Cybersecurity and Non-State Actors

A HISTORICAL ANALOGY WITH MERCANTILE COMPANIES, PRIVATEERS, AND PIRATES

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Abstract

The thesis investigates how the historical analogy to mercantile companies, privateers, and pirates between the 16th and 19th century can elucidate the relationship between non-state actors and states in cyber(in-)security, and how such an application changes our understanding of cyber(in-)security. It contributes to a better integration of non-state actors into the study of cyber(in-)security and international security by clarifying the political challenges raised by the interaction between these players and states.

Drawing on the literature of non-state armed actors, the thesis defines a spectrum of state proximity to develop an analytical framework categorizing actors as state, semi-state, and non-state. The historical investigation utilizes primary and secondary sources to explore three periods in British naval history: the late 16th, late 17th, and mid-19th centuries. A comparison of the two security domains – the sea and cyberspace – identifies the pre-18th century periods as the most useful analogues for cyber(in-)security.

The thesis evaluates the analogy by conducting empirical case studies. First, the case of the attacks against Estonia (2007) and three criminal court cases against Russian hackers (2014/2017) examine the analogy to pirates and privateers. Second, the analogy to mercantile companies focuses on the attacks against Google (2009), the attacks against Sony Pictures Entertainment (2014), and the collaboration between large technology companies and Five-Eyes signals intelligence agencies.

The thesis makes three main claims: first, the analogy to piracy and privateering provides a new understanding of how state proximity is used politically by attackers and defenders, and offers lessons for understanding attribution in cyberspace. Second, the longevity of historical privateering sheds light on the long-term risks and rewards of state collaboration with cyber criminals, and offers insight into the political constitution of cyber(in-)security. Third, the mercantile company lens improves our understanding of how cooperative and conflictive relations between large technology companies and states influence cyber(in-)security.

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CHAPTER 1

Introduction

> *We should not assume that all of the attacks on our system are on the behalf of a nation-state. There is a kind of shadowy world here that is closer to Sir Francis Drake than to an official naval force. That is to say, people may be protected by their government, encouraged by their government, rewarded by their government, but they are also free actors. And there is plenty of that going on in this world – digital privateers, if you will.*[1]

Stewart Baker, former assistant, Homeland Security Secretary for Policy, Hearing on Cybersecurity in the Senate Committee on Homeland Security and Governmental Affairs, 28. April 2009.

> *Our suspicion is that this [GhostNet] was an operation which was essentially outsourced to third parties, essentially third-party actors possessing the equivalent of a letter of marque, legal pirates of the state, which had either some contractual arrangements or had some assurance of financial remuneration or reward in return for maintaining a specific kind of network such as this.*[2]

Rafal Rohozinski, Report to Congress of the U.S.-China Economic and Security Review Commission 2009.

> *'What we are seeing in cyberspace is essentially the return of the privateer,' Inkster said, referring to semi-authorised but privately owned raiding ships sent out by nations in previous centuries to attack their enemies often in time of peace. 'And what we know from history is that privateers can, sometimes, start wars... We are talking about states that do retain substantial nuclear arsenals.'*[3]

Nigel Inkster, former deputy-head of MI6, Reuters 2011.

A. Research question and aims

If we divide the world of international politics into state and non-state actors we miss important actors that exist in between these two categories. In the realm of cyber(in-)security, those actors fundamentally shape the security and insecurity experienced worldwide. Calling them non-state actors, however, as some in the International Relations discipline do, obscures their deep interlinkages with the international political system.[4] This thesis offers one way of analysing those linkages: it

[1] Cyber Security: Developing a National Strategy, 111th Cong., 1st sess., Washington, DC: U.S. Government Printing Office, 2009 (S. Hrg. 111-724).

[2] Annual Report to Congress, 111th Cong., 1st sess., Washington, DC: U.S. Government Printing Office, 2009. http://www.uscc.gov.

[3] Peter Apps, "Analysis - Agreement Seen Distant at London Cyber Conference," *Reuters*, 26. October 2011.

[4] See e.g. Brandon Valeriano and Ryan C. Maness, *Cyber War Versus Cyber Realities: Cyber Conflict in the International System*, (New York: Oxford University Press, 2015), 164-87.

uses the historical analogy to pirates, privateers, and mercantile companies to better understand how the links between these unconventional actors and the state contribute to cyber(in-)security.

The analogy is particularly useful for this task. Historically, privateering was embedded in a larger process of building security structures on the seas, which included actors such as navies, mercantile companies, and pirates. The distinguishing feature of privateers were their particular relationship to the state, in the form of state-sanctioned private attacks against foreign vessels. Mercantile companies had intricate conflictive and cooperative relationships with various states; pirates were sometimes useful allies, whilst at other times, they were labelled the enemies of mankind. Similarly today, a variety of actors are operating in concert with states to make use of the insecurity of cyberspace to further their own interests. However, the types of interactions between the actors, and the effects of their undertakings, are poorly understood. Mainstream International Relations theory has difficulty capturing the security dynamics arising from this phenomenon.[5] This thesis addresses this gap in the literature by undertaking the research needed to provide a more nuanced understanding of the state's relationships to private actors both historically on the sea and contemporarily in cyberspace.

In doing so, the thesis also interjects in a policy discourse that has hitherto used the analogy to privateering only superficially, as a reference point for understanding the dynamics of cyber(in-)security in the international system.[6] However, beyond making mere references to the phenomenon of privateering, few scholars have put the analogy in its historical context. International Relations thinkers have demonstrated that the use of

[5] Lucas Kello, "The Virtual Weapon: Dilemmas and Future Scenarios," *Politique étrangère* 79, no. 4 (2014-2015): 2-4.

[6] See, for example, the quotations at the beginning of the chapter.

misconstruing analogies by policymakers can have severe negative consequences for the resolution of security problems.[7] Consequently, it is one of the responsibilities of academia to evaluate the analogies that are used to understand one of the fundamental security challenges of the day.

Building a thorough understanding of the historical security dynamics in a loosely governed space – the sea in the age of sail – this thesis examines its analogy to cyberspace in depth, pursuing the following central research question:

How can the historical analogy to mercantile companies, privateers, and pirates be applied in order to understand the role of non-state actors, with varying degrees of state proximity, in cyber(in-)security, and how does such an application change our understanding of cyber(in-)security?

Posing this question entails three aims: first, the thesis aims to assess the relevance and utility of the analogy to contemporary cyber(in-)security. It recognizes a prima facie analogical nature of the attempts of states to extend their influence over cyberspace through cooperation with, or toleration of, other actors. To understand how privateering existed and eventually became extinct, one needs an awareness of the concurrent actors on the sea. In conducting the research needed to evaluate this prima facie resemblance, the thesis can counter the tendency of analysts and scholars to use analogies without having established whether the two issues are comparable. In addition, it counters the tendency of scholars in cyber(in-)security to concentrate too much on current events and to treat cyber(in-)security as a new, distinct type of problem. The academic community has not decided what type of security problem the involvement of state and non-state

[7] Yuen Foong Khong, *Analogies at War: Korea, Munich, Dien Bien Phu, and the Vietnam Decisions of 1965*, (Princeton: Princeton University Press, 1992).

actors in cyber conflicts presents. Thus, the evaluation of this historical analogy will contribute to learning more about the structure of relations between different actors working together with states or against states in cyber(in-)security.

What the thesis does not do is evaluate policymakers' strategic use of analogies to achieve political aims. Indeed, a body of literature dealing with that already exists, for example, the examination of the "not another Munich" analogy in the American discourse.[8] The present study overlaps with such research in that it was inspired by policymakers' use of the analogy. However, this thesis will evaluate how such an encompassing analogy can be applied, and assess its potential for new understandings of state–non-state relationships in cyber(in-)security.

Second, the evaluation of the analogy to the mercantile company, the privateer, and the pirate would have intellectual merit even if it had never been used by policymakers. This is because it challenges the state-centricity present in much of our conceptual toolkit in mainstream International Relations theory; it leads to the examination of the relations between actors in ways which are unavailable within the current public/private and foreign/domestic divides. Breaking up the state/non-state divide into a more continuous set of relationships can allow for a richer understanding of cyber(in-)security. The hope is that cyber contestations, cybersecurity policies, and accounts of cyber(in-)security are better understood after investigating the relationships between governments and other, sometimes unconventional, actors – some of them motivated predominantly by economic interests. Thus, evaluating the analogy allows for a recasting of the relationships between the state and the other actors, thereby offering a historically informed perspective.

[8] Ibid.

Third, since the conceptualization of the actors involved and their entanglement with the state is partly based on an analysis of the post-Cold War security environment, this thesis can draw upon and contribute to the literature on the transformation of the international security environment in the post-Cold War context. It does so by offering a perspective on how to better integrate non-state actors in cybersecurity studies and in international security studies. The evaluation of the analogy will interrogate to what extent there is an interconnection between the modern-day mercantile companies, privateers, and pirates. This endeavour improves our conceptual understanding of actors, as the thesis aims to uncover how the different types of actors work together, through new networks and interrelationships, to achieve their goals. Specifically, by analysing the relationship of "non-state" actors with the state, the thesis claims to identify – in the cases investigated – what types of political challenges the different states' interactions with these actors have introduced in cybersecurity.

The purpose of the thesis is not to provide a "scientific" model of the cyber(in-)security actors and their relations to states in the neo-positivist sense.[9] Rather, it is to provide a well-researched contribution to the debate on whether, and how far, constellations of actors in cyber(in-)security can be usefully understood with reference to the historical analogy to mercantile companies, privateers, and pirates. The focus will lie on evaluating whether the analogical framework can aid our understanding of the political dynamics of governmental and non-state action in cyber(in-)security.[10] To the extent that the analogical framework is found to be applicable, it may provide a basis for future investigations into the security dynamics of cyber(in-)security. The evaluation of the

[9] For further elaboration on neo-positivist conception of scientific models see Patrick Thaddeus Jackson, *The Conduct of Inquiry in International Relations : Philosophy of Science and Its Implications for the Study of World Politics*, The New International Relations, (London: Routledge, 2011).

[10] Martin Hollis and Steve Smith, *Explaining and Understanding International Relations*, (Oxford: Clarendon Press, 1990).

analogy will be pursued using a framework conceptualizing distinct categories of the phenomena observed in cyberspace, aided by recourse to historical examples. Briefly summarized, the concept of the mercantile company captures the political aspects of private sector foundations of cyberspace. Introducing the privateer offers a perspective on how to understand states' motivations for using private actors for political goals. The concept of the pirate illuminates how the blurred lines between state support and tolerance can introduce challenges and opportunities into the relations between states. Finally, the examination of the development of navies highlights the importance of a holistic analysis of cyber(in-)security, as state incapacity interacts with governmental interest in the use of private actors. The analogical analysis contributes to the building of conceptual frameworks to better understand the type of challenges witnessed in a seemingly chaotic cyberspace.

Thus, the thesis seeks to achieve two closely related research outcomes. First, it shows empirically how the issues raised by naval security arrangements during the 16th – 19th centuries, when states attempted to increase their influence over the high seas through cooperation with or toleration of other actors, can be analogized to the security dynamics observed in cyberspace. Secondly, it demonstrates how such an application of the concepts, derived from a particular historical understanding of mercantile companies, privateers, and pirates, changes our understanding of cyber(in-)security.

Overall, the thesis puts forward one preliminary claim and three main claims that together answer the research question. Based on the historical inquiry, the thesis discusses which period of history should be selected as most analogous to cyber(in-)security. The thesis claims that the evolution and transformation of interests in privateering, due to the growing interest in trade and stability whilst dedicated naval capacities were being built, make the 17th century the period in the history of sail that contemporary cyber(in-)security

can be best analogized to. The purpose of this preliminary claim is to narrow down the scope of the analogy and set up the three other substantive claims:

First, by analysing contestations in cyber(in-)security against the background of the history of contestations in piracy and privateering, we better understand how state proximity is used politically by both attackers and defenders. This changes our understanding of attribution. Second, the longevity and path dependencies of historical privateering setups refine our understanding of the constancy, and the long-term risks and rewards, of state collaboration with cyber criminals. It refines our understanding of the difficulty of exiting a policy based on a political cybercriminal nexus and thus makes an argument about the stability of the politically constituted cyber(in-)security problem. The analogy is uniquely placed to make this long-term observation. Third, by treating large technology companies as political actors of their own kind, the mercantile company lens sharpens the focus on how cooperative and conflictive relations to states, and practices of self-protection, influence cyber(in-)security. It deepens our understanding of the role these companies play in providing cyber(in-)security.

By examining such a diverse range of state and non-state agency and interaction, the thesis sheds new light on the politicisation of cyber(in-)security as well as on particular aspects of International Relations theory. In the spirit of critical security studies, the thesis develops and clarifies the understandings of the agency of actors who are neither state nor non-state actors. The thesis pays special attention to how actions are constituted with reference to a particular relationship to the state. In evaluating the analogy, the critical security studies motivation is directly visible when interrogating the cases with the question: how is this activity being rendered as an activity of the state or as an activity of a non-state actor?

The thesis does not claim to contribute to larger, robust theoretical generalizations. However, this does not mean that it cannot speak to, draw on, and generate insights that may shed light on some theoretical debates. Thus, the substantive contributions of the thesis add to the literature on the privatization of security, and contribute to an emerging debate on the status of the cyber(in-)security topic in International Relations. In addition, the analysis of the analogy itself has its roots in the concept of what has been coined by Joseph S. Nye, Jr. as the diffusion of power from states towards non-state actors.[11] The thesis follows Nye's assessment that "while leaving governments the strongest actors, the cyberdomain is likely to see an increase in the diffusion of power to nonstate actors and network centrality as a key dimension of power in the twenty-first century."[12] Rather than abolishing the state, the actors observed are configured to the state in particular ways. The focus on this configuration of actors is one area in which the thesis can contribute to the theoretical debates.

Finally, the research on the interaction between state, semi-state, and non-state actors will show that the International Relations discipline brings a unique insight to the analysis of cyber(in-)security – one that can illuminate the political roots of some of the challenges that other disciplines, like Computer Science, have struggled with. One of the fundamental contributions of the thesis, therefore, is to provide a better integration of non-state actors to a wider community of study of cyber(in-)security using the toolkit of International Relations.

It is hoped that, solidly based on the research necessary to assess the utility of the analogy, the perspective developed can contribute to the efforts towards a more stable, cooperative, and secure cyberspace for its users. As the discussions around cyber(in-)security often

[11] Joseph S. Nye, Jr., *The Future of Power*, 1st ed., (New York: PublicAffairs, 2011).
[12] Ibid., 151.

focus on the asymmetric ways in which actors can profit from insecurity, the hope is that, by offering a holistic understanding, the thesis may lay the foundations for designing innovative and more durable approaches to cyber(in-)security challenges.

B. Clarifying the terminology

This thesis evaluates the analogy of significant non-state actors in cyberspace to mercantile companies, privateers, and pirates, and considers their respective relationships to the state. Accordingly, some terminological explanations are in order.

There is no clear or consensus definition of a *mercantile company*. In the literature, mercantile companies are defined inductively, by referring to examples such as the chartered companies operating predominantly out of European states. A prominent chartered company is the British East India Company which was founded in 1600. In this thesis, such companies are characterized as semi-state actors, due to their strong relationships both with their home states and with the foreign territories they operate within.[13]

The term *privateer* denotes a privately-owned vessel that operates against an enemy with the licence or commission of a government in times of war.[14] In maritime history, privateer can also refer to a person who is engaged in privateering. This leads to the definition of a *pirate* as: "a person who plunders or robs from ships, esp. at sea; a person who commits or practises piracy." But also: "a person who goes about in search of plunder; a freebooter, a marauder; a raider, a plunderer, a despoiler."[15] The privateer

[13] Recent historical research shows that in the 17th and early 18th century, the companies could also be classified as non-state actors, with respect to their autonomy from the home government. See e.g. Philip J. Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundation of the British Empire in India*, (Oxford: Oxford University Press, 2011). This debate will be picked up in the historical Chapter 3 of the thesis.

[14] "Privateer," ed. I. C. B. Dear and Peter Kemp, vol. 2014, *The Oxford Companion to Ships and the Sea* (Oxford: Oxford University Press, 2006), https://perma.cc/5G2V-P5U2.

[15] "Pirate, N.," in *Oxford English Dictionary Online* (Oxford: Oxford University Press, 2017).

differs from the pirate because the actions of the privateer are committed under the authority of a state. In the framework of this thesis, privateers are classified as semi-state actors, whilst pirates are considered non-state actors. The reason for classifying the mercantile company and the privateer as semi-state actors is to acknowledge their relationship to the state as qualitatively different enough to merit further inspection.

Semi- and non-state actors can be distinguished from the *navy*, a state actor, that constitutes "the whole body of warships belonging to a ruler, state, or nation; (now usually) spec. a regularly organized and maintained naval force, esp. considered as comprising ships, personnel, maintenance systems, equipment, etc."[16] Whilst state actors are not the focus of this thesis, they are important, because they provide the context in which the interactions between the other actors and the state take place.

Beyond the historical naval actors, this thesis uses various concepts to examine the security issues surrounding digital interconnectedness. In order to elaborate the definition of cyber(in-)security used in this thesis, a short overview of the recent history of security studies shall be given.

Security studies has a rich history of academic debate about what constitutes security. Predominantly in the 1990s, the concept of national security was called into question. After the Cold War, the traditional military threats lost their primordial importance. As a consequence, perceived threats such as domestic poverty, educational crises, industrial competitiveness, drug trafficking, and others became more relevant.[17] The question of national security was therefore re-examined. The key questions driving new scholars of

[16] "Navy, N.," in *Oxford English Dictionary Online* (Oxford: Oxford University Press, 2017).

[17] David A. Baldwin, "Security Studies and the End of the Cold War," *World Politics* 48, no. 1 (1995): 126.

security were: who has to be secured, from what/whom, and by what means?[18] Barry Buzan contributed to a broadening of the concept of security by introducing five sectors in which securitization could take place: military, political, economic, societal, and environmental.[19] This broadening was accompanied by a deepening of security, which destabilized the collective reference object on a state level. On the one hand, scholars made a move downwards and focused on group, individual, or human security. On the other hand, they moved upwards and focused on security issues from a global perspective.

Distinct approaches of analysing security emerged with different frames of importance, for example, studies focusing on national security, securitization, emancipatory approaches, or the study of security practices. This thesis builds its definition of security with an awareness for such developments in the literature broadly associated with critical security studies.[20] Didier Bigo and Rob B. J. Walker expanded on their earlier critique of the demarcation of the national and international in International Relations.[21] They argued that International Relations has a difficult relationship to borders. Some scholars see borders as the foundational element of the international, their existence constituting the international realm, whilst others see the eroding of borders as leading to a utopian global

[18] David A. Baldwin, "The Concept of Security," *Review of International Studies* 23, no. 01 (1997); Keith Krause and Michael C. Williams, "Broadening the Agenda of Security Studies: Politics and Methods," *Mershon International Studies Review* 40, no. 2 (1996).

[19] Barry Buzan, "New Patterns of Global Security in the Twenty-First Century," *International Affairs* 67, no. 3 (1991); Barry Buzan, Ole Waever, and Jaap De Wilde, eds., *Security: A New Framework for Analysis* (Boulder: Lynne Rienner, 1998).

[20] See e.g. Keith Krause, "Critical Theory and Security Studies: The Research Programme of 'Critical Security Studies'," *Cooperation and Conflict* 33, no. 3 (1998); Keith Krause and Michael C. Williams, *Critical Security Studies: Concepts and Cases*, (London: UCL Press, 1997). More recently, a group of scholars have extended the original questioning of theoretical claims to methodological approaches. See Claudia Aradau et al., *Critical Security Methods: New Frameworks for Analysis*, The New International Relations, (London: Routledge, Taylor & Francis Group, 2015).

[21] Didier Bigo and Rob B. J. Walker, "Political Sociology and the Problem of the International," *Millennium - Journal of International Studies* 35, no. 3 (2007); Didier Bigo, "The Möbius Ribbon of Security(ies)," in *Identities, Borders, Orders : Rethinking International Relations Theory*, ed. Mathias Albert, David Jacobson, and Yosef Lapid (Minneapolis: University of Minnesota Press, 2001); Rob B. J. Walker, *Inside/Outside: International Relations as Political Theory*, (Cambridge: Cambridge University Press, 1993).

world society. However, using the mathematical figure of the Moebius strip as a thinking tool, Bigo and Walker problematize the sharp distinction of internal and external. A Moebius strip has the particular topology that "no one can identify, whether objectively or even consensually, the location of an edge differentiating once and for all the internal and external."[22] This conception rids itself of the dualisms that structure much of International Relations theory. Consequently, it does not make sense to stick with a strict definition of security and insecurity respectively.

The double-edged nature of security and insecurity is further captured by the often-recited security dilemma. The security dilemma captures the potential of protective actions by actor A to secure itself, leading to (unintended) perceived insecurity for actor B. As Simon Dalby observes:

> The dilemmas of contemporary security provision suggest that in the process of providing various forms of security, insecurities are also reproduced, often in ways that either actually undermine the initial production of security or that merely perpetuate the problems to which they are supposedly providing solutions.[23]

For these reasons, this thesis uses the term *(in-)security* to denote that whether certain practices produce security or insecurity depends on the perspective taken.

This has implications on the way cyber(in-)security is defined. In an interdisciplinary spirit, which requires an understanding about how different disciplines conceive of cybersecurity, the definition of cyber(in-)security used in this thesis starts with the

[22] Bigo and Walker, "Political Sociology and the Problem of the International," 736.

[23] Simon Dalby, "Contesting an Essential Concept: Reading the Dilemmas in Contemporary Security Discourse," in *Critical Security Studies: Concepts and Cases*, ed. Keith Krause and Michael C. Williams (London: UCL Press, 1997), 13.

technical underpinnings of cyberspace. The technical infrastructure, and the people that make this infrastructure work, provide the foundational understanding of the environment cyberspace is made of. Therefore, whilst the thesis' main argument is about the relationship of actors in cyberspace to the state, the technical underpinnings of the security challenges will also be discussed, drawing on interdisciplinary sets of literatures. The technical underpinnings are important because they enable or constrain the production of security and insecurity. *Cyberspace* will be used throughout the thesis to encompass "all computer systems and networks in existence, including air-gapped systems."[24] This definition includes the entire internet, consisting of all interconnected computers, as well as all secluded computer systems that are not logically connected to the internet. As cyberspace is an artificial domain, its properties are subject to normative review. Therefore, the question always arises, whether a security challenge is enabled by technological design choices and if so, whether there are alternative choices out there? The understanding pursued here is not one of technological determinism. On the contrary, both the design and the use of technologies are made by human decisions.

In Computer Science, historically, the security of a system was defined by the properties confidentiality, integrity, and availability. However, security engineers would be quick to point out that the discipline has since integrated other aspects, such as privacy, anonymity, authenticity, or trust, into its security engineering designs. For computer scientists, the definition of the protection properties of the system and the according implementation of these properties make up the security of a system.[25] The discipline of Computer Science distinguishes between information and network security. Information security includes

[24] Lucas Kello, "The Meaning of the Cyber Revolution: Perils to Theory and Statecraft," *International Security* 38, no. 2 (2013): 17.

[25] Ross Anderson, *Security Engineering: A Guide to Building Dependable Distributed Systems*, 2nd ed., (Indianapolis: Wiley, 2008).

the practices related to the protection of information (both electronic and non-electronic), whereas network security focuses on the security of an interconnected system of computers. In Computer Science, there is not an established definition of cybersecurity.

In International Relations, Lucas Kello has defined *cybersecurity* as "the absence of unauthorized intrusion into computer systems and their proper functioning." Kello specified that "the concept encompasses the safety and survivability of functions operating beyond cyberspace but still reliant on a computer host, to which they are linked at the logical or information layer."[26] This is important, as an increase in the dependency of societal functions on cyberspace also increases the potential harm that a compromise of cybersecurity may incur. With the exception of highlighting the functions outside of cyberspace, this definition stays close to the network security definition of computer scientists and thereby enables interdisciplinary conversations. However, by using a negative definition ("the absence of") it defines security as a binary condition and does not acknowledge that, in practice, there will always be a level of security. Furthermore, Kello's definition does not acknowledge relational aspects of security; namely, that security practices are always bound to a particular referent actor. In addition, it does not highlight the security dilemma as introduced above. Following the critical security studies approach to security, it is key that cyber(in-)security always refers to securing some part of cyberspace from a particular threat for a particular referent actor.[27] Clearly, such challenges vary among referent actors. For individuals, cyber(in-)security challenges may take the form of the protection of one's privacy, whereas for businesses, they may concern the stability of operations. Thus, as explained above, *cyber(in-)security* points to the

[26] Kello, "The Meaning of the Cyber Revolution: Perils to Theory and Statecraft," 18.

[27] Krause, "Critical Theory and Security Studies: The Research Programme of 'Critical Security Studies'."

simultaneous security and insecurity that certain practices produce, depending on the actor's perspective.

A *cyber threat* as treated in the technical domain is a potential event, which, if actualized, could cause an unwanted incident and thereby could negatively affect the security of the referent actor.[28] Sources of cyber threats can be natural, human, or environmental. In the case of the political cyber threat discourse, the focus is often on how a human threat actor could exploit a vulnerability of a computer system to achieve a political or strategic effect, and through that potentiality, threaten the security of a state. Nye identified four major categories of cyber threats: cyber war, economic espionage, cybercrime, and cyber terrorism.[29] These four categories differ based on motivation, strategic purpose, and threat actor. All of them use a computer system to achieve their goals. Thus, it is pertinent to explain what a particular actor exploiting the inherent weakness of cyberspace might do. As such, it is useful to distinguish between cyber attack and cyber exploitation.

Cyber attack is understood as the "use of code to interfere with the functionality of a computer system for a political or strategic purpose."[30] Thus, the term cyber attack captures the intentional use of cyberspace to achieve a political or strategic goal by bringing about the effects achieved through cyberspace. This is to be distinguished from *cyber exploitation*, which captures the "penetration of an adversary's computer system for the purpose of exfiltrating (but not defiling) data."[31] Cyber exploitation represents a form of espionage. Distinguishing the two is important, as cyber exploitation, even if done at a large scale, will generally not pass the threshold of an act of war. This is different

[28] See e.g. ISO/IEC, "ISO 27001: Information Technology -- Security Techniques -- Information Security Management Systems -- Requirements,"(Geneva: ISO, 2013).

[29] Joseph S. Nye, Jr., "Nuclear Lessons for Cyber Security?," *Strategic Studies Quarterly* 31 (2011).

[30] Kello, "The Meaning of the Cyber Revolution: Perils to Theory and Statecraft," 19.

[31] Ibid., 20.

for cyber attacks. Cyber attacks that "amplify or are equivalent to major kinetic violence" can be captured by the term *cyber war*.[32] So far, no cyber attack has produced the physical destruction or loss of life so as to be classified as an act of war.

With these definitions in mind, it is pertinent to point out which aspects of cyber(in-)security this thesis does not cover. The thesis does not address the broader question of internet governance, outside of the cyber(in-)security sphere. There is ample literature in this area.[33] Also, the thesis will not address the legal and ethical debates on cyber war.[34] As the focus of this thesis is on activities that, by themselves, do not constitute acts of war, it can be classified as studying cyber(in-)security, with particular focus on international competition and conflict.[35] Furthermore, the international political debate surrounding cyber versus information security will not be at the centre of this thesis. However, where necessary, the interaction between the different understandings will be highlighted.

C. Current state of thinking

Before outlining the organization of the thesis, a short overview of the current thinking on cyber(in-)security, on non-state actors, on privateering, and on analogies in International Relations shall be provided.

[32] Nye, "Nuclear Lessons for Cyber Security?," 21.

[33] See e.g. Milton Mueller, *Ruling the Root: Internet Governance and the Taming of Cyberspace*, (Cambridge, Mass.: MIT Press, 2002); Milton Mueller, *Networks and States: The Global Politics of Internet Governance*, Information Revolution and Global Politics, (Cambridge, Mass.: MIT Press, 2010).

[34] Michael N. Schmitt, *Tallinn Manual on the International Law Applicable to Cyber Warfare : Prepared by the International Group of Experts at the Invitation of the Nato Cooperative Cyber Defence Centre of Excellence*, (Cambridge: Cambridge University Press, 2013); John Arquilla, "Can Information Warfare Ever Be Just?," *Ethics and Information Technology* 1, no. 3 (1999).

[35] The author supports the view that the study of war constitutes a field of study on its own. Supportive of the view see e.g. Tarak Barkawi, "Of Camps and Critiques: A Reply to 'Security, War, Violence'," *Millennium - Journal of International Studies* 41, no. 1 (2012).

In line with the growing relevance of cyber(in-)security to international security policy over recent years, cyber(in-)security has received increased attention from the International Relations academic community. As early as 2003, James Der Derian addressed the impact of information technology on International Relations and identified the central question in the area as "how a revolution in networked forms of digital media has transformed the way advanced societies conduct war and make peace."[36] At the same time, Ronald J. Deibert warned about the negative implications of the increasing militarization of cyberspace and its use for state driven surveillance and censorship.[37] However, Deibert also noted the countermovement of citizen and NGO networks, the technical professionals, who, aware of the technical underpinnings, knew the constraining and enabling effects the underlying infrastructure could have. In 2006, Johan Eriksson and Giampiero Giacomello found that, whilst realists, liberals, and constructivists would have something to contribute on information security, little theorizing of that nature had been done.[38] However, since 2006, some important contributions have been made. Using a securitization framework, Myriam Dunn Cavelty analysed the U.S. discourse on cyber(in-)security from the 1980s up to 2008 and demonstrated how the information warfare, critical infrastructure, and cyber(in-)security discourses are interrelated.[39] Expanding Deibert's argument of four discourses (national security, state security, private security, and network security) Lene Hansen and Helen Nissenbaum showed the linkages between the different discourses.[40] Dunn Cavelty further differentiated between the

[36] James Der Derian, "The Question of Information Technology in International Relations," ibid.32, no. 3 (2003): 447.

[37] Ronald J. Deibert, "Black Code: Censorship, Surveillance, and the Militarisation of Cyberspace," ibid.

[38] Johan Eriksson and Giampiero Giacomello, "The Information Revolution, Security, and International Relations: (IR) Relevant Theory?," *International Political Science Review / Revue internationale de science politique* 27, no. 3 (2006).

[39] Myriam Dunn Cavelty, *Cyber-Security and Threat Politics: U.S. Efforts to Secure the Information Age*, CSS Studies in Security and International Relations, (London: Routledge, 2008).

[40] Ronald J. Deibert, "Circuits of Power: Security in the Internet Environment," in *Information Technologies and Global Politics: The Changing Scope of Power and Governance*, ed. James N. Rosenau and J. P. Singh, *Suny Series in Global Politics* (Albany, NY: State University of New York Press, 2002);

military, civil defence, crime/espionage, and the technical *foci*.[41] Each discourse has its own main actors, referent objects, and threats. Noting the militarization of the discourses, Dunn Cavelty pointed out how the "digital domain has been subjected to Cold War rhetoric and practices in recent years" and thereby critically evaluated the power of threat representations.[42] However, other scholars have not found this type of analysis to be promising. For example, Robert M. Lee and Thomas Rid, who argued that "most political scientists also lack the technical skills to call out poor quality company reports or government documents. Instead, too many scholars seem happy to engage in self-referential theoretical debates of little relevance to anybody else – for instance, on the 'securitization' of cyber-security."[43] However, Lee and Rid did not offer a more promising framework of analysis with which to capture the dynamics of cyber(in-)security. Rid contributed to the debate on cyber war by arguing that the harmful consequences of cyber attacks have not risen to the level of an act of war, and offered the categories of sabotage, espionage, and subversion as alternatives.[44] His argument was made in the context of a growing (predominantly U.S.) debate on cyber war.[45]

To describe activities below the threshold of war, one could use the umbrella term cyber conflict. Cyber conflict, which occurs below the threshold of war, but outside of the normally agreed activities of peaceful conduct, has recently also been labelled as a state

Lene Hansen and Helen Nissenbaum, "Digital Disaster, Cyber-Security, and the Copenhagen School," *International Studies Quarterly*, no. 53 (2009).

[41] Myriam Dunn Cavelty, "From Cyber-Bombs to Political Fallout: Threat Representations with an Impact in the Cyber-Security Discourse," *International Studies Review* 15, no. 1 (2013).

[42] Ibid., 119.

[43] Robert M. Lee and Thomas Rid, "OMG Cyber!," *The RUSI Journal* 159, no. 5 (2014): 9.

[44] Thomas Rid, *Cyber War Will Not Take Place*, (London: Hurst & Company, 2013). The argument was made against Richard A. Clarke and Robert K. Knake, *Cyber War: The Next Threat to National Security and What to Do About It*, (New York: Ecco, 2010).

[45] See e.g. Erik Gartzke and Jon R. Lindsay, "Weaving Tangled Webs: Offense, Defense, and Deception in Cyberspace," *Security Studies* 24, no. 2 (2015); Jon R. Lindsay, "Stuxnet and the Limits of Cyber Warfare," ibid.22, no. 3 (2013); Erik Gartzke, "The Myth of Cyberwar: Bringing War in Cyberspace Back Down to Earth," *International Security* 38, no. 2 (2013).

of "unpeace."[46] This thesis is interested in cyber conflict below the threshold of war, including measures that fall into the state of "unpeace".

In 2011, Nye analysed the debate on cyber(in-)security and compared it to the debate on the impact of nuclear technology in the 1950s.[47] Taking his cue from the absence of a debate in security studies more broadly, Kello called for the integration of *cyber studies* into International Relations theory.[48] Whilst this thesis does not aim to "model, explain, and, where possible, predict," by evaluating the analogy it does analyse one conceptual framework with which to consider "the negative [and positive] influences that nonstate players may be able to exert on states and their relations with other states."[49] Thereby, the thesis contributes directly to what Kello called for, namely, an integration of the conceptual toolkits of International Relations into the debate on cyber(in-)security.

Several contributions to that end have already been made.[50] Some have focused their efforts on characterizing the domain in terms of an offence-defence balance, the security dilemma, and have speculated whether deterrence is possible.[51] Others have theorized

[46] Lucas Kello, *The Virtual Weapon and International Order*, (New Haven: Yale University Press, 2017), 77-78.

[47] Nye, "Nuclear Lessons for Cyber Security?."

[48] Kello, "The Meaning of the Cyber Revolution: Perils to Theory and Statecraft."

[49] Ibid., 38.

[50] For an extensive overview of the literature since, see Hannes Ebert and Tim Maurer, "Cyber Security," Oxford University Press, 11. January 2017, [Annotated Bibliography], https://perma.cc/Y74K-WXKH.

[51] Dorothy E. Denning, "Rethinking the Cyber Domain and Deterrence," *Joint Forces Quarterly* 77, no. 2 (2015); Peter Dombrowski and Chris C. Demchak, "Cyber War, Cybered Conflict, and the Maritime Domain," *Naval War College Review* 67, no. 2 (2014); Michael P. Fischerkeller and Richard J. Harknett, "Deterrence Is Not a Credible Strategy for Cyberspace," *Orbis* 61, no. 3 (2017); Gartzke and Lindsay, "Weaving Tangled Webs: Offense, Defense, and Deception in Cyberspace."; Richard Harknett, J., John Callaghan, P., and Rudi Kauffman, "Leaving Deterrence Behind: War-Fighting and National Cybersecurity," *Journal of Homeland Security and Emergency Management* 7, no. 1 (2010); Kello, *The Virtual Weapon and International Order*; Martin C. Libicki, *Cyberdeterrence and Cyberwar*, (Santa Monica, CA: RAND, 2009); Jon R. Lindsay, "Tipping the Scales: The Attribution Problem and the Feasibility of Deterrence against Cyberattack," *Journal of Cybersecurity* 1, no. 1 (2015); Joseph S. Nye, "Deterrence and Dissuasion in Cyberspace," *International Security* 41, no. 3 (2017); Rebecca Slayton, "What Is the Cyber Offense-Defense Balance? Conceptions, Causes, and Assessment," ibid.; Tim Stevens, "A Cyberwar of Ideas? Deterrence and Norms in Cyberspace," *Contemporary Security Policy* 33, no. 1 (2012); Ben Buchanan, *The Cybersecurity Dilemma: Hacking, Trust and Fear between Nations*, (Oxford: Oxford University Press, 2017).

governance in cyber(in-)security and researched emerging norms.[52] Still others have looked at particular types of actors (states, terrorists, hacktivists, etc.) and their cyber strategies and operations.[53] Limited research on proxy actors exists, though it mostly assumes fixed state and non-state identities.[54] A more technically interested strand of thinkers also addressed problems introduced by the diffusion of cyber capabilities, the availability of strong cryptography, and the difficulty of attribution, and thereby gained a growing consensus that attribution of cyber attacks is often – though not always – possible, and dependant on many factors.[55] Some scholars continued the lineage of critical inquiry into cyber(in-)security and critical infrastructure protection by expanding their

[52] Madeline Carr, "Public–Private Partnerships in National Cyber-Security Strategies," *International Affairs* 92, no. 1 (2016); Martha Finnemore and Duncan B. Hollis, "Constructing Norms for Global Cybersecurity," *American Journal of International Law* 110, no. 3 (2017); Joseph S. Nye, Jr., "The Regime Complex for Managing Global Cyber Activities," Ontario and London, 2014; Toni Erskine and Madeline Carr, "Beyond 'Quasi-Norms': The Challenges and Potential of Engaging with Norms in Cyberspace," in *International Cyber Norms: Legal, Policy and Industry Perspectives*, ed. Anna-Maria Osula and henry Rõigas (Tallinn: NATO CCD COE Publications, 2016).

[53] Brandon Valeriano and Ryan C. Maness, "The Dynamics of Cyber Conflict between Rival Antagonists, 2001–11," *Journal of Peace Research* 51, no. 3 (2014); Valeriano and Maness, *Cyber War Versus Cyber Realities: Cyber Conflict in the International System*; E. Gabriella Coleman, *Hacker, Hoaxer, Whistleblower, Spy: The Many Faces of Anonymous*, (London: Verso, 2014); Maura Conway, "Reality Check: Assessing the (Un)Likelihood of Cyberterrorism," in *Cyberterrorism : Understanding, Assessment, and Response*, ed. Thomas M. Chen, Lee Jarvis, and Stuart MacDonald (New York: Springer, 2014); Nigel Inkster, "Chinese Intelligence in the Cyber Age," *Survival: Global Politics and Strategy* 55, no. 1 (2013); Jon R. Lindsay, "The Impact of China on Cybersecurity: Fiction and Friction," *International Security* 39, no. 3 (2015); Jon R. Lindsay, Tai Ming Cheung, and Derek S. Reveron, *China and Cybersecurity: Espionage, Strategy, and Politics in the Digital Domain*, (New York: Oxford University Press, 2015); Lior Tabansky and Isaac Ben Israel, *Cybersecurity in Israel*, Springer Briefs in Cybersecurity, (Cham, Switzerland: Springer, 2015).

