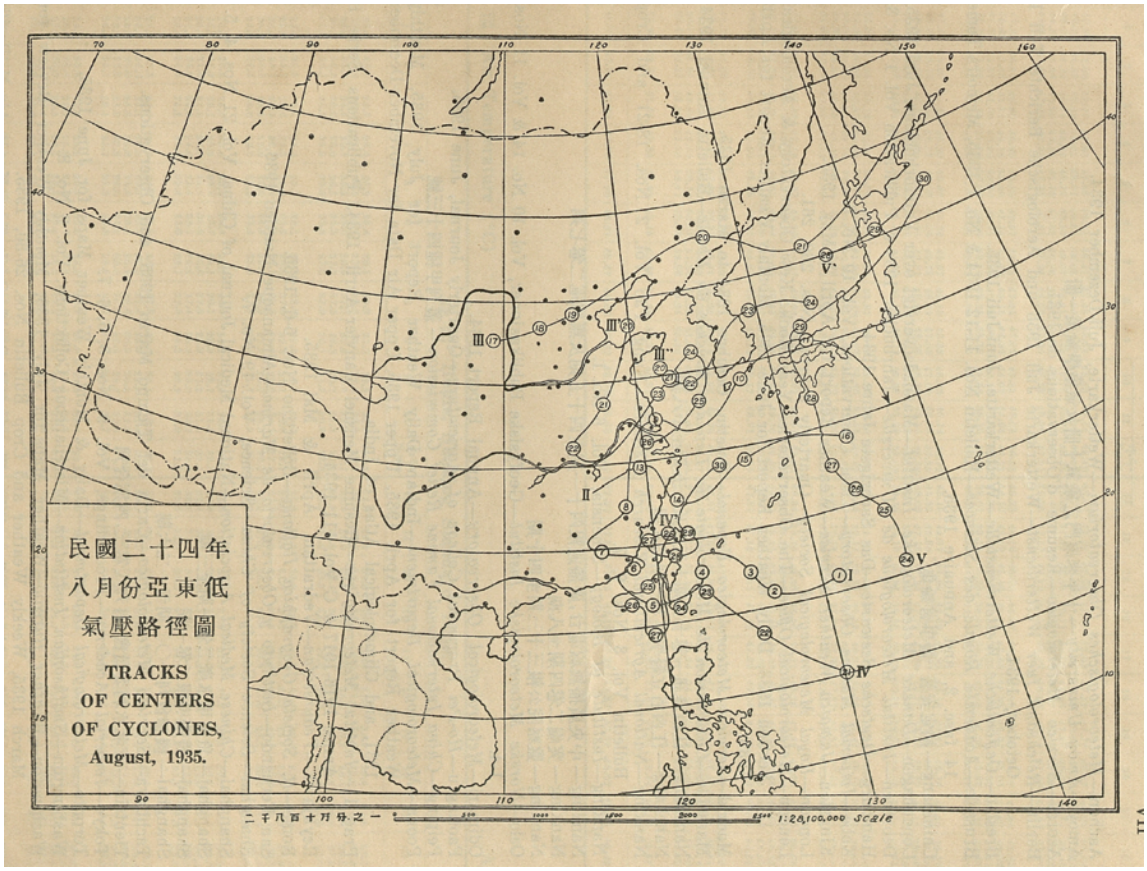

Figure 2. 'Tracks of Centres of Cyclones'

Source: Monthly Meteorological Bulletin, August 1935 (page VII)

Academia Sinica, National Research Institute of Meteorology

Nanjing, China

By 1933, the newly available instrumental data from new state-run weather stations, the Jesuit network of weather stations as well as descriptive data from Russian sources and Sven Hedin enabled Zhu to theorise the atmospheric thermodynamics behind the seasonal climatic variations across China (ZHU Vol.02 1934:166 & Vol. 05 1934:202, also see Figure 2). In an important scientific paper entitled *Circulation of Atmosphere Over China*, Zhu identified three main factors that determine how the East Asian Monsoon moves across China: the general pressure distribution in East Asia and the Western part of the North Pacific Ocean; the frequency and trajectories of cyclones; and the country's topography (ibid). The climatic variation across China measured through wind regimes (prevailing winds), temperature, and precipitation in the same season can be explained by the interaction between atmospheric

circulations and topographical features such as mountain ranges (K. Zhu, 1934). On one hand, the conception of climate as a holistic multi-scalar system that reconciles regional variation with causal mechanisms operating at a larger scale again naturalises China as a natural geographical scale. In doing so, the territory of China is embedded into the study of atmospheric conditions above the ground. On the other hand, the distribution of atmospheric pressure and cyclones is determined by factors beyond the country's land borders and high above. These factors are beyond the control of the state and therefore can only be managed instead through territorial governance such as weather forecast, agricultural planning, and population control.

The voluminous materiality of Chinese territory is construed by Zhu through its relative geographical position and interaction with larger atmospheric forces that we refer to as the Asian Monsoon System today. The Asian Monsoon System is a continental-scale environmental object that is produced through thermodynamic interactions between atmospheric circulations, the vast Asian landmass, and the two adjacent oceans. The impacts of the Asian Monson on seasonality, food security, economic development, and potential environmental catastrophes mean that the legibility and predictability of monsoonal dynamics are critical to the governance of territory and population. Because China's rainfall is also dependent on the monsoon, the knowledge of this transcontinental environmental object is crucial to minimising the adverse political consequences of serve flooding and drought-induced famine which China is known to be prone to.

Of course, the legibility of the Asian Monsoon is not singlehandedly made in one place, but the result of the global circulation of scientific knowledge and material practices. The discovery of the Asian Monsoon was inseparable from the entanglement between meteorological science and colonial state-building in British India (K. Anderson, 2005; Carson, 2021; Cullen & Geros, 2020). Nevertheless, despite the globality of scientific knowledge and the physicality of the environmental phenomena, how the Asian Monsoon System is understood at a specific location is inevitably the result of the co-production between political rationalities used in territorial governance and situated scientific practices. Although both China and India are subject to the Asian Monsoon System, and shared similar governmental

concerns with food security, the Monsoon's impact on seasonality, rainfall, as well as its variability across different time scales can be experienced differently (P. X. Wang et al., 2017). Although technological and conceptual shift has allowed the atmospheric circulations above territories to be seen, the orderings, ways of seeing, and conceptual frameworks used to organise the territory's vertical dimension remain bounded by the geographies of state territories and scientific knowledge production (Powell, 2007). Therefore, the geographies of atmospheric sciences and the materiality of atmospheric forces can help to naturalise a certain geographical scale 'from above'.

In this incidence, the climatic quality of China is made visible through the thermodynamic interactions between the geographical features of China and larger atmospheric forces. The visibility of these forces, and their impact on human society, not only helps to distinguish Chinese territory from other parts of the world through its distinct climatic properties but also cements the impression that the Chinese territory is a voluminous container made up of landmass and elemental forces. Zhu compared China and India to show that China is subject to a different sub-monsoon system, which was known as the southeast monsoon at the time, now known as the East Asian Monsoon. Zhu notes that both China and India are subject to the continental seasonal atmospheric thermodynamic dynamics such as the Asiatic low in summer and the Siberian anticyclone in winter (ZHU Vol.02 1934:189). He also observes through the statistical correlation between prevailing wind directions and precipitation levels across China that rainfall in China is dependent on the southeast monsoon (or East Asian Monsoon), a sub-system of the Asian Monsoon. This knowledge makes visible the underlying multi-scalar causal mechanism behind the contrasting climate between the arid northern parts of China and the lush southern parts of China. As Zhu notes, the direction of the southeast monsoon and the shape of China's coastline means that the moisture-bearing southeast monsoon travels along the coast of North China and soon becomes dry without causing heavy precipitation (K. Zhu, 1934:5). The Chinese territory (or any territory for that matter), therefore, is not a flat abstract space, but actively conceived as a voluminous with an uneven distribution of climatic and arable qualities due to the interaction between atmospheric forces and topographical features.