[54] Proxy relationships can describe some, but not all the phenomena evaluated in this thesis. A limitation of the research on proxy actors is that it often conceptualizes the relationship as one sided. In addition, it often assumes a fixed actor identity (e.g. state or non-state). Some examples are: Jamie Collier, "Proxy Actors in the Cyber Domain: Implications for State Strategy," *St Antony's International Review* 13, no. 1 (2017); Tim Maurer, "'Proxies' and Cyberspace," *Journal of Conflict and Security Law* 21, no. 3 (2016). Tim Maurer extended his research into a promising looking book, though it will be released after submission of this DPhil. See Tim Maurer, *Cyber Mercenaries: The State, Hackers, and Power*, (Cambridge: Cambridge University Press, 2018).

[55] Clement Guitton, *Inside the Enemy's Computer: Identifying Cyber-Attackers*, (London: Hurst & Co, 2017); Clement Guitton and Elaine Korzak, "The Sophistication Criterion for Attribution," *The RUSI Journal* 158, no. 4 (2013); Amir Lupovici, "The "Attribution Problem" and the Social Construction of "Violence": Taking Cyber Deterrence Literature a Step Forward," *International Studies Perspectives* 17, no. 3 (2016); Daniel Moore and Thomas Rid, "Cryptopolitik and the Darknet," *Survival* 58, no. 1 (2016); Thomas Rid and Ben Buchanan, "Attributing Cyber Attacks," *Journal of Strategic Studies* 38, no. 1-2 (2015); Michael N. Schmitt and Liis Vihul, "Proxy Wars in Cyberspace: The Evolving International Law of Attribution," *Fletcher Security Review* 1, no. 2 (2014); Max Smeets, "A Matter of Time: On the Transitory Nature of Cyberweapons," *Journal of Strategic Studies* (2017); Herbert Lin, "Attribution of Malicious Cyber Incidents: From Soup to Nuts," *Journal of International Affairs* 70, no. 1 (2016).

purview into surveillance, broad notions of agency, and the role of time.[56] A group of scholars researched the governing metaphors structuring cyber(in-)security and argued against the dominant Cold War metaphor.[57] Overall, there remains ample space for arguments about how cyber(in-)security is to be assessed in International Relations. This thesis contributes not only to this assessment, but also to the wider cyber(in-)security scholarship by developing one way of analysing cyber(in-)security from an International Relations perspective. This is important, as scholarship in International Relations has a distinct perspective to bring to bear on the topic of cyber(in-)security.

Whilst International Relations has not yet fully integrated cyber(in-)security into its concepts and theories, there is an established literature on non-state actors. Following Michael C. Williams' call for a reintroduction of the public/private divide into international security studies, this thesis contributes to uncovering some of the transformations of the international security field.[58] The literatures on the emergence of sovereignty and the state, on private authority, and on non-state armed actors can contribute to the conceptualization of the actors in cyberspace.[59]

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[56] Thierry Balzacq and Myriam Dunn Cavelty, "A Theory of Actor-Network for Cyber-Security," *European Journal of International Security* 1, no. 2 (2016); Ronald J. Deibert, "The Geopolitics of Cyberspace after Snowden," *Current History* 114, no. 768 (2015); Myriam Dunn Cavelty, "Breaking the Cyber-Security Dilemma: Aligning Security Needs and Removing Vulnerabilities," *Science and Engineering Ethics* 20, no. 3 (2014); Sean Lawson, "Putting the 'War' in Cyberwar: Metaphor, Analogy, and Cybersecurity Discourse in the United States," *First Monday* 17, no. 7 (2012); Tim Stevens, *Cyber Security and the Politics of Time*, (Cambridge, UK: Cambridge University Press, 2016); Shawn M. Powers and Michael Jablonski, *The Real Cyber War: The Political Economy of Internet Freedom*, History of Communication, (Urbana: University of Illinois Press, 2015).

[57] David J. Betz and Tim Stevens, "Analogical Reasoning and Cyber Security," *Security Dialogue* 44, no. 2 (2013); Myriam Dunn Cavelty and Reimer A. Van der Vlugt, "A Tale of Two Cities: Or How the Wrong Metaphors Lead to Less Security," *Georgetown Journal of International Affairs* 16 (2015); Sean Lawson, "Putting the 'War' in Cyberwar: Metaphor, Analogy, and Cybersecurity Discourse in the United States," *First Monday* 17, no. 7 (July 2012); Helen McLure, "The Wild, Wild Web: The Mythic American West and the Electronic Frontier," *Western Historical Quarterly* 31, no. 4 (2000); Constantine J. Petallides, "Cracking the Digital Vault: A Study of Cyber Espionage," *Inquiries Journal/Student Pulse* 4, no. 04 (2012), https://perma.cc/J6NT-7359.

[58] Michael C. Williams, "The Public, the Private and the Evolution of Security Studies," *Security Dialogue* 41, no. 6 (2010).

[59] Examples of those literatures are, on sovereignty: Thomas J. Biersteker and Cynthia Weber, *State Sovereignty as Social Construct*, Cambridge Studies in International Relations, (Cambridge: Cambridge

Relatively little work on privateering exists in the field of International Relations. The "messiness" of the European experience is reflected in Janice E. Thomson's book on mercenaries, pirates, and sovereigns.[60] Most recently, Alejandro Colás and Bryan Mabee critically re-examined Thomson's work and refined the historical account of the public-private partnerships in the provision of violence.[61] Sarah V. Percy contributed to this understanding by demonstrating the normative shift from using mercenaries to national armies, which was brought about by the French revolution.[62] Thus, the thesis also contributes to the re-import of earlier historical examples into modern International Relations by focusing on state–non-state interactions in security.

The debate on the so-called "new wars" literature could also contribute to the contextualization of the security environment.[63] For example, Martin Van Creveld's account of the *Transformation of War* contends that the assumptions made by 19th century strategists were based on the presumption of two sides, each possessing considerable armed forces that are distinguishable and separated by geography.[64] This is a claim that regularly does not apply to the actors in cyberspace.

University Press, 1996). On the state: Charles Tilly, "War Making and State Making as Organized Crime," in *Bringing the State Back In*, ed. Peter B. Evans, Dietrich Rueschemeyer, and Theda Skocpol (Cambridge: Cambridge University Press, 1985). On private authority: Rodney Bruce Hall and Thomas J. Biersteker, *The Emergence of Private Authority in Global Governance*, (Cambridge: Cambridge University Press, 2002); Manuel Suter, "The Governance of Cybersecurity. An Analysis of Public-Private Partnerships in a New Field of Security Policy" (PhD Thesis, ETH, 2012). On non-state armed actors: Annette Iris Idler and James J.F. Forest, "Behavioral Patterns among (Violent) Non-State Actors: A Study of Complementary Governance," *Stability: International Journal of Security and Development* 4, no. 1 (2015).

[60] Janice E. Thomson, *Mercenaries, Pirates, and Sovereigns: State-Building and Extraterritorial Violence in Early Modern Europe*, Princeton Studies in International History and Politics, (Princeton: Princeton University Press, 1994).

[61] Alejandro Colás and Bryan Mabee, *Mercenaries, Pirates, Bandits and Empires: Private Violence in Historical Context*, (London: C Hurst & Co., 2010).

[62] Sarah V. Percy, *Mercenaries: The History of a Norm in International Relations*, (Oxford: Oxford University Press, 2007).

[63] Though this thesis draws in other thinkers of the "new wars" literature, the "new wars" argument is often associated with Mary Kaldor, *New and Old Wars : Organized Violence in a Global Era*, (Cambridge: Polity Press, 1999).

[64] Martin Van Creveld, *The Transformation of War*, (New York: Free Press, 1991).

Finally, the existing literature on analogies highlights how analogies are used in the policy debate to help make sense of the dynamics of new global challenges. For policymakers, the application of a misleading analogy in the analysis of security challenges can have disastrous consequences. Yuen Foong Khong demonstrated how U.S. leaders' reliance on the analogy to the Korean War in the 1950s shaped U.S. strategy in the Vietnam War – with significant consequences for human suffering.[65] Cognitive psychological research explains how practitioners use analogies to analyse situations that share a relational structure with a previously encountered problem.[66] In addition, in an analysis of the deliberations for a WMD-free zone in the Middle East, Gregoire Mallard highlighted the constitutive purpose of analogies in the policymaking process.[67] Introducing the term "forward analogies," he showed how references to historical cases were used to constitute, not only the Middle East as a region, but also to shape a "common map of the future" with significant implications for regional policy.[68]

In cyber(in-)security, the forward analogy deployed shapes the way the security challenge is perceived. However, previous work referring to the analogy examined in this thesis has either been very short, focused on cyber warfare, or centred on privateering as a policy option.[69] The analogy has never been explored in depth. This is problematic as "the choice of a metaphor carries with it practical implications about contents, causes, expectations,

[65] Khong, *Analogies at War: Korea, Munich, Dien Bien Phu, and the Vietnam Decisions of 1965*.

[66] Dedre Gentner and Linsey A. Smith, "Analogical Learning and Reasoning," in *The Oxford Handbook of Cognitive Psychology*, ed. Daniel Reisberg (Oxford: Oxford University Press, 2013).

[67] Gregoire Mallard, "From Europe's Past to the Middle East's Future: The Constitutive Purpose of Forward Analogies" (paper presented at the American Sociological Association Annual Meeting, New York, August 2013).

[68] Ibid., 8.

[69] For very short analogical examinations, see Robert Axelrod, "A Repertory of Cyber Analogies," in *Cyber Analogies*, ed. Emily O. Goldman and John Arquilla (Monterey, CA: Naval Postgraduate School, 2014), 108; Peter W. Singer and Allan Friedman, *Cybersecurity and Cyberwar: What Everyone Needs to Know*, (New York: Oxford University Press, 2014), 177-80. Focused on cyber warfare, see J. Laprise, "Cyber-Warfare Seen through a Mariner's Spyglass," *Technology and Society Magazine, IEEE* 25, no. 3 (2006). For privateering as a policy option, see Michael Lesk, "Privateers in Cyberspace: Aargh!," *Security & Privacy, IEEE* 11, no. 3 (2013).

norms, and strategic choices."[70] In cyber(in-)security, the only academic work addressing analogies was performed by David J. Betz and Tim Stevens.[71] They criticised the current cyber(in-)security discourse as invoking "winner-takes-it-all" mentalities, which are "neither desirable nor necessary in the current strategic reality."[72] Noah Shachtman and Peter W. Singer pointed out that the Cold War concepts used in cyber(in-)security are misleading and that privateering may offer an alternative perspective.[73] This thesis evaluates such an alternative perspective by investigating one composite analogy further, namely the one to mercantile companies, privateers, and pirates.

D. Methodology and data

The argumentative approach of this thesis is analogical. Following Ronald J. Deibert and Markus Kornprobst, the thesis follows pragmatist methodology to pursue the extended use of a historical analogy.[74] The aim is to explore how the conceptual understanding of the actors and their relations to the state, which are built during the historical inquiry, generate new understandings of the contemporary cases. This newly generated understanding can then be used in further problem-solving oriented research.[75] As will be elaborated in the following chapter, the analogy is not to be taken deterministically. The thesis does not investigate the analogy as a claim that history will repeat itself. Rather, it evaluates whether and how the use of conceptual imaginary, based on historical

[70] Davis B. Bobrow, "Complex Insecurity: Implications of a Sobering Metaphor: 1996 Presidential Address," *International Studies Quarterly* 40, no. 4 (1996): 436.

[71] Betz and Stevens, "Analogical Reasoning and Cyber Security."

[72] Ibid., 147.

[73] Noah Shachtman and Peter W. Singer, "The Wrong War: The Insistence on Applying Cold War Metaphors to Cybersecurity Is Misplaced and Counterproductive," Brookings, 15. August 2011, [Blog], https://perma.cc/SCC5-NW4Y.

[74] Ronald J. Deibert, "Exorcismus Theoriae: Pragmatism, Metaphors and the Return of the Medieval in IR Theory," *European Journal of International Relations* 3, no. 2 (1997); Markus Kornprobst, "Comparing Apples and Oranges? Leading and Misleading Uses of Historical Analogies," *Millennium* 36, no. 1 (2007).

[75] Deibert, "Exorcismus Theoriae: Pragmatism, Metaphors and the Return of the Medieval in IR Theory," 183.

experiences, can be useful when approaching modern cyber actors. It takes the insights of Michael P. Marks as its basis, who found that

> the identification of a category – including in the physical and natural sciences – is contingent on the metaphors that define that category, and those metaphors represent a narrative explanation involving delineation of the context under investigation. In this sense, narrative is prior to scientific explanation with metaphor integral to the narrative process. Social science can proceed once the metaphorical narrative identifying a category is spelled out.[76]

The analogy may provide such a metaphorical narrative that could advance the discipline's understanding of certain actors in cyberspace with a particular focus on their relationship to states. The process of analogizing mercantile companies, privateers, and pirates thereby evaluates the classification of the individual actors, and unifies the group of actors in the same realm of analysis.

This distinctly non-causal form of analysis is what Alexander Wendt, drawing on William Dray's "explaining-what," called "explanation by concept."[77] To exemplify this, he pointed to studies that look at what the European Union is by categorizing it as a neo-medieval actor vs. a post-modern state. Following Dray's "explanation-what", this thesis looks at what can be learnt from categorizing certain actors in cyber(in-)security as cyber pirates, cyber privateers, and cyber mercantile companies. Whilst the thesis submits to a hermeneutical pragmatist school of generating partial contextual knowledge claims, the underlying motivation is well captured by Wendt and Dray.

[76] Michael P. Marks, *Metaphors in International Relations Theory*, (Basingstoke: Palgrave Macmillan, 2011), 27.

[77] See Alexander Wendt, "On Constitution and Causation in International Relations," *Review of International Studies* 24, no. 5 (1998): 110-13; William Dray, "'Explaining What' in History," in *Theories of History*, ed. Patrick L. Gardiner (London: Collier Macmillan, 1959).

To evaluate the analogy, the thesis sets out to build up an awareness for the security dynamics on the sea, focusing specifically on mercantile companies, privateers, and pirates. With regard to the historical data collection, the research starts out with secondary literature by historians and explores their historical narrative.[78] The focus is on the British naval historical experience.[79] Two arguments inform this choice. First, Britain is a crucial case, as it went from being an early investor in privateering to pressing for its abolition. An alternative to that would be France, which invested into privateering much later. Conversely, Spain and then the Dutch were formidable naval powers in the 16th and 17th centuries, but their naval influence subsequently declined significantly.[80] Second, the archives and secondary materials pertaining to Britain are readily accessible to the research community. Hence, the thesis gains as these materials render possible a deep engagement with history. The thesis offers insights about Britain, which others could compare to the histories of other countries. Therefore, the claims about the usefulness of the analogy have to, for the purposes of this thesis, be limited to the analogy to the British privateering experience.

The historical method was used to read historians' secondary accounts critically, assess the arguments made, and discuss the sources they are based upon.[81] This was followed up with archival research, shedding light on specific instances of interest to this project.

[78] Historical narrative is understood as explained in John Lewis Gaddis, "History, Science, and the Study of International Relations," in *Explaining International Relations since 1945*, ed. Ngaire Woods (Oxford: Oxford University Press, 1996).

[79] The thesis uses British, when referring to the period both before and after the union of 1706. When referring to exclusively pre-1706 period, the term English is used.

[80] Nuanced accounts of the Spanish and the Dutch naval experience in the 16th and 17th century can be found in Jan Glete, *War and the State in Early Modern Europe: Spain, the Dutch Republic and Sweden as Fiscal-Military States, 1500-1660*, (London: Routledge, 2002).

[81] Marc Trachtenberg, *The Craft of International History: A Guide to Method*, (Princeton: Princeton University Press, 2006).

Specifically, since this research is part of an interpretative project, its archival research is part of an empathic enquiry, with which to study the other's lifeworld of meanings.[82]

The project benefited from being undertaken at Oxford, where access to the Bodleian Special Collections, the British Library, and the British National Archives facilitated research on the history of naval warfare. The archival research generated insights into the different challenges encountered with navies, mercantile companies, privateers, and pirates. Thereby, the author followed Luis Lobo-Guerrero's advice to treat archives as sites of interrogation, placing the materials in their context, and building an imaginary and understanding for the circumstances under which something was (or was not) recorded.[83] In addition to the physical archives, the digitalization efforts of several countries made access to primary sources easier. Thus, other archives were consulted when needed and possible.

The focus of the historical inquiry lies on the interactions between different authorities and mercantile companies, privateers, and pirates between the late 16th and mid-19th century, a time period also referred to as the age of sail. Necessarily, this inquiry cannot go into the same level of depth as a naval historian's would. To mitigate this, the thesis limits the scope to challenges between different actors in three different time periods in the British historical experience. The three periods are the late 16th century Elizabethan privateering, the late 17th century case of the East India Company's interaction with pirates, and the abolition of privateering in a treaty in 1856. These three time periods were selected based on the secondary historical literature. Elizabethan privateering is the most

[82] Dvora Yanow, "Thinking Interpretively: Philosophical Presuppositions and the Human Sciences," in *Interpretation and Method: Empirical Research Methods and the Interpretive Turn*, ed. Dvora Yanow and Peregrine Schwartz-Shea (Armonk, New York: M.E. Sharp, 2014), 23.

[83] Luis Lobo-Guerrero, "Archives," in *Research Methods in Critical Security Studies : An Introduction*, ed. Mark B. Salter and Can E. Mutlu (New York: Routledge, 2012). See also: Luis Lobo-Guerrero, *Insuring War: Sovereignty, Security and Risk*, Interventions, (Abingdon: Routledge, 2012).

prominent phase of privateering in British naval history.[84] The 1690s-1720s are the key phase of British interaction with pirates, including conflicts between the East India Company, pirates, anti-piracy operators, and the Mughal empire. The phase resulted in significant policy changes around 1700, including a redrawing of imperial authorities. It is regarded as a turning point in inter-imperial understandings of piracy, and sets the preconditions for the receding of the practice of privateering.[85] Finally, the abolition of privateering in 1856 is discussed to illuminate why the naval powers agreed to the abolishment.[86] Given that today's policymakers are struggling with, what some perceive to be a similar phenomenon, it is of interest to understand the degree to which the conditions of 1856 are present today.

Whilst conducting the historical research, the conceptual understandings of the diverse actors and their relationships to states were refined. These refined understandings were then used and applied in thickly contextualized case studies which integrated a diverse range of sources.[87] The objects of interest for the case studies were the proximity of actors to the state, and the effects on the security dynamics such proximity introduced. The subjects of interest (actors) that were researched in this thesis fall into the key analogues (key cases) to the historical types of actors evaluated, namely to the mercantile company, the privateer, and the pirate.

[84] David J. Starkey, "Voluntaries and Sea Robbers: A Review of the Academic Literature on Privateering, Corsairing, Buccaneering and Piracy," *The Mariner's Mirror* 97, no. 1 (2011): 130-31.

[85] See e.g. Matthew Norton, "Classification and Coercion: The Destruction of Piracy in the English Maritime System," *American Journal of Sociology* 119, no. 6 (2014); Nicholas A. M. Rodger, *The Command of the Ocean : A Naval History of Britain 1649-1815*, (New York: W.W. Norton & Co., 2006); Nuala Zahedieh, *The Capital and the Colonies: London and the Atlantic Economy, 1660-1700*, (Cambridge: Cambridge University Press, 2010).

[86] For an assessment of the treaty abolishing privateering, see Jan Martin Lemnitzer, *Power, Law and the End of Privateering*, (Basingstoke: Palgrave Macmillan, 2014).

[87] The following categorization of the case studies follows the structure suggested by Gary Thomas, "A Typology for the Case Study in Social Science Following a Review of Definition, Discourse, and Structure," *Qualitative Inquiry* 17, no. 6 (2011); See also: Robert K. Yin, *Case Study Research: Design and Methods*, Fifth ed. Los Angeles: SAGE, 2013.

The case studies serve an evaluative and exploratory purpose. They are evaluative, as the thesis aims to analyse, how issues raised by the security arrangements on the sea, can be analogized to the security dynamics observed in cyberspace. They are exploratory, as the thesis aims to explore how such an application of the concepts of a mercantile company, privateers, and pirates, derived from a particular historical understanding, changes our understanding of cyber(in-)security. The analytical approach used for this purpose is a descriptive analysis of documents covering specific events. Thereby, different actors' perspectives are investigated, particularly as to the narratives they construct regarding specific events.[88] The thesis is interested in different narratives, because they best highlight the political contestation in times of crisis. This means that, whenever possible, evidence of the actors representing themselves was sought. For example, when examining a government narrative, efforts were made to review all the official statements of said government at the time. When available, evidence of a different narrative in private are also used. Pragmatic judgements were made about the claims asserted by secondary sources. Some sources were deemed more trustworthy than others. For example, court submissions given under oath, and hence, under the threat of perjury, were treated as relatively trustworthy, especially when the allegation had to be proven by the party advancing the claim.

The case studies are approached as single case studies rather than multiple ones (i.e. comparative case studies). For example, there is no *a priori* reason to believe that the Russian use of private individuals can be directly compared to that of the Chinese. The generated knowledge is thus seen as thickly contextual, because the researcher generated experience-near characterizations of the actors' lifeworlds. However, the degree to which

[88] On using different narratives as a frame for analysis see Kevin C. Dunn, "Historical Representations," in *Qualitative Methods in International Relations: A Pluralist Guide*, ed. Audie Klotz and Deepa Prakash, *Research Methods Series* (Basingstoke: Palgrave Macmillan, 2008); Ronald R. Krebs, "Tell Me a Story: FDR, Narrative, and the Making of the Second World War," *Security Studies* 24, no. 1 (2015).

the historical uses of privateers can be used to understand the modern actors' actions can be seen as a proxy comparator.

Thick description in the pure anthropological sense is not performed. Rather, a number of ethnographic and sociological research commitments for cross-cultural research are shared, such as "generosity (in our interpretations of what they [the actors under study] are doing) and of symmetry (if they can learn from us, we can learn from them)."[89] From thick description, the thesis uses the approach to, whenever possible, letting actors speak for themselves, and, in so doing, hermeneutically interprets their systems of signification in their own terms.[90] Thereby, a double hermeneutic is at play: both the actors interpret their own world, and the research performed by this thesis interprets their interpretations.[91] Thus, staying true to the hermeneutic research tradition, efforts were made to extensively cite primary materials to give the reader access to the interpretations of the actors. Efforts were made to allow readers to access the same materials by using precise citations and, where possible, an online archiving solution.[92]

The part of cyber(in-)security covered in this thesis is a field surrounded by secrecy and classified information. Any project focusing on the grey space of political action has the potential to upset powerful interests. As a basic security precaution for everyone involved

[89] John Holmwood, "The Challenge of Global Social Inquiry," *Sociological Research Online* 14, no. 4 (2009).

[90] On thick description and experience-near research see Clifford Geertz, ed. *The Interpretation of Cultures: Selected Essays* (New York: Basic Books, 1973); Patrick Thaddeus Jackson and Daniel H. Nexon, "International Theory in a Post-Paradigmatic Era: From Substantive Wagers to Scientific Ontologies," *European Journal of International Relations* 19, no. 3 (2013).

[91] Patrick Thaddeus Jackson, "Thinking Interpretively: Philosophical Presuppositions and the Human Sciences," in *Interpretation and Method : Empirical Research Methods and the Interpretive Turn*, ed. Dvora Yanow and Peregrine Schwartz-Shea (Armonk, NY: M.E. Sharp, 2014); Dvora Yanow, "Dear Author, Dear Reader: The Third Hermeneutic in Writing and Reviewing Ethnography," in *Political Ethnography: What Immersion Contributes to the Study of Power*, ed. Edward Schatz (Chicago: University of Chicago Press, 2009), 278-79.

[92] The thesis uses perma.cc for all online assets that could be legally archived. It thereby facilitates other researchers' access to the same materials as the author and mitigates the risk of an ex-post alteration of the evidentiary basis (through the change or deletion of online materials).

in the project, this thesis relies entirely on publicly available materials. In addition, the reliance on publicly available material is mindful of the project's time constraints. Thus, the claims put forward in the thesis are tentative and based solely on the evidence available at the time of writing.

There is, nevertheless, enough data available to study the issues at hand.[93] One of the key features of the analogy is its holistic conceptualization of different actors in cyberspace and their proximity to the state. The data collection necessary to evaluating this type of argument could be undertaken with desk-based research. Cyber(in-)security research profits from the information security community, which publishes reports on information security incidents in company reports, blog posts, and mailing lists. Moreover, for the high-profile attacks, press reports are available. The leaks by the former U.S. National Security Agency (NSA) contractor Edward Snowden provide a rich source of primary material for the evaluation of cyber mercantile companies. Finally, given the technical nature of cyberspace, there are data sources of a technical nature that can be consulted.

Focusing on relations between actors with differing degrees of state proximity, the cases were chosen so as to cover a variety of colliding and converging interests between state, semi-state, and non-state actors.[94] Due to the thesis' interest in the state's relationships to different actors, only cases feature in which a state is involved, excluding those in which both semi- and non-state actors attack each other, as well as those in which states attack other states. This choice is driven by the research question and motivation of this thesis, namely to research unconventional yet important actors and their connections to states in cyber(in-)security. From this subset, following pragmatist research principles, the most

[93] See e.g. Valeriano and Maness, *Cyber War Versus Cyber Realities: Cyber Conflict in the International System*.

[94] The analytical framework covering the state, semi-state, and non-state actors is introduced and developed in Chapter 2.

important cases in the subject under investigation were chosen. They all contain key actors and events that significantly shaped the history of global cyber(in-)security.[95]

Two cases are used to evaluate the insights gained from historical pirates and privateers, namely a) the cyber attacks on Estonia in 2007 and b) the criminal-political nexus of Russian cybercrime. Three cases highlight the conflicting and cooperative relations between cyber mercantile companies and states, namely c) the attack against Google in 2009/10, d) the attack against Sony Pictures Entertainment in 2014/15, and e) the revealed cooperation between large technology companies with Five-Eyes signals intelligence agencies, particularly those of the United States and the United Kingdom. In the following paragraphs, each case is discussed with regard to its selection and the availability of data.

The case of the 2007 attacks in Estonia focuses on the competing narratives rendering the attacks as "state-sponsored" or "criminal". Previous literature, based on extensive interviews and some first-hand experience, exists for the Estonian case.[96] The choice of this case is motivated by the fact that the events in Estonia in 2007 were key in the history of cyber politics. Subsequent cyber attacks by semi-state and non-state actors that were of national political relevance took place with the backdrop of the experiences of the attacks against Estonia in 2007. The investigation into the criminal-political nexus of Russian cybercrime includes a reassessment of the relationship between the Russian government and cyber criminals featuring three prolific cybercrime cases. They are

[95] Jörg Friedrichs and Friedrich Kratochwil, "On Acting and Knowing: How Pragmatism Can Advance International Relations Research and Methodology," *International Organization* 63, no. 4 (2009): 718.

[96] Gadi Evron, "Battling Botnets and Online Mobs. Estonia's Defence Efforts During the Internet War," *Georgetown Journal of International Affairs* 9, no. 1 (2008); Andreas Schmidt, "The Estonian Cyberattacks," in *A Fierce Domain: Conflict in Cyberspace 1986-2012*, ed. Jason Healey (Vienna, VA: Cyber Conflict Studies Association, 2013); Stephan Herzog, "Revisiting the Estonian Cyber Attacks: Digital Threats and Multinational Responses," *Journal of Strategic Security* 4, no. 2 (2011); Eneken Tikk and Kadri Kaska, "Legal Cooperation to Investigate Cyber Incidents: Estonian Case Study and Lessons" (paper presented at the 9th European Conference on Information Warfare and Security, Thessaloniki, 01-02 July 2010); Eneken Tikk, Kadri Kaska, and Liis Vihul, "International Cyber Incidents - Legal Considerations," Tallinn, Estonia, 2010.

investigated with the aid of court documents and secondary sources. The collision of interest between the cyber criminals and U.S. businesses is included in the analytic purview as an effect of the special relationships between the cyber criminals the Russian state. The Russian political-criminal nexus is of particular relevance, as the most skilled supply chains in cybercrime are in the Russian-speaking market.[97] An alternative case to studying Estonia and Russia would have been the interaction between the Chinese government and its patriotic hackers. For example, the 2001 spy-plane incident and the subsequent attacks against U.S. websites could have been studied. The alleged collusion between Chinese hackers and Chinese businesses could have been an alternative case for the political-criminal nexus.[98] However, Russia and Estonia are the more influential cases in cyber(in-)security discourse, and as such, studying them may generate insights into non-state and semi-state actors engaged in cyber attacks more generally.

The case of the attacks against Google (Operation Aurora 2009/10) focuses on the insights gained by reading Google as a mercantile company and uncovers the conflictive interests between states and companies. For this case, primary and secondary sources are available.[99] It represents a key case due to its prominent standing in the history of cyber(in-)security and the important actors involved. No similarly public standoff

[97] Language, not nationality, is the relevant indicator here, as Russian serves as the language of communication for cyber criminals based in many post-Soviet states, such as Romania, Ukraine, or Estonia. For a discussion of this see e.g. Jonathan Lusthaus, "Honour among (Cyber)Thieves?," *Extra Legal Governance Institute Working Paper* 1 (2016), https://perma.cc/UF99-2AS8.

[98] Adam Segal. "When China's White-Hat Hackers Go Patriotic", 13. March 2017, Net Politics [Blog], https://perma.cc/6TT6-E39F; Scott J. Henderson, *The Dark Visitor: Inside the World of Chinese Hackers*, (2007).

[99] Some primary sources are Google's public response (e.g. company blog posts, but also Google's chairman Eric Schmidt's comments at an Oxford Union event in 2014) and the leaked State Department cables (Wikileaks). Previous secondary literature includes Ronald J. Deibert, *Black Code: Surveillance, Privacy, and the Dark Side of the Internet*, Expanded edition. ed., (Toronto: Signal, 2013); Powers and Jablonski, *The Real Cyber War: The Political Economy of Internet Freedom*; Shane Harris, *@War: The Rise of the Military-Internet Complex*, (Boston: Houghton Mifflin Harcourt, 2014).

between a cyber mercantile company and two great powers is known.[100] It is also one of the few publicly available cases of a company gaining access to the control servers of its attacker.

The case of the attacks against Sony Pictures Entertainment Inc. (SPE) in 2014/15 offers insights into state and non-state interaction and contrasts the Google case with a different U.S. attitude towards protecting private companies from a "state-sponsored" attack. For the SPE case, primary source material exists in the form of press statements. The responses to the attack, both the network outage and the sanctions, were covered in the media.[101] The SPE case is central in the discourse of state–non-state interaction in cyber(in-)security and served as a basis for subsequent discussions on governmental reactions to cyber attacks. An alternative early case of a state actor attacking a non-state actor would have been Operation GhostNet, a case in which Chinese intelligence attacked different governmental and non-governmental institutions, including Tibetan activists.[102] However, in comparison, the SPE case is more adequate for comparing and contrasting the findings to the Google case.

Finally, the case of signals intelligence, focusing on cooperation between large technology companies and Five-Eyes signals intelligence agencies, examines the cooperative aspects of such relationships and uncovers some further dynamics between cyber mercantile companies and the state. This is a key case, as the Five-Eyes are the most advanced signals intelligence collaboration worldwide. Alternative cases could have

[100] An alternative case with the same constellation are the attacks of NSA against Huawei. However, those attacks only became public through the disclosure of classified material by Edward Snowden, and did not generate as much a public contestation as the Aurora case did.

[101] North Korea's internet connections seized responding for 9 hours on 22. December 2014.

[102] Information Warfare Monitor, "Tracking Ghostnet: Investigating a Cyber Espionage Network," (2009), https://perma.cc/H27G-9RWX; Shishir Nagaraja and Ross Anderson, "The Snooping Dragon: Social-Malware Surveillance of the Tibetan Movement," *Technical Report*, no. 746 (2009), https://perma.cc/83Q2-446D.

looked at the collaboration between large telecommunication or technology companies and signals intelligence agencies in other countries, for example in China, France, or Israel. However, besides being the best resourced and (per reputation) the most skilled state actors in cyber(in-)security, the focus on the U.S. and the U.K. also benefits from having well documented relationships due to the documents publicised by Edward Snowden. This material was commented on by experts with relevant first-hand experience and knowledge of the context of the link between companies and states, which allows for the embedding of the documents in a broader context. In addition, there are court cases that increase the reliability and trustworthiness of the source material, as well as reported cases dating back before the release of the Snowden documents (e.g. the "warrantless wiretapping programme" revealed in 2005).[103]

Whilst sufficient data is available in all cases, there are nevertheless two caveats when using the data described. First, in most instances, state decision to use private actors is a largely classified matter. For this reason, very little official data is available claiming state involvement. Where state involvement is alleged, the thesis will clarify which interpretations the evidence allows for, and will be explicit about how analytical judgements are made. Thus, in order to mitigate selection and confirmation bias and to ensure the representativeness of the documents selected, especially where actors are not speaking for themselves, the thesis will build an awareness of the discourses that construct the agency of the actors under investigation. Reflexivity demands looking for alternative interpretations of the data at hand and allowing for more than the dominant discourse framing an event. Thus, primary evidence from different stakeholders of the event was

[103] James Risen and Eric Lichtblau. "Bush Lets U.S. Spy on Callers without Courts." *The New York Times*, 16. December 2005.

analysed. This ensured that the power-laden information environment produced in an event of crisis was accounted for.

To give an example: in the case of the distributed denial of service attacks against Estonia, the emphasis will not be on analysing the actor that attacked Estonia, but rather, how far the security dynamics between Russia and Estonia resemble the security dynamics that were at play when privateers were involved. The public narrative employed by Estonian political leadership to blame Russia is of interest to this thesis. This will be put into context by setting it side by side with what the Russian foreign ministry's statements proffered at the time, as well as with how the evidence basis for the roots of the attack evolved over time. Documents from various policy participants are available, for example, statements by Estonian officials, assessments made by the U.S. embassy in Tallinn, and statements by the Russian foreign ministry. Secondary literature analysing the Estonia case also exists and can contribute to this documentary analysis.

A second caveat is that the reliability of the data used has to be judged for each empirical example. In the grey space of non-attributed state or non-state action, there are incentives for different actors to spread misinformation or encourage misinterpretation. With regard to commercial research reports, the economic incentives of the reporting and the lack of a transparent evidentiary standards, have to be taken into account. The desk-based research leads to a robust basis of information to reach the research objective.

Finally, there is a caveat regarding the material that can be evaluated by the author due to a limited range of language skills. Most of the material analysed is in English, French, or German – three of the languages the author has significant language proficiency in. On the positive side, this means that a broad range of archival material was read in the original. On the negative side, it means that the material analysed is limited to original

texts in these languages or translations thereof into these languages. Limited translated material was used (both professionally translated and some provided through GoogleTranslate).[104] Using translated material is not without risks, particularly, the risk of missing important, culturally specific signifiers and figures of speech. However, the benefit of being able to use the material available outweighs the risk of misinterpretation, particularly when this was mitigated by the author's contact to area specific researchers. In addition, the thesis profited from being supervised by someone who is familiar with both the Estonian and Russian cultural contexts and languages.

E. Structure of the thesis

Six chapters follow this introductory chapter. Chapter 2 contains a review of the literature and a discussion of the research strategy for evaluating the analogy. The strategy for evaluating the claim, that by looking at the dynamics of another ungoverned space – the sea – we can learn some of the dynamics associated with state, semi-state, and non-state actors, will be explained. Drawing on the literature on non-state armed actors, a conceptual framework is introduced, in which actors are categorized alongside a spectrum of state proximity ranging from state actors to non-state actors including mercantile companies, privateers, and pirates. The framework is used as a working tool, with which to analyse the utility of the analogy.

Chapter 3 offers a historical narrative investigating navies, mercantile companies, privateers, and pirates from the late 16th to mid-19th century in the British historical experience. Thereby, the focus lies on the interaction between different authorities and the actors in question. Integrating the knowledge from primary and secondary sources, the chapter highlights the evolution of the challenges associated with the different actors.

[104] For direct quotations only professional translations were used. All translations are clearly indicated in the respective footnotes and bibliographic references.

It illustrates the challenges and relationships between the different actors in three different time periods. The time periods include late 16th century Elizabethan privateering, a late 17th century account of pirates, privateers, and the East India Company, and the abolition of privateering in 1856.

Chapter 4 offers a short narrative history of cyber(in-)security drawn from secondary sources in order to establish the types of interactions between the main stakeholders of cyberspace, namely states, corporations, and users. Having observed both domain's histories, the thesis moves to assesses the general comparability of the two domains, before refining the concepts introduced in Chapter 2. It takes stock of the established understanding of the changing dynamics of the different actors on the sea over time. The focus is on integrating the historical insights gathered into the conceptualization of the different actors, especially with regard to their proximity to the state. Based on this comparison, the chapter argues that the mid-19th century period can be ruled out as a possible analogue, as several of the key features defining the period are absent in cyber(in-)security. This lays the groundwork with which to investigate the modern equivalents to the maritime actors, in analogy to the late 16th and late 17th century periods. From Chapter 5 onwards, the refined concepts of the mercantile companies, privateers, and pirates are used to investigate their utility in understanding cyber(in-)security actors.

Chapter 5 and Chapter 6 apply the conceptual understanding developed in Chapter 4 to modern-day empirical cases. Chapter 5 uses the analogy to pirates and privateers to better understand the governmental response by Estonia in 2007 and to analyse the cooperation of Russian cybercrime and the Russian government. It argues that the existence of intransparent relationships allows governments to strategically associate activities to other states. Cyber criminals thereby behave in a similar way to pirates and privateers by sometimes collaborating with states in exchange for the states' ignorance about their

criminal enterprises. Chapter 5 is concluded with the analysis of three criminal court cases of Russian hackers which document the usefulness of the cyber pirate and privateer in understanding the government-criminal nexus. Special focus will lie on the longevity and path dependencies such historical privateering setups have shown, and how they may be present in the modern-day cases.