The unique qualities of the vertical dimension of China's territory are made visible by Zhu through a comparison with territories located in similar latitudes. The resultant aridity due to the interaction between north China and seasonal monsoons, he observes, creates a narrower belt of arable land in China when compared to regions in the U.S. and Canada at similar latitudes (K. Zhu, 1934:1). This means that much of northern China is semi-arid since annual rainfall is less than 500 ml, which puts into question the ability for that portion of the territory to support a dense and numerous population (ibid). Although the atmospheric causes of rainfall are not geographically confined, nevertheless, the effect itself can be depicted cartographically through isohyets – which divide the territory into zones characterised by a similar level of precipitation (see Figure 3). In doing so, the geophysical quality of the territory is understood via its interactions with atmospheric circulations and its impact on climatic variations. The materiality of the territory is therefore understood through the atmosphere's liquid and aerated qualities (Peters et al., 2018). In doing so, Chinese territory is understood as an overpopulated and fragile environment, or in Zhu's words a 'land of famine', borrowing the title of a 1926 book on China (K. Zhu, 1934:108). By representing

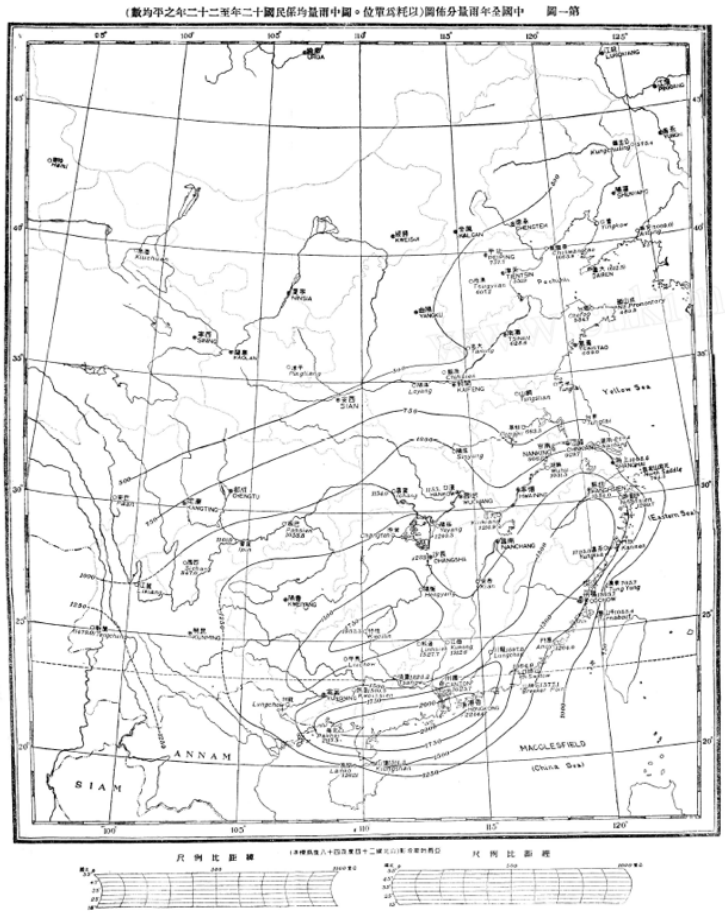

Figure 3. The distribution of annual rainfall

Source: Zhu, K. (1934). 華北乾旱及前因後果 The Aridity of North China: its Causes&Consequences. *Acta Geographica Sinica 地*

the surface-level environmental and social consequences of atmospheric dynamics geographically, Zhu has territorialised China 'from above' as an environmental container for the Chinese state and its population.

The Environmental Frontier and the Problem of Overpopulation

The new visibility of the consequences of the Chinese territory's embeddedness in larger atmospheric forces not only mattered for weather forecasts and economic planning. It radically transformed the political rationalities used in the governance of the frontier regions and the population. The population problem is inseparable from the perceived environmental qualities of the territory, rather than the size of the territory alone. Zhu was also enticed by the prospect of frontier settler colonialism as a resolution to territorial defence, overpopulation, and widespread poverty. In a 1926 article on population density, Zhu notes that population density alone is not an indication of overpopulation (ZHU, Vol.01 1926:513). Instead, whether a place is overpopulated is determined by the point of population saturation and existing population, contingent on food production, efficacy, level of industrialisation, and quality of life (ibid).

Having compared population density, arable land and rainfall between coastal Chinese provinces and Western European countries, Zhu asserts that China is already overpopulated. He argues that frontier regions such as Mongolia and Tibet are barren and unable to support more people whereas the population density of wealthier coastal provinces has already surpassed the levels found in industrialised Western countries (ibid). But it does not seem as if Zhu was fully convinced that the frontier regions of China are unable to support settler colonisation and agricultural redevelopment. In 1931, Zhu still states that one of the rationales behind his plan to expand the state's meteorological network to Xinjiang and the north-western provinces was to explore the possibility of agricultural settlement as a solution to the overpopulation problem (ZHU Vol.22 1931:343).

Nevertheless, by the mid-1930s, he became convinced of the environmental constraints of settler colonialism. In a 1936 university lecture, he explicitly referred to the 500 ml isohyet as an ecological barrier to frontier migration (ZHU vol.02 1936:317). Agricultural settlement in the northwest, he asserts, will only make the population more vulnerable to famines and droughts (ibid:320). Later in his life under the Communist regime, Zhu continued to advocate for population control through his official capacity at the state's science administration (ZHU vol.14 1955:135). Thus, the impact of meteorology on China's population policy cannot be overstated since many of Zhu's contemporaries shared similar views.

The more consequential outcome of Zhu's meteorological works was perhaps its challenge to the settler-colonialist view of the frontier regions that had been popular throughout the late 19th and early 20th centuries. The novel form of environmental knowledge about atmospheric circulations and their impacts on climatic variations was not only shaped by political rationalities concerning the governance of population, ethnic minorities, and territorial cohesion but also reshaped these rationalities in return. Zhu is not alone in his neo-Malthusian understanding of the human population as limited by natural constraints. What is new about his contribution to the understanding of the environmental and voluminous qualities of the territory is the cartographic representation of the rainfall distribution and the implied arability across Chinese territory. Zhu was fixated on the 500ml isohyet that cut across northern China as the boundary between productive arable land and dry land, but he did not provide any basis for this argument in his famed 1934 paper (K. Zhu, 1934). The reason behind his decision, it seems, is that he was comparing rainfall levels of Eastern U.S. and Canada, perceived by him as productive agricultural lands, with their counterparts in China located on similar latitudes (ibid:98).

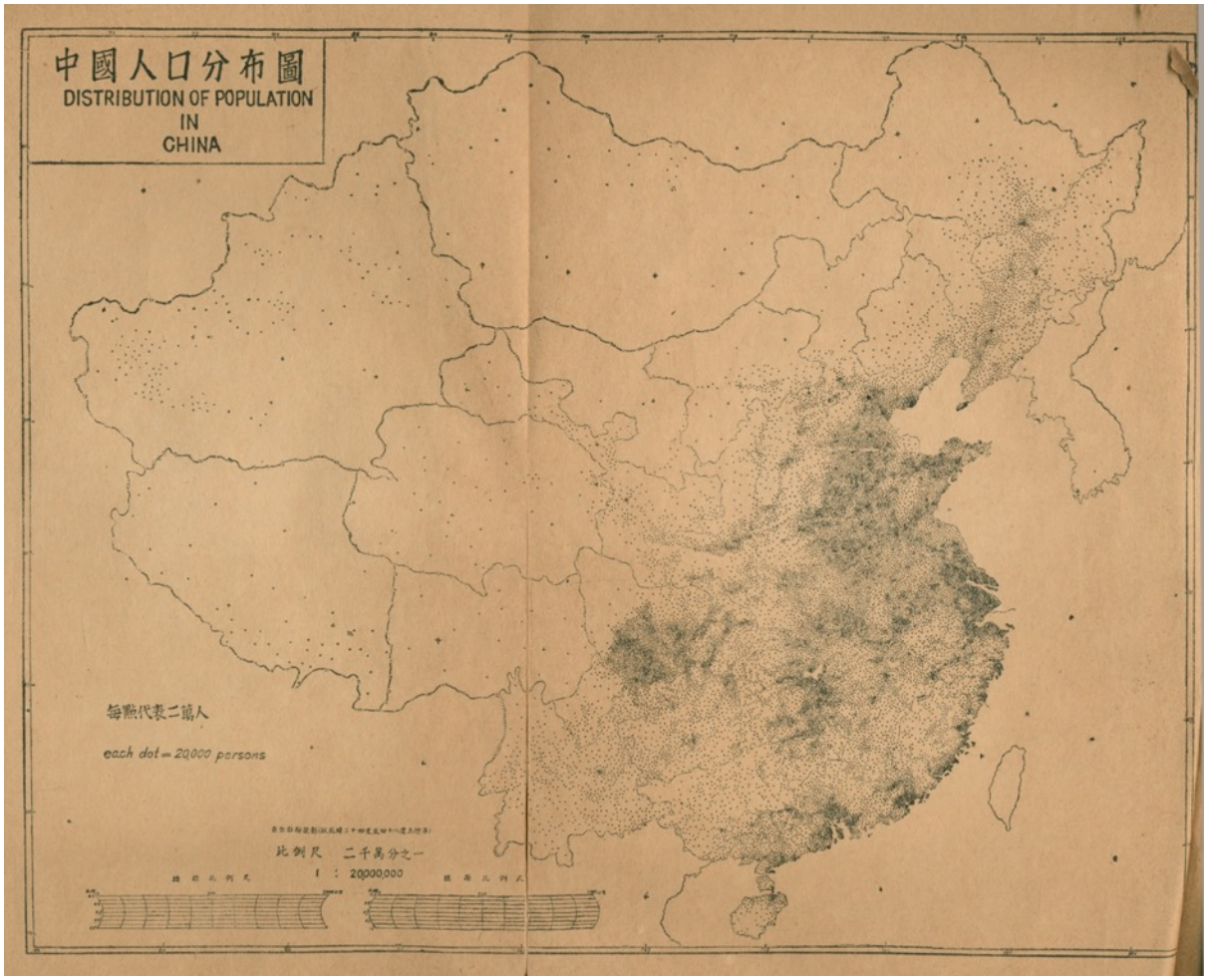

Figure 4. Distribution of Population in China (1935)

Source: Hu, H. (1935). 中国人口之分布——附统计表与密度图 (The Distribution of Population in China With Statistics and Maps). *Acta Geographica Sinica*, *2*, 33–74.

Whereas Zhu's inference of the relationship between precipitation level and population density was primarily concerned with northern China, his idea was soon picked up to understand the underlying 'natural' conditions that distinguish the frontier from China proper. Building on Zhu's works on the causes of climatic variation across China, Hu Huanyong, the chair of geography at the National Central University tried to examine whether China's overall population level had already exceeded what its environment can support. To do so, Hu cross-examined Zhu's metrological data with regional population records and topography in an

influential 1935 article entitled '*The Distribution of China's Population'* (中國的人口分布). At the time when various parts of the country were under different state, colonial, warlord, and indigenous administrations, the compilation of population data from various sources and records was a strenuous task.

Hu triangulated and compared his hand-drawn map population of the population density (see Figure 4) and the country's topography with Zhu's map of precipitations. He observes that the three variables are closely related (1935:43). Hu divided the country into 8 different zones based on the population density of each in descending order. Whereas Zone 1 includes the densely populated intensive wet rice cultivation area of the Yangtze Delta, Zone 8 includes all of Mongolia, Xinjiang, Tibet, and significant parts of the northeast near the Amur River. He notices that zone 8, which makes up 68% of the country's landmass, is roughly within the area beyond the 500ml isohyet identified by Zhu (ibid:48). Hu identified a straight line that runs from northeast to the southwest through the entirety of China's territory separating zone 8 from the rest of the country. This line roughly converges with the 400ml isohyet. The population divide on either side of the line, Hu writes, 'converges with the racial distribution within the country, the south-eastern half of the country is the world of the Han' whereas the north-western half 'is the domain of Mongolians, Tibetans, and Muslims' (ibid:44). This domain is largely made up of barren deserts, frozen land, and the occasional grasslands and waterbodies. Considering the frontier's aridity and the population density of the heartland, Hu concludes that the country is severely overpopulated given the amount of rainfall and arable land. Population migration and settlement in the frontier regions are difficult to sustain because of the 'natural limits of the territory' (ibid:48). The only place suitable for settlement and migration in the frontier regions, he concludes, is Manchuria which was under Japanese rule at the time.

Hu's division of the country based on demographics, precipitation, and terrain is known as the 'Hu Line'. As a geographic concept, the Hu line has gained canonical status in contemporary China as a part of the secondary school's geography curriculum and debated concepts in scholarly discussions. Of course, in the 1930s, the connection made by Hu between rainfall, vegetation, agriculture, and ethnic identity in China's north-western frontier

was hardly a revolutionary argument (see Lattimore, 1937). What made the 'Hu Line' noteworthy is its intermeshing of the problem of overpopulation with new environmental knowledge. A territory, therefore, is not simply a physical container for a population but is also understood to be an amalgamation of land, people, and atmosphere with its underlying mechanisms and inherent limits. This specific conceptualisation of the Chinese territory via its demographic, climatic, and topographical unevenness was the outcome of specific knowledge forms and deliberate imbrication of the territory's material features in the political rationale underpinning the governance of the territory.

Indeed, Hu and his geographical bifurcation were put into use for frontier governance and population planning by the communist state. After his rehabilitation following the Cultural Revolution, Hu worked for the population policy unit of the National Population and Family Planning Commission – the administration for China's birth control policies. The objective and unchanging materiality of the territory manifested via the trio of climate, arability, and land-to-population ratio forms the basis of his policy recommendations. The trio has been quite adaptive to the state's various colonial, defence, and developmental objectives. In a 1985 paper, Hu recommends that minority groups too should be subjected to mandatory family planning policies because of the natural environmental constraints in Tibet, Xinjiang, and southwestern provinces (Hu, 1985:23). At the time of his writing, minority ethnic groups were not yet subject to China's population control measures. To accommodate a more settler-colonial approach, Hu is also able to alter his earlier emphasis on precipitation and arability but focused instead on the intra-regional microclimates with more abundant rainfall and surface water. This intra-regional variability in water availability and arability is only visible using smaller geographical scales. Despite Xinjiang's overall aridity, he asserts that if hydraulic engineering projects can capture high-altitude rainfall and surface water body flowing in the direction of the Soviet Union, Xinjiang's environment can support up to 50 million people (ibid:34-36).

The 'Hu Line' remains a canonical geographical concept in the contemporary PRC. The 'Hu Line' has been observed to be remarkably resilient in its ability to capture the country's population distribution by contemporary Chinese geographers (M. Chen et al., 2016).

Although China's population has increased by nearly threefold, the population ratio between the two portions of the territory has remained largely stable. This fact has been frequently cited to support the existence of an environmental barrier between the Han-dominated urbanised eastern parts of the country and the underdeveloped ethnic minorities' hinterland unsuited for large-scale urbanisation and industrialisation (ibid:187). The Hu Line has been cited as support that the ecological fragility of the frontier area requires urbanisation which delivers better service and growth to the existing population without challenging the environmental limit (M. Chen et al., 2016:187).

The knowledge and concepts produced by natural scientists like Hu and Zhu are not simply about the legibility of a territory's features. The imbrication of environmental knowledge in the governance of people is not specific to modern territoriality. In Qing China, the division of the frontier areas between pastoralist Mongol banners and chieftain systems in the lush mountainous highlands is ultimately dependent on the forms of animal-people relations that could be sustained in these environments (Bello, 2016). The production of environmental knowledge, which brings certain martial qualities into view through the use of new scientific concepts that are only meaningful through the use of certain geographical scales (Bocking, 2015; Sayre, 2005), produces 'nature' as a socially intelligible entity. In other words, the territory's material qualities are not the outcomes of nature 'speaking for itself' but socionatural entities that are produced through scientific knowledge and material practices.

Of course, atmospheric circulations, population, and weather phenomena are all 'real' things. Nevertheless, their legibility is inevitably inseparable from the historical and political context within which they are produced. In that sense, the geographies of science and the geographies of political rationalities reproduce and reshape each other through the myriad ways through which knowledge production is related to political processes. The 'scientific' status of knowledge does not mean it is uncontested and truly 'universal'. Neither Zhu's conception of China's territory as made up of distinct types of climates that are connected by atmospheric circulations nor Hu's conception of the territory as different zones of population density connected by human dependency on land and rainfall were uncontested propositions. For instance, Zhu's fellow meteorologist Tu Changwang (1906 – 1962), who later became the

first head of the Meteorological Administration under the Communist regime attributed the problem of the population to backward agricultural practices, not intrinsic environmental limits (Tu, 1935). The underlying mechanisms of Monsoon in ocean-land-atmospheric interactions are incredibly complex and not fully understood to this day. The purpose of following Zhu's scientific works and Hu's reliance on the population-atmosphere-terrain nexus in their articulation of the territory's qualities is to show that the legibility of the territory's materiality is historically contingent and unstable (Braun, 2000:13).

CONCLUSION

The discussions in this chapter should help to further the conception of modern territoriality in three productive directions: 1. We should revise the flat land ontology embedded in the IR conception of modern territoriality and embrace state territories' dimensionality, voluminousness, and dynamism; 2. We need to understand how a territory's materiality is conceptualised in the political rationalities used by political authorities. The multifaceted and more-than-human materiality of the territory, therefore, involves a wide range of environmental knowledge and technological practices that characterise modern territoriality as techno-territoriality (Carroll, 2006); 3. We should pay attention to the geographies of science, specifically how the spatiality of scientific knowledge and practices intersect with the spatiality of state territories. The universality and globality of modern technoscience do not mean that territories' environmental features are understood in the same way by different people in different places or that the forms of technoscience involved in state governance produce the same political rationalities.