Chapter 6 focuses on the usefulness of analogies to mercantile companies to understand cooperative and conflictive interests between states and companies in the present era. It does so by using three cases. The case of the attacks against Google in 2009 demonstrates that some corporations are powerful enough to play in the leagues of states. Their policies resemble the mercantile companies' policies of the past; their dilemmas are analogous. Thereby, their relations to states, both cooperative and conflictive, are interlinked. The case of the attacks against Sony Pictures Entertainment in 2014/2015 contrasts with the Google case because of a different U.S. attitude towards protecting the private company from a "state-sponsored" attack. Finally, the case of signals intelligence, with the cooperation between large technology companies and Five-Eyes signals intelligence agencies, focuses on the cooperative aspects of such relationships and uncovers some further dynamics between companies and states.

Finally, Chapter 7 summarizes the arguments of the thesis and discusses its contributions to International Relations thinking and cyber(in-)security research. It answers the question, what the International Relations discipline and policymakers can learn from the investigation of this analogy, highlighting the murky intersection of state and non-state actors. The insights are summarized and avenues for future research in International Relations identified.

CHAPTER 2

Framework of Analysis

LITERATURES, THEORIES, AND CONCEPTS

The evaluation of the analogy of piracy, privateering, and mercantile companies as applied to cyber(in-)security will be performed using the (in-)security definition introduced in the previous chapter, which is derived from the critical security studies literature. So far, studies inspired by critical security studies have mostly focused on efforts to deconstruct the securitization of cyber(in-)security. For example, one important contribution by Dunn Cavelty has demonstrated how vulnerabilities in cyberspace have been framed by national security, thus becoming "securitized."[1] Whilst recognizing the value of such contributions, this thesis aims to go beyond a deconstructive exercise. Instead, as the thesis will show, critical security studies can also be used in a constructive manner to analyse the usefulness of the analogy. The thesis follows an understanding of critical security studies in its original broad notion.[2] Given that the community of thinkers associated with critical security studies is still varied, some stances on key arguments interconnecting this community are taken. The thesis is critical of the philosophical-ontological mind-world dualism, a commitment underlying, for example, neo-positivism and critical realism. Instead, the thesis adopts the philosophical-ontological commitment to the inseparability of the researcher and the subject (what Patrick T. Jackson called "mind-world monism").[3] It adopts a scientific-ontological understanding of security as

[1] Myriam Dunn Cavelty, *Cyber-Security and Threat Politics: U.S. Efforts to Secure the Information Age*, CSS Studies in Security and International Relations, (London: Routledge, 2008).

[2] For Critical Security Studies in its broad variant, see Keith Krause, "Critical Theory and Security Studies: The Research Programme of 'Critical Security Studies'," *Cooperation and Conflict* 33, no. 3 (1998); Keith Krause and Michael C. Williams, "Broadening the Agenda of Security Studies: Politics and Methods," *Mershon International Studies Review* 40, no. 2 (1996); *Critical Security Studies: Concepts and Cases*, (London: UCL Press, 1997).

[3] Patrick Thaddeus Jackson, *The Conduct of Inquiry in International Relations: Philosophy of Science and Its Implications for the Study of World Politics*, The New International Relations, (London: Routledge, 2011).

something to be defined by the actors. The epistemological stance denies the possibility of studying the social world in the same way natural scientists study the natural world. A pragmatist approach to generating truth-claims is employed. Pragmatists share the philosophical mind-world monism and commit to a consensus theory of truth.[4] Pragmatism is best placed to offer a way of analysing the applicability of the analogy as it is used in this thesis.[5] Empirical research is possible – it starts with the understandings of the different actors.[6]

The reflexivity demanded both by pragmatists and critical security studies more broadly, coupled with the monist conception of the world, demands that the researcher is conscious of the political effects the construction of knowledge has in this realm.[7] With critical theory the thesis shares a weak notion of emancipation, in the sense that the production of knowledge shapes and constrains the cyber(in-)security practices. Thus, the thesis does not explore emancipation of any particular groups' concerns.[8] This speaks to the core critical argument that knowledge production is inescapably normative. A key part of the project is to evaluate, besides the empirical applicability, the utility of the analogy in

[4] On the varieties of truth claims within pragmatism, see Ulrich Franke and Ralph Weber, "At the Papini Hotel: On Pragmatism in the Study of International Relations," *European Journal of International Relations* 18, no. 4 (2011).

[5] Ronald J. Deibert, "Exorcismus Theoriae: Pragmatism, Metaphors and the Return of the Medieval in IR Theory," ibid.3, no. 2 (1997): 180-88. On pragmatism and analogies more generally, see also Markus Kornprobst, "Comparing Apples and Oranges? Leading and Misleading Uses of Historical Analogies," *Millennium* 36, no. 1 (2007).

[6] This chapter draws on and refines concepts and develops arguments originally introduced in a working paper and later refined in edited volume. See Florian Egloff, "Cybersecurity and the Age of Privateering: A Historical Analogy," *University of Oxford Cyber Studies Working Papers*, no. 1 (2015), https://perma.cc/XC33-GT7W; Florian Egloff, "Cybersecurity and the Age of Privateering," in *Understanding Cyberconflict: Fourteen Analogies*, ed. George Perkovich and Ariel Levite (Washington DC: Georgetown University Press, 2017).

[7] Jonna Nyman, "What Is the Value of Security? Contextualising the Negative/Positive Debate," *Review of International Studies* 42, no. 5 (2016).

[8] As opposed to the strong notion as for example argued for in Ken Booth, *Theory of World Security*, (Cambridge: Cambridge University Press, 2007).

capturing processes of (in-)security – namely actions that one party views as contributing to security can, at the same time, be perceived by another party as undermining security.

The distinctive benefit of such an approach is that it enables the conceptual foundations for a study of security arrangements in which a private actor's relationship with a state is co-constitutive of the actor type. Thus, the thesis explores the usefulness of the analogy in terms of its ability to capture the political processes that associate an actor with the state. Considering the actor categories of the analogy as morally neutral ensures that the different security dynamics can be captured as reflexive practices giving rise to security dilemmas. Critical reflection, therefore, enables one to capture the performative aspect of calling an activity a "state-sponsored" act. Analysing this process with reference to the historical cases allows one to evaluate, whether the phenomena in question are comparable. Another advantage is that, due to the monist conception of mind-world ontology, the thesis will not have to demonstrate, whether "real" privateers exist. Rather, it only has to evaluate, whether historical comparisons elucidate the security dynamics of specific cases and contexts. Thus, the thesis takes a pragmatist methodological approach to answering questions rooted in the critical security studies scholarly community.

Applying the analogy destabilizes the meanings of both the source and the target of the analogy. For example, researching the privateer in light of the modern-day phenomenon changes the inquiry into the past as well as the understanding of the modern form of privateering. The analogy to the historical security dynamics on the sea suggests a holistic argument, which puts the particular phenomenon of interest in a larger context, and has the potential to capture changing arrangements of state–non-state relations over time.

To analyse the analogy, the thesis creates new conceptual frameworks describing the interactions between diverse actors. In this respect, the thesis explores two types of

questions. First, it analyses, whether the historical claim, that mercantile companies, privateers, and pirates were connected, can reveal connections between otherwise seemingly distinct phenomena in cyber(in-)security. The resulting analysis contributes to a better understanding of the political constitution of cyber(in-)security. Second, the thesis assesses, if the collaborative and confrontational arrangements between state and non-state actors, captured by the analogy, can illuminate the security dynamics introduced by the blurring of lines between these actor types. For example, an inquiry into the incentives of how policymakers deal with the modern-day equivalent of a privateer uncovers the intended and unintended consequences such close relationships entail and the degree to which they are comparable. To research these two questions, the thesis develops a conceptual framework that captures the conflicting and cooperative endeavours between the different actors.

Part A of this chapter will review the literature relating to the specific analogy of privateering and cyber(in-)security as used in policymaking and research. The analysis will show that, in contrast to much of the literature, the thesis does more than analogize one point in time. The chapter then moves on to connect the research endeavour to the debate around power diffusion, private violence, the new medievalism literature, as well as non-state armed actors. The thesis draws insights from each of these literatures. Nye's work on power diffusion provides a theoretical motivation from the international relations literature. The research of the analogy can both evaluate a claim made by Nye, as well as provide greater detail about how non-state actors are linked to states. The literature on private violence adds context about the interconnection of state development and normative shifts that have –in Western states – produced a monopoly of violence. A brief review of Hedley Bull's treatment of new medievalism as an alternative to the International Relations dominant state-centric analysis shows that some of the elements

he reviewed have become more accentuated. Thus, the thesis engages the argument of multiple sources of authority and governance when reflecting on the security dynamics over time. Finally, the literature on non-state armed actors offers a useful benchmark for setting up conceptual frameworks on state proximity and actor types.

The chapter then proceeds in part B, based on a spectrum view of state proximity, to elaborate a baseline understanding of different actors. It categorizes them into state, semi-state, and non-state actors, whilst recognizing that the boundaries between them are fluid. These conceptual typologies are used to setup a framework and refined throughout the rest of the thesis. The framework captures the cooperative and conflictive relationships between state, semi-state, and non-state actors and enables a mapping of major cyber(in-)security cases. The framework provides the basis for the investigation of the analogy in the rest of the thesis.

A. Literature review

i. On analogies and metaphors

An analogy can be defined as a "correspondence or resemblance between things, as a basis for reasoning or argumentation."[9] Much of human thought is based on analogical reasoning. Analogies differ from metaphors in the degree to which they are specified. Analogies are argued in much more detail than metaphors. Analogies can thus be considered a specific form of metaphor. Cognitive psychologists argue that analogies and metaphors make up the fundamental building blocks of our thinking.[10] Since research findings indicate that our thinking is structured by conceptual metaphors, the use of metaphors in an academic process has to be explained.[11] Many scientific theories are

[9] "Analogy, N.," in *Oxford English Dictionary Online* (Oxford: Oxford University Press, 2017).

[10] For a summary and overview of important studies in the field of cognitive psychology, see Dedre Gentner and Linsey A. Smith, "Analogical Learning and Reasoning," in *The Oxford Handbook of Cognitive Psychology*, ed. Daniel Reisberg (Oxford: Oxford University Press, 2013).

[11] George Lakoff and Mark Johnson, *Metaphors We Live By*, (Chicago: University of Chicago Press, 1980).

based on underlying metaphors. For example, Theodore L. Brown explains in his book *Making Truth*:

> the models and theories that scientists use to explain their observations are metaphorical constructs. To understand how science works and to account for its success, we have no need for the proposition that scientists have unmediated access to the world 'as it really is'. We have no grounds for believing that there exist objective, mind-independent truths awaiting discovery. Rather, statements we regard as truths about the world are the product of human reasoning.[12]

He then goes on to explain this statement by using various examples from chemistry, physics, and biology. Metaphors hold together research programmes and define theories. For example, thinking of the state as an individual, mirroring the qualities of human nature, has influenced much of International Relations theory. However, holding on to the same metaphors can lead to theoretical stagnation and can be constraining.[13] For example, famous quantum physicists David Bohm and F. David Peat argued that, had 19th century physicists been able to think of a particle as a wave, a breakthrough in quantum physics could have occurred much earlier. The fundamental building blocks of mathematics would have been available, but holding on to seeing the world as either a particle or a wave limited the realm of the possible. Thus, they argue for a greater inclusion of creativity in the scientific process. They speculate:

> it would be better to regard scientists, in the case of interpretations, as being somewhat like artists who produce quite different paintings of the same sitter.

[12] Theodore L. Brown, *Making Truth: Metaphor in Science*, (Urbana: University of Illinois Press, 2003), 12.

[13] Paul A. Chilton, *Security Metaphors: Cold War Discourse from Containment to Common House*, Conflict and Consciousness, (New York: Peter Lang, 1996), 409; Richard Little, *The Balance of Power in International Relations: Metaphors, Myths, and Models*, (Cambridge: Cambridge University Press, 2007), 35.

> Each theory will be capable of giving a unique insight which is aesthetically satisfying, to a given person, in some ways and not in others. Some interpretations may show creative originality while others may be mediocre. Yet none give the final 'truth' about the subject.[14]

This quote mirrors an argument Deibert makes when he explains how "large-scale conceptual revolutions are driven by the creative use of metaphors, by novel redescriptions of the present that help shake us free from the current dogma and stale vocabulary that has us intellectually stifled."[15]

New metaphors can be disruptive. They change the fundamental assumptions about a subject. They "often ask us to project one system on to another sort of terrain entirely… The metaphor highlights certain unpleasant and perhaps controversial features of both subjects; the features become the more prominent for their being parallel."[16] In this process, neither the source nor the target of the metaphor stays constant. Rather, sometimes called the interaction view of metaphors, it is widely acknowledged that metaphors change both the understanding of the source as well as the target of the metaphor.[17] The analogy explored in this thesis is a case of such a new metaphor. Thinking of the modern-day equivalents of mercantile companies, privateers, and pirates offers a conceptual space to disrupt traditional notions of state and non-state actors. Thus, the evaluation of the analogy does not only capture how it can order empirical

[14] David Bohm and F. David Peat, *Science, Order and Creativity*, (London: Routledge, 1988), 102.

[15] Deibert, "Exorcismus Theoriae: Pragmatism, Metaphors and the Return of the Medieval in IR Theory," 170.

[16] Roger Tourangeau, "Metaphor and Cognitive Structure," in *Metaphor: Problems and Perspectives*, ed. David S. Miall (Brighton: Harvester, 1982), 17.

[17] Donald A. Schön, "Generative Metaphor: A Perspective on Problem-Setting in Social Policy," in *Metaphor and Thought*, ed. Andrew Ortony (Cambridge: Cambridge University Press, 1979); Little, *The Balance of Power in International Relations: Metaphors, Myths, and Models*; Richard H. Brown, "Social Theory as Metaphor: On the Logic of Discovery for the Sciences of Conduct," *Theory and Society* 3, no. 2 (1976).

phenomena, but also, how far it is useful in enabling a more nuanced understanding of state–non-state actor relationships.

In International Relations, research on metaphors and analogies is relatively sparse. Michael P. Marks' contributions on metaphors in International Relations, as well as Richard Little's contribution on the balance of power as a metaphor in International Relations are notable exceptions.[18] Both note that the use of metaphors in International Relations is abundant and that the re-examination of forgotten metaphors is an important endeavour for the discipline. They also point out that studying the metaphors used by theoreticians can be problematic as they reflect the academic community's own understanding of how the world works and not necessarily the experiences of the subjects. This critique places them on the understanding (i.e. hermeneutical) side of International Relations research.[19] As a consequence, Marks highlights that "scholars who invoke a metaphor must therefore ensure that there is corresponding comprehension of those who have lived experiences of that which the metaphor invokes."[20]

This also connects to the post-positivist commitment of the inseparability of the researcher and the subject. Even if we acknowledge mind-independent information, "there is no mind-independent way of *thinking about it.*"[21] As mentioned above, a metaphor used in International Relations theory is the state understood as a human being. Other examples in International Relations theory are states as billiard balls or containers, power understood as a balancing act, nuclear deterrence strategy as a game of chicken, or levels of analysis used for horizontal abstraction layers between domestic, state-level, and

[18] Michael P. Marks, *The Prison as Metaphor : Re-Imagining International Relations*, (Oxford: P. Lang, 2004); Michael P. Marks, *Metaphors in International Relations Theory*, (Basingstoke: Palgrave Macmillan, 2011); Little, *The Balance of Power in International Relations: Metaphors, Myths, and Models*.

[19] Martin Hollis and Steve Smith, *Explaining and Understanding International Relations*, (Oxford: Clarendon Press, 1990).

[20] Marks, *The Prison as Metaphor : Re-Imagining International Relations*, 167.

[21] Emphasis in original, Marks, *Metaphors in International Relations Theory*, 195.

system-level politics. Far from being value-neutral, these metaphors do not arise out of a thought vacuum. They are shaped by the experiences and value commitments of the researchers as well as the surrounding discourses in which they are deployed.

This thesis evaluates the analogy of the historical security dynamics on the sea to cyber(in-)security. The cyber(in-)security discourse is open for ideas and framings to compete in capturing different aspects of the security challenges. The assessment of an analogy, purporting a holistic understanding of the phenomena, probes to what extent it can render political interactions between a mercantile company, privateer, and pirate intelligible and thereby offer a language with which to capture the political effects of such a structure.[22] This is based on an understanding of partial truth claims: there is a "real" world out there, but we have no mind independent way of accessing it. The way we speak about the world matters and has significant implications on what is rendered possible. For example, the framing of the cyber(in-)security problem, with reference to the historical analogy of the sea, has the potential of destabilizing the fiction of a clean state and non-state dichotomy. This productive opening up of a conceptual space will be used to develop a framework of analysis. The analogy will then be applied to evaluate how such an application is useful in capturing empirical phenomena and how it changes our understanding of cyber(in-)security.[23]

The historical analogy is interesting epistemologically. It constitutes the cyber(in-)security challenge by recourse to on an older world. As Robert W. Cox writes of critical theory, it calls institutions and power relations into question: "the critical approach leads towards the construction of the larger picture of the whole of which the

[22] Closely related, see Deibert's explanation of Richard Rorty's "therapeutic redescription." Deibert, "Exorcismus Theoriae: Pragmatism, Metaphors and the Return of the Medieval in IR Theory," 180-83.

[23] On usefulness as a criterion see also Ulrich Franke and Ralph Weber, "At the Papini Hotel: On Pragmatism in the Study of International Relations," ibid.18, no. 4 (2011).

initially contemplated part is just one component, and seeks to understand the processes of change in which both parts and whole are involved."[24] This strand of theorizing was subsequently picked up in the 1990s critical security studies literature with an aim to denaturalize power structures through historicising and questioning. Thus, as introduced at the beginning of this chapter, the analysis will tease out the potential as well as the detriments of constituting the cyber(in-)security challenge in terms of the historical naval security challenge. The structure of the cyber(in-)security challenge is questioned, with particular focus on how some actors are rendered state or non-state and how they interact with the state.[25] The thesis illuminates grey spaces of political action and renders them intelligible. As emancipatory aim, the thesis aims to contribute to one of the core endeavours of security studies, namely to better understand the security dynamics, thereby enabling solutions that minimise the potential for human suffering.

Since multiple epistemological types of analyses are possible, it is pertinent to point out what the thesis is and is not doing. First, one can distinguish between using an analogy as a thinking tool for scholarship versus analysing the use of an analogy by policymakers. Whilst both are valuable endeavours, the thesis is doing the former, not the latter. Second, to agree on the status of the knowledge produced by the thesis, the epistemological stance needs to be further specified. Following Kornprobst, the next few paragraphs present the positivist, post-structuralist, and pragmatist account of the status of analogies, and then decide to follow a pragmatist stance of truth.

[24] Robert W. Cox, "Social Forces, States and World Orders: Beyond International Relations Theory," *Millennium - Journal of International Studies* 10, no. 2 (1981): 129.

[25] This mirrors Patricia Owens observations of how actors are rendered "public" or "private." See: Patricia Owens, "Distinctions, Distinctions: 'Public' and 'Private' Force?," in *Mercenaries, Pirates, Bandits and Empires: Private Violence in Historical Context*, ed. Alejandro Colás and Bryan Mabee (London: C Hurst & Co., 2010).

Positivists use historical analogies to "describe, explain and predict" an objective reality.[26] They believe that an application of the correct methods and research design leads to the discovery of truth. This causes several problems when using historical analogies in a positivist research design. First, an analogical comparison necessarily involves two very different situations that are not strictly comparable, and second, the data that is relied upon is often produced by actors that do not share a positivist rule-set for producing the facts.[27] This is problematic as, for the positivist, the true historical fact is the basis upon which to build the analogy.

Post-structuralists do not have this problem, though they face other challenges. For them, the main thrust of inquiry lies in the deconstruction of dominant discourses, often using genealogy to do so.[28] Genealogical accounts, thereby, use analogies as "tools for denaturalizing discursive constructs."[29] For post-structuralists, analogies remain solely tools to denaturalize. As they are tools for critique, they cannot ever produce an alternative constructive account of the world.[30]

Pragmatists share the rejection of an objective truth with post-structuralists, but consider the purpose of research to be the generating of useful knowledge.[31] Hence, to pragmatists, analogies can be used to ameliorate our understanding of the world. Truth claims, thereby, are partial to the assent of the stakeholders in open debate. The way to agree on whether analogies are leading or misleading is by debate and adjudication by peers. To the degree

[26] Kornprobst, "Comparing Apples and Oranges? Leading and Misleading Uses of Historical Analogies," 33.
[27] Ibid., 33-34.
[28] Ibid., 34.
[29] Ibid.
[30] Ibid.
[31] Ibid.

that they are accepted by peers, the truth claims constitute working truths, which are "always provisional."[32] This matches the understanding put forward in this thesis.

Finally, historical analogies can be evaluated by their use as first or second order constructs.[33] The evaluation of a first order construct looks at the appropriateness of the analogy by comparing its empirical applicability with the historian's working truths. The evaluation of a second order construct refers to the political function of labelling two things as analogues (e.g. comparing a politician to Hitler). The two functions are not fully separable in practice, though some applications of analogies invoke stronger political functions than others.

This thesis mainly focuses on the evaluation of the first order construct and pursues this in two steps, namely enquiring both about its empirical applicability and about how it changes our understanding of cyber(in-)security. The empirical claim is an analytical judgement into the comparability of the historical and modern political contestations, building on working truths generated by historians as well as limited archival work. The claim of changing, or disrupting our understanding, is a normative claim, arguing that, due to the application of the analogy, we can better understand a part of cyber(in-)security.

ii. The analogy of privateering

A group of scholars researched the governing metaphors of cyber(in-)security and argued against the dominant Cold War metaphor. Others suggested different analogies.[34] For

[32] Ibid.

[33] Halvard Leira, "Political Change and Historical Analogies," *Global Affairs* 3, no. 1 (2017).

[34] David J. Betz and Tim Stevens, "Analogical Reasoning and Cyber Security," *Security Dialogue* 44, no. 2 (2013); Myriam Dunn Cavelty and Reimer A. Van der Vlugt, "A Tale of Two Cities: Or How the Wrong Metaphors Lead to Less Security," *Georgetown Journal of International Affairs* 16 (2015); Sean Lawson, "Putting the 'War' in Cyberwar: Metaphor, Analogy, and Cybersecurity Discourse in the United States," *First Monday* 17, no. 7 (July 2012); Helen McLure, "The Wild, Wild Web: The Mythic American West and the Electronic Frontier," *Western Historical Quarterly* 31, no. 4 (2000); Constantine J. Petallides,

example, Betz and Stevens assess a range of spatial and biological analogies in use. They find that the application of the analogies clearly serves some productive purpose, whilst the wholesale application of them is probably misleading.[35] A number of alternative analogies could have been evaluated in this thesis (see Table 1).

Table 1: Alternative analogies of cyberspace

Analogies	Used by
Domain (like space, air, sea, land)	Throughout militaries (originally U.S. DoD)
Public health, particular focus on Immunology & Epidemiology	Throughout Computer Science (e.g. virus, infection etc.)
American Wild West	Anecdotal use in U.S. intelligence community, use in some policy reports
Global commons, especially comparing to the sea, including privateering	Foreign Office use; often also navy officer's use
Event based analogies (cyber pearl harbour, cyber 9/11)	U.S. politicians

The analogy to privateering merits further investigation. Whilst other analogies have become common when describing digital phenomena of insecurity (e.g. viruses), privateering was offered up on the international stage as a way of vocalizing the international conflict dimension of digital activity. The domain analogy used by the U.S. Department of Defense privileges the strategic military dimension (also in terms of budgetary implications), and the Wild West, pearl harbour, and cyber 9/11 analogies are U.S. specific. The global commons analogy is, in some ways, the underlying analogy to privateering, as policymakers today often mention the sea as a paradigmatic case for global commons.[36] Privateering is thus a specific way of operating in such a space,

"Cracking the Digital Vault: A Study of Cyber Espionage," *Inquiries Journal/Student Pulse* 4, no. 04 (2012), https://perma.cc/J6NT-7359.

[35] Betz and Stevens, "Analogical Reasoning and Cyber Security." 157-9.

[36] Whilst the domain qualifies as a commons, security in it, analytically, was not always, nor is presently, a global public good. See Alex Gould, "Global Assemblages and Counter-Piracy: Public and Private in Maritime Policing," *Policing and Society* 27, no. 4 (2017).

specifically as a form of producing security (or insecurity, depending on the perspective). The privateering analogy lays its emphasis on the actors possessing the capabilities to act and those authorizing the use of such capabilities in a commonly used space. The analogy investigated is used in the policymaking discourse, with little regard for its appropriate historical embeddedness – perhaps deliberately so.[37] Given these characteristics, it merits further inquiry. The research effort will be focused on going back to history, inquiring what the historical political contentions surrounding the use of privateers were, and approaching the modern environment with a refined understanding.

Until now, no one has undertaken extensive research on whether this analogy can be supported in light of the privateers' historical contemporaries, namely mercantile companies, and pirates. However, in order to build on previous research, the previously existing arguments shall be discussed.

In 2006, after offering a short historical overview, John Laprise develops the ideas of the French late 19th century *Jeune Ecole* regarding the war on commerce, using the *guerre de course* in analogy to cyberspace. He suggests that cyberspace offers strategic advantages of dependency to the United States of America: "just as it was impossible to cease trading with the British Empire during the nineteenth century, it is difficult for a nation to forego trade with the U.S. today as the economic costs are too high."[38] Following this, Laprise focuses on the tactical parallels between possible cyberspace strategic doctrines and sea power doctrines, including decisive battle, siege, sea control, sea denial, and commerce

[37] Tim Stevens, *Cyber Security and the Politics of Time*, (Cambridge, UK: Cambridge University Press, 2016), 129. Stevens persuasively argues that policymakers are not just ignorant of history (and hence, they do not just need to be taught more history), but that they use analogies to aid their policy and decision making processes. Stevens' opponents in this argument are Yuen Foong Khong, *Analogies at War: Korea, Munich, Dien Bien Phu, and the Vietnam Decisions of 1965*, (Princeton: Princeton University Press, 1992); Richard E. Neustadt and Ernest R. May, *Thinking in Time: The Uses of History for Decision-Makers*, (London: Collier Macmillan, 1986).

[38] J. Laprise, "Cyber-Warfare Seen through a Mariner's Spyglass," *Technology and Society Magazine, IEEE* 25, no. 3 (2006): 29.

warfare. He develops the analogy of commerce warfare to cyberspace concluding that the "U.S. is in a position similar to that of Great Britain during the nineteenth century."[39] Although a remarkable contribution to strategic discourse, his perspective is focused on cyber warfare and strategic thinking at the turn of the 19th century. In contrast, this thesis aims to engage in a more holistic use of the analogy, following the development of privateering throughout history and finding reference points that connect to the situation in cyber(in-)security.

In 2013, Michael Lesk published an article focusing on the difficulties introduced when using privateers. He argues against the enthusiasm of a subset of U.S. policymakers for so called "active defence" of the private sector.[40] While agreeing with Lesk about the policy recommendations, it is worth exploring whether the analogy employed reflects the broader reality of today's cyberspace, rather than "just" a policy option.

Robert Axelrod and Peter W. Singer & Allan Friedman mentioned the analogy briefly.[41] Having mentioned the analogy in a blog post in 2011, Singer and Friedman come closest to making a similar argument as pursued in this thesis, namely exploring the analogy by analysing the privateers and pirates concurrently.[42] However, their focus lies mainly on the policies adopted after the War of 1812.[43] In addition, their brief treatment allows for

[39] Ibid., 31.

[40] Michael Lesk, "Privateers in Cyberspace: Aargh!," *Security & Privacy, IEEE* 11, no. 3 (2013). For an example of advocating for the private sector in the U.S. to be given letters of marque, analogizing the privateers as a solution to the pirate problem see Michael Tanji, "Buccaneer.Com: Infosec Privateering as a Solution to Cyberspace Threats," *Journal of Cyber Conflict Studies* 1, no. 1 (2007).

[41] Robert Axelrod, "A Repertory of Cyber Analogies," in *Cyber Analogies*, ed. Emily O. Goldman and John Arquilla (Monterey, CA: Naval Postgraduate School, 2014), 108; Peter W. Singer and Allan Friedman, *Cybersecurity and Cyberwar: What Everyone Needs to Know*, (New York: Oxford University Press, 2014), 177-80.

[42] Noah Shachtman and Peter W. Singer, "The Wrong War: The Insistence on Applying Cold War Metaphors to Cybersecurity Is Misplaced and Counterproductive," Brookings, 15. August 2011, [Blog], https://perma.cc/SCC5-NW4Y.

[43] A similar time period focused on by Matteo G. Martemucci, Col, " Unpunished Insults -- the Looming Cyber Barbary Wars," *Case Western Reserve Journal of International Law* 47, no. 1 Spring (2015).

little in-depth research on the actual pirates, privateers, and mercantile companies. Rather, they use the analogy as one of many ways of analysing cyberspace.

Finally, there have been some contributions in the legal, information security, and policy realm. In the legal realm, scholars explored letters of marque and the law of piracy as potential legal instruments to address cyber(in-)security.[44] In information security and policy, some analogies of navies, privateers, and pirates to cyber(in-)security were made at conferences and in blog posts, however, no one presented the in-depth research necessary in order to evaluate the analogy.[45]

Thus, this thesis goes far beyond existing analyses by not only analogizing one point in history, but also by developing a broader understanding of the evolution of pirates, privateering, and mercantile companies over time. This perspective highlights how certain solutions were rendered possible over time. It both demonstrates the commonalities and contingencies of each realm and allows for a more nuanced understanding of the domain.

iii. Connections to the broader International Relations research agenda

This section lays out specific connections of this project to the International Relations research agenda. Starting with Nye's work on power diffusion, the connections to other areas of research such as private violence, new medievalism, and armed non-state actors are drawn.

[44] B. Nathaniel Garrett, "Taming the Wild Wild Web: Twenty-First Century Prize Law and Privateers as a Solution to Combating Cyber-Attacks," *University of Cincinnati Law Review* 81, no. 2 (2013); Paul Rosenzewig, "International Law and Private Actor Active Cyber Defensive Measures," *Stanford Journal of International Law* 50 (2014); Scott Shackelford and Scott Russell, "Risky Business: Lessons for Mitigating Cyber Attacks from the International Insurance Law on Piracy," *Minnesota Journal of International Law* 24, no. 1 (2015).

[45] See e.g. Thomas Dullien, "Piracy, Privateering ... And the Creation of a New Navy" (Keynote speech presented at the SOURCE Conference, Dublin, May, 2013); Davi Ottenheimer. "Eventually Navies Take Over", 11. February 2015 [Blog], https://perma.cc/VU35-B6ZC; Christopher Ford. "Here Come the Cyber-Privateers", 19. July 2010, Science and Technology [Blog], https://perma.cc/XE8S-J2TJ.

Nye argued that there is an on-going diffusion of power from states towards non-state actors.[46] He posited that "while leaving governments the strongest actors, the cyber domain is likely to see an increase in the diffusion of power to nonstate actors and network centrality as a key dimension of power in the twenty-first century."[47] With reference to cybercrime, he used the analogy to privateers and pirates to indicate how, sometimes, it may be in the interest of states to harbour cyber criminals.[48] By evaluating this analogy in greater depth, the thesis will explore the usefulness of Nye's claim.

Nye contended that cyberspace alters rather than diminishes state sovereignty. The new actors that share the stage with states do not directly challenge states in as much as they change them: they create "new wealth, new coalitions, and new attitudes."[49] He concluded that "cyberspace will not replace geographical space and will not abolish state sovereignty, but like the town markets in feudal times, it will coexist and greatly complicate what it means to be a sovereign state or a powerful country in the twenty-first century."[50] The thesis agrees with Nye's assessment but goes further theoretically: it is interested in examining how Nye's metaphorical town markets *interact* with states. That is, how the new actors are linked to states and what security dynamics are triggered by the perceived existence of such relationships. Thus, the contribution made by the thesis also elaborates on Nye's conception of power diffusion. Overall, the theoretical and empirical work of the thesis will respond to Kello's call for the integration of "cyber studies" into international relations theory.[51] The thesis aims to contribute to this

[46] Joseph S. Nye, Jr., *The Future of Power*, 1st ed., (New York: PublicAffairs, 2011).
[47] Ibid., 151.
[48] Ibid., 148.
[49] Ibid., 118.
[50] Ibid., 122.
[51] Lucas Kello, "The Meaning of the Cyber Revolution: Perils to Theory and Statecraft," *International Security* 38, no. 2 (2013).

integration by investigating in detail "the negative [and positive] influences that nonstate players may be able to exert on states and their relations with other states."[52]

Relatively little work on privateering exists in International Relations. Privateering is sometimes treated in the context of a broader examination of private violence. Private violence is important in the context of the theory of the state. Much of International Relations theory uses a Weberian notion of the state, which conceives of the state in terms of the entity that has a monopoly of legitimate violence in a given territory. It is in this context that Thomson contributed to a more historically informed awareness of the process of control over private violence.[53] She contextualized how the outcome of territorially organized nation-states was not an inevitability of history, but an outcome of a longer process of state formation including agreements between states against competing actors. In addition, Thomson highlighted the normative change after the French and American revolutions in the conception of sovereignty: the change from state sovereignty, sourced from the monarch, to national sovereignty, sourced from the individual citizen, led to a responsibility of the state for the acts of its citizens. This shift would later be re-examined by Percy who analysed the shift away from mercenaries and highlighted how the French revolution (i.e. the "birth" of the citizen), brought about a normative change from the use of mercenaries towards national armies.[54] Interestingly, while Thomson's narrative was nuanced and highlighted the idiosyncrasies of the process of eradication of private violence, she was unable or unwilling to expand beyond a

[52] Ibid., 38.

[53] Janice E. Thomson, *Mercenaries, Pirates, and Sovereigns: State-Building and Extraterritorial Violence in Early Modern Europe*, Princeton Studies in International History and Politics, (Princeton: Princeton University Press, 1994).

[54] Sarah V. Percy, *Mercenaries: The History of a Norm in International Relations*, (Oxford: Oxford University Press, 2007).

Weberian notion of the modern state.[55] However, the teleological story in favour of the nation-state, underlying many a historical sociologist's works, should not cloud the analyst's judgements that history could have taken a different course.[56] Thus, whilst the historical analogy evaluated in this thesis reconceptualizes cyber(in-)security in particular ways, it should not be read as a judgement favouring the consolidation of state control in cyberspace. Recently, Colás and Mabee re-examined Thomson's narrative and refined the historical account of the public-private partnerships in the provision of violence.[57] They took issue with the clean separation between state and non-state actors, highlighting the many interconnections between private violence and the "commercial, military, and political circuits of imperial power."[58] Their detailed historical contributions are an invaluable source for the historical part of this thesis.

Whilst privateering has not been given much attention in the international relations literature, there is a group of scholars studying contemporary piracy.[59] For example, Christian Bueger, who has led a multi-year inquiry into the counter-piracy governance and generated contributions speaking to broader maritime security governance.[60] Of particular note are his contributions, which draw on practice theory and narratives, in

[55] Jeremy Larkins, "Book Review: Janice E. Thomson, Mercenaries, Pirates, and Sovereigns: State-Building and Extraterritorial Violence in Early Modern Europe," *Millennium - Journal of International Studies* 24, no. 2 (1995).

[56] Hendrik Spruyt, *The Sovereign State and Its Competitors: An Analysis of Systems Change*, Princeton Studies in International History and Politics, (Princeton: Princeton University Press, 1994).

[57] Alejandro Colás and Bryan Mabee, *Mercenaries, Pirates, Bandits and Empires: Private Violence in Historical Context*, (London: C Hurst & Co., 2010).

[58] Ibid., 4.

[59] For a detailed review of piracy studies, see Christian Bueger, "Piracy Studies: Academic Responses to the Return of an Ancient Menace," *Cooperation and Conflict* 49, no. 3 (2013). For a review in criminology see Anamika A. Twyman-Ghoshal, "Contemporary Piracy Research in Criminology: A Review Essay with Directions for Future Research," *International Journal of Comparative and Applied Criminal Justice* 38, no. 3 (2014).

[60] Christian Bueger, "Learning from Piracy: Future Challenges of Maritime Security Governance," *Global Affairs* 1, no. 1 (2015); Christian Bueger, "Doing Europe: Agency and the European Union in the Field of Counter-Piracy Practice," *European Security* 25, no. 4 (2016); Christian Bueger, Jan Stockbruegger, and Sascha Werthes, "Pirates, Fishermen and Peacebuilding: Options for Counter-Piracy Strategy in Somalia," *Contemporary Security Policy* 32, no. 2 (2011).

which he, amongst other things, highlighted the epistemic practices creating the "piracy" episteme.[61] Following Bueger's cue, Alex Gould drew on assemblage thinking to investigate the constellation of private and public actors providing maritime security.[62] Similarly, this thesis aims to shed light on particular public and private actors in cyber(in-)security, researching the authority structures and interactions between the different actors. From such piracy studies, the thesis picks up the multi-perspectival analysis of narratives.[63]

There is a significant body of literature on non-state actors and private violence. For example, Diane E. Davis and Anthony W. Pereira focused on the role of irregular armed forces in state making.[64] Reflecting on a chapter by Charles Tilly, they contend that the European experience "from armies based on personal service, to contractor-supplied mercenary forces, to massive, conscript-based standing armies financed internally by the state did not occur everywhere."[65] This may present some analytical leverage for understanding the differences in the use of private actors by different countries in cyber(in-)security.

[61] Christian Bueger, "Making Things Known: Epistemic Practices, the United Nations, and the Translation of Piracy," *International Political Sociology* 9, no. 1 (2015); Bueger, "Doing Europe: Agency and the European Union in the Field of Counter-Piracy Practice."; Christian Bueger, "Practice, Pirates and Coast Guards: The Grand Narrative of Somali Piracy," *Third World Quarterly* 34, no. 10 (2013).