The production of knowledge about the vertical dimension of Chinese territory, as I have tried to show through the scholarship of Zhu Kezhen and Hu Huanyong, not only makes visible the impacts of atmospheric forces on human societies but also helps to naturalise Chinese territory through the materiality of the physical environment. The unquestioned equivalence between the materiality of the physical environment and Chinese territory helps to consolidate the impression that Chinese territory is both self-evident and natural. Of course,

atmospheric circulations, population, and weather phenomena are all 'real' things which impart human knowledge production. Nevertheless, the legibility of the territory's materiality is inseparable from the historical and political contexts within which it is produced. The legitimacy, status, technical sophistication, and mobility of technoscientific knowledge and expertise means that scientists and technocrats yield significant constitutive power in shaping how the environment is conceived (Braun, 2000; T. Mitchell, 2002). In doing so, technoscientific expertise plays a crucial role in constituting the territory as a governable entity.

Since its establishment, the contemporary PRC state has embarked on a series of mega infrastructural projects and the controversial population control initiative known as the 'One-Child Policy' to address the perceived environmental limits to development and governance. This chapter has provided some historical insights into the underlying environmental and especially climatic determinism that underpinned forms of environmental knowledge about the modern Chinese territory. Knowledge production about the weather was not simply about uncovering facts about the atmospheric environment of China but also about how the atmospheric environment conditions the state's governance of its territory and population in different parts of the country. In that regard, the territory of the Chinese state is not just a physical inheritance from the Qing Empire but reconceptualised and reshaped through techno-territoriality. As seen in the political justifications used by Zhu Kezhen in the establishment of meteorological infrastructure and the governmentalisation of atmospheric forces over China, the legibility and governance of the natural environment are inseparable from the legibility and governance of the population. The canonical status afforded to the Hu-Line shows how geographical bifurcation and ethnocultural diversity are underpinned by a latent form of climate determinism that can be traced back to the early 20th century. Crucially, Chinese territory is not conceived simply as a landmass but as a dynamic environment suspended in larger planetary atmospheric forces. This voluminous conception of Chinese territory not only helped to naturalise Chinese territory as a 'natural environment' as opposed to a socially constructed spatial conception but also addresses concerns about overpopulation, frontier settlement and colonisation, as well as the management of the

natural environment. To put it simply, the constitutive power of technoscience turns the territory from an ideational space that is imaginable into a material space that is governable.

In addition to heeding the constitutive role of technoscience in shaping modern state territories' dimensionality, materiality, and governability, we should also pay attention to how modern territoriality shapes technoscience. As I have shown in this chapter through the example of atmospheric sciences, the production of scientific knowledge is intimately connected to processes of territorialisation by empires and modern territorial states. However, the globality of scientific knowledge and material technologies does not mean that their circulations and local adaptations are unbeholden to situated contexts (Livingstone, 2003, 2005). What this means is that we should not treat the global circulatory nature of scientific nature as an indication that it is a stable corpus of knowledge traversing around the globe. Quite the contrary, the people, the political context, and the physical environment through which this knowledge are made effective show that global circulation means that knowledge is deployed in new systems of reproduction, meaning making, and processes through which contestable scientific knowledge is reified as nature itself speaking (Castree & Braun, 2001; Marcon, 2020). Given the historical entanglements between modern environmental science and the modern territorial state, the geographies of technoscience often overlap with the geographies of the modern territorial state. in the context of early 20th-century China, the production of environmental knowledge reflected existing concerns with the management of far-flung frontier regions and the political challenges posed by ethnocultural diversity to state and nation-building efforts.

The materiality of the environment, the situatedness of technoscience, and the entanglement between technoscience and the modern state mean that the history of modern state territories is not simply about a concept or a specific technology. A territory is not an abstract space imposed over nature, but a specific environment shaped by continuous interaction between human and nonhuman forces (Steinberg in Peters et al., 2018:87). Therefore, the territory is not simply a demarcated landmass, but also an entity with its atmospheric, climatic, topographical, geological, and liquid properties that are only visible at specific (politically and territorially motivated) geographical scales. The Hu-Line or the uneven distribution of rainfall

caused by the interaction between the geophysical features of mainland East Asia and the East Asian Monsoon, for instance, are only visible at the geographical scale of Chinese territory. Seen in this light, to understand how the materiality of the territory matter in the governance and conceptualisation of a specific territory, we need to examine the politics and historical contingency of environmental knowledge that make visible nonhuman forces. The physicality of territory might assume a façade of inevitability as nature itself, but a closer examination reveals that the materiality of the territory is neither fully understood nor an uncontested technical matter. Instead, knowledge of the territory's materiality is interwoven with the territory's spatiality through its entanglement with historical processes of territorialisation.

The co-productionist relationship between environmental knowledge and the modern territorial state is not endogenous but often made up of actors and material technology that are simultaneously transnational, national, and local. As I have tried to show through the example of meteorology in Republican-era China, the development of meteorological science was enabled by new scientific methods, a global network of observatories, the demand for agriculture and transportation, and the global circulation of scientific techniques, ideas, and data, in addition to 'indigenous' efforts of modernisation and state-building. Republican-era China, therefore, is not a historical anomaly nor simply 'catching up' but a coeval part of a global trend wherein effective control of territories requires the mastery of knowledge of the vertical dimension. The historical developments of meteorological science, the emergence of a planetary understanding of 'climate', and the establishment of meteorological services, as many others in the History of Science have shown, were made possible by the emergence of political authorities that are territorially organised during processes of imperial, colonial, and (later) nationalist conquests. The environmental objects made visible via scientific concepts and instruments, such as climate zones, Monsoons, and annual precipitation operate on a geographical (and temporal) scale that is more amenable to the governance of territorial political authorities rather than the embodied experiences of the individual human being.

Of course, atmospheric sciences are not the only source of knowledge that make visible the verticality, volume, depth, and instability of nonhuman environmental features. Other

scientific disciplines such as Geology, Biology etc also configure and upend rationales of territorial governance by showing that human territory is embedded *within*, rather than superimposed on natural forces underneath and above the surface. At a time when territorial contests are occurring in complex terrain, from the polar sea ice sheets and the Himalayan mountains to outer space, modern territoriality appears to encompass various forms of environmental knowledge that enable the territorialisation of 'volumes' (Elden, 2013b). Seen in this light, the understanding of modern state territory as demarcated by linear borders and defined through cartographic imaginations appears to be analytically sterile and restrictive. Instead, we should approach the historicity of modern state territory not only via histories of demarcation and social construction of geographical imaginations alone, but also through the interplay between the territory's materiality and spatiality that is embedded in the politics and the production of environmental knowledge.

Chapter 6 Conclusion

The central claim of this thesis is that modern Chinese territory was produced by various forms of technoscientific knowledge and practices. By examining the entanglement between global and circulatory technoscience with the emergence of China as a territorial state, the distinctive geographies of technoscience (Livingstone, 2003; Naylor, 2005; Powell, 2007) show that modern territoriality, too, is contingent on practices and political rationalities that are both global and local. Therefore, modern territoriality needs to be reconceptualised in more processual and polysemic terms that are attentive to local specificities, which can be obscured in the search for a global narrative. Thus far, the discussions on modern territoriality in IR have not yet paid attention to modern territoriality as an assemblage of political technologies that contains not only representative technologies such as maps and borders which enabled the social construction of space but also comprised of technoscientific means to encode, make legible, and ultimately govern and reshape the spatial and material aspects of the modern state's territory. By rethinking modern territoriality through modern China, away from the more familiar stories of European nationalism and settler colonialism, I find that modern territoriality to be a polycentric phenomenon whose origins need to be understood through how peoples and the physical environment are conceptualised and transformed into objects of governance. In this concluding chapter, I will review the thesis' empirical findings and theoretical arguments to assess its theoretical contributions. In addition, I will also provide theoretical reflections on the conceptual limit of modern territoriality, and the ensuing challenges regarding a global historical approach and the incorporation of non-human material forces into the History of International Relations.