[62] Gould, "Global Assemblages and Counter-Piracy: Public and Private in Maritime Policing." Gould is not alone in this move – assemblage thinking has gained in prominence following the publication of both Manuel De Landa's book in 2006 and its subsequent application in researching the public and the private in security studies by Rita Abrahamsen and Michael C. Williams. See: Manuel De Landa, *A New Philosophy of Society: Assemblage Theory and Social Complexity*, (London: Continuum, 2006); Rita Abrahamsen and Michael C. Williams, "Securing the City: Private Security Companies and Non-State Authority in Global Governance," *International Relations* 21, no. 2 (2007); Rita Abrahamsen and Michael C. Williams, "Security Beyond the State: Global Security Assemblages in International Politics," *International Political Sociology* 3, no. 1 (2009); Rita Abrahamsen and Michael C. Williams, *Security Beyond the State: Private Security in International Politics*, (Cambridge: Cambridge University Press, 2011).

[63] Bueger, "Practice, Pirates and Coast Guards: The Grand Narrative of Somali Piracy."; Mark Shirk, "How Does Violence Threaten the State? Four Narratives on Piracy," *Terrorism and Political Violence* (2015).

[64] Diane E. Davis and Anthony W. Pereira, *Irregular Armed Forces and Their Role in Politics and State Formation*, (Cambridge: Cambridge University Press, 2003).

[65] Ibid., 389.

The discussion of private violence and the conception of the state can be contextualized by an awareness of the broader literature on private authority in International Relations. In 2002, Rodney B. Hall and Thomas J. Biersteker re-evaluated private authority in International Relations.[66] They focused on market authority, moral authority, and illicit authority. The chapter by Stephen J. Kobrin used the frame of "new medievalism" to understand emerging forms of private authority. Phil Williams added that organized crime could provide private authority in the context of weak states. The "new medievalism" frame is part of a larger body of literature questioning the adequacy of state-centric research paradigms in a world that is increasingly populated by influential non-state actors. Using the analogy to medieval structures in *The Anarchical Society,* Hedley Bull evaluated how far the empirical evidence can support such a frame of analysis.[67] Concluding that the trends at the time were not yet as advanced so as to support a move away from state-centric theory, the interesting aspects for this thesis are Bull's recognition of the similarities with regard to a) the restoration of private international violence, b) the analogy of the East India Company with regard to multinational corporations, and c) the effects of a unified technology across the planet. Regarding private violence, Bull maintained that most trends, at his time of writing, pointed to private violence being motivated by a longing for statehood. This is remarkably different in today's cyberspace, where non-state actors such as Anonymous are able to effect insecurity without ambitions of reaching formal statehood. Bull asserted that it is unclear whether the transnational corporation undermines the state system or not. As a reason, he

[66] Rodney Bruce Hall and Thomas J. Biersteker, *The Emergence of Private Authority in Global Governance*, (Cambridge: Cambridge University Press, 2002).

[67] Hedley Bull, *The Anarchical Society: A Study of Order in World Politics*, (London: Macmillan, 1977), 254-66. Before him, Arnold Wolfers had already alluded to this analogy in 1962, but dismissed these "novel developments, which deserve theoretical as well as practical attention" since the "traditional problems of intersovereign relations, predominant for the last four centuries, continue to occupy the center of the political stage." See Arnold Wolfers, *Discord and Collaboration: Essays on International Politics*, (Baltimore: Johns Hopkins Press, 1962), 242.

put forward the ability of states to deny them access or to restrict their activities.[68] Furthermore, he claimed that the multinational corporations are dependent on the security provided by states for their operations. All of these claims could be revaluated in the context of the cyber(in-)security: are states able to deny access and restrict activities of large technology companies and service providers? Are these corporations depending on "peace" in cyberspace provided and enforced by states? For both questions, the argument that this is not the case could be supported for at least some states. Lastly, Bull raised doubts as to whether unified technology would have a greater impact on global integration as opposed to regional, national, or sub-national integration. The point is of interest, as it is yet unclear, which level has been most affected by the advent of cyberspace.

Forty years later, these trends have advanced considerably. Kello captured the elements that do not fit into the state system in an argument about two concurrent states of nature.[69] One state of nature, the one very familiar to the International Relations scholar, consists of states acting amongst one another under the condition of anarchy. The state vs. state interactions in cyberspace can potentially benefit from the web of norms that governs the relations between states. The other state of nature consists of non-traditional actors competing with one another in a global system, with actors that do not necessarily strive for statehood, but are also not under direct control of states. It is in the cases where these two states of nature converge and collide that the experience of the mercantile companies, privateers, and pirates may illuminate some of the dynamics at play. This argument will be integrated in the development of the framework for analysis in part B of this chapter.

The "new wars" literature on the changing character of conflict in the post-Cold War

[68] Bull, *The Anarchical Society: A Study of Order in World Politics*, 261-62.

[69] Kello, "The Meaning of the Cyber Revolution: Perils to Theory and Statecraft," 36-37; *The Virtual Weapon and International Order*, (New Haven: Yale University Press, 2017), 12-13.

context is associated to the "new medievalism" frame.[70] Van Creveld's account of the *Transformation of War*, which is part of the "new wars" literature of the 1990s, contended that the assumptions made by the 19th century strategists (Jomini/Clausewitz/Moltke) were based on the assumption of two sides with considerable armed forces that were distinguishable, separated by geography, and potentially mobile.[71] He further argued that this bias has carried forth into modern strategy. Van Creveld extended this analysis in *The Rise and Decline of the State* by demonstrating that, since the Second World War, dispersed non-traditional armed actors increasingly win wars.[72]

> Spreading from the bottom up, the conduct of that violence may revert to what it was as late as the first half of the seventeenth century: namely a capitalist enterprise little different from, and intimately linked with, so many others. Where princes and other military entrepreneurs used to contract with each other in order to make a profit – an Amsterdam capitalist, Louis de Geer, once provided the Swedish government with a complete navy, sailors, and commanders up to the vice-admiral included – in the future various public, semi-public, and private corporations will do the same.[73]

Herfried Münkler carried the argument forth into the 2000s.[74] However, the "new wars" argument received criticism for equating the post-Cold War civil wars with private looting, lack of popular support, and senseless violence as opposed to "old wars" which were supposed to have been ignited by collective grievances, based on broad popular

[70] See for one of the most discussed accounts Mary Kaldor, *New and Old Wars : Organized Violence in a Global Era*, (Cambridge: Polity Press, 1999).

[71] Martin Van Creveld, *The Transformation of War*, (New York: Free Press, 1991).

[72] Martin Van Creveld, *The Rise and Decline of the State*, (Cambridge: Cambridge University Press, 1999), 397.

[73] Ibid., 407.

[74] Herfried Münkler and Patrick Camiller, *The New Wars*, (Cambridge: Polity, 2005).

support, and only involved controlled violence.[75] Stathis N. Kalyvas argued that the highlighting of the criminal aspects was mainly due to the "demise of the conceptual categories engendered by the cold war."[76] Those who have studied civil wars and areas of instability before and after the "new wars" literature have recognized that it is political labels that are underlying the blurring of war, organized crime, and large-scale human rights violations.[77] Nevertheless, the "new wars" literature did point to phenomena that did not fit into the mainstream security studies research agenda and did merit further study. This literature is of relevance as it also pointed to the mismatch between, on the one hand, the clean separation of state and non-state activity in the literature, and on the other hand, the experiences of people in conflicts, in which those lines were often blurred. Similarly, the experiences of cyber(in-)security suggest a complex, blurred set of relationships between different actors.

While the changing character of warfare is a continuous topic of debate, part of the motivation underlying the "new wars" literature, namely the rising visibility of violent non-state actors in active conflicts after the 1990s, has also impacted the more general International Relations outside of the "new medievalist" literature. The liberal International Relations literature had started integrating non-state actors by focusing on benign actors contributing to global governance.[78] In contrast, the less benign non-state armed actors were frequently not addressed by them. Rather, the civil war scholars focused on them from two angles: whilst scholars using micro-modelling approaches focused on sub-state conflict dynamics, others, focusing on the study of armed conflict,

[75] Stathis N. Kalyvas, "'New' and 'Old' Civil Wars: A Valid Distinction?," *World Politics* 54, no. 1 (2001).
[76] Ibid., 117.
[77] See e.g. William Reno, "Crime Versus War," in *The Changing Character of War*, ed. Hew Strachan and Sibylle Scheipers, *Oxford Leverhulme Programme on the Changing Character of War* (Oxford: Oxford University Press, 2011); Mats Berdal, "The 'New Wars' Thesis Revisited," ibid.
[78] See for example on advocacy networks: Margaret E. Keck and Kathryn Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics*, (Ithaca, New York: Cornell University Press, 1998).

tried to capture the variety of actors engaged in non-state violence.[79] The literature grouped the non-state armed actors in typologies containing six actor types: a) insurgent groups, b) militant groups, c) urban gangs and warlords, d) private militias, police forces and security companies, e) criminal organizations, and f) terrorists.[80] Most research focusing on such groups recognizes the problematic aspects of defining a group according to what it is not (i.e. a state). This problem is exacerbated through the heterogeneity of states and the complex entanglement of non-state armed actors with states. Despite these challenges, scholars have tried to offer a better understanding by building typologies along the aspects of, for example a) organizational structure, b) type of organization, identity and purpose, c) profit motives, d) method of recruitment, or e) type and degree of use of violence. Whilst these typologies have shed light on the variety of actors, there is a lack of focus on the way these actors *interact* with the state. The exception is a study from 2013, which developed a framework to conceptualize the relations to the state as a matter of degree.[81] Thinking of the level of autonomy from the state as a matter of degree acknowledges the difficulty of classifying an actor as non-state. Peter G. Thompson recognized this challenge in his discussion on whether to include private military and security companies (PMSCs) in the definition of an armed group. He included them, as there is no guarantee that they remain loyal to the state's agendas. "History is replete with groups breaking oaths, promises, contracts, and treaties, all in the name of securing

[79] For examples of micro-modelling and sub-state dynamics see Stathis N. Kalyvas, *The Logic of Violence in Civil War*, (Cambridge: Cambridge University Press, 2006); Jeremy M. Weinstein, *Inside Rebellion: The Politics of Insurgent Violence*, (Cambridge: Cambridge University Press, 2007). For examples of actor focused studies see Keith Krause and Jennifer Milliken, "Introduction: The Challenge of Non-State Armed Groups," *Contemporary Security Policy* 30, no. 2 (2009); Kledja Mulaj, "Introduction: Violent Non-State Actors: Exploring Their State Relations, Legitimation, and Operationality," in *Violent Non-State Actors in World Politics*, ed. Kledja Mulaj (New York: Columbia University Press, 2010).

[80] Ersel Aydinli, "Assessing Violent Nonstate Actorness in Global Politics: A Framework for Analysis," *Cambridge Review of International Affairs* (2013); Krause and Milliken, "Introduction: The Challenge of Non-State Armed Groups."; Mulaj, "Introduction: Violent Non-State Actors: Exploring Their State Relations, Legitimation, and Operationality."; Robert Mandel, *Global Security Upheaval: Armed Nonstate Groups Usurping State Stability Functions*, Stanford Security Studies, (Stanford: Stanford University Press, 2013).

[81] Aydinli, "Assessing Violent Nonstate Actorness in Global Politics: A Framework for Analysis."

greater financial and political opportunities. We should expect no less from today's 'progovernment' nonstate actors."[82] Analysts focusing exclusively on PMSCs mostly support this view.[83] The framework presented in part B uses this idea of the continuum of state proximity from the research on non-state armed actors, recognizing that the relationship to the state is a key focus for the analysis of cyber actors.

B. Framework and concepts: security dynamics between actors in different proximities to the state

i. General framework: state proximity

The literature on armed non-state actors shows that, with few exceptions, researchers use typologies to conceptualize the different actors captured under the armed non-state actor umbrella. Whilst building the typologies as heuristic devices, it is acknowledged that the empirical cases usually show a blurring of these types when examining a specific actor. Furthermore, as presented in the literature review, many studies have pointed out that the entanglement of these actors with states is a field for further research. Clearly, the actors of interest (at least the ones in cyberspace) are neither necessarily violent nor armed in the traditional sense.[84] However, the type of analysis employed by scholars studying non-state actors can aid the conceptualization of the actors observed in cyberspace, not least because similar incentive structures can apply for states.

[82] Peter G. Thompson, *Armed Groups: The 21st Century Threat*, (Lanham: Rowman & Littlefield, 2014), 72.

[83] Peter W. Singer, "Private Military Firms: The Profit Side of VNSAs," in *Violent Non-State Actors in World Politics*, ed. Kledja Mulaj (New York: Columbia University Press, 2010); Christopher Coker, "Outsourcing War," in *Non-State Actors in World Politics*, ed. Daphne Josselin and William Wallace (Basingstoke: Palgrave, 2001). For the view of excluding PMSCs from the definition of armed groups see: Anthony Vinci, *Armed Groups and the Balance of Power : The International Relations of Terrorists, Warlords and Insurgents*, LSE International Studies, (London: Routledge, 2009).

[84] Although there is some debate about the level of violence computer code can incur, as well as whether it can be considered a weapon. A good starting point for this debate is found in Thomas Rid, *Cyber War Will Not Take Place*, (London: Hurst & Company, 2013). For a perspective of violence in information ethics see Luciano Floridi, *The Ethics of Information*, (Oxford: Oxford University Press, 2013).

With this literature in mind, the thesis highlights two focuses of analysis. First, the evaluation of the analogy to mercantile companies, privateers, and pirates needs to focus on the holistic analytic task of identifying connections between phenomena otherwise seen as distinct in cyberspace. Thus, an answer must be given as to whether the analogy is applicable to groups as diverse as cyber commands, technology companies, hackers, and cyber criminals. Can a spectrum of analysis of cyber influence and conflict bring them together? If so, the analogy may enable us to see something we would not otherwise be able to see. If not, then the analogy might be misleading. Second, similar to the research on armed non-state actors, this thesis focuses on typologies of cyber phenomena to identify specific ways in which the different types of actors interact. The focus is on whether the collaboration and confrontation between the different actors can be usefully captured by the analogy. The analysis of the interactions between state, semi-state, and non-state actors will uncover the security dynamics at play. For example, the collaborative aspects between companies and governmental security institutions may uncover insights into the dynamics of company and state security. Similarly, the confrontational aspects between the modern companies and states can capture corporate powers and weaknesses when interacting with multiple states at once.

To support the analysis of these two focuses, a framework of analysis, consisting of a spectrum of state proximity, will be used to develop the concepts of the mercantile company, privateer, and the pirate. As an anchoring point, this will also include navies (i.e. a state actor). Thereby, state proximity is understood as how closely a particular actor is collaborating with the organs of a state. This conceptualization mirrors Ersel Aydinli's understanding of "distance from the state."[85] The state closeness of actors on this spectrum can be understood to be coalescing, analogous to the colours on a colour

[85] Aydinli, "Assessing Violent Nonstate Actorness in Global Politics: A Framework for Analysis."

spectrum. Whilst the different colours are clearly recognizable, the boundaries of one to the other are fluid.

Figure 1: Spectrum of state proximity

State actors *Non-state actors*

Similarly, whilst the concepts developed capture a specific type of relationship, the way that it can manifest itself is manifold. The conceptualization of actors that is used at the outset is developed further using the historical analysis part of the thesis. The focus will be to sharpen our understanding of how the mercantile company, the privateer, and the pirate are different with respect to their relation to the state. This will provide the baseline for the analogical comparison. The idea is not to come up with one definition of the ideal-types. Rather, the intent is to explore the different manifestations of the concepts that provide a rich understanding of the family of cases that are referred to as mercantile companies, privateers, and pirates. With this repertoire of historical constellations of state proximity, the full strength of the analogy can be assessed. The historical examples can expand the contemporary realm of how the different actor constellations may fit together to form a holistic realm. In a second step, based on the state proximity framework, both cooperative and conflictive types of interaction between the actors can be looked at. Attention is paid to extracting common challenges from the different constellations between the different actors. Having discussed the literature and laid out the strategy for developing the framework and concepts, the following section applies these ideas to the actors of the sea and cyberspace.

ii. Applied framework and concepts: capturing the dynamics between the different actors

As a starting point for applying the framework of state proximity, the basic conceptual understanding of the actors will be recounted. The navy, mercantile company, privateer, and pirate will be categorized along the spectrum of state proximity introduced in the previous section. Based on this categorization, a first overview of modern-day equivalents will be given.

Although "navy" can sometimes be used as a term indicating the ships of a particular maritime institution (e.g. the merchant navy), in this thesis, it will denote a state institution. As introduced in Chapter 1, this thesis categorizes mercantile companies and privateers as semi-state actors. They are not classified as non-state actors due to their intimate relationship with a particular home state. They are not classified as state actors as they are not formally integrated in the state organs and as they have special relationships with foreign polities. Pirates are considered non-state actors, as they work outside of the state system, sometimes even rejecting the state's authority to govern them. However, in specific cases, they may be found to be more closely affiliated with a state, which would merit treating them as semi-state actors.

Table 2: Comparison between actors on the sea and in cyberspace

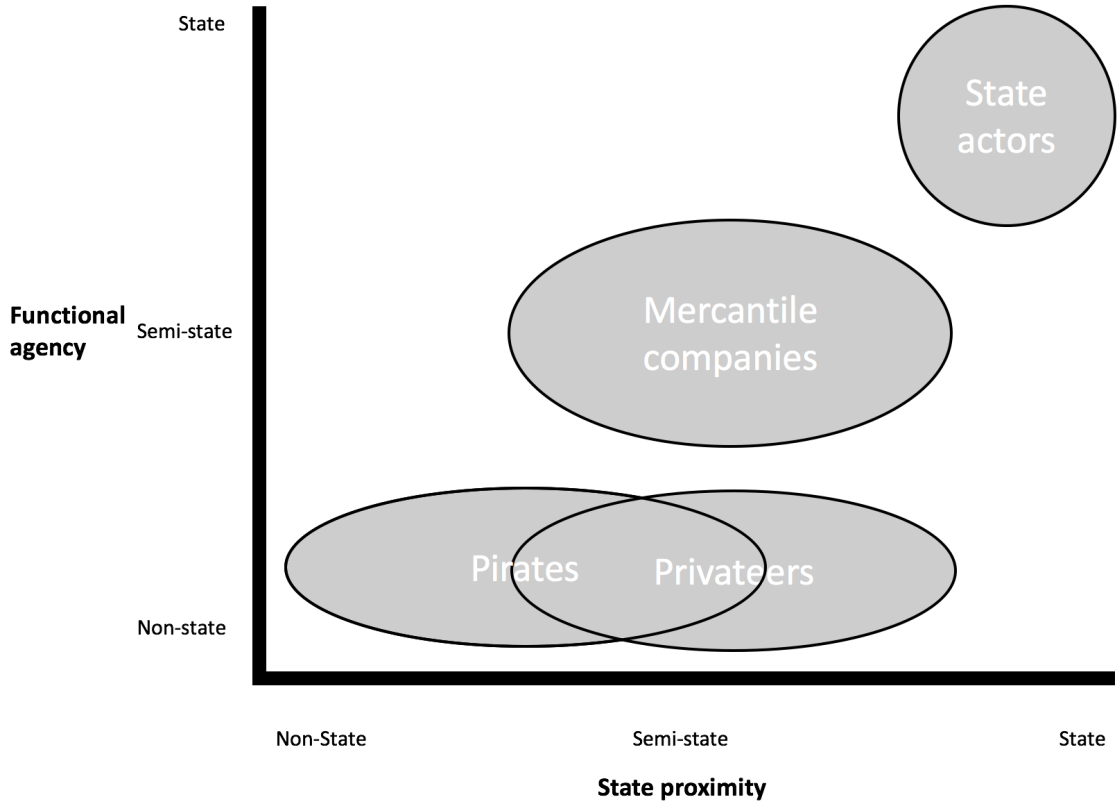
Actor Type	Sea	Cyberspace
State Actors	Navy (including mercenaries)	Cyber armies, intelligence, police forces, state contractors, offensive security providers
Semi-State Actors	Mercantile companies	Technology champions, major telecommunications companies, security vendors
	Privateers	Patriotic hackers, private contractors to companies
		Some cybercriminal elements
Non-State Actors	Pirates	Independent hackers, Cybercriminal elements (incl. organized crime)

In cyberspace, the equivalents are categorized alongside the same spectrum of state proximity as on the sea. For an actor to be categorized as a state actor, it has to be part of the state's organs or in direct support thereof. They are to be distinguished from semi-state actors, that are in a close relationship with one particular state, and sometimes advance state interests, but are not organizationally integrated in state functions. They also stand in a special relationship with foreign states. Non-state actors are actors whose interests lie outside of the formal activities of a state, who might even reject the state's authority to govern their activities. Nevertheless, they may sometimes be in complicated relations to states, enabling each other to pursue their interests. Overall, only those actors are of interest, that directly interfere with another group's or individual's security interests.

This conceptual understanding of mapping state proximity based on the collaboration with the state is extended, with regard to mercantile companies, in a functional mapping of state-like agency (see Figure 2). Thus, a feature of mercantile companies is that they not only collaborate intimately with particular states (state proximity), but that they are

also functionally set up as a state-like actor (i.e. some of their behaviour and organizational structure looks and acts similar to a state). Hence, whilst some smaller companies may have the same state proximity in their collaborations with a state, they are not to be classified as mercantile companies functionally.

Figure 2: State proximity versus functional agency



These conceptual understandings provide a perspective with which to analyse the different actors in cyberspace. Each concept provides a distinct way in which the respective actor is connected to the state. Importantly, the concepts do not carry an inherent moral value. The concepts of the navy, mercantile company, privateer, and pirates are understood as concepts that, by themselves, are morally empty. This also reflects the historical understanding of them: some viewed privateers as heroes, others thought of them as criminals.

The three categories of actors, developed based on the state proximity framework, can be used to analyse the interactions between them. Such an analysis connects to the two "states of nature" argument discussed in the literature review. As introduced above, Kello argued that whilst the old state of nature (state vs. state) exists, cyber(in-)security has also accentuated a new state of nature involving non-state actors. This global state of nature can be analysed using the state/semi-state/non-state framework, both for when the actors' interests collide, as well as for when they converge. With respect to when they collide the question is: when are the respective actors attackers and when are they victims?

Table 3: Collision of interests between state, semi-state, and non-state actors

		Victims		
	Actor Types	State	Semi-state	Non-state
Attackers	*State*	Moonlight Maze GhostNet Stuxnet Red October	NSA/ Huawei PLA / Google, Lockheed (e.g. Titan Rain, Operation Aurora) RU / Ukrainian Power Grid	PLA/ Tibetan activists (GhostNet) NK / SPE RU / TV 5 monde
	Semi-state	Patriotic Hackers / Estonia Iranian hackers / Saudi Aramco (Shamoon)		Russian hackers / JPMorgan Chase Iran / Sands Casino Cybercrime
	Non-state	Activist hackers / NK ISIS / STRATCOM	ISIS / AP Phineas Fisher / HackingTeam & Gamma International	Cybercrime Anonymous / Scientology Ashley Madison

When mapping some of the most prolific cyber attacks onto the categories identified (see Table 3), a clearer picture of the complexity of responding to cyber attacks starts to emerge. Each of these categories of constellations involves different challenges for the attacked party. For example, in the cyber attack against Estonia in 2007, all the signs pointed towards Russian patriotic hackers having attacked the Estonian infrastructure. How is a state to handle such a situation? In another case of SPE being attacked in 2014,

allegedly by the North Korean government, how is the United States government to react? Some of these constellations will be looked at in more detail throughout the rest of the thesis. By doing in-depth research on some of these cases and thereby contributing to building up knowledge on how states did react in particular situations, the thesis can refine the knowledge on how these constellations provide analytical leverage to better understand the security dynamics of cyberspace.

With respect to when the interests of the different actors converge, the question is: who is demanding assistance and who is supplying it?

Table 4: Convergence of interests between state, semi-state, and non-state actors

		Supply of cooperation		
	Actor Types	State	Semi-state	Non-state
Demand for cooperation	*State*	Five-Eyes	USA / PRISM companies CN / Huawei RU / Patriotic hackers	Iran / hackers Russia / cybercrime USA / Hector Gonzalez
	Semi-state	Google / USA (Operation Aurora) Huawei / U.K.		
	Non-state	SPE / USA Cybercrime / Russia		Wikileaks / Anonymous

Mapping some of the prolific cooperation cases onto the matrix (see Table 4) captures the constellations that are difficult to explain in a traditional state vs. state framework. For example, the cooperation between technology or telecommunication service providers and states needs to be carefully researched. Similarly, the cooperation between hackers or cyber criminals and states is of interest. As in the case of the collision model, some of the constellations will be researched in-depth in this thesis so as to build a better understanding of the choices made by the actors. In both models, there are constellations

that indicate the presence of dynamics of an old state vs. state type of interaction as well as those of a new type of state of nature.

With this in mind, one can now revisit the case selection. The purpose of the case studies is a) to analyse to what extent there is evidence of effects of the presence of the actors of interest in the cyber(in-)security cases and b) to elucidate how the historical cases can aid our understanding of the security challenges the modern-day cyber mercantile companies, cyber privateers, and cyber pirates introduce. The two matrices identified a range of cases with both converging and conflicting interest. Five of those cases will be analysed as single case studies in Chapter 5 and Chapter 6 (see Table 5 and Table 6). This allows for an assessment of the degree to which the analogy can shed light on the differing types of constellations. Whilst the spectrum of state proximity is the focal point of the analysis of all cases, specific claims are evaluated in the different cases. Each of those cases highlights key aspects of how the analogy can be applied and how such an application of the concepts of a mercantile company, privateers, and pirates changes our understanding of cyber(in-)security.

Table 5: Collision of interests between state, semi-state, and non-state actors (selected cases)

		Victims		
	Actor Types	*State*	*Semi-state*	*Non-state*
Attackers	*State*		China / Google (Operation Aurora) (Chapter 6; Case 3)	North Korea / SPE (Chapter 6; Case 4)
	Semi-state	Patriotic Hackers / Estonia (Chapter 5; Case 1)		Russian cyber criminals / U.S. businesses (Chapter 5; Case 1)
	Non-state	Activist hackers / North Korea (Chapter 6; Case 4)		

Table 6: Convergence of interests between state, semi-state, and non-state actors (selected cases)

		Supply of cooperation		
	Actor Types	*State*	*Semi-state*	*Non-state*
Demand for cooperation	*State*		RU / Patriotic hackers (Chapter 4; Case 1+2) USA / PRISM companies (Chapter 6; Case 5)	Russia / Cybercrime (Chapter 5; Case 1+2)
	Semi-state	Google / U.S. (Operation Aurora) (Chapter 6; Case 3)		
	Non-state	Cybercrime / RU (Chapter 5; Case 2) SPE / U.S. (Chapter 6; Case 4)		

As outlined in the introduction the cases were selected to best evaluate the conceptual applicability of the analogy.[86] Estonia and the Russian political-criminal nexus will be used to evaluate the applicability of cyber pirates and cyber privateers, whereas the concept of cyber mercantile companies will be explored in the cases of Google, SPE, and signals intelligence cooperation. Having set up the framework with which to analyse the utility of the analogy, the next chapter will present the historical overview of the sea during the age of pirates, privateers, and mercantile companies.

[86] For arguments regarding case selection see part D on "Methodology and Data" in Chapter 1.

CHAPTER 3

From the Age of Privateering to its Abolition

A HISTORY OF THE LOOSELY GOVERNED SEA BETWEEN THE 16TH – 19TH CENTURY

This chapter discusses the main historical trends and characteristics of navies, mercantile companies, privateers, and pirates from the 16th to the 19th century in order to set up the analogy to contemporary problems of cyber(in-)security. The chapter contributes to answering the research question by defining the historical bounds of the analogy and by identifying different constellations between the actors investigated in three particular historical cases: an account of late 16th century Elizabethan privateering (part B), the interaction between mercantile company, privateers, and pirates in the late 17th century (part C), and the abolition of privateering in the mid-19th century (part D).[1]

The chapter focuses on how non- and semi-state actors, with the capacity to deploy violence at sea, were interacting with one another and with states. It argues that non- and semi-state actors had different options for collaboration at different points in time: whilst violence at sea was a relatively state-independent activity in the 16th century, the late 17th century period shows an increased ambition for state control of semi- and non-state actors deploying violence at sea. This changed the operating environment and realms of possibilities for these actors. Some chose to capitalize on the state's willingness to claim authority over their domain of action, whilst others chose to resist it. The mid-19th century period features states as actors, who dictated the permissible activities at sea and abolished privateering in the Paris Declaration Respecting Maritime Law of 1856. The historical research and the detailed analysis of different periods show that mercantile

[1] This chapter draws on and refines arguments originally introduced in Florian Egloff, "Cybersecurity and the Age of Privateering," in *Understanding Cyberconflict: Fourteen Analogies*, ed. George Perkovich and Ariel Levite (Washington DC: Georgetown University Press, 2017).

companies, privateers, and pirates were operating in a volatile environment. Their proximity to a state depended on the context. Non- and semi-state actors' selective representation of their relationships to a state is of particular interest in this thesis. Consequently, special attention is paid to it and it will be further discussed in Chapter 4.

Before embarking upon the historical analysis, a reflection on sources used by the secondary literature is in order. As explained in the introduction, the chapter limits the historical analysis to the British history of interaction with mercantile companies, privateers, and pirates. The limitation is based on Britain being a key case for the understanding of privateering as well as ready access to archives and secondary materials. The history of British naval engagement between the 16th and 19th century profits from the primary source records of the Admiralty at the National Archives, the East India Company records at the British Library, and individual collections of papers held by the Navy. Collections of printed source documents also exist, for example, coverage of Elizabethan Privateering compiled by the Hakluyt Society. Some historians have looked at French, Spanish, Dutch, and Portuguese archives to inform their analysis of the British experience. Comparatively little work, however, utilizes documents from Indian, Chinese, Indonesian, or Latin American sources. This means that much of the engagement with the historical record reflects a European within-empire and between empire discourse, and does not account for a potentially significantly different, non-European experience. However, sometimes non-European experiences are reflected in letters and orders received sent by extra-European writers, for example, the Indian Imperial Mughal Court's correspondence with the East India Company. For the specific cases examined in this chapter, the research strategy entailed the limited use of archival resources, which contributes to a deeper understanding of the narratives constructed both by actors at the time, and is contextualized by the secondary literature.

This chapter proceeds by providing some historical background on piracy and privateering, and introducing the three cases (part A). This is followed by an analysis of the constellations of actors in three historical contexts: the late 16th century (part B), the late 17th century (part C), and the mid-19th century (part D).

A. Historical background

Between the 13th and mid-19th century, privateering was an established state practice. Privateers, privately owned vessels that operated against an enemy with the licence or commission of the government in times of war, would be used to attack the enemy's trade. In peacetime, the practice of reprisal represented the means with which to seek redress against the harm suffered at the hands of another nation's ships at sea. A *letter of marque* allowed merchants to attack any ship of the offending nation until they found something of equal value to their loss.

In the 15th and 16th centuries, several developments concurrently lead to an increase in European exploitation of the sea, with the Portuguese and the Spanish leading the way. Shipping and military technology advanced, so that long distance sailing and war fighting possibilities became more viable. At the same time, a will to explore, proselytize, and conquer led the seafarers into new territories.[2] Financed by investing parties expecting lucrative returns, and backed by their respective sovereigns to attack both colonial locals and rivals, privateers represented an early means of colonial expansion.

In the early 16th century, Spain and Portugal were competing for territory. The world of exploration and religious conquest brought with it territorial claims. In early colonial fashion, the two powers settled on a deal dividing the world into two colonial spheres of influence. Spain received the territory west of the 46°W Meridian (up to the 146°E

[2] Paul M. Kennedy, *The Rise and Fall of British Naval Mastery*, (London: Penguin, 2004).

Meridian) and south of the Tropic of Cancer, whereas all territory in the East was claimed by Portugal.[3] Portugal would henceforth claim control of the Southern Atlantic and Indian Ocean, whilst Spain expanded into the Americas and the Pacific. This splitting up of the territory is an important antecedent for the maritime imperial practice later named "no peace beyond-the-line" agreement. The agreement split up the affairs of European imperial states into European international relations and colonial affairs, where a formal state of war or peace did not exist.

By 1580, the Iberian Union unified the Portuguese and Spanish Crowns, leavening Spain the dominant power ruling the sea. By that time, other European powers (e.g. the Dutch and the English, and, from the 17th century onwards, the French), were competing with Spain. They did not accept Spain's sovereignty claims of the sea on paper. Rather they challenged Spain's interpretation of sovereign claims by arguing that there must be a degree of effective control to be able to assert a sovereign claim.[4] Following the no peace beyond-the-line logic, England, France, and the United Provinces engaged abundantly in privateering south of the Tropic of Cancer. From the late 16th century onwards, rather than claiming whole oceans, the different navies and merchant companies struggled for control – not of whole oceans – but of specific sea lanes.

By the end of the 16th century, the era of the mercantile companies had begun. Mercantile companies operated by their own international policies. They made deals with other companies or sovereigns, or were at war with them, engaging in open warfare, piracy,

[3] The two realms are settled in the Treaty of Tordesillas (1494) and Treaty of Saragossa (1529). There is some dispute about the exact lines, see Garrett Mattingly, "No Peace Beyond What Line?," *Transactions of the Royal Historical Society* 13 (1963).

[4] Arguing for only a limited *mare clausum* and for a *mare liberum* on the high seas, see original Hugo Grotius and Louis Elzevir, *Mare Liberum Sive De Iure Quod Batavis Competit Ad Indicana Commercia Dissertatio*, (Lugduni Batauorvm: Ludovici Elzevirij, 1609). Arguing for a *mare clausum*, but theorized from effective control of the land, see original John Selden, *Mare Clausum Seu De Dominio Maris*, (London: W. Stanesbeius pro R. Meighen, 1635).

and privateering – sometimes independently and against the interests of their home states. At the time, merchants had to provide their own protection. Even in the Narrow Seas (the English Channel and the southern North Sea[5]), the Elizabethan Royal Navy did not yet provide protection for them.[6]

Since this thesis is interested in the interaction between the different actors, it is pertinent to briefly survey the literature on causes of piracy and its relationship to states. This analysis clarifies how piracy can be connected to other forms of raiding at sea. In an excellent literature review, historian David J. Starkey points to a variety of economic, political, and social arguments as causes of piracy.[7] Ranging from the deficiencies of trading markets, to entrepreneurial opportunities in areas of limited policing and legal enforcement, to the oversupply of labour after wars ended, many a historian concluded that there are economic reasons that cause piracy.[8]

However, some also purport political causes of piracy. For example, according to Anne Pérotin-Dumon, pirates are the product of political will and the policies of empires. They occur in two cases, namely a) when empires extend their hegemony over areas where they were previously weak or b) when there is a conflict between an established and a new political entity.[9] In both cases, the political challenge over the authority of determining

[5] "Narrow Seas," ed. I. C. B. Dear and Peter Kemp, vol. 2014, *The Oxford Companion to Ships and the Sea* (Oxford: Oxford University Press, 2006), https://perma.cc/4XSN-DECB.

[6] „In February 1603, the government proposed a scheme for the formation of an auxiliary fleet of private ships to protect commerce in the Narrow Seas, tacitly admitting the inability of the royal navy to manage this duty." From: Kenneth R. Andrews, *Elizabethan Privateering: English Privateering During the Spanish War, 1585-1603*, (Cambridge: Cambridge University Press, 1964), 238.

[7] David J. Starkey, "Voluntaries and Sea Robbers: A Review of the Academic Literature on Privateering, Corsairing, Buccaneering and Piracy," *The Mariner's Mirror* 97, no. 1 (2011): 143-46.

[8] See e.g. "Pirates and Markets," in *Bandits at Sea: A Pirates Reader*, ed. C. Richard Pennell (New York: New York University Press, 2001); John L. Anderson, "Piracy and World History: An Economic Persepctive on Maritime Predation," in *Bandits at Sea : A Pirates Reader*, ed. C. Richard Pennell (New York: New York University Press, 2001).

[9] Anne Pérotin-Dumon, "The Pirate and the Emperor: Power and the Law on the Seas, 1450–1850," in *Bandits at Sea: A Pirates Reader*, ed. C. Richard Pennell (New York: New York University Press, 2001), 26.

who is allowed to trade, and under what circumstances, renders certain existing behaviour as illegitimate. For example, in the case of the East India Company, the monopolization of the East India trade rendered other often smaller merchants, who had been active in the same trade routes, as illegitimate interlopers. In her study of the legal history of piracy, Lauren Benton details that whilst piracy rhetorically was framed as an offence against humanity, the treatment of it was often as a "crime under municipal law in which subjects ignored the terms of their commissions or failed to comply with requirements that they bring captured ships to vice-admiralty courts for adjudication."[10] Explaining the anti-piracy measures Pérotin-Dumon concludes that increasingly, "merchants laid down their weapons and accepted that the state would protect their business in exchange for regulating and taxing it. There would have been no 'suppression of piracy' without this change in relationship between merchant and the state."[11] This conclusion mirrors Robert C. Ritchie's analysis, who identifies the double shift of merchants increasingly relying on "order and regularity" and the administrative apparatus of the state valuing "routine and discipline."[12]

In Thomson's reading, the practice of privateering represented an attempt to control and bring non-state violence under the authority of the state. She reads pirates as an unintended consequence from the reliance of the state on privateers. Sometimes they were

[10] Lauren Benton, "Toward a New Legal History of Piracy: Maritime Legalities and the Myth of Universal Jurisdiction," *International Journal of Maritime History* 23, no. 1 (2011): 233.

[11] Pérotin-Dumon, "The Pirate and the Emperor: Power and the Law on the Seas, 1450–1850," 41.

[12] Robert C. Ritchie, *Captain Kidd and the War against the Pirates*, (Cambridge, Mass.: Harvard University Press, 1986), 128. This shift from the primary interest in imperial conquest towards the reliance on trade was previously already pointed out by Lane's analysis of the shift of profit derived from tribute (i.e. payment in excess of cost of protection) vs. profit derived in the form of protection rents (i.e. cheaper protection for own companies than for competitors). See: Frederic C. Lane, "The Economic Meaning of War and Protection," *Journal of Social Philosophy & Jurisprudence* 7, no. 3 (1942). Supportive of the economic driver to the end of piracy, see Alejandro Colás and Bryan Mabee, "The Flow and Ebb of Private Seaborne Violence in Global Politics," in *Mercenaries, Pirates, Bandits and Empires: Private Violence in Historical Context*, ed. Alejandro Colás and Bryan Mabee (London: C Hurst & Co., 2010). See also Arne Bialuschewski, "Pirates, Markets and Imperial Authority: Economic Aspects of Maritime Depredations in the Atlantic World, 1716–1726," *Global Crime* 9, no. 1-2 (2008).

used as a resource by states, sometimes pirate practices could be read as a political struggle against the authority of the state to control non-state violence. Over time, the pirates' existence transformed from being an outflow of state policy to a mix of unintended consequences of the use of privateers and active political resistance.[13]

Different pirates had different relationships with states. Mark Shirk offers a useful four-way classification of these different narratives of piratical violence: entrant, resource, revisionist, and criminal.[14] Entrant violence constitutes piracy as a threat to the power of a particular state. The resource perspective casts piratical violence as something to be used by the state, reinforcing the current practices and norms. Revisionist narratives see piratical violence as a "threat to the system as a whole as it exists in a particular time and place."[15] Finally, criminal narratives render piratical violence as something outside of the state, but not threatening the sovereignty of the state. Hence, Thomson's account can be read as a transformation of the piratical threat narratives from resource to a revisionist and criminal violence.

One could also construe the presence of pirates as a side effect of the absence of sovereignty on the seas. However, as Benton convincingly argues, the absence of sovereignty on the seas is an outcome of a political process, rather than a forgone conclusion. The legal development across different regions allows one to trace the more and less effective control different empires had over their colonies. Benton highlights the difference between the emerging Atlantic system of prize courts (initiated in the 17th century) and the India trade, which was predominantly regulated trough inter-imperial

[13] Janice E. Thomson, *Mercenaries, Pirates, and Sovereigns: State-Building and Extraterritorial Violence in Early Modern Europe*, Princeton Studies in International History and Politics, (Princeton: Princeton University Press, 1994).

[14] Mark Shirk, "How Does Violence Threaten the State? Four Narratives on Piracy," *Terrorism and Political Violence* (2015). See also: Mark Shirk, "Pirates, Anarchists, and Terrorists: Violence and the Boundaries of Sovereign Authority" (PhD Thesis, University of Maryland, 2014).

[15] Shirk, "How Does Violence Threaten the State? Four Narratives on Piracy," 7.

policies between the land-based Mughal empire and the trading companies (who were perceived as extensions of European powers).[16] Benton notes the contrast between an imagined territorial claim on a map and differing degrees of control in practice:

> In both the real and imagined legal order, ships and their captains moved as delegated legal authorities along intersecting paths, extending corridors of control, in turn weakly or strongly associated with jurisdiction, into an interimperial space that could not be owned but could be dominated.[17]

Hence, she emphasizes the Europeans' view that law travels with the captains of the ships, that sovereigns extend their rule over the actions taken abroad.

Finally, besides the economic and political causes of piracy, Starkey also highlighted the historians' conjectures for social drivers of piracy.[18] Some mariners found personal freedom in pirate communities. Some pirate communities were characterized as more egalitarian, and structured with a different set of social norms. Accounts of female pirates, black slaves, and gay men all speak to a set of political and social motivating reasons for becoming a pirate.[19]

The remainder of this naval historical analysis will proceed along three cases. Each case will highlight a particular historical constellation amongst actors of interest to this thesis.

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[16] Lauren Benton, *A Search for Sovereignty: Law and Geography in European Empires, 1400-1900*, (Cambridge: Cambridge University Press, 2010), 137-48.

[17] Ibid., 161.

[18] Starkey, "Voluntaries and Sea Robbers: A Review of the Academic Literature on Privateering, Corsairing, Buccaneering and Piracy," 145.

[19] B. Richard Burg, *Sodomy and the Pirate Tradition: English Sea Rovers in the Seventeenth Century Caribbean*, (New York: New York University Press, 1983); Kenneth J. Kinkor, "Black Men under the Black Flag," in *Bandits at Sea: A Pirates Reader*, ed. C. Richard Pennell (New York: New York University Press, 2001); C. Richard Pennell, *Bandits at Sea: A Pirates Reader*, (New York: New York University Press, 2001); Marcus Rediker, "Liberty beneath the Jolly Roger: The Lives of Anne Bonny and Mary Read, Pirates," in *Bandits at Sea: A Pirates Reader*, ed. C. Richard Pennell (New York: New York University Press, 2001); Jo Stanley et al., *Bold in Her Breeches: Women Pirates across the Ages*, (London: Pandora, 1995).

The first case is an account of late 16th century Elizabethan privateering, which will be analysed in part B.[20] The time period was selected based on secondary literature, which identifies the late Tudor period as one of the most significant phases of licensed private naval warfare in English naval history, particularly for reprisals and early forms of privateering.[21] The case offers an account of a queen that could not afford to finance naval operations on her own. In that situation, she shared risks and returns with influential investors (including her Lord Admiral), who had a motive in profiting from the war against Spain (some merchants were compensating for the loss of the Spanish trade due to the war). Spain and, due to the Iberian Union, Portugal represented the largest naval power of the era, with the United Provinces being strong investors into naval capacity. England had small, and mostly private, naval capacities. The accounts from an era of conquest and bullion describes raids motivated by a mix of adventurism, a will to proselytize, and profit seeking. In the Elizabethan period, pirates were not that different from any other sea faring undertaking, as deep-sea sea faring embodied a spirit of predation. The no peace beyond-the-line agreement of the European powers rendered deep-sea raiding a policy option between war and peace. Occurring at an important time for the understanding of sovereignty, the flurry of privateering triggered a legal discussion

[20] Extensive primary source material is available in commented editions of primary sources, such as Kenneth R. Andrews and Hakluyt Society., *English Privateering Voyages to the West Indies, 1588-1595: Documents Relating to English Voyages to the West Indies from the Defeat of the Armada to the Last Voyage of Sir Francis Drake*, Works Issued by the Hakluyt Society, 2nd Series, Nr. 111, (Cambridge: Cambridge University Press for Hakluyt Society, 1959). Most scholars (including this thesis) refer to the actions in this late Tudor age analytically as privateering, as it forms what would, by the mid-17th century, be called privateering. It is strictly speaking an anachronism – in Elizabethan times it would have been referred to as general reprisals, authorized by the issuance of a *letter of marque and reprisal* or just a *letter of marque*. Nicholas A. M. Rodger, *The Safeguard of the Sea: A Naval History of Britain. Volume 1, 660-1649*, (London: HarperCollins Publishers in association with the National Maritime Museum, 1997), 200; Starkey, "Voluntaries and Sea Robbers: A Review of the Academic Literature on Privateering, Corsairing, Buccaneering and Piracy," 130.

[21] Starkey, "Voluntaries and Sea Robbers: A Review of the Academic Literature on Privateering, Corsairing, Buccaneering and Piracy," 130-31.

about the distinction between piracy and privateering, which would prove important for the understanding of sovereign responsibility.

The late 17th century case offers an account of a government divided and will be discussed in part C.[22] The time period was selected as it represents a key turning point for the understandings of piracy, a shift in the function of the navy, a shift in the interest in predation towards an interest in trade, and involves all the actors of interest in this thesis: mercantile companies, privateers, and pirates.[23] Whilst France was the wealthiest and dominant power of the time, England had become much stronger in commerce, financially, and was capitalizing on its geographic position.[24] A stronger Royal Navy, not least due to the administrative body strengthened in the 17th century, could be used to protect the sovereign's interests. Some investment parties were corporatized into formal mercantile companies, who had a strong stake in protecting their monopoly over certain sea lanes and ports. This is important conceptually, as they grew into large political actors with their own sets of interests and capabilities to deploy violence, sometimes in

[22] Primary sources identified from consultations of secondary sources and archival catalogues for the late 17th century case are: Hendrik Carel Vos Leibbrandt, Willem Adriaan van der Stel, and Cape of Good Hope Archives., *Journal, 1699-1732*, (Cape Town: Richards, 1896), 228-32; East India Company Original Correspondence, IOR/E/3/52, India Office Records and Private Papers, British Library. Letter of the 16 November 1695; Calendar of state papers Colonial series America and West Indies, Vere Harmsworth Library. Entries on 28 Nobember 1697 and 1 September 1698; Factory Records Bombay: Copies of Letters Despatched between 21 August 1699 and 30 January 1703, 1699-1703, IOR/G/3/17, India Office Records and Private Papers, British Library. Letter of the 23 July 1700; East India Company Original Correspondence, 1700, IOR/E/3/57, India Office Records and Private Papers, British Library. Letters of 10 May 1700 and 28 December 1700.

Consulted secondary sources include: Peter Earle, *The Pirate Wars*, (London: Methuen, 2003), 120-24; John Keay, *The Honourable Company : A History of the East India Company*, (London: Harper Collins, 1991), 189; Charles Grey and George Fletcher MacMunn, *Pirates of the Eastern Seas (1618-1723): A Lurid Page of History*, (London: Sampson Low, Marston & Co., 1933), 123; Philip J. Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundation of the British Empire in India*, (Oxford: Oxford University Press, 2011).

[23] Matthew Norton, "Classification and Coercion: The Destruction of Piracy in the English Maritime System," *American Journal of Sociology* 119, no. 6 (2014); Nicholas A. M. Rodger, *The Command of the Ocean : A Naval History of Britain 1649-1815*, (New York: W.W. Norton & Co., 2006); Nuala Zahedieh, *The Capital and the Colonies: London and the Atlantic Economy, 1660-1700*, (Cambridge: Cambridge University Press, 2010).

[24] John B. Hattendorf et al., "Part IV 1648-1714," in *British Naval Documents, 1204-1960*, ed. John B. Hattendorf, et al. (Aldershot: Scholar Press for the Navy Records Society, 1993), 189-92.

competition with state actors. Other investment parties, as in the case of Captain Kidd, financed privateering raids that sometimes ended up at odds with the government's policies. In a mercantile era, the domination of trade was the political goal and taxation of trade was the new source of revenue for the state. Increasingly, pirates became a nuisance and interfered with the globalizing trade relations between empires. A redefinition of the pirate and a concurrent shift of the line between the state and the empire enabled the British state to address piracy.

Finally, in part D, the mid-19th century case about the abolition of privateering, accounting for the situation of a dominant power, will be analysed.[25] The case was selected due to its importance in the history of privateering.[26] It represents a major change in a multi-century development of practices around the legitimacy of privateering, and demonstrates how actors' interests in the governance and stability of a commonly used space changed over time. At the time, Britain operated by far the strongest navy which protected its global colonial interests.[27] By the early 19th century, an increased interest in the protection of property at sea rendered the business of pirates increasingly dangerous. Multi-state efforts to eradicate pirates were undertaken. Mercantile companies retained their trading functions, but the state had taken over the political administrative aspects of territorial control and foreign policy. Industrializing Britain promoted a free-trade agenda, which dove-tailed with its global interests of exploiting profits made through trade. In such a position, privateering became a strategically dangerous and an

[25] Consulted primary sources include the Clarendon Archives and UK National Archives holdings on decision-making at the time. A comprehensive excellent secondary source is: Jan Martin Lemnitzer, *Power, Law and the End of Privateering*, (Basingstoke: Palgrave Macmillan, 2014).

[26] Ibid.

[27] The second largest naval power at the time, though considerably weaker than Britain, was France.

ideologically unviable option. Therefore, Britain had an interest in denying other states this option.

B. Elizabethan privateering

In English history, privateering is best known by the acts of the Elizabethan Sea Dogs. The voyages of Sir John Hawkins, Sir Francis Drake, and Sir Walter Ralegh not only brought wealth to themselves and their investors, but also inspired subsequent generations of English singers and playwrights. Besides their voyages against the Spanish in the New World, the English privateers formed a key part in the still fledgling Royal Navy. The Crown invested into the privateers, outfitted them with official protection duties for the state, and thus directed their efforts. Booty remained a significant motivation, as it spurred private interests to "share expense of the venture and partly because it might repay the queen's own outlay."[28] The English also used the skills and experience of the privateers, gained in attacking commerce abroad, for the defence of the home country.[29] For example, Sir Francis Drake and Sir John Hawkins served in the Royal Navy to fight against the Spanish Armada. Thus, privateering was used to augment national strength through militarily means, but also through contributing to a national identity.

Control over privateers was exerted through the admiralty, who tried to regulate the number of sailors involved in privateering and the targets that would be attacked by the issuance of privateering licenses. For example, it issued bonds outlining the expected behaviour of the privateers (i.e. the procedures that should be followed (e.g. pay the tenth

[28] Kenneth R. Andrews, *Drake's Voyages: A Re-Assessment of Their Place in Elizabethan Maritime Expansion*, (London: Weidenfeld & Nicolson, 1967), 117.

[29] However, this entailed significant risks. As Paul Kennedy pointed out, the privateers were "prone to alter carefully formulated plans in favour of rash enterprises and all too easily tempted by the prospect of plunder and glory into forgetting the national strategy." As an example he points to Sir Francis Drake's attack on the *Rosario*, abandoning the chase of the Armada. Kennedy, *The Rise and Fall of British Naval Mastery*, 38. See also Andrews, *Drake's Voyages: A Re-Assessment of Their Place in Elizabethan Maritime Expansion*, 130-31.

to the Lord Admiral or not to attack French ships)).[30] However, effective control was not guaranteed. At the end of the 16th century, the admiralty was weak. This weakness was rooted in an understanding that the admiralty was "at once a department of state under the authority of the Crown and a private province of liberty of the Lord Admiral."[31] The Lord Admiral's private profit out of his public function led to a loss of authority of the admiralty.[32] This is demonstrated, for example, by the judgements made by the High Court of the Admiralty being overturned by political interference on the part of the Privy Council.[33]

During the Anglo-Spanish War in the late 16th century, many merchants engaged in privateering to redress harm suffered by the Spanish. For example, members of the Levant and Barbary companies could "find in privateering an appropriate substitute for and supplement to their normal dealings. Inevitably their appetite grew with what it fed on, and privateering reinforced both their power and their ambition to penetrate an enemy's colonial trade."[34] Hence, with trade disrupted, the merchants and seamen had a strong incentive to engage in privateering. The result of the privateering was "a transformation of the English merchant fleet, and of the London merchant class, who owned so large a share of it."[35]

[30] As an example of such a bond see Benjamin Wood for the Challenger, 1959, HCA 25/3, 9, English privateering voyages to the West Indies, 1588-1595 : documents relating to English voyages to the West Indies from the defeat of the Armada to the last voyage of Sir Francis Drake., Cambridge University Press for Hakluyt Society, 2nd ser. , no. 111, Hakluyt Society.

[31] Andrews, *Elizabethan Privateering: English Privateering During the Spanish War, 1585-1603*, 30.

[32] Calendar of State Papers, Domestic Series, of the Reigns of Elizabeth and James I, Addenda, 1580-1625, Ed. Mary Anne Everett Green. London: Longman & Co., 1872, State Papers Online, Gale, Cengage Learning, 274.

[33] Andrews, *Elizabethan Privateering: English Privateering During the Spanish War, 1585-1603*, 26-27.

[34] Ibid., 112.

[35] Rodger, *The Safeguard of the Sea: A Naval History of Britain. Volume 1, 660-1649*, 295.

Naval historian Nicholas A.M. Rodger sums up the alliance between the royal household and private interests:

> This uniquely Elizabethan hybrid war effort, which made up for some of the weakness of royal finances by invoking private investment, was partly based on the long-standing pirate traditions of England in general, and the West Country in particular. The crown co-opted […] seamen capable of oceanic naval warfare – but the more it encouraged and depended on them, the less it controlled them. In peacetime, the crown frequently regarded piracy as a local problem for shipowners to sort out for themselves. In wartime, the patriotic pirate who only attacked foreigners could be sure of having public opinion on his side, whatever the diplomatic damage done by plundering neutrals.[36]

Not only professionals engaged in attacking foreign commerce. Many amateur seamen engaged in naval predation too. It presented a possibility to gain some income for a poorer part of Elizabethan society. Andrews concludes that the best the government could hope to achieve was to "direct the force of this popular movement against the queen's enemies."[37]

During the early years of James I's reign, the admiralty tried to reassert its authority. However, some privateers were hard to control. For example, problems arose when, after being knighted for his services to the court, the notorious privateer Sir Walter Ralegh did not stop looting, even after the peace treaty between James I and His Most Catholic Majesty.[38] Finally, James I had Ralegh executed. This episode is a case in point for one

[36] Ibid., 343.

[37] Andrews, *Drake's Voyages: A Re-Assessment of Their Place in Elizabethan Maritime Expansion*, 183.

[38] Willard Mosher Wallace, *Sir Walter Raleigh*, (Princeton: Princeton University Press, 1959); For Ralegh's defence of his actions see Apology in: Walter Ralegh, *Miscellaneous Works*, ed. William Oldys and Thomas Birch, 8 vols., vol. 8, The Works of Sir Walter Ralegh, (Oxford: Oxford University Press, 1829), 479-520.

of the problems that some scholars argue contributed to the abolition of privateering (i.e. the difficulty of controlling privateers).[39]

The technical innovations in naval warfare in the 16th century made invasion of a well defended island more difficult. For the English, this "meant that national defence could be organised more cheaply around a fleet which could also be used for offensive operations at long distance."[40] However, the capacity for strategic action at sea was still very limited by the small size of the fleet. [41]

The longer wars lasted, the more privateering was professionalized and institutionalized. At the end of wars, privateers were either integrated into the navy, worked on merchant ships, or became pirates.[42] The line between privateering and pirating was blurred. As Fernand Braudel noted, pirates could serve as a "substitute for declared war."[43]

Much discussion in Europe about piracy revolved around the North African Barbary corsairs, who frequently crossed the boundaries between privateering and piracy.[44] The legal history of piracy in this particular time is instructive.[45] Legal scholar Alfred Rubin explains that, in the late 16th century Alberico Gentili understood piracy as the "taking of foreign life or property not authorized by a sovereign."[46] A professor and advocate of the

[39] See e.g. Thomson, *Mercenaries, Pirates, and Sovereigns: State-Building and Extraterritorial Violence in Early Modern Europe*.

[40] Jan Glete, *Warfare at Sea, 1500-1650: Maritime Conflicts and the Transformation of Europe*, (London: Routledge, 2000), 161.

[41] Ibid., 163-64.

[42] Matthew S. Anderson, *War and Society in Europe of the Old Regime, 1618-1789*, (Stroud: Sutton, 1998), 57; Michael Arthur Lewis, *The History of the British Navy*, (Harmondsworth: Penguin Books, 1957), 74-75.

[43] Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, 2 vols., (Berkeley: University of California Press, 1995), 865.

[44] On the Barbary corsairs, see Oded Löwenheim, *Predators and Parasites: Persistent Agents of Transnational Harm and Great Power Authority*, (Ann Arbor: University of Michigan Press, 2007).

[45] Alfred P. Rubin, *The Law of Piracy*, International Law Studies, (Newport, R.I: Naval War College Press, 1988).

[46] Ibid., 20.

Spanish in England, Gentili switched opinions on the legitimacy of the Barbary corsairs several times during his career.[47] Before him, Jean Bodin had argued that the Barbary pirates, despite their criminal conduct, became lawful due to the Ottoman Sultan's sovereign authorization, conferring lawful combatant status upon them.[48] Thus, Bodin's sovereignty based argument reflected the legal distinction between privateering and piracy made at the time.[49] It put much emphasis on the necessary existence of a recognized, lawful sovereign, in absence of which, acts at sea could be labelled piratical. Strategically, this was of interest, as it gave sovereigns large flexibility in framing activity as piratical. For example, when convenient, states could not recognize the Barbary states as sovereign, and hence deny any activity to be lawful privateering. The Spanish, Portuguese, and Italians, who suffered most from the Barbary threat were especially interested in this.[50] Much of the debate at the time concerned the status of the United Provinces.[51] Gentili accepted Bodin's argument about the Barbary corsairs being sovereigns, but argued that, under the law of nations, they did not wage war for a just cause, but only for private gain, like pirates.[52] He considered pirates to be enemies of mankind, "who broke off every bond with society of mankind as a whole and should be considered as common criminals, not lawful belligerents."[53]

[47] Claire Vergerio, "Alberico Gentili's De Iure Belli: An Absolutist's Attempt to Reconcile the Jus Gentium and the Reason of State Tradition," *Journal of the History of International Law* 19 (2017): 14.

[48] Walter Rech, *Enemies of Mankind: Vattel's Theory of Collective Security*, ed. Martti Koskenniemi, vol. 18, The Erik Castrén Institute Monographs on International Law and Human Rights, (Leiden: Martinus Nijhoff Publishers, 2013), 53.

[49] Ibid., 54.

[50] Ibid., 101.

[51] For more on the debate of the status of the United Provinces see C. G. Roelofsen, "Grotius and the International Politics of the Seventeenth Century," in *Hugo Grotius and International Relations*, ed. Hedley Bull, Benedict Kingsbury, and Adam Roberts (Oxford: Clarendon Press, 1990).

[52] Rech, *Enemies of Mankind: Vattel's Theory of Collective Security*, 18, 59.

[53] Ibid., 56.

Contrary to that, Alfred Rubin contends, Hugo Grotius understood pirates as "individuals whose primary object was plunder regardless of place."[54] The pirate offended humanity, as commerce and property was part of the fundamental human nature.[55] Hence, the status of the Barbary corsairs was not directly impacted by their sovereignty claim to the Ottomans, but by whether their acts were self-interested acts against property (as opposed to political struggles for a community). To back up his points, Grotius also observed that historically there were several instances of pirate communities turning into lawful sovereigns.[56] He looked to the ancient law of nations for justification of the Barbary corsairs. He argued that, just as the Romans had extended the right to enslavement and *postliminy* not only to Romans themselves, but also to "free and independent peoples," who had no relationship to Rome, the same should be applied to the Barbary corsairs.[57] The argument between Gentili and Grotius reflects the struggles between the European nations at the time, who each tried to find justifications for their actions against or in cooperation with pirates and privateers, and, in the case of the United Provinces, argue for the existence of its own sovereignty.

Even though England profited from privateering, both by disrupting enemy commerce and as a source of income, privateering also brought disadvantages. It was a lucrative undertaking for the sailors. Serving on a privateer was associated with better food, and the individual seaman took a higher share in the prizes than in the Royal Navy. Consequently, many of the most able seamen served as privateers not as sailors in the navy. Over time, the Royal Navy addressed the competition for skill by impressment

[54] Rubin, *The Law of Piracy*, 66.

[55] Amedeo Policante, *The Pirate Myth: Genealogies of an Imperial Concept*, Glasshouse Book, (New York: Routledge, 2015), 138.

[56] Rech, *Enemies of Mankind: Vattel's Theory of Collective Security*, 18.

[57] *Postliminum* is a Roman law concept referring to the rights to the spoils of war. It is especially important in this context, for whether property can be transferred by the warring party or not (in Roman law, pirates cannot transfer property). Ibid.

(forcing sailors to join the navy) and improving working conditions on royal vessels. Privateering also fostered a relative state of lawlessness, incentivising corrupt practices and generally undermined the sovereign's power and authority.[58]

Privateering as a strategy of war could distract from the more formal naval efforts of building the Royal Navy. Indeed, the Elizabethan navy consisted of men who had "grown up in the school of oceanic trade and plunder and remained promoters and leaders of the privateering war."[59] These interests were so strong that they delayed the formation of a formal state navy.[60]

This late 16th century Elizabethan privateering case depicts a weak state, which was not yet administratively integrated. The admiralty was serving both a public and private function. There were wide freedoms for the privateering parties to undertake deep-sea raiding, as long as the targets were politically favourable. Privateering transformed the London merchant class, as the joint investment (and risk-sharing) into privateering was an appreciated way of profit making during times of conflict. However, when the war with Spain ended, a generation of privateers was still trying to capitalize on their tried and tested skills.

Whilst the late 16th century case illuminated the constellation between the sovereign, merchants, and privateers, the 17th century case will introduce the interaction between the most prominent English mercantile company, the East India Company, and pirates.

[58] Gijs A. Rommelse, "An Early Modern Naval Revolution? The Relationship between 'Economic Reason of State' and Maritime Warfare," *Journal for Maritime Research* 13, no. 2 (2011): 143.
[59] Andrews, *Drake's Voyages: A Re-Assessment of Their Place in Elizabethan Maritime Expansion*, 185.
[60] Ibid.

C. Late 17th century: the East India Company and piracy

During the second part of the 17th century, the status of privateers changed. The no peace beyond-the-line practice became untenable, not least due to an expanded and regularized trade network of different states. In the mid-17th century, the Spanish claims of jurisdiction over the sea collapsed completely with the recognition of Dutch and English overseas territories.[61] The European imperial states expanded their purview of international relations and gradually integrated their colonial relations into rule-based European politics.[62] This rendered the chaotic and ambiguous use of privateers/pirates beyond-the-line increasingly untenable. A tightening of control over privateering and a war on pirates was the result. However, that is not to say that privateering stopped. French privateers (*corsairs* and *filibustiers*) became increasingly active. While English privateers were used as a tool of influence alongside the growing navy, the *corsairs* were used as a primary tool of naval warfare (*guerre de course*).[63] For France, *corsairs* provided an ideal weapon against the English, who, comparatively, relied more on foreign trade.[64] However, this emphasis on the *guerre de course*, which was supported by the profiting investment circles, shifted the (limited) funds and efforts away from building a more formal naval capacity.[65]

[61] Of relevance for the Dutch is the Treaty of Münster in 1648 acknowledging their sovereignty and right to trade in the New World, whereas for the English the Treaties of Madrid (1667, 1670) recognized the English territories. Matthew Norton, "Culture and Coercion: Piracy and State Power in the Early Modern English Empire" (PhD Thesis, Yale University, 2012), 81-82.

[62] Ibid., 83-86.

[63] Anderson, *War and Society in Europe of the Old Regime, 1618-1789*, 97-98, 147.

[64] Kennedy, *The Rise and Fall of British Naval Mastery*, 79.

[65] The degree of choice should not be overstated, however, as the French did not have the financial means to invest in a navy comparable with the British. In addition, there was much enthusiasm for privateering. For more details, see Halvard Leira and Benjamin de Carvalho, "Privateers of the North Sea: At Worlds End - French Privateers in Norwegian Waters," in *Mercenaries, Pirates, Bandits and Empires: Private Violence in Historical Context*, ed. Alejandro Colás and Bryan Mabee (London: C. Hurst & Co., 2010), 60-62.

During the 17th century trade expanded massively. Whilst early 16th century English efforts were based on emulating the Spanish model of expansion with the aim of gaining bullion, during the 17th century English ambitions transformed towards inner-imperial trade. The Navigation Acts of 1651 forced all English colonial trade to be carried by English vessels, which resulted in tensions with other countries (e.g. Anglo-Dutch wars), but also had the effect of strengthening English mercantile interests. Still mercantile in nature, but focused on making England the profiting trading centre, this transition resulted in the growing importance of merchant interests in English political life.[66]

Philip J. Stern made an excellent case about how to understand the East India Company, which was founded in 1600, on its own terms: as a corporation with political, economic, and social effects.[67] He persuasively argued that understanding the company as an own body politic, recovering the political programmes and ideas from the correspondence of its officers, allows for an assessment of the company that goes beyond a mere "quasi-state" actor. Consequently, he calls it a "company-state". This insight is important: the historiography of the English state formation does point to a diverse set of coexisting political corporations – the state being just one of them – at the end of the 17th century. Whilst the absolutist vision of the hierarchical state existed at that point in time, it was exactly that: a vision and not reality.[68] As such, it is important to understand the company as a polity of an own kind, co-inhabiting an early-modern world of multiple types of polities. The company was itself a political player in different other political systems (e.g. the Mughal's Court). It did assume sovereign-like functions abroad. For example, it had the right to raise an army and to declare war. Thomson read these practices through a state

[66] For an account making this argument based on extensive data sources, see Zahedieh, *The Capital and the Colonies: London and the Atlantic Economy, 1660-1700*.

[67] Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundation of the British Empire in India*.

[68] An example of the absolutist political vision of the state can be found in Thomas Hobbes' Leviathan.

formation lens: "at the heart of these practices was the state-building process. To attain wealth and power promised by overseas expansion, states empowered nonstate actors to exercise violence," as the states' capabilities were insufficient or too constrained.[69]

However, this claim assumes that the English "state" was already formed to a degree where it could "empower" a non-state actor. At least for the early period of the East India Company (i.e. in the 17th century), the company had its own body politic. Whilst the English state granted the company charters, they were "often more tenuous claims on [rather] than authoritative dispensations of authority."[70]

Thus, the East India Company operated in multiple spaces of political authority: it secured an authority to trade both from the English Crown and from the Mughal emperor, formally submitting to both. In the Mughal empire, it inserted itself into the local political fabric, submitting to local rule in order to be allowed to trade. By submitting to the Mughal as "exotic vassals" and thereby confirming his authority to rule universally, the European mercantile companies strengthened the Mughal's power.[71] In smaller island polities in South-East Asia, local rulers used "stranger king" norms to accept companies as foreign suzerains, using it "as a means of strengthening their own authority."[72]

Thus, certainly when it suited the company, it used its position as a group of "mere merchants", who were only interested in peaceful trade.[73] Nevertheless, the company operated its own foreign policy, made deals with other companies or states, or was at war

[69] Thomson, *Mercenaries, Pirates, and Sovereigns: State-Building and Extraterritorial Violence in Early Modern Europe*, 67.

[70] Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundation of the British Empire in India*, 12.

[71] Andrew Phillips and Jason C. Sharman, "Explaining Durable Diversity in International Systems: State, Company, and Empire in the Indian Ocean," *International Studies Quarterly* 59, no. 3 (2015): 444.

[72] Ibid.

[73] Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundation of the British Empire in India*, 122.

with them, engaging in open warfare, piracy, and privateering, sometimes independently and against the interests of the home state.[74] For a long time, the mercantile companies ruled vast territories. It is important to highlight the political economy of this: in a mercantilist economy, the political and the economic were not functionally differentiated. John Anderson wrote that "the term *mercantilist* reflects the symbiotic alliance between the state and the commercial interests in pursuit of power and wealth at the expense of other states."[75] The use of violence allowed mercantile companies to establish trade monopolies. In Britain, a slow process of incorporation merged the company and the state and eventually rendered the company commercial.[76]

Scholars have struggled to classify the various surges of piracy into defined periods. However, they agree that one peak in piratical activities occurred in the Indian Ocean in the mid-1690s, which triggered a reconfiguration of English policy towards piracy with important impacts on the Golden Age of piracy (1716-1726).[77] The policy change was partially the result of a joint interest between the East India Company and the English government.

The case of Captain Kidd can illuminate the interdependence of piracy with the mercantile interests and state power as exercised by the Royal Navy. By the end of the 17th century, the English imperial state depended on stability. The merchants were interested in monopoly profits and depended on stable trade-routes, whilst the enlarged

[74] Thomson, *Mercenaries, Pirates, and Sovereigns: State-Building and Extraterritorial Violence in Early Modern Europe*, 61-62.

[75] Anderson, "Piracy and World History: An Economic Persepctive on Maritime Predation," 91.

[76] Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundation of the British Empire in India*, 15. Others companies went bankrupt, had their royal charters removed, or merged with other companies.

[77] Starkey, "Voluntaries and Sea Robbers: A Review of the Academic Literature on Privateering, Corsairing, Buccaneering and Piracy," 140-41; Mark Shirk, "'Bringing the State Back in' to the Empire Turn: Piracy and the Layered Sovereignty of the Eighteenth Century Atlantic," *International Studies Review* (2016).

administrative apparatus valued "routine and discipline."[78] Specifically the East India Company wanted a kind of *imperium*[79] over the trade to the East Indies: it wanted to control all Englishmen and the ships passing across specific sea lanes requiring passes from the company. It also wanted authority over some coastal territory and people in the East Indies.[80] It was dissatisfied with English interlopers (i.e. traders that did not respect its monopoly). While pirates did not pose a concern to the East India Company itself, it saw them as an extreme form of interloper. Politically, the company used the fight against pirates to advocate for its authority to control trade more generally. Hence, the fight against piracy became a "claim to be able to draw fundamental distinction between just and unjust violence, public and private right, and honourable and dishonourable behaviour at sea."[81]

The last decade of the 17th century was financially, economically, and politically challenging for the East India Company: English exports were down and the Whig rise in parliament led to a challenge of the monopoly of the company. At the same time, piracy was flourishing. Many pirates originated from North America, where they set out "under cover of privateering against France, and with the discreet encouragement of Whig political interests in London."[82] English pirates, did not refrain from attacking ships of local rulers in the colonies.[83] In India, after a piratical attack by Henry Avery on a Mughal

[78] Ritchie, *Captain Kidd and the War against the Pirates*, 128. However, the East India Company also applied for privateering licenses, see for example: Commission for Taking French Ships, 1694, IOR/H/36, 63-64, Miscellaneous papers, India Office Records and Private Papers, British Library.

[79] *Imperium* is used here in the sense of the early modern period: described as sovereignty by David Armitage, *Foundations of Modern International Thought*, (Cambridge: Cambridge University Press, 2012), 124. Keene captures *imperium* (as opposed to *dominium*) as "rights to ruleship over people" Edward Keene, *International Political Thought: A Historical Introduction*, (Cambridge: Polity, 2005), 103.

[80] Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundation of the British Empire in India*, 136.

[81] Ibid.

[82] Rodger, *The Command of the Ocean : A Naval History of Britain 1649-1815*, 162.

[83] Extract of Letters Sent [to] the East India Company from Severall Parts of India, 1697, IOR/H/36, 323-325, Miscellaneous papers, India Office Records and Private Papers, British Library.

pilgrim ship, the Mughal forced the Dutch, French, and English to provide protection from English-speaking pirates on the pilgrimage and to reimburse the losses suffered by threatening to shut down their trade.[84] The Dutch fuelled the Mughal's perception that all pirates were English by ordering "their officials to send any captured English pirates to Surat for delivery to the governor."[85]

In 1695, Captain William Kidd was engaged as a privateer and was issued with a letter of marque to attack French vessels and pirates.[86] His backers were powerful Whig lords that expected a financial profit from the undertaking. Kidd left England as part of the English anti-piracy policy. However, it was during the years that Kidd was away, fuelled by the impact of the piratical exploits of Captain Henry Avery, that the English government policy changed. Kidd's actions were qualified under a different political climate than when he left.

Kidd's attack on the *Quedah Merchant* was particularly significant for his future prosecution.[87] Kidd attacked an Armenian merchant, flying "French Colours with a design to decoy,"[88] which carried goods that belonged to Abdul Ghaffur, who was close to the Mughal Aurangzeb's court. This had a direct impact on the East India Company trade. The company was forced to provide convoy protection to the Mughal's ships going

[84] Surat to London, 9. September 1696, IOR/E/3/52, 147, East India Company Original Correspondence, India Office Records and Private Papers, British Library.

[85] Ritchie, *Captain Kidd and the War against the Pirates*, 132.

[86] Registered Declaration for the Letter of Marque for the Adventure Galley, 11. December 1695, HCA 26/3, 59, Records of the High Court of Admiralty and Colonial Vice-Admiralty Courts, The National Archives. See also: Bond for the Letter of Marque for the Adventure Galley, 1695, HCA 25/12, Part 2, Records of the High Court of Admiralty and Colonial Vice-Admiralty Courts, The National Archives.

[87] High Court of Admiralty, *The Arraignment, Tryal, and Condemnation of Captain William Kidd, for Murther and Piracy, Upon Six Several Indictments, at the Admiralty-Sessions, Held by His Majesty's Commission at the Old-Baily, on Thursday the 8th. And Friday the 9th. Of May, 1701*, (London: Printed for J. Nutt, 1701).

[88] Narrative of the Voyage of Captain William Kidd Commander of the Adventure Galley from London to the East Indies, Received in London 20. September 1699, 7. July 1699, CO 5/860, 200, Records of the Colonial Office, Commonwealth and Foreign and Commonwealth Offices, Empire Marketing Board, and Related Bodies, The National Archives.

forward.[89] The company reported on Kidd's activities in detail and pushed for a prosecution in London.[90] Their lobbying paid off: Whitehall first requested more intelligence about the pirates and later issued the long sought after commission to fight pirates in the East Indies.[91] Whitehall informed Mr. Blackbourn, Secretary to the East India Company, on 21. November 1698: "If there be anything more that the company judges proper to be done for vindicating the honour of the nation against the calumnies raised in India, and for the security of the factories there, I desire you will let me know it."[92] The prosecution impacted the Whig Lords, who dropped their support for the mission, to forgo any additional embarrassment. Captain Kidd tried to fend off the accusations by proofing his innocence. However, two French passes were key to his defence strategy, which went missing before his trial.[93] Captain Kidd, without help from his political supporters, faced trial and was hung a pirate.[94]

The case of Captain Kidd is interesting for two reasons. Firstly, it is an example of how enforcement could be tightened when raids of ships "threatened the interests of powerful

[89] To the Kings Most Excellent Majestie. The Humble Petition of the Governors of the Company of Merchants of London Trading into the East Indies, 1698, IOR/H/36, 420-421, Miscellaneous papers, India Office Records and Private Papers, British Library.

[90] Company Letters from India to London., 1698, IOR/H/36, 385-391, Miscellaneous papers, India Office Records and Private Papers, British Library.

[91] Letter to Mr. Blackburn Secretary of the East Indies Company, 2. August 1698, CO 324/6, 313-314 (old marking: 157-158), Records of the Colonial Office, Commonwealth and Foreign and Commonwealth Offices, Empire Marketing Board, and Related Bodies, The National Archives; Proclamation About Pirates in East India, 8. December 1698, PC 2/77, 276-277, Records of the Privy Council and other records collected by the Privy Council Office, The National Archives.

[92] Vernon to Blackbourn, 21. November 1698, IOR/H/36, 392, Miscellaneous papers, India Office Records and Private Papers, British Library.

[93] The passes were sent over America by his sponsor, Lord Bellomont. See long abstract of items sent in the letter dated 26. July 1699, received in London on 20. September 1699 (158). Amongst the items are the two "missing" French passes (159-162), as well as witness statements from various mariners, including a narrative of the voyage by Capt. Kidd himself (199-202). See: Lord Bellomont to London, 7. July 1699, *letter and materials re Kidd's activities*, CO 5/860, 158-202, Records of the Colonial Office, Commonwealth and Foreign and Commonwealth Offices, Empire Marketing Board, and Related Bodies, The National Archives.