The Main Arguments of the Thesis

It is often observed that the Qing Empire's multivalent approach to governing diverse peoples differs from the homogenising tendencies of the modern Chinese nation-state. While it is true

that the logic of territorial governance differs between the Qing Empire and the PRC (Crossley, 1990; T. Mullaney, 2010a:22), nevertheless, the physical space governed by the Qing Empire became equivalised with China (*Zhongguo*) by the 19th century among the reformist statecraft literati scholars who were deeply influential to late-day Chinese nationalist thinkers and political leaders. By the end of the 19th century, the canonical nationalist intellectual and the 'inventor' of the term 'Chinese nation' Liang Qichao viewed China as the amalgamation of five political-geographical entities: China Proper, Xinjiang, Tibet, Mongolia, and Manchuria (Wang, 2014a). Whereas Liang is often credited with the territorialised understanding of China (Leibold, 2004:173) he was indebted to an earlier generation of reformist scholars for his spatiotemporal frame of 'China' (Wang, 2014b). This new geographical conception of China, as I have shown in Chapter 2, was the result of both new geographical knowledge and cartographic representation produced by Jesuit and imperial cartographers, as well as the strategic reconceptualisation of China as the Qing Empire itself by Sinophone Han literati scholars. This geographic conception of China, which predated Chinese nationalism that emerged in the late 19th century, shows that modern territoriality does not just emerge from the coalescence between sovereignty and territory (cf. Elden, 2013c) nor through the cartographic representation of physical spaces (cf. Branch, 2013; Winichakul, 1997).

Instead, modern territoriality appears to have multiple historical pathways that are driven by both situated political contexts as well as globally circulating forms of political and material technologies. One such globally circulating yet locally situated form of political technology, as I have argued in Chapter 3, is the internal frontier space of the modern territorial state. The emergence of the modern international system, as Historical IR scholars have noted (Levin, 2020; MacKay et al., 2014), is predicated on the eradication of 'non-state' spaces characterised by territorial heterogeneity and diverse people-environment relations (Greaves, 2016; Halvorsen, 2019:801; Karppi, 2001; Shadian, 2010). The political autonomies of the territorially heterogenous spaces were able to persist because premodern states or imperial centres had to rely on indigenous intermediaries since they could not exercise effective control over the physical environment (Bello, 2016; Scott, 1998). Therefore, a key reason why modern territoriality should be understood as a process and a 'bundle of political technologies' is because a wide range of technoscientific knowledge and practices are needed

for the effective control of the physical environment a state claims as its territory (Elden, 2013c:2; Mitchell, 2002; Mukerji, 1997). The creation of modern state territories, particularly in hitherto challenging social and natural environments, requires epistemic and material transformations that are facilitated by a wide range of technoscientific knowledge and practices. In the case of modern China, as I have shown in Chapter 3, the territorially heterogeneous, politically ambiguous spaces inhabited by peoples whose 'Chineseness' were uncertain were reimagined as a national frontier space (*bianjiang*) to facilitate the production of new social and environmental knowledge.

The spatial imaginaries and material transformations of the so-called frontier spaces are dependent not only on cartographic representations and nationalist claims. The creation of governable political subjects out of the inhabitants of the territory is an equally important and coeval process (de Carvalho, 2016; Elden, 2010; Foucault, 2007; Scott, 1998). The question of people, population, and political subjecthood is currently absent in IR discussions on modern territoriality, despite the importance of nationalism to territorial sovereignty and the creation of the population as a modern governmental problem. The racial and ethnocultural composition of the population, a crucial concern for all colonial or nationalising political authorities(Cooper, 2005:23), is made visible through knowledge production rather than self-evident. As I have demonstrated in Chapter 4, the creation of political subjects and their legibility to the state authorities were produced by what Dirks calls the 'ethnographic state' (Dirks, 2001). The spatiality of ethnographic production within political projects of territory, state, and nation-building means that the production of ethnographic knowledge is heavily skewed by existing political rationalities (Burke III, 2014; Cohn, 1996; Conklin, 2013; Dirks, 2001; Heiskanen, 2020; Mattson, 2014; Mullaney, 2010). However, as I have demonstrated through the micropolitics of ethnographic knowledge production, these social scientists, armed with ethnographic expertise and the prestige of international scientific theories, can also challenge the validity of nationalist claims and existing political rationalities. The British-trained Functionalist social anthropologists, who formed the bulwark of the Communist Party's ethnographic state, helped to institutionalise the frontier's distinct ethnocultural identities through their 'scientific recognition' of ethnocultural diversity.

Through their productive power, the social scientists reshaped the ethnocultural and administrative configurations of China as a modern territorial state.

The co-production between the modern territorial state and technoscience is not only limited to the production of social knowledge. Crucially, the entanglement between environmental knowledge production and territorial state building is key to explaining how the modern state's territory is perceived to be the physical substratum (Shah, 2012) and naturalised as the physical container for both the state and society (Agnew, 1994). In Chapter 5, I combined the theoretical insights from Political Geography on the materiality of the physical environment (Billé, 2020; Elden, 2013b; Steinberg & Peters, 2015) with the geographies of knowledge approach in the History of Science (Braun, 2000; Hulme, 2008; Livingstone, 2003; Mahony & Hulme, 2018) to draw out the relations of co-production between state territories and environmental knowledge. Using the development of modern atmospheric sciences, specifically meteorology and climatology, I have shown that new knowledge about the environmental impact of atmospheric circulations - made visible by new material infrastructure, new scientific theories, and Chinese scientists and technocrats - gave rise to a materialist understanding of Chinese territory as a landmass suspended in the voluminousness of larger environmental forces. This understanding, I argued, not only ecologised the geographical bifurcation and ethnocultural differences of China but also created a problem of 'overpopulation'. The co-production between atmospheric knowledge production and territorial political rationalities, as I have emphasised in the chapter, was a crucial part of the global process that produced the 'climate' as a planetary environmental object.

The theoretical insights from these chapters show that the emergence of modern territoriality should be examined through diverse forms of technoscientific knowledge and practices that are both global as well as situated within specific political and geographic contexts (Haraway, 1988b; Livingstone, 2003; Raj, 2007). Empirically, this thesis provided in-depth snapshots of the diverse epistemic transformations that allowed for the Qing Empire to be reimagined as modern China. By doing so, I have showed that modern China can be understood as a constitutive, coeval component of the modern international system, rather than a premodern

entity that passively encountered the modern international system spearheaded by European colonial empires. My in-depth meso-level and micro-level empirical focus on China suggests that the establishment of the modern international system involved a greater variety of actors and historical practices than what has been thought of in the existing historiography of the modern international system (cf. Allan, 2018; Branch, 2013; Bull & Watson, 1984; Buzan & Lawson, 2016; Elden, 2013c). In the remainder of this concluding chapter, I will outline the theoretical contributions of this thesis to IR as well as new potential avenues of empirical research and theory-building.

THE THEORETICAL CONTRIBUTIONS OF THIS THESIS

This thesis advocates for a reconceptualisation of modern China in IR through the politics of territorialisation, rather than through the politics of nationalism, identity, and cultural difference. Ultimately, what binds the contemporary PRC with the Qing Empire, and indeed historical Chinese states and civilisations, is the physical space within which these historical social and political formations have existed. There are two main reasons behind this conceptual move: The first is that Chineseness is not so much about an imagined national homeland. Instead, it is a global phenomenon driven by the spread of Sinophone peoples, languages, and cultures; The second reason, as I have demonstrated in this thesis, is that the modern Chinese territory claimed by the PRC was made legible by a myriad of geographical, ethnographical, environmental, and other forms of knowledge, rather than by imagined nationhood or nationalist historiography alone. In rethinking the emergence of modern China through the concept of modern territoriality, which is seen as a defining feature of our current international system (Buzan & Lawson, 2015; Goettlich, 2019; Kratochwil, 1986; Phillips, 2013, 2016; Ruggie, 1993; Taylor, 2003), the need to re re-examine the Euro-centred historiography of modern territoriality becomes apparent.

Examining the emergence of modern China through the theoretical lens of modern territoriality allows us to analytically distinguish the historical process of territory-making beyond the taken-for-granted nexus of territory, sovereignty, and nationalism (Antonsich,

2009:791). As demonstrated in works by Elden and others, the 'physical space' upon which territories are created is not self-apparent, but socially produced through political and material technologies. The production of state territories, therefore, requires that the physical environment and its inhabitant are made legible (Branch, 2013, 2017; Elden, 2010, 2013a; Strandsbjerg, 2010, 2012). The modern Chinese territory did not emerge just with the introduction of the new concept of 'territory' from Japan and the West (cf. Hayon, 2020). Instead, the production of a territory as a culturally meaningful and politically governable entity hinges on diverse forms of knowledge about its people and physical environment. Some of these forms of knowledge, such as the geographical concept of 'China' based on the geographical contour of the Qing Empire, and the conceptual distinction between China as a people and China as a landmass, seem to predate the late-19th century emergence of Chinese nationalism (Li, 2022).