[94] High Court of Admiralty, *The Arraignment, Tryal, and Condemnation of Captain William Kidd, for Murther and Piracy, Upon Six Several Indictments, at the Admiralty-Sessions, Held by His Majesty's Commission at the Old-Baily, on Thursday the 8th. And Friday the 9th. Of May, 1701*.

merchants."[95] The exceeding of a commission did not consistently lead to the prosecution as pirates. To the contrary, attacks against traders of rivals were often strategically ignored.[96] Secondly, the time period encapsulates both the expansion of the capabilities of the Royal Navy and an expansion of piracy (what some call the "Golden Age of piracy").[97] It demonstrates how the East India Company, facing a political standoff abroad, was able to use piracy as a political opportunity to gain the government's support for the company's ambition to control the English subjects in the East Indies more generally. It used the negotiation with the Mughal court around the protection of his ships to create leverage over the Mughal. For example, it argued that in order to provide adequate protection, the Mughal's ships needed company passes, lest they be mistaken as pirates.[98]

Raiders naturally tried to avoid capture and disposed of raided goods outside of the official prize courts. However, attacks against commerce were often justified by the use of different flags and commissions. Captains had elaborate defence strategies. As Benton notes:

> They [the mariners who were defined as pirates by their enemies] offered creative interpretations of the terms of their commissions, purchased or falsified commissions, feigned ignorance of peace treaties and carried multiple flags and

[95] Benton, "Toward a New Legal History of Piracy: Maritime Legalities and the Myth of Universal Jurisdiction," 231.

[96] Ibid., 239.

[97] On the expansion of the Royal Navy see the very useful appendices which reflect the build-up of the Royal Navy in the conflict with France during the last two decades of the 17th century. In: Rodger, *The Command of the Ocean : A Naval History of Britain 1649-1815*.

[98] See Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundation of the British Empire in India*.

set of papers – all strategies claiming the legitimacy of their actions based on the sponsorship of particular sovereigns.[99]

The self-identification of raiders as pirates (e.g. by raising the black flag) was the exception rather than the rule. The pirates of the late Golden Age were an exception, in that some actively rejected the English state. This is substantively different, for example, from Henry Avery who self-identified as an "Englishmen's friend."[100]

In the 18th and early 19th centuries the British state responded with a comprehensive set of policies, for example, offering incentives to pirates (including amnesties), implementing legal reform in the colonies to prevent offering a market to pirated goods, and sending the Royal Navy to destroy pirates' home bases.[101] Increasingly, reprisals were settled diplomatically.[102] This differentiation of policies between piracy and privateering has to be analysed in light of the increasing power of navies supported by a thickening administrative body, the integration of privateering in a strategy of naval warfare, and the decreasing usefulness of pirates due to their negative impact on trade.[103] The navy had grown during wartime and merchants demanded protection. In return, the state levied taxes, which would stay around in peacetime.[104] This mirrors the state-building by war making argument as told by historical sociologists such as Charles Tilly.[105] However, Shirk reads the English state's measures introduced against piracy of

[99] Benton, "Toward a New Legal History of Piracy: Maritime Legalities and the Myth of Universal Jurisdiction," 227.

[100] To Their Exellencies the Lords Justices of England. The Humble Petition of the Governour & Company of Merchants of London Trading into the East Indies, 16. July 1696, IOR/H/36, 191, Miscellaneous papers, India Office Records and Private Papers, British Library.

[101] Kennedy, *The Rise and Fall of British Naval Mastery*, 164-65, 71; Earle, *The Pirate Wars*.

[102] Ritchie, *Captain Kidd and the War against the Pirates*, 146-51.

[103] Bryan Mabee, "Pirates, Privateers and the Political Economy of Private Violence," *Global Change, Peace & Security* 21, no. 2 (2009).

[104] Ritchie, *Captain Kidd and the War against the Pirates*, 158.

[105] Charles Tilly, "War Making and State Making as Organized Crime," in *Bringing the State Back In*, ed. Peter B. Evans, Dietrich Rueschemeyer, and Theda Skocpol (Cambridge: Cambridge University Press,

the Golden Age as a re-aligning of the line of empire and the state.[106] Much like Stern analyses the East India Company as a company-state, Shirk reads early 18th century England as a state-empire hybrid polity. He observes that pirates forced a redrawing of boundaries between the state and empire. Changes in law, making piracy a universal crime, was a redrawing of what piracy meant.[107] "Pirates were legally extricated from the state and citizenry, an effective declaration that England would not be offended if an English pirate met justice in France."[108] Together with the changes in law, England instituted a new legal process. Instead of London or local colonial courts, pirates would now be tried by English Vice-Admiralty courts, presided by English judges, directly in the colonies. This resolved the tension of local courts being too close to the pirates versus London being too far away to have meaningful influence. It also enabled a standardization of policy across the colonies. Two additional measures reinforced this redrawing of boundaries. A tightening of control over the colonies via the appointment and replacement of governors willing to fight pirates. Furthermore, a strong anti-piracy propaganda campaign constructed a narrative of pirates being the outcasts of society, thereby strongly differentiating the colonists from the pirate. All three measures, the legal measures, the appointment of adequate personnel, and the propaganda campaign contributed to bringing the colonies closer to the English state, thereby redrawing the boundary between the empire and the state.

1985); Charles Tilly, *Coercion, Capital, and European States, A.D. 990-1990*, (Oxford: Basil Blackwell, 1990).

[106] Shirk, "'Bringing the State Back in' to the Empire Turn: Piracy and the Layered Sovereignty of the Eighteenth Century Atlantic."

[107] On the importance of changes in law crystallizing piracy as an object of action see Norton, "Classification and Coercion: The Destruction of Piracy in the English Maritime System."; Norton, "Culture and Coercion: Piracy and State Power in the Early Modern English Empire," 148; On the effect this had on colonial autonomy, see Rebecca A. Simon, "The Problem and Potential of Piracy: Legal Changes and Emerging Ideas of Colonial Autonomy in the Early Modern British Atlantic, 1670–1730," *Journal for Maritime Research* 18, no. 2 (2016).

[108] Shirk, "'Bringing the State Back in' to the Empire Turn: Piracy and the Layered Sovereignty of the Eighteenth Century Atlantic," 13.

Shirk also highlights the shift towards the collaboration between European states against pirates in a "recognition that the enemies to trade were no longer other states, as had been the case in the 17th century, but were instead non-state actors like pirates. It was in every trading state's interest to eradicate piracy and protect trade."[109] Thus, the term *hostes humani generis*, enemies of mankind, was transformed in use to label the outcast, the ones outside the society of states, who could not be legitimate combatants, and were therefore enemies of all. As the legal scholar Christian Wolff noted in the mid-18th century: those who engage in unjustified war, who transgress the law of humanity, and seek for war as an end in itself:

> cannot be said to wage war, but to practice brigandage, and are to be compared to robbers whose malice extends to the farthest limit. Therefore the right to punish them belongs to all nations, and by this right they can remove from their midst those fierce monsters of the human kind.[110]

This distinct late 17th century / early 18th century shift marked a move away from the legitimate state-sponsored piracy towards universal jurisdiction.[111] Universal jurisdiction implied that states could prosecute each other's nationals for crimes of piracy committed on the high seas. An example is renowned English pirate Captain Edward Lowe, who was hung in Martinique by the French, without any intervention by the British.[112] Pirates, thus, could not rely on state protection anymore.

[109] Shirk, "Pirates, Anarchists, and Terrorists: Violence and the Boundaries of Sovereign Authority," 133.

[110] Quotation was found in Daniel Heller-Roazen, *The Enemy of All: Piracy and the Law of Nations*, (New York, N.Y: Zone, 2009), 117. Original quotation from Christian Wolff, *Jus Gentium Methodo Scientifica Pertractatum*, ed. James Brown Scott, trans. Joseph Horace Drake and Otfried Nippold, vol. 2, Classics of International Law, (Oxford: The Clarendon Press, 1934), 319. §627.

[111] Shirk, "Pirates, Anarchists, and Terrorists: Violence and the Boundaries of Sovereign Authority," 131-32.

[112] Earle, *The Pirate Wars*, 205; Shirk, "Pirates, Anarchists, and Terrorists: Violence and the Boundaries of Sovereign Authority," 132.

The reinterpretation of the purview of European international relations to include the imperial world can thus be read as making possible the reinterpretation of piratical violence at sea. Whilst the Spanish governments once claimed vast parts of the oceans as their territory, in effect, by the early 18th century the disputes (e.g. between the English and the Spanish in the 1730s) were mostly about the degree of control over sea lanes, and no longer about the distinction of piracy and privateering. Questions of dispute were, for example, whether a government may search the ships connecting a foreign colony to its home state, or to what degree neutral trade could be interdicted if they carried enemy goods not acquired from the enemy.[113] These were questions that would rise to central importance in the debate on the abolition of privateering.

D. The abolition of privateering in the mid-19th century

British privateering flourished during the wars of the 18th century.[114] For example, to incentivise privateers in the War of the Spanish Succession, Queen Anne passed an English Prize Act that allowed privateers to retain all profits and introduced a bounty for prisoners taken.[115] By 1744, George II pardoned prisoners who volunteered to serve as privateers. In 1756, Britain introduced a policy that encouraged privateers to attack neutral ships trading French colonial goods (i.e. Dutch ships).[116] This spurred so much interest in privateering that the maritime insurer Lloyd's filed a complaint with the

[113] Benton, *A Search for Sovereignty: Law and Geography in European Empires, 1400-1900*, 152-53.

[114] David J. Starkey, E. S. van Eyck van Hesling, and Jaap A. de Moor, *Pirates and Privateers: New Perspectives on the War on Trade in the Eighteenth and Nineteenth Centuries*, Exeter Maritime Studies, (Exeter: University of Exeter Press, 1997).

[115] Great Britain, *The Statutes Relating to the Admiralty, Navy, Shipping, and Navigation of the United Kingdom from 9 Hen. III to 3 Geo. IV Inclusive : With Notes, Referring in Each Case to the Subsequent Statutes, and to the Decisions in the Courts of Admiralty, Common Law, and Equity, in England, and to the Scotch Law*, (London: s.n., 1823), 104-06.

[116] Daniel A. Baugh, *The Global Seven Years War, 1754-1763 : Britain and France in a Great Power Contest*, Modern Wars in Perspective, (Harlow: Longman, 2011).

government. The government responded by announcing a minimum vessel size, which raised the entry requirement for active privateers.[117]

In maritime warfare, one important figure for the navy's mobilization potential was the total number of able seamen. More than in land combat, naval capacity directly relied on a set of specialized maritime skills and expertise.[118] Thus, a standard assumption was that countries with larger merchant fleets could draw on a larger number of able seamen. Wartime demand usually exceeded peacetime supply.[119] At the beginning of a conflict, however, it was the speed of mobilization that determined who could project naval power quickly. For example, in the 18th century, the French "système des classes […] could recruit men up to a certain level of manpower, faster than the British practice of bounties backed by the press" and hence France had an advantage at the beginning of the mobilization.[120] However, due to the larger total number of skilled seamen, the British would enjoy an advantage in the later stages of mobilization.

British policy toward neutral ships was not well received by the Russians. In 1780, Catherine II reacted by enacting the Free Ships Free Goods policy, which allowed neutrals to trade with nations at war (excluding contraband), to denounce ineffective blockades, and to defend this policy by force if necessary (the so called "Armed Neutrality"). Other neutrals agreed with Russia. The renewal of this agreement in 1800 led to a convention

[117] 32 George II, c.25. ("Naval Prize Act" of 1758). For a recent study of privateering in that period, see Thomas M. Truxes, "The Breakdown of Borders: Commerce Raiding During the Seven Years' War, 1756-1763," in *Commerce Raiding: Historical Case Studies, 1755-2009*, ed. Bruce A. Elleman and Sarah C. M. Paine (Newport, Rhode Island: Naval War College Press, 2013).

[118] Richard Harding, *Modern Naval History: Debates and Prospects*, (London: Bloomsbury, 2016).

[119] Nicholas A. M. Rodger, "Mobilizing Seapower in the Eighteenth Century," in *Essays in Naval History, from Medieval to Modern*, ed. Nicholas A. M. Rodger (Farnham: Ashgate, 2009), 4.

[120] Ibid., 5.

between England and Russia in 1801, in which Russia gave up the Free Ships Free Goods policy in return for immunity from search by privateers.[121]

By the end of the 18th century, it was mostly the United States (in the War for U.S. Independence) and France (in the French Revolutionary war and later in the Napoleonic war) that employed privateers against Britain. Thus, privateering had "evolved into a weapon of the weak against the strong." However, "it was invented and encouraged by the 'strong' states of Europe, whose naval power was largely an outgrowth of privateering."[122]

Britain operated by far the strongest navy which protected its global colonial interests. By the early 19th century, the strong interests in the protection of property at sea rendered the business of pirates increasingly dangerous. After the Congress of Vienna in 1815, multi-state efforts to eradicate pirates were undertaken.[123] Mercantile companies retained their trading functions, but the state had taken over the political administrative aspects of territorial control and foreign policy. Industrializing Britain promoted a free-trade agenda, which dove-tailed with its global interests of exploiting profits made through trade. In such a position, privateering became a strategically dangerous and ideologically unviable option. As a consequence, Britain had an interest in denying other states this option.

[121] For more on armed neutrality, see the forum on neutrality, e.g. Silvia Marzagalli and Leos Müller, "'In Apparent Disagreement with All Law of Nations in the World': Negotiating Neutrality for Shipping and Trade During the French Revolutionary and Napoleonic Wars," *International Journal of Maritime History* 28, no. 1 (2016).

[122] Thomson, *Mercenaries, Pirates, and Sovereigns: State-Building and Extraterritorial Violence in Early Modern Europe*, 26.

[123] On the efforts against the Barbary states, see Caitlin M. Gale, "Barbary's Slow Death: European Attempts to Eradicate North African Piracy in the Early Nineteenth Century," *Journal for Maritime Research* 18, no. 2 (2016).

For the duration of the Crimean War, France and Britain agreed to extend the Free Ships Free Goods policy to the neutral powers.[124] In 1854, the United States launched a diplomatic offensive to try to persuade the European countries to settle this principle contractually. Britain, however, knowing that it would be difficult to revert to its former policy after the war, wanted something in return: the abolition of privateering. Lord Clarendon highlighted this difficulty of reverting back in his opening words in a letter to Prime Minister Palmerston on 6. April 1856: "It is quite clear that we can never again reestablish our ancient doctrines respecting neutrals, and that we must in any future war adhere to the exception to our rule which we admitted at the beginning of the present war, under pain of having all mankind against us."[125] He then proposed the tactic of at least getting something in return (the abolition of privateering), and links this as a direct response to U.S. maritime policy.[126]

The interest in this was both ideological and strategic.[127] Ideologically, some members of the liberal elite were appalled by the crude method of warfare. Strategically, Britain's naval commerce had become very large. In addition, the large merchant navy of the United States posed a risk even to the country with the largest navy in the world. Lecturing Lord Clarendon in a letter, Prime Minister Palmerston wrote on the 5. April 1856:

> Privateering is a Practice most inconvenient to the Power which has the largest number of merchant men at sea, and the least useful to the Power which has the largest War Navy. England is that Power and we should therefore willingly agree

[124] Great Britain, "British Declaration with Reference to Neutrals and Letters of Marque," in *British Foreign and State Papers, Volume 46* (London: H. M. S. O.), 36-37.

[125] Clarendon to Palmerston, 6. April 1856, *draft letter*, MSS. Clar. Dep. C. 135, 510-511, Clarendon Papers, Bodleian Library, University of Oxford.

[126] Ibid.

[127] Lemnitzer, *Power, Law and the End of Privateering*, 39-40.

to abolish that Practice in regard to all Powers which would enter into the same Engagement towards us.[128]

Considering the possible instability of the Anglo-French alliance, a U.S.-French alliance would have posed a direct risk to Britain's survival, a scenario feared by Britain. In contrast, the United States relied on being able to transform its considerable number of merchant cruisers into weapons of warfare and lobbied for its own proposal in European capitals.[129]

Meeting for a settlement of the Crimean War in Paris in 1856, the Congress of Paris decided to resolve some other questions of concern. France seized the opportunity to press for establishment of the Free Ships Free Goods policy as international law, proposing to concede to the British demand to abolish privateering.[130] Both France and Britain had not engaged in privateering since the Napoleonic wars, and besides Britain, France held the largest navy. As this policy option was evaluated in the context of a new U.S. proposal to protect private property at sea, Britain felt compelled to act. Prussia, having evaluated its policy options in an earlier U.S. proposal, was now ready to support the British proposal.

The declaration was passed and, in an invention of international public law, it was agreed that it would be widely circulated so that as many powers as possible could comply with it.[131] Most powers happily acceded as Britain, the predominant sea power, was finally ready to support a practice protecting neutral commerce. This agreement, however, left the U.S. out. Since there was a consensus among the parties of the declaration that no port

[128] Palmerston to Clarendon, 5. April 1856, *letter*, MSS. Clar. Dep. C. 49, 241-242, Clarendon Papers, Bodleian Library, University of Oxford.

[129] Lemnitzer, *Power, Law and the End of Privateering*, 48-51. See also: Clarendon to Palmerston, 6. April 1856, Clarendon Papers.

[130] Lemnitzer, *Power, Law and the End of Privateering*, 70.

[131] The option of other powers acceding was important to Lord Palmerston. See: Palmerston to Clarendon, 12. April 1856, Clarendon Papers.

may receive privateers, privateering was made practically impossible. A privateer would have to return to his home state to sell his prizes. During the U.S. Civil War, the northern states enquired about signing the Declaration of Paris to prevent the southern states from using privateers against commerce. At that time, though, the two parties were already in a state of belligerency, thereby losing the justification to sign away rights for the other party.

In summary: this chapter has given a historical account of the different constellations and framings between the major actors involved in the provision of naval (in-)security during three periods between the late 16th and mid-19th century. The chapter offered a historical narrative of mercantile companies, privateers, and pirates with an emphasis on their relations with states. The next chapter discusses the implications of the three actor contexts, the late 16th, late 17th, and mid-19th century, for the refinement and analysis of the analogy.

CHAPTER 4

The Sea and Cyberspace

HISTORY, COMPARISON, AND CONCEPTUAL REFINEMENT

Having identified the challenges that existed between pirates, privateers, and mercantile companies in three different historical contexts, this chapter contributes to answering the research question by making a claim about which periods in the history of sail can be most fruitfully compared to the actors in the contemporary context of cyber(in-)security. To make this claim, the chapter reviews the history of cyber(in-)security in order to identify the structure of relations between some of the main actors in this area of security affairs. The chapter then assesses the general comparability of the two domains: the sea and cyberspace. In the final part, it undertakes a conceptual refinement of the main actors and decides, how to compare the modern cases. It argues against the 19th century case as a useful analogue and recommends the late 16th and late 17th centuries as closer approximations to current trends. In so doing, the chapter specifies the scope for a more focused analysis of the modern-day case studies in the subsequent empirical chapters (Chapter 5 and Chapter 6).

Having split the historical analysis into three time periods raises the question of which time period or constellation of actors the present-day situation can be usefully analogized to. To answer this, part A features a short history of cyber(in-)security drawn from secondary sources, and highlighting the interaction between state security interests, global technology companies and internet providers, and users in the development of cyber(in-)security. It traces how cyber(in-)security was shaped and perceived by these different actors. Part A finds that corporations' role in the provisioning of cybersecurity grew more important and complex over time. They had cooperative and conflictive

interests with other actors, including states. Explaining the challenge of signals intelligence in a digital era, part A traces how cyber(in-)security became a topic of interest for states, and how they sought strategies to expand their influence both overtly and covertly. It thus identifies the main structures of interaction between the modern actors of interest, which will be analysed in-depth in the subsequent chapters.

Based on the historical analysis in Chapter 3 and part A, part B assesses the general comparability of the two domains, the sea between the late 16th and mid-19th century and cyberspace. It concludes that there are many shared characteristics of insecurity observed in both domains, and, whilst the differences do not alter the fundamental structure of the insecurity problem, they do change our assessment of the expected speed of interaction, the range of possible potential policy solutions, as well as our expectations of the stability of insecurity reproduced across time.

Part C then discusses the impact the historical research has on the conceptualization developed in Chapter 2. It includes a discussion of the findings in light of the spectrum of state proximity, crystallizes the differing types of relationships of the actors with the state and amongst one another, and builds on the richness of the different historical constellations encountered throughout the previous chapter. The historical insights from the sea and cyberspace are used to re-examine the conceptualization of the different actors introduced in Chapter 2. The key insights identified in the historical research process include: narratives of piracy, the evolution and transformation of interests in privateering, longevity and path dependency, the evolution of mercantile companies, and the abolition of privateering. Each of these are discussed, their impact on the conceptualization of each actor evaluated, and the security dynamics between the actors analysed. Part C finds that the initial conceptualization of pirates as non-state actors in Chapter 2 missed the nuances of the connection to the state in the different narratives of piracy. Accordingly, it

integrates the narrative conceptualization of the relationships between pirates and states from the study of pirates. Furthermore, part C finds that the actors' goals changed over time. Whilst early expansion was enabled by adventurism, the will to proselytize, and predation, the growing interest in trade during the 17th century created incentives for stability. Concurrently, having taxed the expansion of seafaring, governments had more resources to build dedicated state capabilities. This has implications on the structure of the analogy. To usefully locate the cyber(in-)security challenge in time, the characterization of the environment as exploratory and predatory or more trade-like is of importance. Furthermore, the notion of pirates as enemies of mankind is of importance for the comparison of cyber criminals to pirates. Part C argues against the 19th century case as a useful analogue, as both the absence of the state as the provider of security and the lack of a clear dominant state in cyberspace indicate severe differences. Following that claim, throughout the rest of the thesis, the refined concepts for analysing mercantile companies, privateers, and pirates, based on the understandings built from the late 16th and the 17th century cases, will be used to investigate their utility in understanding actors in cyber(in-)security. Part C concludes with proposing a way to study the cyber pirates, privateers, and mercantile companies following three main lines of inquiry. First, the background of the history of contestations in piracy and privateering sets out a pathway of how to better understand how state proximity, and the ambiguity thereof, is a political play used strategically by both attackers and defenders. Second, the longevity and path dependencies of historical privateering setups suggest a focus of the inquiry on the constancy, and the long-term risks and rewards, of state collaboration with cyber criminals. Finally, the mercantile company lens suggests focusing on how cooperative and conflictive relations of large technology companies to states, and their practices of self-protection, influence cyber(in-)security.

A. The origins and development of (in-)security in cyberspace

Compared to the history of privateering, the history of cyberspace and its security challenges is relatively short. This part highlights the emergence of different actors and their interactions with the government in the cyber domain so as to gain a historical understanding of the problems of cyber(in-)security from different actors' perspectives. Three perspectives are integrated into a narrative history of cyber(in-)security: governments, large technology and telecommunication companies, and users. The governmental perspective highlights how cyber(in-)security is at once an opportunity and a challenge to governments. By incorporating high-profile incidents, it is argued that, to understand the governmental perspective, one has to understand cyber(in-)security's historical embedding in signals intelligence. For this reason, digital network intelligence as a challenge is explained, and it is argued that it is one of the drivers for collaboration between governments and the large technology and telecommunication companies. The corporate perspective focuses on the emergence of companies as early investors that exploit opportunities, take risks, and pioneer new markets. Their converging and conflicting interests with other actors will be highlighted. Important cases of such interactions lay the foundation for the in-depth empirical analysis in Chapter 6. For example, a constellation, in which a state actor attacked a large technology company, Google, in 2010 highlights the complex problems arising from non- and semi-state agency. Finally, the user perspective highlights how individuals have been neglected parties when it comes to cybersecurity.

The research of the historical actors on the sea has highlighted the importance of state and private interaction in exploiting the opportunities offered by oceanic travel and predation. The state facilitation and enablement of privateering and mercantile companies transformed the mercantile class in London. Similarly, cyberspace and especially the

internet, expanded rapidly as a result of commercialization and advances in personal computing, especially from the early 1990s onwards. The internet, enabled by government funded technology, the liberalization of telecommunications markets, and, at first, a mainly government and academically used inter-network, was quickly used and expanded by companies.

Different actors have shaped the trajectory of the development and the norms associated with cyberspace. Early proponents, mainly from the United States, focused on an open, unregulated network. With the expansion of the network, states started to realize the vulnerabilities that became apparent when analysing the relatively unchecked interconnectivity with the rest of the world. Alongside the increase of a technically literate user base, attacks arose. At first, Computer Emergency Response Teams (CERTs) were formed (e.g. Carnegie Mellon University's CERT/CC in 1988) to respond to the technical challenges of the growing number of threats. CERTs started cooperating internationally by sharing data about vulnerabilities and attacks.[1] While performing the same basic defensive functions, however, the diversity of national political systems and practices created challenges for cooperation.[2]

With increased end-user connectivity, the role of companies in the protection of consumers grew more important and complex. Companies have also reacted to the insecurities demonstrated by the various viruses and worms circulating in the 1990s and early 2000s. For example, Bill Gates, who was the CEO of Microsoft at the time, announced trustworthy computing as the number one priority for the company in 2002. He outlined a ten-year vision of computing becoming an "integral and indispensable part

[1] European Union Agency for Network and Information Security (ENISA), "CERT Cooperation and Its Further Facilitation by Relevant Stakeholders," Heraklion:ENISA, 2006.

[2] Nazli Choucri, Stuart Madnick, and Jeremy Ferwerda, "Institutions for Cyber Security: International Responses and Global Imperatives," *Information Technology for Development* 20, no. 2 (2014): 106.

of almost everything we do."[3] Consequently, security needed to be integrated from the ground up. His vision though, of computing being as reliable and risk-free as using electricity or water, has not become reality. Rather, security for consumers was delivered in a piecemeal fashion, as a patchwork between fundamental improvements in operating systems and protection using cloud services. Consumers were taught to use anti-virus products (which increased the visibility of customer data by security vendors) and to choose strong passwords for authentication. Both have turned out to be ineffective against increasingly skilful and complex attacks. After the end of the millennium dot-com boom, the market consolidated and a few winners emerged: Microsoft, Apple, and later Google provided the largest share of endpoint operating systems, while Google, Amazon, and later Facebook offered the largest share of online services. Consumers' security would henceforth be directly impacted by the business decisions made by those companies. A few large telecommunication companies that provided international distribution of internet traffic (examples are Alcatel-Lucent, AT&T, British Telecom, Cable & Wireless, Deutsche Telekom, Level 3, Telefónica, Verizon, or Vodafone) were less overt, but equally important in terms of access to data flows. Many were formerly state-owned telecommunication and telegraph companies that had been privatized during the second half of the 20th century. The networking equipment was provided by a few large hardware manufacturers (e.g. Cisco, Huawei, Juniper Networks, or ZTE). With increasing interconnectivity, technology and telecommunication companies became important players in the protection of key societal functions.

States labelled the providers of these key societal functions as critical infrastructure. The realization that the interconnectivity of critical infrastructures posed new risks to national

[3] William H. Gates, III, "Trustworthy Computing", 15. January 2002, *e-mail communication to Microsoft Staff*, Microsoft Company Timeline, Microsoft Webpage, https://perma.cc/78NQ-EZSM.

security drove two different state responses.[4] First, since the infrastructures were mostly owned by the private sector, increasing collaboration between the government and corporations became a necessity. In the U.S., various iterations of cybersecurity policies would pick up on that need, including public-private partnerships, information sharing centres, as well as government provided intrusion prevention capabilities. Second, militaries and intelligence agencies anticipated the increasing role that the control of, and attacks against, networks would play in their respective future operating environments. Consequently, the U.S. military developed its policy of information warfare of the early 1990s into a fully operational cyber command structure (U.S. CYBERCOM).

Growing out of the capabilities of traditional signals intelligence (SIGINT), many states have teams working on ways to exploit cyberspace for their own interests. The foreign intelligence value of the internet was highlighted in a U.S. counterintelligence operation codenamed "Moonlight Maze."[5] The operation was mounted in 1998 and investigated a set of intrusions that were traced back to 1996 and were targeting key military, government, and academic systems. At the time the intrusions were traced back to Russia. However, the espionage campaign never stopped, and some of the attack infrastructure remained technically linkable to attacks occurring up to the present day.[6]

Whilst the increasing use of computers would eventually offer vast opportunities for spying, it was first perceived a challenge to SIGINT agencies due to the increasing use of

[4] Myriam Dunn Cavelty, *Cyber-Security and Threat Politics: U.S. Efforts to Secure the Information Age*, CSS Studies in Security and International Relations, (London: Routledge, 2008).

[5] That year, there were at least two other operations that caused a stir. One was Solar Sunrise, traced back an Israeli hacker and two Californian teenagers. The other was Digital Demon, about which nothing is publicly known to date. Director of Central Intelligence, "Annual Report for the United States Intelligence Community," Washington DC, 1999.

[6] The best source detailing the Moonlight Maze investigation is Thomas Rid, *Rise of the Machines: A Cybernetic History*, First ed., (New York: W. W. Norton & Company, 2016). For technical details see: Thomas Rid, "Back to the Future - Moonlight Maze" (Talk presented at the Security Analyst Summit, Tenerife, Spain, 8. February, 2016).

fibre-optics and the wide availability of encryption. Progress in cryptographic research meant that, not just states, but also citizens and businesses could use strong cryptography to protect the confidentiality of their messages. For example, the software Pretty Good Privacy (PGP) developed by Phil Zimmermann in 1991 made public-key cryptography available to everyone. Starting in 1999, U.S. General Michael Hayden embarked with the NSA to "tackle the internet."[7] Similarly, the British signals intelligence agency (GCHQ) invested in a modernization programme. The 11. September 2001 terrorist attacks against the United States transformed the political climate, which made money and extended operational powers available to intelligence agencies. For example, on 4. October 2001 President George W. Bush authorized a metadata and content collection programme as a direct response to 9/11.[8] In addition, signals intelligence agencies were tasked to support the military campaigns in Afghanistan and later in Iraq, which gave their capabilities added political impact.

As more of their targets used the internet, during the first decade of the 21st century, the signals intelligence cooperation between the U.S., U.K., Canada, Australia, and New Zealand (called Five-Eyes) significantly expanded their use of the internet for data collection.[9] In a similar fashion, many advanced industrialized nations have given their

[7] Seymour M. Hersh, "The Intelligence Gap - How the Digital Age Left Our Spies out in the Cold," *The New Yorker*, 6. December 1999.

[8] The programme later transitioned to FISA authority. Best sources are the declassified court documents found at: Office of the Director of National Intelligence, "DNI Announces the Declassification of the Existence of Collection Activities Authorized by President George W. Bush Shortly after the Attacks of September 11, 2001," Office of the Director of National Intelligence, 21. December 2013, https://perma.cc/34E8-AT8B.

[9] See "SID Today: Digital Network Exploitation (DNE), Digital Network Intelligence (DNI) and Computer Network Exploitation (CNE)", Deputy Director for Data Acquisition, National Security Agency: The Intercept, 10. August 2016 (Dated: 16. July 2003), https://perma.cc/W9K4-ZSHG. For a Canadian program, which claims to be an 8 years development effort, see "CSEC SIGINT Cyber Discovery: Summary of the Current Effort", Cyber-Counterintelligence, Communications Security Establishment Canada: Der Spiegel, 17. January 2015 (Dated: November 2010), https://perma.cc/JQ3V-K4TK.

defence and intelligence agencies a large role in exploiting the vulnerabilities of increasingly networked societies.

At the same time, SIGINT agencies were tasked to also take a defensive role. Intelligence historian Richard J. Aldrich noted: "GCHQ did not like this, since it resurrected the familiar dilemma of 'offence versus defence' in the realm of code-breaking, but in a much more unmanageable form."[10] The agencies were asked to brief private sector entities on good practices of computer security, including how to use strong cryptography to protect against online threats. This sat strangely with agencies that had tried to prevent the spread of strong cryptography to other countries for decades.[11]

However, several large espionage campaigns uncovered in the last two decades contributed to the perception that a stronger defence against cyber threats was necessary. Just as the Moonlight Maze investigation showed that (presumably) Russian agencies were using the internet to spy on U.S. technologies, a set of intrusions code-named "Titan Rain" (later renamed Byzantine Hades) at the U.S. Department of Defence labs, NASA, and defence contractors revealed (presumably) Chinese spying since early 2003.[12] To the Five-Eyes governments these intrusions demonstrated that their defence industrial base

[10] Richard J. Aldrich, *GCHQ : The Uncensored Story of Britain's Most Secret Intelligence Agency*, (London: HarperPress, 2011), 488.

[11] This tension also existed previously with regard to communications security of telephone calls. For example, NSA's internal history documented the debates on whether to extend encryption to businesses, that the Soviet Union was suspected to be spying on, in the 1970s. See David G. Boak, A History of U.S. Communications Security Volume II, Fort George G. Meade, Maryland: National Security Agency, 1981, 27-30.

[12] We know much about the evolution of the U.S. tracking of this specific threat actor from the Snowden documents leaked in *Der Spiegel* in January 2015. See "BYZANTINE HADES: An Evolution of Collection", NTOC, V225, National Security Agency: Der Spiegel, 17. January 2015 (Dated: June 2010), https://perma.cc/H79D-PMXA; "Chinese Exfiltrate Sensitive Military Technology", National Security Agency: Der Spiegel, 17. January 2015, https://perma.cc/LW4W-R7ZQ. See also: Gordon Corera, Intercept: The Secret History of Computers and Spies, (London: Weidenfeld & Nicolson, 2015). 176-201. For a list of publically reported intrusions attributed to China between 2005-2015 see: Jon R. Lindsay and Tai Ming Cheung, "From Exploitation to Innovation: Acquisition, Absorption, and Application," in *China and Cybersecurity: Espionage, Strategy, and Politics in the Digital Domain*, ed. Jon R. Lindsay, Tai Ming Cheung, and Derek S. Reveron (New York: Oxford University Press, 2015), 58-60.

was a prime target for Chinese espionage. By the end of 2007, it was clear to the signals intelligence agencies that more had to be done against cyber espionage. The U.K.'s domestic intelligence agency, the security service (MI5), even went as far as writing a letter to 300 chief executives warning about Chinese electronic espionage.[13]

In 2007 the Distributed-Denial-of-Service (DDoS) attacks against Estonian institutions, in the wake of the political decision to move a Red Army Second World War memorial outside the centre of Tallinn, raised cyber attacks as a means of influencing the politics of a foreign country to the attention of Western politicians. Whilst the attacks themselves were unsophisticated, the policy community learned that cyber attacks had become a means of influencing a country's domestic policies.[14] Whilst not providing conclusive evidence, Estonian politicians were quick to point to Russia as the sponsor of the attacks. The attacks against Estonia will later feature in a case study, as they demonstrate the politicisation of cyber actions. In close analogy to pirates and privateers, the case study will focus on the competing narratives portraying the attackers either as state-sponsored hackers or as independent patriotic hackers.

The espionage campaigns of the early days of the internet were not perceived to impact the individual's security directly. However, this was different for groups who were perceived as a threat to a state's security. In 2009, a report named *GhostNet* on an espionage operation was released by the Information Warfare Monitor, a partnership between the CitizenLab (University of Toronto) and SecDev Group (think tank).[15]

[13] BBC, "MI5 Warns over China Spy Threat," BBC, 2. December 2007, https://perma.cc/2E22-GQVJ.

[14] Earlier examples might be the spy plane accident 2001 (U.S. and China), Turkish vs. Kurdish, Israeli-Palestinian hacking. An excellent source on Estonia is Andreas Schmidt, "The Estonian Cyberattacks," in *A Fierce Domain: Conflict in Cyberspace 1986-2012*, ed. Jason Healey (Vienna, VA: Cyber Conflict Studies Association, 2013).

[15] Information Warfare Monitor, "Tracking Ghostnet: Investigating a Cyber Espionage Network," (2009), https://perma.cc/H27G-9RWX. See further: Shishir Nagaraja and Ross Anderson, "The Snooping Dragon: Social-Malware Surveillance of the Tibetan Movement," *Technical Report*, no. 746 (2009), https://perma.cc/83Q2-446D.

GhostNet revealed a sustained espionage operation against the embassies of various countries, including the offices of the Dalai Lama and many Tibetan activists. Starting with reports on *GhostNet*, the cyber(in-)security community regularly produced intelligence reports, highlighting the activities of threat actors targeting specific industries, groups, or countries. This is indicative of a peculiarity of cyber(in-)security: most of the defensive work is undertaken by private actors.

One of the most interesting interactions between a large technology company and a nation-state level attacker were the attacks against Google, which were revealed to the public in January 2010. The attack campaign, including at least 34 different targets across the technology, finance, and defence sectors, was labelled as *Operation Aurora*. This operation will later feature in a case study to look at the interactions between a large technology company and (at least) two governments (U.S. and China).

In mid-2010, the most sophisticated intrusion to date became known: *Stuxnet*. *Stuxnet* was found to be a nation-state directed malware attack against an Iranian nuclear enrichment facility. Whilst uncertainty about the strategic intent of the attackers remains, the technical effects of the malware are known. The malware was traced back to a joint operation between the United States and Israel.[16] Since then, other nation-state directed campaigns have been uncovered with differing degrees of confidence in their attribution to a particular state.[17] Having first taken note of the importance of cyber attacks in influencing policy covertly in Estonia in 2007, *Stuxnet* added impetus to the development

[16] The best account of *Stuxnet* is Kim Zetter, *Countdown to Zero Day: Stuxnet and the Launch of the World's First Digital Weapon*, First ed., (New York: Crown Publishers, 2014).

[17] See e.g. Equation Group, Turla, APT28, APT29, Turla, Careto, Balibar. A collection of links to industry reports of operations associated with these various threat actors can be found under http://apt.threattracking.com and https://github.com/aptnotes/.

of national cybersecurity strategies in many countries.[18] Based on signals intelligence, NSA analysts assessed that Iran retaliated to *Stuxnet* by conducting DDoS attacks against U.S. financial institutions.[19] The U.S. later indicted seven Iranian nationals, who worked for private security companies, allegedly on behalf of one of the Iranian intelligence services.[20] They were accused of hacking U.S. financial institutions between December 2011 and May 2013.

In 2013, NSA contractor Edward Snowden leaked documents to journalists that shed light on the covert offensive and defensive initiatives of the Five-Eye signals intelligence cooperation. A subset of those documents was published by various media organizations (henceforth referred to as the Snowden archives). The Snowden archives offer valuable insights about the interactions between large technology companies and signals intelligence agencies.

In 2014, the U.S. government formally indicted five Chinese People's Liberation Army officers for having committed commercial espionage. At the same time, it prosecuted Su Bin, a Chinese businessman, who aided two China based hackers to exfiltrate sensitive data from defence contractors. Importantly, the court documents gave some idea of the financial dimension such an operation takes on. They revealed that an operation against the plans for a C-17 transport plane cost 3.5 million Renminbi (ca. £350'000) in 2011 and

[18] Organisation for Economic Co-operation and Development (OECD), "Cybersecurity Policy Making at a Turning Point: Analysing a New Generation of National Cybersecurity Strategies for the Internet Economy," Paris:OECD Publishing, 2012.

[19] See the talking points memo for the director of NSA and the director of Signals Intelligence: "Iran – Current Topics, Interaction with GCHQ", S2E4, Iran Division Chief, National Security Agency: The Intercept, 10. February 2015 (Dated: 12. April 2013), https://perma.cc/W9K4-ZSHG.

[20] *United States of America Vs. Fathi et al.*, 16-348 (2016).

up to 6.8 million Renminbi (ca. £660'000) for previous operations and infrastructure set-up.[21]

In 2014-2015, the public posting of documents acquired through hacking of two private companies, Gamma International (summer 2014) and Hacking Team (summer 2015), allowed researchers to gain a deeper insight into the international market for interception and surveillance tools. Meanwhile, data breaches have continued to make headlines. For states, one of the most notable was the U.S. Office of Personal Management breach, which led to the exfiltration of the national security relevant SF86-Questionnaires (security clearance background information) for 21.5 million individuals. Private sector analysts attributed this to a Chinese intelligence operation. However, no official (i.e. government issued) conclusion has been proffered supporting this claim.[22]

To better understand the connection between the large technology companies and intelligence services, a short explanation of modern-day signals intelligence regarding digital network exploitation is in order. First, one differentiates the collection of data in transit versus data at rest. The collection of data in transit is sometimes referred to as upstream collection. Upstream collection can happen at any point in the internet infrastructure (data cables, switches, routers, internet exchange points etc.). Most of this infrastructure is owned and maintained by private companies. If a SIGINT agency wants to collect traffic, it needs to access this infrastructure. It can do so overtly, for example through partnering with an internet service provider, or covertly, for example by

[21] *United States of America V. Su Bin*, 14-1318M (2014). Criminal Complaint (14-1318M, CDC, pp.33-34). Importantly, such calculations leave out the analysis, distribution, and management cost of running the espionage campaign. See e.g. The Grugq. "Cyber: Ignore the Penetration Testers", 17. September 2016 [Blog], https://perma.cc/Q6DS-NNA7.

[22] Even private sector assessments are blacked out in official publications. See e.g. U.S. Congress, House of Representatives, Committee on Oversight and Government Reform, The OPM Data Breach: How the Government Jeopardized Our National Security for More Than a Generation, 114th Cong., Washington DC: Government Printing Office, 2016. https://perma.cc/BZ8T-88Q3.

infiltrating malware in a backbone network router.[23] The other large digital network exploitation category is the collection of data at rest (i.e. stored data). This can also be achieved overtly, for example with the cooperation of an e-mail provider, or covertly, for example by infiltrating malware on a target's smartphone. These relationships will later be analysed in the case studies on modern-day mercantile companies.

Today, cybersecurity is still provided as an afterthought: most computing and networking equipment is not designed with security as a design goal. The cybersecurity of an individual user still relies on the user's safe usage practices – an assumption that frequently breaks down and is exploited by cyber criminals.[24] Most users have to rely on large companies being incentivised to deliver services securely for them. As witnessed by several large data breaches, this is not always a safe assumption. Companies have increased their investments in cybersecurity, but there is a large variance across different sectors of the economy. At the same time, states have increased their investment in cybersecurity. It is of note that states include money spent on offensive capabilities as cybersecurity investments.

Part A has provided a short overview of the history of cyber(in-)security and the constellations between the main actors. It has introduced examples of cooperative and competing aspects of cyber(in-)security between the different stakeholders. It was argued that, with increasing interconnectivity, technology and telecommunication companies' roles in the protection of societal networks and end-user data have become more prominent. Whilst states have acknowledged the challenges arising from cyber(in-

[23] Overt and covert in this usage are terms of art. Overt means the government is the identifiable counterparty; covert means efforts are undertaken to make the access unattributable to the government. Both can be undertaken secretly (out of the public's purview).

[24] Some research efforts are trying to externalize security services to the network, so as to reduce the possibility of users inadvertently engaging in "unsafe" behaviour. See e.g. D. Montero et al., "Virtualized Security at the Network Edge: A User-Centric Approach," *IEEE Communications Magazine* 53, no. 4 (2015).

)security and tried to address them, they faced both defensive and offensive interests. The defensive interest acknowledged companies' increasingly important roles and made them key stakeholders in the protection of critical infrastructure. The offensive interests, rooted in signals intelligence, led to an investment by states in exploiting cyber insecurity to further their national goals.

B. A comparison of the two domains: the sea and cyberspace

Having assessed the history between the different actors in both domains, a number of similarities and differences between the sea and cyberspace can be identified (see elements of comparison in Table 7 below).

Table 7: Elements of comparison between the sea and cyberspace

Similarities	Differences
• Geography • Costs of offensive and defensive capabilities • Public-private divide of capabilities • Difficulty of attribution • Dependence of actors on the domain	• Actors' exposure to physical sanctions • Pace of technological change and diffusion of knowledge • International society and institutions • Stability of domain characteristics

Before moving to part C, which will apply the conceptual framework introduced in Chapter 2 and adapt it with the insights gained from the historical research presented in Chapter 3, part B will discuss these similarities and differences and assess their impact on the further analogical research (see detailed comparison in Table 8 below). It is recognized that specific characteristics are always only similar or different to some degree: the categorizations are thus to be read as "more similar than different" and "more different than similar".

Geography

To the degree that the sea and cyberspace are interpreted as geographic realms of action, they form similar operating domains. For centuries, naval forces have tried to control specific sea lanes. Similarly, in cyberspace, geographic access to specific communication choke points represents an advantage for the host country. However, one geographic difference are the actors that have access to the domain in the first place and their potential reach: land-locked countries never represented major naval forces, whereas all countries have access to most of cyberspace now.

Cost of offensive capabilities and defensive capabilities

The cost of entry for offensive naval capabilities in the age of sail stand in direct relationship to the cost of defensive capabilities. In naval history, the cost of offensive and defensive capabilities varied across time. At first, the entry-level offensive costs were low, mainly due to the low protection of ships, and amounted to outfitting a merchant ship with arms. Success rested on the size of the boat and the skill level of the labour force. Over time this changed, as more ships were protected by an accompanying private protective force or dedicated state navies, that started to provide convoy duty. State navies were an expensive investment by states, which, over time, raised the entry level for persistent offensive success.[25] Furthermore, certain sea lanes were protected by companies who held a monopoly for trading in the area. In cyberspace, the cost of entry for offensive capabilities is still relatively low, in part due to weak defensive postures. Persistent offensive success rests mainly on skilled labour and protected network access, both factors a moderately well-resourced actor can provide.[26] The cost of defending

[25] Even today, taking over *one* merchant ship is relatively easy (if it is not accompanied by armed guards). However, generating persistent offensive success is made hard by the naval capabilities sent to secure areas of naval predation (e.g. anti-piracy mission in the Gulf of Aden).

[26] On the notion of offensive persistence, see also Michael P. Fischerkeller and Richard J. Harknett, "Deterrence Is Not a Credible Strategy for Cyberspace," *Orbis* 61, no. 3 (2017). On cyber offense-defence

cyberspace at a national scale is not yet determinable, as states have not taken responsibility and demonstrated success at defending national assets in cyberspace. For companies, both on the seas and in cyberspace, investments in defensive measures are part of the operating cost and risk structure considered, when relying on cyberspace.

Public-private divide of capabilities

In the period of naval history observed, the nature and affiliation of the actors deploying offensive and defensive capabilities varied across time. They started out as small, and largely private crews, then grew into larger and distributed private capabilities. Concurrently, larger public capabilities (i.e. deployed in furtherance of the state) were built. For a long time, skills for deploying force rested in semi-state (companies, privateers, some pirates) and non-state (some pirates) hands.

In cyberspace, we are witnessing a similar development. Offensive and defensive capabilities started out small and private, and have only recently transformed into larger and distributed private (defensive and offensive) and public capabilities (mostly offensive). There is still a lack of public capability to protect. Skills for deploying security practices and insecurity are distributed amongst many actors.

Difficulty of attribution

Attribution represents a challenge both on the seas and in cyberspace, though the nature of the problem is slightly different. On the seas, it was a non-trivial task for a captain of a ship to determine the association of another ship with a particular political entity. Several signs were used as markers for belonging, though many were subject to forgery. Firstly, ships regularly carried multiple flags as defensive and offensive measures. Thus, when encountering an English vessel, a French crew might decide to hoist a Dutch (false)

balance more generally, see Rebecca Slayton, "What Is the Cyber Offense-Defense Balance? Conceptions, Causes, and Assessment," *International Security* 41, no. 3 (2017).

flag, to confuse the origin of the attack. Secondly, some captains carried several *letters of marque*, selectively producing the one allowing the capture of a particular ship, when challenged to do so in hindsight. Thirdly, the crews operating the ships were quite diverse, including many nationalities and languages. Finally, the verification mechanisms for the defenders were poor. Inter-imperial networks of information were slow and subject to political influence.

Today, the problem of attribution has arisen in cyberspace. The problem of attribution in cyberspace can be split into three parts.[27] First, one must match the experienced attacks to a particular source of computers. Second, one must associate the actions of those machines to an (human) agent (individual or group). Third, one must ask, which political actor (individual or group) to associate the behaviour to (i.e. who is responsible for the actions of the individual/group that undertook the attacks?). Every step requires a different set of expertise and sources of information. And for each step, the attackers can undertake efforts to shape the attribution process of the defender. Hence, the attackers can still use "false-flag" attacks (i.e. try to mimic the attacking profile of a different state).[28] They can mask the origins of the attacks by operating out of a different location. And more importantly, it is very difficult to reliably ascertain an attacker's sponsors.

Dependence of actors on the domain

The dependence of the different actors on the seas in the observed period increased drastically. Whilst England had been a sea-faring nation, the relative dependence on trade

[27] The problem of attribution will be further discussed in Chapter 5. The three-part split is standard practice. See e.g. Herbert Lin, "Attribution of Malicious Cyber Incidents: From Soup to Nuts," *Journal of International Affairs* 70, no. 1 (2016).

[28] On false-flag attacks see Brian Bartholomew and Juan Andrés Guerrero-Saade, "Wave Your False Flags! Deception Tactics Muddying Attribution in Targeted Attacks" (paper presented at the Virus Bulletin Conference, Denver, CO, 5. October 2016); Christopher Porter, "Toward Practical Cyber Counter Deception," *Journal of International Affairs* 70, no. 1 (2016). See also Juan Andrés Guerrero-Saade and Costin Raiu, "Walking in Your Enemy's Shadow: When Fourth-Party Collection Becomes Attribution Hell" (paper presented at the Virus Bulletin Conference, Madrid, 4. October 2017).

in terms its share of the economy multiplied. Similarly, most states are growing increasingly dependent on cyberspace, both economically and societally, as evidenced by data measuring the integration of networked computing into modern economies.

Actors' exposure to physical sanctions

A major difference between attacking in the two domains is the physicality of the attacker. On the seas, attackers have to expose themselves to the defender physically, thereby risking their lives. In cyberspace, attackers can operate remotely, far away from the defender. This lowers the risk profile experienced by the attacker and potentially aggravates incentives to deploy insecurity in cyberspace.

Pace of technological change and diffusion of knowledge

In the early modern system, both the pace of technological change and diffusion of knowledge was slow. Ship designs took a long time to be copied, emulated, and tested. It took even longer for a dominant form of naval administration to form. Whilst the different countries tried to copy the currently leading country's model of success, they did not succeed at it (e.g. England copying Spain). Rather, it took an extensive time of exploration and experimentation until the imperial trade model took a hold. In today's time, and particularly with regard to operating in cyberspace, the pace of technological change is high and knowledge spreads rapidly, both about the technologies and designs used, as well as about the administrative structures in place. For example, after the U.S. launched a dedicated cyber command in 2009, within a short time span, a flurry of countries modelled their own cyber commands on the U.S. design. We would thus expect any international process analogized to happen in a compressed time-span.[29]

[29] Reflecting on the impact of faster knowledge diffusion on cyber capabilities, see Max Smeets, "A Matter of Time: On the Transitory Nature of Cyberweapons," *Journal of Strategic Studies* (2017).

International society and institutions

A difference between the naval history of the seas and cyberspace is the nature of international society and depth of international institutions. In the naval history covered in this thesis, international society is thin and globally fragmented according to competing imperial realms. It covers a period of European international relations expanding in depth and geographic scope, often by the force of arms, with many rules and principles of naval practice that were still unsettled. By comparison, today's international society is more global (including some globally shared norms, such as those in the Geneva Conventions) and international laws and institutions are more robust. For example, 193 countries are a permanently represented at the United Nations in New York.[30] However, in cyberspace international consensus on acceptable behaviour is still very limited and norms globally adhered to are few. The lack of shared norms in cyberspace increases the risk of misunderstanding and escalation. Despite that though, given the depth of relations between countries in many other areas today, it is unlikely that actors are settling for very hostile options lightly.

Stability of domain characteristics

Whilst technologies of operating on the seas have changed, the sea itself has not.[31] Contrary to that, cyberspace is an artificial domain. As a living technology, it is always evolving. Consequently, this also means that the characteristics of cyberspace are changeable. This has important implications on the analogical logic applied here. As the historical part A laid out, the current-day analogy assesses a similarity with regard to the impact of distributed, private capabilities can have on actors in the same domain. This

[30] United Nations Protocol and Liaison Service, "The Blue Book - Permanent Missions to the United Nations (St/Pls/Ser.A/306)," United Nations, November 2017, https://perma.cc/3KAN-F7U6.

[31] More accurately, it changed very little. The biggest changes are the addition of new canals (e.g. Suez, Panama, Volga-Don, or Kiel canals), which made new shipping lanes possible and decreased the importance of other strategic chokepoints.

rests on two assumptions: reachability within the network (packets can traverse the domain relatively unhindered), and decentralized control (most control lies in the endpoints). A fundamental technology change affecting these two assumptions would consequently also demand a re-evaluation of the applicability of the analogy. However, a fundamental technology change is, at the time of writing, not to be expected. Whilst some networks may become less reachable, a complete overhaul of the engineering of cyberspace would require a massive technology investment, which is currently unlikely to be in any actor's interest.

Table 8: A comparison of two domains: the sea and cyberspace

Aspects	Sea (16th – 19th century)	Cyberspace
Geography	Strategic sea lanes, limited number of countries (access to the seas)	Strategic communication points, potentially larger number of countries (access to cyberspace)
Cost of offensive capabilities	Varies across time. *Offensive capabilities*: first low costs due to low protection (mainly skilled labour and access to a ship). Later higher barrier.	*Offensive capabilities*: relatively low due to weak protection (mainly skilled labour and protected network access).
Cost of defensive capabilities	Expensive (national), part of the operating costs/risks (company)	Not determined yet (national), part of the operating costs/risks (company)
Public-private divide of capabilities	Varied across time. From small and private, to large and distributed private capabilities, to large and public capabilities. For a long time, skills for deploying force rested in semi-state hands.	From small and private, to large and distributed private capabilities. There is a lack of public capability to protect. Skills for deploying force rest in semi-state hands.
Difficulty of attribution	Problematic (multiple flags, letters of marque, diverse crews)	Problematic (false-flag attacks, masking of origins, ambiguous sponsors)
Dependence of actors on the domain	Increased over time	Increases over time
Actors' exposure to physical sanctions	Attackers physically expose themselves to the defender	Attackers work remotely
Pace of technological change and diffusion of knowledge	Slow change and slow diffusion of knowledge	Fast change and rapid diffusion of knowledge
International society and institutions	Thin and globally fragmented (empires)	Thicker and more globally shared
Stability of domain characteristics	Stable (the sea does not change)	Evolving (the characteristics of fundamental domain are changeable)

White = More similar than different; Grey = More different than similar

Part B has enhanced the understanding of the analogy through a general comparison of the similarities and differences between the two domains. It demonstrated that some characteristics of the problem of insecurity in the domain are very similar and enable a useful comparison.[32] The discussion of differences resulted in an appreciation of where difference in security dynamics and policy solutions may be expected. The decreased

[32] They are the dependence of actors on domain, attribution problems, offensive and defensive cost over time, geography, and the mix of public and private capabilities.

physical risk to the attacker, the more rapid diffusion of knowledge, and increased pace of technological change point to a more aggravated problem of insecurity and a faster changing interaction between the actors. Denser international society and institutions, though still sparse in the cyber domain, allow for a broader range of solutions to the insecurities experienced in cyberspace than on the seas. Finally, the possibility of a change in the fundamental characteristics of cyberspace, though unlikely, makes the specific problem of insecurity studied in this thesis potentially transformable. Having discussed the major similarities and differences of the domain, part C will apply the conceptual framework introduced in Chapter 2 and adapt it with the insights gained from the historical research presented in the previous chapter.

C. Reassessing and refining the conceptual framework for comparison

So far, this chapter has presented the history of the main modern actors treated in this thesis, given an overview of their interaction in cyber(in-)security to uncover the different constellations and framings between actors with different proximity to the state, and assessed the general similarities and differences of the domains. Following the research strategy of this thesis, this final part C integrates the insights gained from the historical interrogation, specifically, how the different actors were interacting amongst one another, into the conceptualization for the different actors. It discusses the findings in light of the spectrum of state proximity, clarifying the differing types of relationships of the actors with the state and amongst one another, and builds on the richness of the different historical constellations encountered in part A and Chapter 3. The concepts developed in Chapter 2 are then refined accordingly. In the empirical Chapter 5 and Chapter 6, these refined concepts for analysing pirates, privateers, and mercantile companies will be used to investigate their utility in understanding actors in cyber(in-)security.

The key insights identified in the historical research process include: the narratives of piracy, the evolution and transformation of interests in privateering, longevity and path dependency, the evolution of mercantile companies, and the abolition of privateering. Each of them is discussed briefly, their impact on the conceptualization of each actor evaluated, and the security dynamics between the actors analysed. Part C will claim that, due to the absence of any dominant state in cyberspace and the absence of the state as a security provider, the mid-19th century period can be ruled out as a useful analogue. Rather, the evolution and transformation of interests in privateering, due to the growing interest in trade and stability, whilst dedicated naval capacities were being built, makes the late 16th and late 17th century periods better analogues to further investigate cyber(in-)security. This narrows down of the scope of the analogy and sets up the three claims made in the following two chapters.

i. Narratives of piracy

The identification of political narratives of piracy enables a useful clustering of the interactions between pirates and the other actors of their time.[33] The entrant, resource, revisionist, and criminal narratives all offer a particular type of framing of the relationships between states and pirates. Rather than looking at the motivations of the actors, the analysis focuses on how a particular piratical episode is rendered a matter of state concern. For example, in the case of Captain Kidd, those in power had no interest in the particular attacks he led against the *Quedah Merchant*. Rather, the political blowback (via the East India Company) led them to declare his action as piratical. These categorically different ways of shaping the associations to the state are one tool to better understand the proximity to the state.

[33] Mark Shirk, "How Does Violence Threaten the State? Four Narratives on Piracy," *Terrorism and Political Violence* (2015); Mark Shirk, "Pirates, Anarchists, and Terrorists: Violence and the Boundaries of Sovereign Authority" (PhD Thesis, University of Maryland, 2014).

Similarly, in the cyber(in-)security context, different narratives compete in classifying different hacks. Some attackers are classified as purely criminal, a nuisance, but not a fundamental challenge or threat. Other attackers are labelled state-supported criminals, constructing a resource narrative of hacking. An example would be parts of the Russian speaking cybercriminal underground, its size and existence often being associated with the tolerance by the Russian state. The Russian political cybercriminal nexus will form part of the next chapter's empirical investigation. Yet other attackers are labelled revisionist, threatening the fundamental state system. Examples are certain offshoots of Anonymous that promote an anarchist political vision of the future. Finally, some portrayals of other attackers' actions could be labelled as entrant narratives. For example, the politically motivated hacks by the Palestinian and Kurdish hacking collectives, their hacking being undertaken as measures of pursuing the objective to establish their own state.

ii. Evolution and transformation of interests in privateering

The analysis of privateering showed an evolution of interests in privateering across different time periods. Whilst in the 16th century privateering was a method of warfare and conquest, the growing interest in stability of trade relations from the mid-17th century onwards made privateering a more complicated policy choice. The mercantile companies' growing trade network, and the increasing revenues generated from that, raised the potential costs of employing privateers. In addition, the growing navies offered new alternative naval strategies. Both elements point to an awareness of the changing interests of globalizing trading conglomerates and states over time. In addition, dedicated state capacity is to be analysed as both enabled by successful trade (source of income, knowledge, and skillsets for the state) and as a guarantor of continuing stable trade.

In cyber(in-)security, a similar question around transformation of interests can be posed. Are we still in an era of conquest, in which the hostile appropriation of data is seen as a method for advancing the actors' interests? Are there actors that promote a strong interest in the stability of relations in cyber(in-)security and others that do not? Some observers argue that regarding the Chinese interest in intellectual property theft, a similar transformation of interests can be observed. Whilst intellectual property theft may be a useful strategy to avoid investment cost in catching up technologically, in the long-run participation in the global market will incentivise the possibility to defend one's own intellectual property against other countries' abuse.[34] Furthermore, cyber(in-)security and the use of private actors by states is changing as many states invest in dedicated offensive capabilities. Different models of acquiring capabilities are used, some relying on state controlled contractors, on forms of national service, or on the supply chain in a grey market. The opportunities and risks associated with the use of privateers can hence be observed in cyber(in-)security. Examples are the lack of control, the inability to clearly classify attacks, and the government-private sector competition for skills.

iii. Longevity and path dependency

When researching naval history in the age of sail, one quickly learns to appreciate the dependencies of naval capacity on specialized skills and supply chains, and gains an awareness of career paths and personal investments. Especially with deep sea privateering, the range of skills, personal bets, social relationships, and the size of ships, armament, and investment communities all highlight the depth institutionalized privateering can have. This has direct implications on the analysis of privateering as a

[34] On this issue more broadly, see e.g. James A. Lewis, "Put China's Intellectual Property Theft in a Larger Context," Center for Strategic & International Studies, 15. August 2017, https://perma.cc/M6JV-SJJ7.

government policy: there is a stickiness of this policy.[35] Once privateering is institutionalized as a form of living, switching away from such a policy is associated with friction. Specialized labour is asked to leave the only job it trained for. Powerful investors, having gained lucrative returns, are asked not to continue seeking those returns. Ships outfitted for deep sea raiding are to be repurposed. The protection offered by outfitting trading companies with privateering licenses has to be considered. Furthermore, there are effects on other policy choices. The investment in this form of force directly affects the building of state capacity. For example, Elizabethan privateering brought with it incentives for state officials to become invested in gaining private returns. For sailors, serving on a privateer often meant better living conditions on the ship as well as a larger share of the booty. However, naval history also demonstrates the absolute dependency of any navy on specialized expertise. In the different time periods, the differing amounts a government could spend on retaining dedicated personnel for a state navy also impacted the attractiveness of allowing for a private capacity to be financed – even if that choice introduced additional political risk.

In cyber(in-)security, some of these dependencies seem to be present. As a domain that relies on a set of highly marketable and specialized skillsets, different countries have taken different approaches to incentivise such specialized labour to become active in their interests. The interdependencies between policy choices made, career paths chosen, and the friction resulting from the competition for talent can also be seen in cyber(in-)security and merit further investigation.

[35] Such stickiness is often highlighted in the literature on historical institutionalism. See e.g. Orfeo Fioretos, "Historical Institutionalism in International Relations," International Organization 65, no. 2 (2011): 367-99.

iv. Mercantile companies: from early investor to reaping the benefits of monopoly

One interesting phenomenon to observe is the degree of independent agency exerted by the mercantile companies and their framing of the proximity to states. Depending on the audience, the companies chose to represent their affiliation and status differently. In some relationships, for example with the Indian Mughal, the East India Company chose to represent itself as a mere merchant, whereas towards the English Crown and merchants, it self-identified as the Sovereign over the English people in the East Indies.

The East India Company's constitution in the 17th century shaped the development of both empire and private property. The freedom to trade, enabled by the Crown, allowed for a rapid global expansion. Trade became both a source of revenue and influence for the state. The once early investor in global exploration and conquest was increasingly interested in reaping the benefits of monopoly by protecting its network of trade relations from other entrants. Besides the corporate policies with the Mughal empire, where it competed for trade routes and products, making the affairs of the company a matter of the home state was one way of protecting its interests. The East India Company contributed to the rise of the commercial reason of the state, as exemplified in the period of mercantilism.

In cyber(in-)security, there is a different starting point. Ideologically starting in a neo-liberal market environment, many of the (predominantly) U.S. technology companies, that fundamentally shaped the commercialization of cyberspace, did not start out with close government interaction. However, the government enabled and facilitated their expansion, for example, by supporting the commercialization of internet exchange points. As the companies' reach grew, they gained more weight in influencing the political process and lobbying the government to support their interests. In the reverse, as more

people started using the companies' products and services, the state also became more interested in the activities of the companies. As introduced in the conceptual framework in Chapter 2, and substantiated in the historical narrative of cyberspace in part A of this chapter, this could lead to both cooperative and conflictive outcomes.

One insight from the historical research was to interpret the analogues of companies as their own body politic.[36] Just as the East India Company heeded its own political ambitions, so do many modern technology companies. For example, Larry Page and Sergey Brin – the founders of Google – have a vision of Google's role in the world: organizing the world's information. The specific ways of doing this sketches out a political vision of what they consider a better world. Similarly, when Apple challenged the FBI in court over the phone of a deceased terrorist in 2016, Tim Cook, Apple's CEO, claimed the authority to advocate on behalf of millions of Apple users. By doing so, the company uncovered the diverging interpretations of *security*: one defined by a national government, the other by a multinational company.

v. Abolition of privateering

The case of the abolition of privateering raises multiple points of insight. From a constellation of actors' point of view, this case could be read as a situation, in which a dominant power was able to lock in its interests when it was willing to trade off something in return. It showed that not all great powers were needed to force a global change in behaviour. This was in part due to the network effect of privateering: it was only beneficial if you could turn the spoils gained through it into durable assets. However, the abolition treaty prevented treaty members from offering privateers access to their ports. The applicability of the analogy to the mid-19th century to the cyber realm is questionable

[36] Philip J. Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundation of the British Empire in India*, (Oxford: Oxford University Press, 2011).

for two reasons. First, there is today no comparable dominant power that can control cyberspace to the degree Britain was able to influence the activities on the seas in the mid-19th century. Despite the United States' clear superiority in other realms of power, in cyberspace it is more equal to other powers, such as China and Russia, than in any other domain. Second, the analogy would suggest that the still limited state capabilities and willingness to intervene in the cyber domain on behalf of other actors rules out the analogy to the mid-19th century. States currently do not provide protection for their companies and citizens in cyberspace. In naval history, a key turning point was the early 18th century, when Britain's interests had shifted to stable trade, protected by a strong navy and a more "coherent involvement of the state in the country's commercial affairs."[37] Whilst the dependency on cyberspace keeps rising, and states are investing in dedicated cyber capabilities, the following chapters will build on the claim that current cyber(in-)security practices are best analogized to the pre-18th century history of sail.

vi. Conceptual refinement: how do these insights impact the conceptualization offered in Chapter 2?

The narratives of piracy arguments have demonstrated one way of interrogating the construction of a criminal or state-supported actor. Whilst early narratives casted pirates as resources to the state, later pirates were represented as non-state actors in the extreme form, their sheer existence representing a threat to the state system (e.g. as *hostes humani generis*). The agnostic nature of researching incidents of "hacking", and then observing how different actors are rendering them criminal or political in particular constellations, offers a methodologically and theoretically robust way of analysing the comparability between the historical and modern-day political contestations. It impacts the spectrum of

[37] Alejandro Colás and Bryan Mabee, "The Flow and Ebb of Private Seaborne Violence in Global Politics," in *Mercenaries, Pirates, Bandits and Empires: Private Violence in Historical Context*, ed. Alejandro Colás and Bryan Mabee (London: C Hurst & Co., 2010), 97.

state proximity insofar as it offers a richer set of categories to be compared, instead of just casting all pirates as "non-state" actors. In Chapter 5, the Estonia case will be used to argue that by analysing these contestations in cyber(in-)security with the background of the history of contestations in piracy and privateering in mind, we better understand how state proximity is a political play used strategically by both attackers and defenders, and how this can change our understanding of attribution.

The history of privateers has shown that they need to be closely observed with regard to their impact on the mercantile companies' interests. The expansion of global trade, and thereby also the exposure of assets and markets overseas, feature large in the debates around the use of privateers. Furthermore, the incentives of using privateers and the interaction with (the lack of) formal state capacity will continue to be of interest for the analysis of the modern cases. In addition, the interaction between privateers and pirates has shown multiple constellations: privateers as former pirates, privateers as pirate hunters, and privateers as pirates. Coupled with the narratives of piracy, this encourages a focus on the state criminal-nexus. In Chapter 5, in addition to making an argument about state proximity and attribution in the Estonia case, three court cases against Russian cyber criminals will be used to further the claim that the understanding of the longevity and path dependencies of historical privateering setups can refine our understanding of the constancy, and the long-term risks and rewards, of state collaboration with cyber criminals. Furthermore, it can refine our understanding of the difficulty to exit a policy of a political cybercriminal nexus. It will be argued that the analogy is uniquely placed to make these long-term observations.

The history of the East India Company suggests their (state-enabled) freedom of action was a possibility of a relatively weak state to access capital it would not otherwise have

had access to.[38] In this sense, the mercantile company could be reduced as a state strategy. However, the historical analysis has offered episodes of independent agency beyond the English state. This analysis substantiated the conceptual imaginary offered in Chapter 2 of sometimes cooperative and sometimes conflictive interests. The analysis of cyber(in-)security in the modern context has sketched out the constellation between the modern actors. It focused on states, technology corporations, and users' conceptions of security and how they are represented in the present context. An introduction to the modern-day signals intelligence environment introduced cooperative and competitive interests between state agencies and corporations. Rather than being, as in the physical domain, the provider of security for users and corporations, the state in cyber(in-)security is just one among many players. Its ability to provide any meaningful security beyond its own institutions has yet to be proven. No clear rules of interaction amongst the players have been established. Hence, this further supports the claim of not analogizing the security situation with the mid-19th century case, where many rules of interaction on the high seas were established.

Contrary to some pirates, the existence of the company itself did not challenge the existence of the state. Nevertheless, it is possible to analyse companies with the same lenses: how does a company become close to the state? How does it establish independence? Does the state protect the company or does is protect itself? As an empirical question, the spectrum of state proximity can be left open. One can observe the positioning of a multinational company towards other actors only in concrete instances. In Chapter 6, three cases will analyse these questions and further the claim that by treating large technology companies as political actors of an own kind, the mercantile company

[38] This mirrors the Dutch development. See Jan Glete, *War and the State in Early Modern Europe: Spain, the Dutch Republic and Sweden as Fiscal-Military States, 1500-1660*, (London: Routledge, 2002). See also Gijs A. Rommelse, "An Early Modern Naval Revolution? The Relationship between 'Economic Reason of State' and Maritime Warfare," *Journal for Maritime Research* 13, no. 2 (2011).

lens can sharpen the focus on how cooperative and conflictive relations to states, and practices of self-protection, influence cyber(in-)security. It can refine our understanding of the role companies play in providing cyber(in-)security.

This chapter has presented a historical account of cyberspace to uncover the different constellations and framings between the major actors involved in the provision of cybersecurity. Part A presented a brief history of cyber(in-)security, focusing on the three perspectives of users, technology corporations, and states. Part B then assessed the general comparability of the two domains, the sea between the late 16th and mid-19th century and cyberspace. It concluded that there are many shared characteristics of insecurity observed in both domains, and, whilst the differences do not alter the fundamental structure of the insecurity problem, they do change our assessment of the expected speed of interaction, the range of possible potential policy solutions, as well as our expectations of the stability of insecurity reproduced across time. Part C discussed the impact the historic research has on the conceptualization developed in Chapter 2. The finding was that the conceptualization has to be adjusted with regard to pirates, as their proximity to the state is more complex than originally sketched out. Furthermore, with regard to mercantile companies the conflictive and cooperative interest framework was found to be adequate in capturing some of the dynamics between the different actors. Thus, part C refined the conceptual understanding of the actors and thereby enabled the setting up of the three main claims advanced in the thesis.

The next two empirical chapters will apply the conceptual understandings to the cyber pirates, cyber privateers, and cyber mercantile companies. Empirical cases are used to evaluate the concepts' applicability and the utility of the analogy in changing our understanding of the security dynamics between the different actors in cyber(in-)security. While Chapter 5 will apply the understanding of the privateer and pirate to the case of

Estonia and the Russian government's interaction with cybercrime, Chapter 6 will evaluate the usefulness of analogies to mercantile companies to better understand cooperative and conflictive interests between states and large technology companies.

CHAPTER 5

Cyber Pirates and Privateers

STATE PROXIES, CRIMINALS, AND INDEPENDENT PATRIOTIC HACKERS

Many states are currently building capacities to conduct offensive and defensive cyber operations. States' growing capacities are augmented by the expertise and experience of private actors. As this chapter seeks to show, the interests of skilled personnel and governments can overlap in three main ways.

First, instead of recruiting personnel for governmental positions, governments rely on the support of private personnel in several countries. Countries rely on a form of national service (e.g. formalized cyber militias), the use of contractors to buy key capacities (e.g. exploit writers), or the use of a range of services offered by the cybercriminal underground, as part of the toolset for state exploitation of the cyber realm.

Second, there is the phenomenon of so-called patriotic hackers. Working in the political and economic interest of a country, patriotic hackers have been active in many highly visible cases ranging from the attacks by Russian hackers on Estonia in 2007 and on Georgia in 2008, to the attacks by Chinese and U.S. hackers in 1999 and 2001, and to those by the Syrian Electronic Army.

Third, criminal intelligence collection efforts, as in the case of Evgeniy Bogachev, have also been mounted. These are less evident than the highly visible and clearly politically motivated attacks. The influence and direction of criminal activity is multi-layered, ranging from discretionary enforcement, based on the selected targets, to the way in

which cyber criminals have become active in Russian political interests.[1] Empirical evidence, however, is usually incomplete and open to interpretation. Tacit support is sometimes inferred by the absence of cooperation between governments to prosecute identified criminals in the presence of a mutual legal assistance treaty (MLAT).

In this chapter, the alignment between Russian cybercriminal networks and Russian state interests will be documented. The chapter contributes to answering the research question by analogizing the relationship between Russian cybercrime and the Russian state to historical privateers and pirates and then drawing insights based on the type of relationship found and the political strategies used to interact with such actors.

Specifically, in part A, the case of the cyber attacks against Estonia will be discussed to elaborate how the historical strategies used to connect an act of piracy to a government are implemented today to transform an act of hacking into an act of state-sponsored hacking. The analysis of this case shows how the Estonian and Russian leadership acted before, during, and after the crisis between the two countries in 2007. Using the insights of the different historical narratives of piracy, part A establishes the narratives that each government constructs regarding the proximity to the state of the attackers. The narratives of piracy observed in the historical chapter demonstrated that states used different narratives to construct piracy, including as a threat or as a resource. The case of Captain Kidd has shown that governments have agency in the framing of the state-association. The case of Estonia will unveil, how the Estonian leadership rhetorically connected the cyber incidents with the Russian government, whilst the Russian government introduced distance between its officials and the hackers. The case emphasizes that governments make political choices about whether to treat a specific instance of hacking as political or

[1] There are examples of criminal sites, which exclude content that "can adversely affect the Russian Federation, the Ukraine, and Belorussia". Example from: Max Goncharov, "Criminal Hideouts for Lease: Bulletproof Hosting Services," Cupertino:2015, 11.

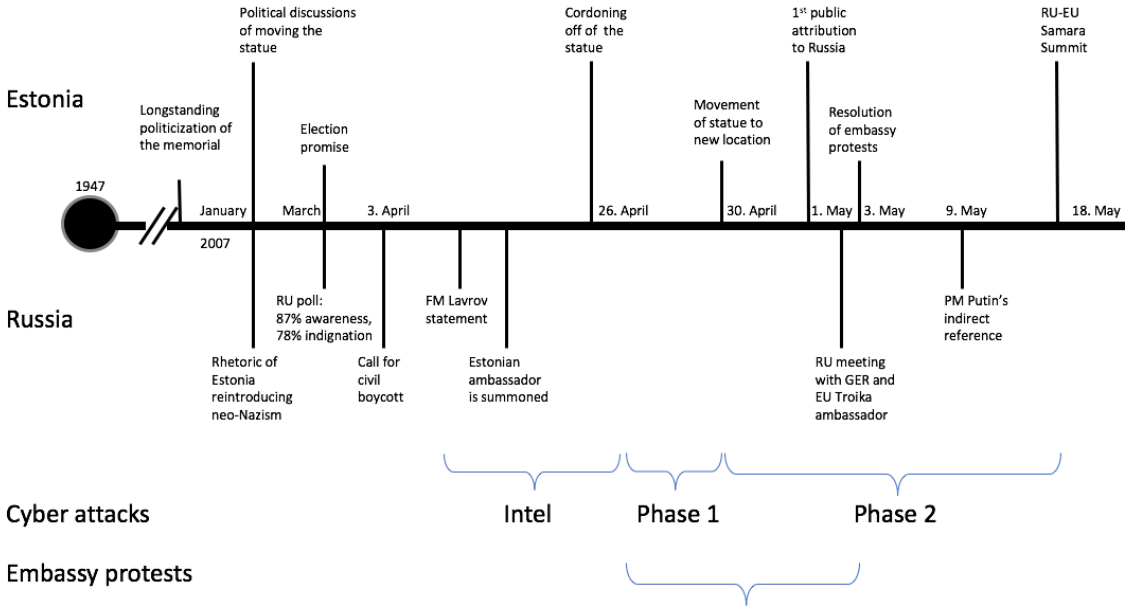
criminal, which adds a new element to the literature on attribution. The case closes with a discussion of the resulting strategic ambiguity that uncertainty about the attacker's proximity to the state introduces. It argues that the perception of collaboration raises the stakes of non-involvement and increases the escalatory potential.