More importantly, the technoscientific knowledge and material technologies that are involved in the production of modern state territories are not reducible to nationalist claims. For instance, the tell-tale signs of the imperial roots of present-day Chinese territory and the fictitious nature of its nationalist historiography - namely the presence of a colonial frontier space and the existence of various ethnocultural groups with nationalist claims to their historical homelands - were not erased by the creation of modern China as a territorial state. On the contrary, the territorialisation of China was accompanied by the creation of a frontier space and the invention of state-sanctioned ethnocultural categories. None of these social and geographical features of modern China as a territorial state are self-evident divisions of the social and natural world, and neither the frontier space nor national minorities are meaningful political-geographical and ethnocultural entities without a self-assumed centre that categorises physical spaces and peoples. The making of a territory into a governable entity through the production of social and environmental knowledge (Scott, 1998) is a separate and distinguishable process from nation-building. As seen in Chapters 3 and 4, the creation of a new 'internal' frontier space did not simply facilitate the imagined sameness of the Chinese nation, but elevated and engendered the production of ethnological knowledge and the visibility of ethnocultural differences within China.

The main theoretical claim of this thesis is that modern territoriality is not just an idea about the spatial congruence of nation/people/society and the physical space exclusively controlled by a state (Agnew, 1994; Kratochwil, 1986; Ruggie, 1993; Walker, 1993). Instead, it is a polysemic phenomenon whose epistemic and cultural legibility depends on situated forms of social and environmental knowledge. There are multiple pathways to create a modern state territory. The use of linear borders, nationalist claims, or cartographic representations is just some of the ways through which territory is brought into being. A territory is not simply a way to bind to a political community such as a 'nation' to a state or to control people within a physical space (Sack, 1983). The materiality of the physical environment upon which the territory is created binds the 'imagined' political community and the state's territory to the peoples who constitute the political subjects. The inseparableness of spatiality and materiality means that the modern state territory is an assemblage that ties together more-than-human forces, and in doing so, studies conceptualise and ultimately govern the more-than-human forces following an anthropogenic imaginary (Usher, 2020:1034). As seen in this thesis, the conceptual emergence of the Chinese frontier involved shifting conceptions of the relationship between ecological forces and human differences (Chapter 3). The shifting understandings of what makes the environmental qualities of the territory 'political' can engender new forms of political rationalities that are used in the governance of people and the environment. The 'unveiling' of larger environmental forces such as the Asian Monsoon and the planetary climate as physical forces that engulf that territory (Chapter 5), for instance, can legitimise the Malthusian anxiety and create the problem of 'overpopulation' in the state's governance of territory and people.

These theoretical insights on the entanglement of people and territory, and the entanglement between spatiality and materiality, allow us to reflect on the concept of modern territoriality in IR. The recent discussions of modern territoriality in IR have ignored the relationship between people and the environment and focused instead on the technical and representative means of modern territoriality (Branch, 2013, 2017). Only by examining how modern territoriality intervenes, orders, and reorganises the material and symbolic relations between people and the physical environment, can we address the equivalence between the territory of the modern state and the physical environment, which is crucial to its

naturalisation and appeal (Shah, 2012; Usher, 2020:1032). Moreover, by examining the modern state's conceptual and material reordering of the physical environment (Whitehead et al., 2006, 2007) we can also retrace the historical processes that led to the disappearance of so-called 'non-state' spaces (Scott, 2009). As many historically minded IR scholars (Levin, 2020; MacKay et al., 2014; Neumann & Wigen, 2018; Phillips & Sharman, 2015), and Chapter 3 of this thesis have pointed out, much of the history of international relations has been the history of frontier spaces, rather than a history of interstate relations. Tracing the forms of human territoriality that are supplanted by modern territoriality can not only help us to understand the spatial configurations of international hierarchies (Zarakol, 2017) but also help to engender a decolonial approach to IR by unbundling people's relationships to land from the narrow modernist frame of territorial sovereignty and state formation (Blaney & Tickner, 2017; Shadian, 2010). This thesis sets up alternative ways to historicise modern territoriality by conceptualising the formation of modern China as a process through which the forgotten colonised peoples of mainland East Asia are recategorised as ethnic groups within the Chinese nation.

This thesis also connects discussions of modern territoriality with recent theoretical development in IR that centre on international hierarchies (Mattern & Zarakol, 2016; Zarakol, 2017) and technoscientific knowledge and practices (Allan, 2017b, 2017a, 2018). The re-focus on people and the environment, which I advocate for in this PhD thesis, allows IR to re-examine the state-centric provenance of modern territoriality. In doing so, the globality of modern territoriality can be examined from other productive forms of hierarchy in the history of international relations (Mattern & Zarakol, 2016). By conceptualising modern state territories through the notion of 'techno-territoriality', which I used in Chapter 5, we can examine territories as the outcome of technoscientific knowledge and practices that bring together the material infrastructure, population and environmental governance (Mitchell, 2002; Whitehead et al., 2006). The globality of modern territoriality, as scholars in IR have recognised (Branch, 2013; Buzan & Lawson, 2015; Goettlich, 2019), hinges on the mobility of material technologies and knowledge. Therefore, the transformative qualities of modern territoriality on political orders cannot be fully understood without taking into account the globality of technoscience (Allan, 2018; Asdal et al., 2007). As Allan notes, the spread of ideas

about scientific progress and improvement has shifted the very purpose of governance around the world (Allan, 2018). Yet, examining the emergence of modern territoriality in tandem with the politics of technoscience through the lens of co-production (Jasanoff, 2004b, 2004a) shows that technoscience not only shapes the territory but that the politics of territorialisation also shape technoscientific knowledge and practices in return. In my thesis, the imbrication of new geographical knowledge with the older culturalist conception of China (Chapter 2), the importance of state-building in the scientific studies of the frontier (Chapter 3), and the need to legitimise ethnographic knowledge through Stalinist and the indigenous *minzu* discourse (Chapter 4), and the use of an existing political-geographic scale in the production of meteorological knowledge (Chapter 5) have all demonstrated that technoscience is bounded by political, cultural, and historical contexts that are local rather than global.

Last but not least, the relations of co-production between technoscience and modern territoriality studied in this thesis highlight the importance of an interdisciplinary approach that is attentive not only to the globality of modern territoriality and technoscience but also to the geographies of knowledge production and science (Agnew, 2007; Livingstone, 2003, 2010; Naylor, 2005; Powell, 2007). Unlike a state's territory and its population, scientific knowledge and techniques are designed to be circulated (Latour, 1987). The globality of modern territoriality depends not simply on knowledge and technology being 'immutable mobiles' circulating through a European-dominated global scientific network (cf. Latour, 1987:299), but also on situated political meanings and practices at the micro and meso levels that reshape them (Livingstone, 2003, 2010). Therefore, in addition to paying attention to the productive power of technoscience (Allan, 2017a, 2017b, 2018; Mitchell, 2002; Yao, 2021), we need to also heed the spatiality of knowledge production (Naylor, 2005; Powell, 2007). In Chapters 3, 4, and 5 of this thesis, I have shown how the socially produced spatial concepts such as China, the Chinese frontier, and Chinese territory were used to structure social and environmental phenomena spatiotemporally. Even seemingly placeless knowledge about the weather and atmospheric circulations, as I have shown in Chapter 5 was made possible by territorialisation and the attempts to control people and the physical environment through technoscience. Seen in this light, we should be focusing on how different global forms of

knowledge and material techniques such as cartography, anthropological theory of human society, and meteorology are made possible by dispersed and situated local practices (Haraway, 1988; Livingstone, 2003). The focus on meso-level and local level practices allows the 'international' to be studied as simultaneously local and transnational. Additionally, we should also foreground the global dispersion of these technoscientific practices which coincided with the emergence of modern territorial states. In doing so, we can study the 'epistemic geographies of modern territoriality' (see Mahony & Hulme, 2018) through the globality of technoscience without resorting to a Eurocentric diffusionist account long debunked elsewhere (Anderson, 2018; Raj, 2007, 2013).

In thinking about the concept of modern territoriality through modern China's tumultuous and violent search for a viable territorial state form, this thesis has shown that broadening the conceptual and empirical scope can lead to new theoretical insights. Having said that, this thesis advocates for a research agenda that focuses on a more polycentric and polysemic understanding of modern territoriality. Further research that looks at the transnational conceptual histories of key concepts, the circulation of technoscientific knowledge and practices across a wider range of political and geographical contexts beyond the 'West' will be needed. In the rest of this concluding chapter, I will provide some theoretical reflections on the concept of modern territoriality and the notion of 'the global' and point to some potential directions for further research on the co-production between technoscience and the modern territorial state.

Reflection: the Conceptual Limit of Territory and Modern Territoriality

My thesis has argued for the reconceptualisation of modern territoriality as a wider set of technoscientific forms of knowledge and practices that brings together the physical environment and its human inhabitants. The reason behind this conceptual move is the lack of clarity between modern state territory as a way to communicate ownership and a way to govern people and the physical environment. The influential theorist of territoriality Robert Sack, for instance, sees the communication of territory through legal rights and cultural norms

as a means through which the control of a geographic area is asserted (Sack, 1983:56-58). In existing discussions of modern territoriality in IR, modern territoriality is principally understood as the technical and conceptual means through which territorial sovereignty is communicated. The globality of modern territoriality is therefore made possible by the globalisation of international legal frameworks, cartographic representations, borders, and calculative techniques of physical space (Branch, 2017; Elden, 2010; Goettlich, 2019; Strandsbjerg, 2010). However, what I found in the case of China is that the material and epistemic conditions for the production of specific territories do not necessarily need to be universal or global (also see Cheney, 2017; Mukoyama, 2022; Watanabe, 2018; Zhu, 2020). It is difficult to disentangle the global intelligibility of modern territoriality rooted in territorial sovereignty, national self-determination, border, and cartography from more locally situated forms of intelligibility without delving into specific cases of territory-making. In IR, these locally situated understandings of territory, which can be crucial to the effectiveness of territorial governance, tend to be negated in favour of a more top-down, global approach to modern territoriality.

The theoretical insights I draw from this PhD thesis present a strong case for modern territoriality to be understood on a case-to-case basis as opposed to a top-down global process because 1) territories are not produced from empty space but suffused with more-than-human material forces that can challenge and facilitate the creation of modern state territories; 2) the political authority of the state can be based on different normative and instrumental rationalities, and reflect the organising logics of multiple transnational and internal hierarchies (Getachew, 2019; Halvorsen, 2019:795; Mattern & Zarakol, 2016). Therefore, modern territoriality is characterised by the contrast between the outward appearance of sameness and the internally diverse material, epistemic, and political configurations that are not readily translatable. This contrast raises a fundamental question regarding the nature of modern territoriality: is it truly a historical rupture that replaced premodern forms of territoriality or simply the result of the global circulation of representative practices that presented an effective and universal means of communicating territorial ownership? The concept of territoriality in general, as opposed to its modern variant, is key to potentially answering this question.

The understanding of territoriality, broadly speaking, is divided between a functionalist approach and a relational interpretation. The functionalist view is epitomised by Robert Sack's often-cited definition as the attempt to control objects, peoples and relationships through controlling a territory (Sack, 1983:56). The relational understanding represented by Raffestin, sees territoriality and the production of territories as outcomes produced by the wider webs of social relations (Brighenti, 2010; Raffestin, 2012:126). The relational approach sees territoriality as a historically shifting set of social relations that manifest themselves geographically through the production of territories (Raffestin, 2012). In contrast, Sack's functionalist understanding of territoriality is more grounded in the modernist conception of territory as calculative, divisible, bounded, communicable spaces that are explicitly created to control people (Elden, 2010; Murphy, 2012:164; Sack, 1983; Usher, 2020:1029). In the functionalist understanding, territories are produced from physical space and socially constructed representations of territories are constitutive of the production of territories. The relational understanding, however, sees territories as the results of socially produced conceptions of space that are separate from the physical environment (Murphy, 2012:163; Raffestin, 2012:129). In short, whereas for Sack, territories are produced from physical space for the purpose of control, Raffestin's territories merely reflect the social relations that are already inscribed into the materiality of the physical space.

Going back to the question of whether modern territoriality constitutes a form of historical rupture in human territorial practices, the answer depends on whether the materiality of the natural environment is thought of as self-evident and pre-social or socially constructed. If the creation of modern state territories fundamentally reshapes social relations and socionatural configurations, then modern territoriality does constitute a form of historical rupture. But if we consider the representational aspect of modern territoriality in relation to the materiality of modern state territories (Raffestin, 2012:128) then the effects of modern territoriality on social relations appear to be uneven and circumstantial, rather than uniform. One way to understand how the global rise of the modern territorial state reshaped pre-existing social relations and international hierarchies is to focus not so much on representative technologies of modern territoriality but on 'techno-territoriality' (Carroll, 2006) instead. That is to say, we

need to focus on how modern territorial states and the creation of new administrative, legal, and economic arrangements have reshaped the physical environment through the use of technoscience, engineering, infrastructure, and landscape transformation (Carroll, 2006; Mitchell, 2002; Swyngedouw, 1999). Specifically, we should focus on the so-called 'frontier' or borderland spaces where state power had been historically weak due to local socionatural configurations.

Through my empirical research in this thesis, I have shown how some of the forgotten colonised peoples and places in East Asia, Southeast Asia, and Central Asia remain locked inside an imperial hierarchy through their absorption into modern China. To recover the historical trajectories and diversity of political rationalities that underly the globality of modern territoriality, we need to move beyond the prison of Euro-centred historiography and the subsequent lack of empirical engagements with non-English language materials and historical experiences beyond Euro-American histories and colonial expansions. IR scholars have largely focused on territory as the production of the modern state, and the modern state as the 'fusion of nationalism with popular sovereignty, sovereign equality' etc. (Buzan & Lawson, 2015:50). The so-called modern international system, despite recent efforts by postcolonial and historical IR scholars, remains understood as the outcome of Europe's effort 'to produce a world after its image' (Getachew, 2019:4). To truly understand the polycentric origins of the modern international system of states, we need to move outside the great corridors of power and the unreflexively designated core sites of international order, invariably used as euphemisms for an exclusive focus on the West or Europe. The problem is not that we lack the theoretical sophistication to entertain historicity, but simply due to inadequate empirical research.

Reflection: Techno-Territoriality and the Production of Globality

One of the key themes that emerged during my thesis is the politics of spatiotemporal scales used by myself and the Chinese social and environmental scientists I am studying (MacKinnon, 2011; Moore, 2008; Rangan & Kull, 2009). My focus on the emergence of modern territoriality

in China means that I am focusing on the historical production of 'China' in its current territorial contour as well as subnational political-geographical entities such as the national frontier, ecological zones, or ethnic minority regions. The national scale, as well as subnational scales, were used by scholars, scientists, and technocrats to observe specific ethnocultural or environmental qualities that in turn reify certain scales as 'natural'. These socially constructed spatiotemporal scales are used in knowledge production as well as in administrative and material practices (Rangan & Kull, 2009). Therefore, although scales are imagined, the social and material reification of these scales produced 'real' effects. Over time, the social and material transformations induced by socially produced scales, such as a nation or the frontier, reify these scales as endogenous to certain socionatural configurations (Swyngedouw, 1999, 2004). Therefore, spatiotemporal scales should be understood as both an observational practice inherent to social scientific studies as well as an object of scholarly enquiry (Moore, 2008).

The social and material reification of historically produced spatiotemporal scales, which includes the territories of the modern state, is key to understanding how, over time, the state's territory is understood in physical terms even by those who are conscious of its socially constructed nature (Shah, 2012). The entanglement between technoscience and the modern state means that not only are the productions of environmental knowledge organised using state-centric scalar hierarchy (Mahony, 2014; Mahony & Hulme, 2018; Mahony & Randalls, 2020), but the state's governance of the population and their lived environment also led to the transformation of 'nature' itself (Carroll, 2006, 2012; Haraway, 1990; Latour, 1993; Nightingale, 2018; Parenti, 2015; Swyngedouw, 1999). In doing so, the socially produced spatiotemporal scales do take on a physical veneer and become naturalised as a part of the environment.

By focusing entirely on the spatiality of modern state territories, a supposedly de-territorialise approach unwittingly naturalises techno-territoriality by treating the state's territory as the 'physical substratum of human societies' (Shah, 2012:68). Both the intelligibility and the materiality of this 'physical substratum' are inseparable from the techno-territoriality of the modern state which not only produces and institutionalises concepts and spatiotemporal

scales in its quest for the territory to be known and controlled (Braun, 2000; Scott, 1998) but also transforms the physical environment in the process of state-building. Most importantly, our current understanding of the 'global' as a distinct realm of political actions (Bartelson, 2010; Rosenboim, 2017) is also indebted to the techno-territoriality of the modern state. The production of knowledge about the vertical space, specifically about the weather and climate, assembled the globe as a knowable and governable object (Allan, 2017b; Chakrabarty, 2018a; Coen, 2020; Edwards, 2006; Martin-Nielsen, 2013; van Munster & Sylvest, 2016). As I have argued in Chapter 5, the 'discovery' of planetary environmental forces by Chinese meteorologists with the aid of globally circulating meteorological technologies and theories of atmospheric sciences reinforced the understanding of Chinese territory as a landmass suspended in larger voluminous atmospheric forces. This three-dimensional 'voluminous' understanding of territory (Billé, 2020), as political geographers have already noted, is why modern state territories are seen as a 'container' (Steinberg & Peters, 2015:254).

If we follow the understanding of modern territoriality as constituted by a wide range of technoscientific knowledge and practices, which I have argued for in this thesis, then we must be cautious of how spatiotemporal scales are used as 'levels' of analysis without reflecting on their roots in historical material and discursive practices. A spatiotemporal scale with a larger geographical coverage or temporal span does not mean that it captures a 'higher' level of phenomena (Rangan & Kull, 2009:31). On the contrary, it can lead to the naturalisation of historically produced spatiotemporal scales as self-evident ways of partitioning the world (Agnew, 1994; Moore, 2008). Certain phenomena, such as the socionatural transformations produced through modern territoriality, might only be visible at specific spatiotemporal scales that are endogenous to the phenomena (see Sayre, 2005). In the context of modern territoriality, a global 'perspective' might not be the antithesis of the territorial trap (Agnew, 1994) but the very outcome of the globality of modern territoriality, which is made possible by diverse, and locally situated political rationalities and technoscientific knowledge and practices. Since the modern territorial state is a critical site of environmental knowledge production, modern territoriality constitutes the modernist scalar hierarchy that divides the world into global, national, and local levels (Brenner, 1999, 2001). We need to focus on the creation of specific national territories, especially ones characterised by significant social and

environmental diversity and/or large spatial extent, to understand how the 'global' is construed at the meso-level (see Allan, 2018:54). This means the study of modern territoriality requires not only 'top-down' or 'bottom-up' approaches but also a 'middle-out' approach that does not privilege any specific scalar configurations (MacKinnon, 2011:29), but engages head-on with the messy situatedness without hiding behind an abstracted 'global' narrative.

An understanding of the co-constitutive relations between the social construction of globality (Bartelson, 2010) and the social construction of modern territoriality (Ruggie, 1993) with shared roots in technoscientific innovations that became global (Allan, 2018) is vital to some of the pressing contemporary questions faced by IR scholars. For example, in a bid to search for conceptions of world politics that are less anthropocentric and more attentive to the impact of environmental forces, the question of human political differences tends to be downplayed (see Burke et al., 2016; Youatt, 2014). As critics of the Anthropocene turn in IR have argued, the use of planetary scale, enabled by specific forms of environmental science and calculative techniques, comes at the cost of human times, geographies, and political distinctions (Corry, 2020; Hamilton, 2016). Instead of starting at an all-encompassing planetary or global scale as though they are the self-evident spatiotemporal scale of analysis (Moore, 2008), IR scholars should think more carefully about how the political-geographic concepts of the global and the planetary emerged through specific material transformations and forms of knowledge that are created through the nexus between the modern territorial state and technoscience. Scholars in IR who are working at the intersection of international relations and Science and Technology Studies have started to examine how environmental phenomena are created as governance objects through technoscience (Allan, 2017b; Corry, 2010). What is needed next is to show how environmental forces are prefigured in human political processes not only as objects of human knowledge but also as agential 'things' (Connolly, 2013). Since the planetary or global perspectives are, at their epistemic and infrastructural roots, irretrievably entangled with the creation and governance of imperial, colonial, and modern state territories (Baker, 2018; Coen, 2018; Crosby, 1986; Heymann & Dahan Dalmedico, 2019; Hulme, 2008; Mahony, 2016; Mahony & Hulme, 2018). To recover the agency of things in human political histories, we need to pay closer attention to the actual

'site' of knowledge production at the sub-territorial levels in the laboratories and in the field sites where technoscientific practices, political rationalities, and the materiality of environmental forces are inscribed into the knowledge produced by scientists (Castree & Braun, 2001; Livingstone, 2003; Powell, 2007).

Reflection: Environmental History IR and the Politics of Technoscience

The main critiques of existing IR discussions on modern territoriality outlined by this thesis are the conceptual separation of people and territory, as well as the subsequent neglect of the territory's materiality. On the face of it, the discipline's increasingly developed turn towards historical polity forms, intellectual traditions, and practices has created an obvious opportunity for synergy between Historical International Relations and Environmental History. It is not difficult to imagine environmental forces being written into the histories of international relations to create something akin to 'Historical Environmental International Relations'. However, as I argued in this concluding chapter, the spatiotemporal scales inherent to scholarly observation are invariably the by-products of the entanglement between technoscience and modern territoriality. By writing about 'natural' forces at certain spatiotemporal scales, despite the lip service to overcoming the modernist culture/nature divides, the scales themselves are 'naturalised' as self-evident frames of socionatural phenomena. Environmental Historians themselves are aware of the entanglement between the global, transnational, national, and local scales that are necessary to their works, and the power-laden historical processes through which these scales assume their discursive and material status (R. White, 1999:977). In light of the entanglement between modern territoriality and the power-laden, historically produced forms of environmental knowledge (Braun, 2000; Castree & Braun, 2001; Scott, 1998), we cannot produce a truly environmental or 'posthuman' form of IR without being attentive to the politics of technoscience (cf. Harrington, 2016).

Following recent works in IR on the historical contingencies of socio-technical problems such as biosecurity and climate (Allan, 2017b; Elbe & Buckland-Merrett, 2019; Hamilton, 2016), I

have mainly approached the socionatural entanglements via the politics of knowledge production. My argument is based on the premise that whereas environmental forces are real, the knowledge about them is not transhistorical and operates with latent geographical assumptions that are power-laden. In my thesis, I argued, by examining the creation of political geographical concepts such as 'China' and the Chinese frontier as well as the production of environmental knowledge that made visible the materiality of these socially created spatial entities, that nature does not reveal itself to us on its own (Castree & Braun, 2001). What warrants further research is how, in a similar vein to what Mitchell described as the 'state effect' through a wide range of quotidian practices that execute the state's surveillance, coercive, and bureaucratic functionalities (T. Mitchell, 1991b:94), the territory of the state too can be thought of as an 'effect' of technoscientific knowledge and practices. A territory is not only worked in the sense that it is cultivated and laboured on, but also enforced and, more importantly, rendered knowable by people with different expertise. In Painter's words, the modern state's territory is the effect of 'networked socio-technical processes' involving material technologies and the labour of human experts (Painter, 2010:1103). However, Painter's technical understanding of territory remains bounded by anthropocentric instrumentalism. As I have argued in this thesis, specifically in Chapters 3, 4, and 5, the historical contingencies and micropolitics involved in the production of scientific knowledge, which we also rely upon to understand a given territory, means that socio-technical problems are inherently uncertain and contested, rather than merely 'technical' solutions to pre-existing problems (Whatmore, 2006:603). What remains to be seen is how the involvement of technoscience in the creation of modern territorial states produced socionatural transformations that reordered both social relations and the physical environment.

Works in Environmental History have already set examples of how environmental changes can be explained through human political histories and vice versa at different spatiotemporal scales (Blackbourn, 2006; Burke III & Pomeranz, 2009; Chu, 2015; Marks, 2011; Richards, 2003). Works in Science and Technology Studies have also shown us how technoscientific knowledge and practices are coproduced with the modern state (Asdal et al., 2007; Carroll, 2006; Mitchell, 2002). More recently, IR scholars have begun to examine how technoscience

has shaped the modern international system (Allan, 2017a, 2017b, 2018; Yao, 2021, 2022). These insights can be combined to chart out a theoretical and methodological approach that is attentive to both the materiality of the physical environment that is inseparable from human strategic interactions and power relations (Billé, 2020; Elden, 2013b; Scott, 2009) and how that materiality is made visible through knowledge production that is itself a power-laden and historically contingent process (Asdal et al., 2007; Castree & Braun, 2001; Jasanoff, 2004a). To conclude, modern territoriality as an empirical phenomenon offers a fruitful analytical and empirical starting point for HIR to incorporate sights from Environmental History and STS by making visible the entanglement between the making of modern state territories at different places with globally circulated yet locally situated technoscientific knowledge and practices. As I have shown in this thesis, a closer empirical engagement that takes seriously the co-production between political rationalities and technoscience can help us to better understand how and why environmental forces matter in the establishment of anthropogenic political orders.

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