In part B, the analysis of three different criminal cases against Russians will lead to a discussion, based on the insights of privateers and pirates, about the risks and opportunities associated with the closeness between cybercrime and politics. Specifically, the analysis focuses on the longevity and path dependencies that a reliance on privateers and pirates brought historically, and probes the extent to which they are visible in the cases observed today. Three different contemporary associations to the state are examined. First, the case of a politically supported cyber pirate shows that like pre-18th century pirates, cyber criminals are not treated as enemies of mankind. There is not a common understanding amongst states that cybercrime represents an evil that has to be addressed jointly. The second case of a cyber pirate and cyber privateer identifies the existence of a deal for political cover for some of cybercrime. As in the case of early 17th century piracy, the case highlights both the provision of a safe harbour and the indications of political profit from the criminal enterprise itself. The signalling of the acceptance of cybercrime brings with it the risks of self-reinforcing tendencies. Finally, the third case features a cyber privateering setup. It analogizes the problems of control about late 16th century privateers with those evidenced in contemporary case. In close analogy to the historical risks, a Russian contemporary's assessment of the risks of institutionalization of the cyber privateering setup is examined. Part B finishes with the analysis of the effects this has on recruitment and capability building, and an assessment of how the analogy to privateering can offer insights into the political constitution of cyber(in-)security.

In part C, the chapter concludes that the constellations of actors analysed in this chapter, with regard to their state proximity, are most comparable to the late 16th and early 17th century pirates and privateers. Based on this analysis, the conclusion advances two claims. First, we can better understand the label of state-sponsorship when reading the association to the state as a narrative constructed by the different stakeholders involved. As the Estonia case demonstrates multiple narratives can coexist. Public and private attribution should be distinguished. In doing so, we can better understand the political contestation of public attribution claims. It is argued, the public attribution claim is a strongly political choice about how to frame the relations of the attacker and the entity that the state blames. Introducing this distinction aids us to better understand the politics of attribution. Second, the longevity and path dependencies of historical privateering setups refine our understanding of the constancy, and the long-term risks and rewards of state collaboration with cyber criminals. The identification of both drivers and feedback-loops, characteristic of such path dependent choices, refines our understanding of the difficulty to exit a policy of political cybercriminal nexus. This offers a conceptual explanation of the stability of politically constituted cyber(in-)security in the domain of political cybercriminal interaction. The analogy is uniquely placed to make this long-term observation and thus disrupt the short-term perspectives present in some analyses of cyber(in-)security.

A. The 2007 cyber attacks in Estonia: examining public attribution and ambiguity

Figure 3: Estonia (2007) case timeline



The case of the 2007 cyber attacks in Estonia interrogates the competing narratives that rendered the attacks as "state-sponsored" or "patriotic". It integrates different political perspectives of the same events. To do so, research was undertaken to access these different narratives. Primarily, Estonian and Russian official statements and press reporting was relied upon. Research was performed – where necessary – with the aid of GoogleTranslate, an online tool that allows for the translation of text and entire websites. Imperfect though it may be, it allowed for a deeper penetration into the meaning-making processes of both governments.[2]

In 2007, the moving of the Bronze Soldier, a Soviet Second World War memorial, built next to war graves in 1947, led to political controversy. Given the tense relations between

[2] Meaning-making is understood as the "production of facts, images, and spectacles aimed at influencing socio-political uncertainty and conflict generated by crises." This public function is distinguished from the governmental sense-making processes, which establish what is happening. See Arjen Boin et al., *The Politics of Crisis Management: Public Leadership under Pressure*, (Cambridge: Cambridge University Press, 2005), 88.

ethnic Estonians and Estonian Russians, the moving of the statue led to two days of riots in Tallinn, protests in front of the Estonian embassy in Moscow, and cyber attacks against Estonian public and private networks.[3] The handling of these incidents by the Estonian government, specifically with regard to the cyber attacks, are of interest to this case study.

Specifically, the analogy to piracy and privateering is used with regard to the governmental construction of state proximity of the attackers. The different narratives of the Russian and the Estonian governments represent different categories of framing the same activity. This resembles the different narratives of piracy that historically either legitimized or delegitimized pirates. Uncovering the construction of state-sponsored cyber attackers vs. the patriotic undertakings of fervent cyber patriots allows for the drawing of parallels to historic narratives of piracy.

To summarize the argument made in the Estonia case succinctly up front: the Estonian government publically attributed the 2007 cyber attacks to Russia, because it was politically convenient to do so. The argument for the attribution in this case is similar to privateering, as the government attributed the actions of a small group of hackers to the state. The case demonstrates the political agency of government leadership in the discourse about the state proximity of the attacker. The Russian state denied sponsorship, but was content with the patriotic actions of their citizens. The privateering analogy aids us to understand the political nature of attribution by highlighting the political choice a government has in framing the association of an attacker.

[3] Külliki Korts, "Inter-Ethnic Attitudes and Contacts between Ethnic Groups in Estonia," *Journal of Baltic Studies* 40, no. 1 (2009).

i. Estonian official narrative: crisis response and the politics of attribution

a) Overview

The Estonian government knew that the moving of the statue would be controversial. Whilst to many Estonian Russians the statue signified the Red Army's contribution to the end of fascism, to many ethnic Estonians it signified the begin of an era of Soviet occupation. The statue came to signify two different readings of history, and consequently a conflict of identities. This conflict was fuelled by exchanges between Russian and Estonian politicians.[4] The Estonian election in March 2007 further politicised the marker of the war graves. After the election of the reform party's Andrus Ansip, who had promised to move the statue before 9. May 2007, the Memorial Day of the end of the Second World War, he did not wait long with delivering said promise.[5] The cordoning off for the excavation of the war graves on 26. April 2007 was met with two nights of riots on the streets of Tallinn. Not having anticipated the extent of violent resistance, an emergency meeting of the Estonian government decided to move the statue in the morning hours of 27. April 2007. Heavy police reinforcements brought the situation in Tallinn under control with hundreds of arrests, dozens injured, and one permanent resident of Estonia, who also held Russian citizenship, dead. On 30. April 2007, the government moved the statue to its current-day location in the military cemetery in Tallinn.

b) The cyber attacks 27. April – 18. May 2007

The cyber attacks started on 27. April 2007 and were resumed sporadically with different intensities and durations up to the 18. May 2007. They took place in two phases. The first

[4] For an Estonian personal account and analysis that highlights the depth of the diverging interpretations, see Enn Soosaar, "The Bronze Soldier and Its Deportation to a Military Cemetery," *Diplomaatia*, no. 46 (2007). For a scholarly analysis providing context and depth see Martin Ehala, "The Bronze Soldier: Identity Threat and Maintenance in Estonia," *Journal of Baltic Studies* 40, no. 1 (2009).

[5] Ehala, "The Bronze Soldier: Identity Threat and Maintenance in Estonia," 142.

phase could be called "online protest". It represented unprofessional and disorganized attacks and lasted until 29. April 2007. The second phase could be labelled "organized attack". It was much more professional and coordinated.[6] Several layers of attacks were observed, including the probing of infrastructure and the subsequent adaption to the targets accordingly. They consisted mostly of distributed denial of service (DDoS) attacks, but also of "website defacements, DNS server attacks, mass e-mail, and comment spam."[7]

The Estonian CERT and internationally connected private sector entities had had about two weeks of warning before the attacks started.[8] The warnings came in the form of reports on Russian language forums inciting attacks on Estonian public and private entities (with instructions) and in the form of network probes to gauge the network capacities. Whilst the online protest phase (27.–29. April 2007) resembled an unorganized group of people performing simple denial of service attacks, the organized attack phase (30. April–18. May) relied on hired botnets, displayed more coordination, and demonstrated more adaptable targeting.

c) The concurrent demonstrations in front of the Estonian embassy in Moscow

From the 27. April 2007 onwards, young demonstrators, including members of the patriotic nationalist youth-group Nashi, set up camp in front of the Estonian embassy in Moscow, harassing embassy staff, and demanding for the Estonian ambassador to leave the country. In the process, the Estonian flag was torn down, eggs were thrown, and

[6] Eneken Tikk, Kadri Kaska, and Liis Vihul, "International Cyber Incidents - Legal Considerations," Tallinn, Estonia, 2010. They categorize the attacks into two phases (27.-29. April and 30. April – 18. May 2007).

[7] Andreas Schmidt, "The Estonian Cyberattacks," in *A Fierce Domain: Conflict in Cyberspace 1986-2012*, ed. Jason Healey (Vienna, VA: Cyber Conflict Studies Association, 2013).

[8] Atlantic Council. "Building a Secure Cyber Future." Atlantic Council, 23. May 2012 [Transcript]. https://perma.cc/5KMR-G9SF.

Estonians were labelled fascists. The Estonian government protested with the Russian Foreign Ministry and discussed their concerns bilaterally and multilaterally with European countries. Eventually, upon intervention of the European Union, represented by the German presidency, on 3. May 2007 a deal was struck: the Estonian Foreign Ministry agreed for the ambassador Marina Kaljurand to leave Moscow for a "vacation" and the Russian government agreed to end the protests.[9] The correlation of this deal and the protesters packing up and leaving was read, by some observers, to indicate a coordination between the Russian government and the organizers of the protests.[10]

d) Estonian government attribution during the crisis

The Estonian government first informed about the cyber attacks in the night of the 28. April 2007 and warned about the possibility of spreading misinformation.[11] On the next day, Estonia's CERT informed that the cyber attacks came "from abroad."[12] On 1. May 2007, the Minister of Foreign Affairs, Urmas Paet, released a statement opening with:

> The European Union is under attack, as Russia is attacking Estonia. […] IP addresses have helped to identify that the cyber terrorists' attacks against the Internet pages of Estonian government agencies and the Office of the President have originated from specific computers and persons in Russian government

[9] Estonia: Demonstrators Quit Estonian Embassy as Ambassador Returns to Tallinn, 4. May 2007, *Diplomatic cable from the U.S. Embassy in Moscow*, No. 07MOSCOW2065_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/LHZ5-GCFP. See also: Estonian Ministry of Foreign Affairs, "Estonian Ambassador Is Going on Vacation," Republic of Estonia, 3. May 2007, [Press release], https://perma.cc/95Z7-64WM.

[10] International Centre For Defence and Security. "Russia's Involvement in the Tallinn Disturbances", 11. May 2007 [Blog], https://perma.cc/A7DS-QH6A.

[11] Estonian Government, "Possible Misinformation Spreading in Electronic Channels," Republic of Estonia, 28. April 2007, [Press release], https://perma.cc/Q9NF-3ER4.

[12] Estonian Government, "Malicious Cyber Attacks against Estonia Come from Abroad," Republic of Estonia, 29. April 2007, [Press release], https://perma.cc/787B-ZVBZ.

> agencies, including the administration of the President of the Russian Federation. […] I affirm to you that we have sufficient material to prove our accusations.[13]

He also accused the Russian embassy staff of having met the organizers of the riots before they took place, the demonstrators in front of the Estonian embassy of being paid by the Kremlin, and the Russian TV-media campaign lying to their viewers about the actions of the Estonian police forces.

This governmental shaping of the narrative is important. By claiming attribution to the Russian government, he labelled the cyber attacks as deliberate political acts between the two countries, and assigned responsibility for the actions to the Russian state.[14]

The next day, the Estonian President Toomas Hendrik Ilves weighed in. He addressed Russia directly:

> Finally, I turn to Russia, Estonia's neighbour, with a clear message – try to remain civilised! It is not customary in Europe to demand the resignation of the democratically elected government of another sovereign country. It is not customary in Europe to use computers belonging to public institutions for cyber attacks against another country's public institutions. In Europe, as well as in the rest of the civilised world, it is not considered possible to violate the Vienna Convention when an embassy of a small enough country is concerned. It is

[13] Estonian Government, "Declaration of the Minister of Foreign Affairs of the Republic of Estonia," Republic of Estonia, 1. May 2007, [Press release], https://perma.cc/4C5X-JZJ7.

[14] In the discussion of attribution, it is worth noting that the Estonian Foreign Minister highlighted *computers and persons in Russian government agencies*, who – one presumes – were authorized to act in the name of the state, and consequently, the state is responsible for their actions. For an elaboration of political discourse of state action and responsibility, see Sean Fleming, "Artificial Persons and Attributed Actions: How to Interpret Action-Sentences About States," *European Journal of International Relations* 23, no. 4 (2017).

> customary in Europe that differences […] are solved by diplomats and politicians, not on the streets or by computer attacks.[15]

In this message, Ilves again highlighted Russia's governmental responsibility of the cyber attacks, and engaged in a civilizational discourse, casting Russia's behaviour as outside of Europe and outside of the "civilized world". On the 3. May 2007, President Ilves' office released a summary of a phone call with U.S. Secretary of State, Condolezza Rice. The summary claimed that Secretary Rice called the pressure against the Estonian state unacceptable. It also mentioned the attribution of the cyber attacks to Russia. The attribution to Russia, however, was not part of the statement attributed to the Secretary in the summary, but rather formed context offered by President Ilves' office.[16]

On 11. May 2007 Estonian Minister Urmas Paet addressed the Council of Europe and repeated:

> We analyse the logs of these ongoing actions. However, there is already clear evidence that these attacks are well-coordinated and a significant amount of them originate from Russia. (Russian government agencies have also been involved in cyber attacks against Estonia.)[17]

Urmas Paet's formulation also found its way into a European parliament resolution of 24. May 2007 on Estonia:

[15] Toomas Hendrik Ilves, "Statement of the President of the Republic Hendrik Toomas Ilves: We Can Agree Upon a Common Future," Office of the President, 2. May 2007, [Transcript], https://perma.cc/SUV5-B7Q5.

[16] Estonian President of the Republic, "US Secretary to the President of Estonia: US Supports Estonia," Republic of Estonia, 3. May 2007, [Press release, GoogleTranslate], https://perma.cc/X57G-V2SS.

[17] Estonian Ministry of Foreign Affairs, "Address by Minister of Foreign Affairs of Estonia Urmas Paet," Republic of Estonia, 11. May 2007, [Transcript], https://perma.cc/FG3N-S8P5.

> whereas systematic cyber attacks have been organised, mostly from outside Estonia, in an attempt to block official communication lines and Estonian administration websites; whereas those attacks have come from Russian administration IP addresses, and whereas intensive propaganda attacks have continued via the Internet and mobile telephone messages calling for armed resistance and further violence.[18]

It is notable, that in the European Union's statement, only the fact of Russian administration IP addresses is mentioned, and those are not further politically attributed to the Russian government. By June 2007, the Estonian Defence Minister Jaak Aaviksoo also chose not to attribute the attacks anymore, but focused on what to do about them. In his remarks, he analogized cyberspace to the sea and looked to the Declaration against Privateering for inspiration.[19] Finally, in September, Aaviksoo adjusted the government's claim of incontrovertible evidence in an interview with the Estonian TV Channel Kanal 2: "Of course, at the moment, I cannot state for certain that the cyber attacks were managed by the Kremlin, or other Russian government agencies."[20] Still today, the government of Estonia does not formally uphold its claims of state responsibility. Recalling the situation in 2007, Marina Kaljurand, the Estonian ambassador to Moscow in 2007, explains:

> There was no direct evidence linking the attacks to the Russian state, but there was enough circumstantial evidence to conclude that these attacks were carried out with the knowledge and support of the Russian state.[21]

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[18] European Parliament, European Parliament Resolution of 24 May 2007 on Estonia, 2007. http://www.europarl.europa.eu. (P6_TA(2007)0215).

[19] Jaak Aaviksoo, "Cyber Defense – the Unnoticed Third World War" (Speech presented at the 24th International Workshop of the Series on Global Security, Paris, June, 2007).

[20] "Police Conclude Probe into Alleged Riot Ringleaders," *The Baltic Times*, (6. September 2007), https://perma.cc/3SY9-7T3Q.

[21] Lucas Kello, *The Virtual Weapon and International Order*, (New Haven: Yale University Press, 2017), 185.

e) The politics of attribution

The Estonian case demonstrates how politics shaped attribution. During the heat of the crisis, the political decision was made to publically attribute the cyber attacks to the Russian government. This mirrors a historical debate (as introduced in Chapter 3) about whether and how the actions of individuals on the high seas can be attributed to a sovereign. The debate included both a discussion on whether the sovereign could legitimize the otherwise criminal actions undertaken by individuals at sea (i.e. by issuing privateering licences) as well as the nature of that sovereign. In the late 16th century Gentili understood piracy as "any taking of foreign life or property not authorized by a sovereign."[22] This highlighted the necessary existence of a recognized, lawful sovereign, in absence of which, acts at sea could be labelled piratical. Contrary to that Grotius argued, that pirates can be identified as "individuals whose primary object was plunder regardless of place."[23] Whereas Grotius' approach was based on the intent of the group, Gentili's realist approach rested on "political decisions of the decision-makers in each society as to what labelling system would best suit their needs, and achieved the legal and political results they preferred as a result of their choice of labels."[24] The difference in the Estonian case is that, historically, states would often have been incentivised to call their attackers pirates, so as to be able to take drastic measures against them. However, when convenient, some also associated piratical actions to states. An example of this was raised in the historical Chapter 3: the Indian Mughal chose to associate piratical acts committed by English speaking pirates to the English Crown and hold the East India Company responsible for them, despite the Company's innocence with regard to the sponsorship of pirates. This enabled the Mughal empire to force the company to provide

[22] Alfred P. Rubin, *The Law of Piracy*, International Law Studies, (Newport, R.I: Naval War College Press, 1988), 20.
[23] Ibid., 66.
[24] Ibid.

protection for the Mughal's ships. The opposite case was also highlighted in the historical investigation. In the case of Captain Kidd, the English government chose to deny state-sponsorship for the actions undertaken, also to mend relations with the Mughal Court. Thus, to better understand governments' agency in framing state proximity of the attackers, one can analogize to the history of pirates and privateers in the 17th century.

Of course, Estonia was in a very different position than the Mughal empire. Nevertheless, it effectively used the public attribution to Russia to rally support for the government's position in the European institutions (EU, Council of Europe), in NATO, and bilaterally between countries.[25] President Ilves' invocation of the civilizational discourse is also similar to the historical discourse, as it draws boundaries between the civilized world – and what would in the colonial context have been called the "barbarians". Once the crisis was over, the government became more cautious and retracted the accusations, still implying state sponsorship, but not openly accusing the Russian government.

It is likely that the retraction came about due to the lack of conclusive evidence. The Estonian government had publically attributed the attacks, despite not having any conclusive evidence of Russian state-sponsorship at that time. For example, Estonia's CERT privately informed U.S. officials before the 18. May 2007 that "there is still no smoking gun that links the attacks to Moscow."[26] A post-crisis assessment by the U.S. embassy summarizes the Estonian internal position, relying on Mikhel Tammet, the Estonian Ministry of Defence's Director for Communications and IT. He stated:

[25] European Union Presidency, "EU Presidency Statement on the Situation in Front of the Estonian Embassy in Moscow," 2. May 2007, [Press Release], https://perma.cc/99JQ-XQ2D; North Atlantic Treaty Organization, "EU Presidency Statement on the Situation in Front of the Estonian Embassy in Moscow," 3. May 2007, [Press Release], https://perma.cc/99JQ-XQ2D.

[26] Russian Bear Hug Squeezes Estonian Economy, 29. May 2007, *Diplomatic cable from the U.S. Embassy in Tallinn*, No. 07TALLINN347_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/F383-N7JQ.

> Looking at the patterns of the attacks, it is clear that there was a small, core of individuals who intended to launch their attack on May 9 […] but when the MOD announced its plans to move the Bronze Soldier on April 27, they moved up their plans to try to link the attacks with the monument's removal. […] You don't expect spontaneous, populist cyber attacks to have a pre-determined list of targets and precise dates and times for coordinated attacks.[27]

The government of Estonia's assessment was based on the level of organization, coordination, and timing of the attacks as well as their sophistication. Furthermore, the government repeatedly asked the *cui bono* question (i.e. who profits?). Interestingly, whilst Estonian analysts pointed to the sophistication of the attackers (e.g. having shut down a key router), in a debriefing reported by the U.S. embassy, they pointed out how much worse the attack could have been. For example, Rain Ottis "noted had the attacks specifically targeted Estonia's key servers and routers, they could have shut down Estonia's entire cyber infrastructure."[28] Hence, the dual claims of sophistication on the one hand, but not so sophisticated as to target the "key servers and routers" on the other, raises the question, whether not having shut down the entire infrastructure was due to a lack of target intelligence by the attackers, a more limited strategic aim, or due to a lacking sophistication on the attacker's side.

In 2007, Russia had one of the most competent hacker scenes world-wide. Operating within an environment of widespread corruption, as long as cyber criminals stayed out of

[27] Estonia's Cyber Attacks: World's First Virtual Attack against Nation State, 4. June 2007, *Diplomatic cable from the U.S. Embassy in Tallinn*, No. 07TALLINN366_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/CC35-NBCM.

[28] Estonia's Cyber Attacks: Lessons Learned, 6. June 2007, *Diplomatic cable from the U.S. Embassy in Tallinn*, No. 07TALLINN374_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/3ABQ-6J7D.

attacking Russian interests, they could operate relatively safely.[29] The types of cybercrime ranged from intellectual property thefts, extortion, financial fraud, spam, to service oriented models such as DDoS for hire or criminal infrastructure provision.[30] Some of these services were offered by the same groups. For example, spammers may own botnets that they rent out for use by third parties.[31]

Political DDoS and website defacement was nothing new in Russia in 2007.[32] Especially if targeting a website of politically undesired groups (e.g. Chechen rebels), attackers could rely on not being prosecuted. Examples go as far back as 1999, when the Chechen website Kavkaz.org was first attacked.[33] This type of hacking made the news in 2002. When Siberian hackers attacked the website anew, the local FSB office was quoted as appreciating this type of action as a legitimate expression of its citizens.[34] Later, hackers started to target opposition websites, like the National Bolshevik Party, Garry Kasparov, or newspapers (e.g. the Kommersant) and radio stations (e.g. Echo Moskvy).[35] State support is usually inferred and cannot be proven. Exceptions exist, as evidenced in the Duma certificate issued to a hacker on behalf of the right-wing extremist party LDPR

[29] Note: "Official corruption remains a problem in all levels of government" in Russia in 2017, see: U.S. Department of State, "International Narcotics Control Strategy Report - Money Laundering and Financial Crimes," Washington DC, 2017, 149.

[30] See Eli Jellenc and Kimberly Zenz, "Global Threat Research Report: Russia," Chantilly, VA, 2007.

[31] See authoritative account Brian Krebs, *Spam Nation: The inside Story of Organized Cybercrime--from Global Epidemic to Your Front Door*, (Naperville: Sourcebooks, 2014).

[32] See also Jose Nazario, "Politically Motivated Denial of Service Attacks," in *The Virtual Battlefield: Perspectives on Cyber Warfare*, ed. Christian Czosseck and Kenneth Geers (Amsterdam: IOS Press, 2009).

[33] Andreĭ Soldatov and Irina Borogan, *The New Nobility: The Restoration of Russia's Security State and the Enduring Legacy of the KGB*, 1st ed., (New York: PublicAffairs, 2010), Chapter 18. Soldatovand Borogan also mention kavkazcenter.com. Interestingly, the Chechen islamist site stayed in the Russian state's purview. In 2014 APT28, a cyberespionage group associated with the Russian state's interest, used the domain in a spear phishing campaign, registering their own site on kavkazcentr.info. See FireEye, "APT28: A Window into Russia's Cyber Espionage Operations?," Milpitas, CA, 2014. Thanks to Juan Andrés Guerrero-Saade for pointing this out to me.

[34] Soldatov and Borogan, *The New Nobility: The Restoration of Russia's Security State and the Enduring Legacy of the KGB*. Chapter 18.

[35] Ibid.

Deputy Kuryanovich in March 2006.[36] At the time, the hacking of targets within the broad political directive of the Russian government was not seen as to entail personal risk of prosecution. Rather, one could be acknowledged as patriotic hacker.[37]

In 2007, the Estonian government chose to associate the behaviour of a small group of actors, which used a known political practice in Russia, with the Russian government. Later, the accusation of state complicity would be upheld only informally (i.e. in public discourse but not in diplomatic affairs), due to the absence of honouring a mutual legal assistance treaty.[38] Politically, the Estonian government thereby chose to raise behaviour that it could have labelled as criminal, or political activism, to an interstate political level. Whilst the attacks were taxing on a highly internet-dependent country, the Estonian government used its representation of the sophistication of the attacks to rally for political support amongst its Western partners and cast Russia as the "uncivilized" aggressor. Thereby, it succeeded in raising some support in NATO and in the EU.

ii. Russian narrative: a demonizing discourse

The Russian state did not stay silent during this crisis. Rather, already in January 2007, the Russian Federation Council voiced its discontent with Estonian domestic actions by

[36] The certificate was awareded for the defacement of the Jewish website www.evrey.com. The text of the certificate includes (as translated by Jellenc and Zenz): "As Deputy of the State Duma and member of the Security Committee, I want to present you with the thanks and appreciation of the Information department of the NSD 'Slavic Union' for your vigilance and your recent suppression of Russophobe and others on the Internet, Russophobes that fan the flames of inter-religious discord and provide related materials. I hope that from now on your work will not become any less productive or ideologically adjusted." Jellenc and Zenz, "Global Threat Research Report: Russia," 47.

[37] Andreĭ Soldatov and Irina Borogan, *The Red Web: The Struggle between Russia's Digital Dictators and the New Online Revolutionaries*, 1st ed., (New York: PublicAffairs, 2015), 151.

[38] According to Marina Kaljurand, the mutual assistance treaty was invoked by Estonia in June 2007, but no Russian cooperation was forthcoming. Kello, *The Virtual Weapon and International Order*, 185.

classifying the Estonian government policies as a step towards legalizing neo-Nazism in Europe.[39]

Strong public sentiments towards the Estonian plans were present throughout the Russian population. Polled on the 3–4th of March 2007, 87% people had heard about the Estonian government's plans, 78% reported to feel a sense of indignation towards them, and 90% of the polled population thought the Russian government should do something about it, although opinions varied on the extent of such measures.[40]

At the beginning of April, Russia's First Deputy Prime Minister Sergei Ivanov called for a civil boycott of Estonia's products.[41] On 18. April 2007, Foreign Minister Sergei Lavrov called the planned Estonian actions "blasphemous – an outrage upon the memory of those who liberated Europe from the fascists."[42] On 23. April 2007, Russia summoned the Estonian ambassador and issued a diplomatic note protesting the exhumation of the soldiers and the move of the statue – actions which, according to the Russian foreign ministry, would review the role of Russia in the victory over fascism in World War II.[43] The Russian foreign ministry held on to that narrative, highlighting the desecration of soldiers' graves as rewriting Second World War history, and labelled the protesters in front of the Estonian embassy as citizens protesting the mockery of sacred sites and the

[39] Federation Council of the Federal Assembly of the Russian Federation, "Address of the Federation Council of the Federal Assembly of the Russian Federation (No. 15-SF)," 24. January 2007, [Press Release, GoogleTranslate], https://perma.cc/M46P-DWKM.

[40] Russian Public Opinion Research Center (VCIOM), "Monuments and Burial of Soviet Warriors in Estonia," 12. March 2007, [GoogleTranslate], https://perma.cc/7ZQJ-5VTY. See also: Veiko Spolitis, "Russland Und Die Baltischen Staaten. Denkmalstreit Und Russische Minderheit in Estland," *Russland Analysen*, no. 134 (2007).

[41] "Here We Go Again," *The Baltic Times* (4. April 2007), https://perma.cc/JT4M-LZ9L.

[42] Ministry of Foreign Affairs of the Russian Federation, "Remarks and Replies to Media Questions by Russian Minister of Foreign Affairs Sergey Lavrov at Joint Press Conference with Spanish Minister of Foreign Affairs Miguel Angel Moratinos after Their Talks, Madrid, April 18, 2007," Russian Federation, 19. April 2007, [Transcript], https://perma.cc/PWQ5-XA5J.

[43] Ministry of Foreign Affairs of the Russian Federation, "On the Note of the Ministry of Foreign Affairs of Russia to the Foreign Ministry of Estonia," Russian Federation, 23. April 2007, [Press release, GoogleTranslate], https://perma.cc/YWE5-KPU2. Russia also raised the objections to the removal of the statue by one of the daughters of the soldiers buried at the grave site.

cruelty of the Estonian police.[44] It also criticised the treatment of the Russian minority in Estonia, specifically the non-issuance of passports. The Russian government made an appeal to the European Union, OSCE, and expressed support for its statements trough the Commonwealth of Independent States (CIS). Sergei Lavrov also wrote a letter to major European governments outlining the Russian position and detailing the expectations of the European partners to act.[45] In his Great Patriotic War memorial speech, Russian President Vladimir Putin mentioned Estonia indirectly:

> Those who attempt today to belittle this invaluable experience and defile the monuments to the heroes of this war are insulting their own people and spreading enmity and new distrust between countries and peoples.[46]

Dmitry Peskov, spokesman for the Russian government, denied Russian involvement in the cyber attacks and warned "the Estonia side has to be extremely careful when making accusations."[47]

What emerges from this narrative is a climate, within which patriotic hackers may have been at work. The Russian official bodies outlined an interest of the Russian state against the removal of the monument. By doing so, the government supported a narrative with a clearly identifiable opponent (the Estonian government), victims (the Russian people), and a call for political action (e.g. civil boycott). In such an environment, similar to the

[44] Ministry of Foreign Affairs of the Russian Federation, "Statement by the Permanent Representative of the Russian Federation, AN Borodavkin, at the Meeting of the OSCE Permanent Council," Russian Federation, 3. May 2007, [Transcript, GoogleTranslate], https://perma.cc/2W8A-5WML.

[45] "The Lavrov Letter in Full". 12. May 2007, A lamb with no guiding light [Blog], https://perma.cc/2A2T-VX2E. The translation from Finnish, provided by the blogger, can be independently corroborated by concurrent newspaper accounts at the time.

[46] President of Russia, "Speech at the Military Parade Celebrating the 62nd Anniversary of Victory in the Great Patriotic War," Russian Federation, 9. May 2007, [Transcript], https://perma.cc/KHE8-TSE8.

[47] BBC, "Estonia Hit by 'Moscow Cyber War'," BBC, 17. May 2007, https://perma.cc/U98H-J4YF; Quote from: Mark Landler and John Markoff, "Digital Fears Emerge after Data Siege in Estonia," *The New York Times*, 29. May 2007.

ones during previous political DDoS activities, it is likely that Russian pro-government hackers took it upon themselves to attack the Estonian infrastructure. Indeed, a leader of the Transnistrian regional section of Nashi, the pro-nationalist youth movement, did take credit for the attacks in 2007. This was corroborated later by the U.S. NSA and a Russian Duma member.[48] This could still be consistent with the Estonian MoD's (private) assessment that DDoS attacks were planned for the 9. May 2007 anyway. The connection to the Russian government, however, is tenuous at best. No evidence directly linking the government to the attacks was ever published. Rather, the hacking activity and the demonstrations in Moscow were kept at arms-length from the state.

iii. Re-assessing Estonia 2007: pirates, privateers, or something else entirely?

This case illustrates how a government engaged in a narrative of state-sponsorship and used it strategically to lobby for political support with its allies. Estonia claimed Russian government involvement during the crisis and signalled willingness to present evidence for the claim. Private diplomatic conversations with United States officials, however, demonstrate that the technical evidence was insufficient. Hence, political attribution was used as a rhetoric strategy to shift the blame on the Russian government. The Estonian government struggled to defend their attribution claim.[49] This was further complicated, because the construction of a cyber attack as an active attack against a country was still a novel discursive space to occupy.[50] NATO and the EU did come to the aid of the Estonian

[48] Nicole Perlroth, "Online Security Experts Link More Breaches to Russian Government," *New York Times*, 29. October 2014; Nargiz Asadova. "We, the Russian Overseas, Do Not Need Foreigners", 5. March 2009 [Blog, GoogleTranslate], https://perma.cc/ANR2-CHCZ; Andrey Zlobin and Xenia Bolletskaya, "Electronic Bomb - Who Is Behind the Cyberwar between Russia and Estonia?," Vedomosti, 28. May 2007, [GoogleTranslate], https://perma.cc/9CW6-UZRD.

[49] Highlighting the impact of the missing attributive evidence on securitization, see Lene Hansen and Helen Nissenbaum, "Digital Disaster, Cyber-Security, and the Copenhagen School," *International Studies Quarterly*, no. 53 (2009): 1170.

[50] See also Amir Lupovici, "The "Attribution Problem" and the Social Construction of "Violence": Taking Cyber Deterrence Literature a Step Forward," *International Studies Perspectives* 17, no. 3 (2016); ibid.

republic, but their messaging to Russia highlighted the upholding of the Vienna Conventions, thereby referring to the Moscow embassy incidents, rather than acting based on Estonia's attribution claim.

To draw direct parallels to history: the blurred lines between piracy and privateering had been classified by some historians as a substitute for open warfare. The official denials of support were a predictable feature of that form of conflict. What is surprising, and what deserves further study, are the dynamics that lead states to challenge these denials. In the case of Estonia, a mix of a sense of national emergency due to the realization of vulnerability and the spotting of a policy opportunity seems to have given rise to the challenge. Just as the Mughal empire chose to blame the English Crown for the actions of English speaking pirates attacking the Mughal's ships, the Estonian government chose to blame the Russian government for the cyber attacks against the Estonian institutions.

This adds a new element to the literature on attribution. Scholars have pointed out the element of uncertainty and the political judgement that an attribution claim is made under.[51] For example, Rid and Buchanan labelled attribution as "being what states make of it" and point out the uncertainties that arise in making strategic attributions under time "pressure."[52] However, their focus lies on there being a "correct" attribution, and time-pressure leading to a potential for getting it wrong. Whilst their scholarly contribution is very valuable, it does not shed any light into the political contestation of the specific

[51] Thomas Rid and Ben Buchanan, "Attributing Cyber Attacks," *Journal of Strategic Studies* 38, no. 1-2 (2015); Clement Guitton, *Inside the Enemy's Computer: Identifying Cyber-Attackers*, (London: Hurst & Co, 2017); Herbert Lin, "Attribution of Malicious Cyber Incidents: From Soup to Nuts," *Journal of International Affairs* 70, no. 1 (2016); Madeline Carr, "Cyberspace and International Order," in *The Anarchical Society at 40: Contemporary Challenges and Prospects*, ed. Hidemi Suganami, Madeline Carr, and Adam R. C. Humphreys (Oxford: Oxford University Press, 2017); Ashley Coward and Corneliu Bjola, "Cyber-Intelligence and Diplomacy: The Secret Link," in *Secret Diplomacy: Concepts, Contexts and Cases*, ed. Corneliu Bjola and Stuart Murray, *Routledge New Diplomacy Studies* (Abingdon: Routledge, 2016), 207.

[52] Rid and Buchanan, "Attributing Cyber Attacks," 7, 32.

public attribution claims. Clement Guitton paid more attention to this public contestation by casting attribution as a "game to convince an audience", which depends on trust and authority of the entity making the claims.[53] Herb Lin built on this analysis by including the specific standards of evidence required to convince different audiences, modelled on different domestic and international legal standards.[54] This thesis extends Guitton's and Lin's analyses by identifying these public claims as deeply political choices about how to frame the relations between the attacker and the entity that the state chooses to blame.

In contrast to previous scholarship, the focus in this case study on how state-sponsorship attribution is attained has brought to the fore the significant agency that a government has when making those attribution claims in public. Hence, applying the historical analogy of piracy and privateering to the situation in Estonia, fostered a conceptual advancement in the analysis. Not only is it a political judgement to attribute the cyber attacks to the Russian government (i.e. answering the question "who is responsible" privately). It is also not only a political judgement whether to disclose any attribution publically (i.e. answering the question "should we publically blame someone"). It is also a political judgement about how to frame such a judgment in public. The meaning-making efforts of the defending entity are especially powerful, given the absence of authoritative third party analyses. The analysis of the Estonian case study suggests, that the resource based "state-sponsorship" attribution narrative was used, at least in part, as a policy opportunity to rally international support.

The analysis of the different narratives presented by different stakeholders in the Estonia case illustrates a similarity to historical piracy. The government being attacked gets to

[53] Guitton, *Inside the Enemy's Computer: Identifying Cyber-Attackers*, 82. See also "Achieving Attribution" (PhD Thesis, King's College London, 2014), 98-122.
[54] Lin, "Attribution of Malicious Cyber Incidents: From Soup to Nuts."

frame its response. It may choose to frame the attack as a criminal act and use its criminal justice system to respond. Or, it may choose, as in the case of Estonia, to react politically and, by associating the hacking with a political actor, such as a government, raise the hacking to an interstate incident. These differing narratives open different paths for political resolution or escalation of a cyber attack.

It is specifically relevant for international relations that the government is making this political choice. As experience with cyber attacks grows, the palette of policy responses becomes more nuanced. In a long and drawn out process the community of states build a repertoire of practices that may ensue after a suffered cyber attack. As the very early case of Estonia demonstrates, the decisions taken by governments are made under uncertainty about both the identity and the exact motivation of the opponent. This makes the response particularly difficult.

One of the interesting implications of the perceived convergence of interests between Russian cybercrime and the Russian state is how this assessment complicates statecraft for other actors. One of the fundamental judgments state defenders have to undertake is how closely the attacker is associated with a state. The analytic judgment has implications not only for the (legal) assessment of state responsibility, but also informs whether the particular attack can be read as a signalling component of a particular state's leadership.[55] Hence, the blurring of the official state led operations and criminal undertakings introduces strategic ambiguity, which offers advantages and disadvantages.

The effect in the Estonia case was carefully assessed. The ambiguity of sponsorship enabled Russia to publicly talk about the Estonian situation, without having to take

[55] For an analysis focusing only on state responsibility, see Healey, Jason, "The Spectrum of National Responsibility for Cyberattacks," *Brown Journal of World Affairs* 18, no. 1 (2011): 57-69.

responsibility for the actions happening on the internet. At the same time, the ambiguity also enabled the Estonian government to blame the Russian government for the cyber attacks, without providing any evidence. In the Estonian case, the political interests of Russia were clearly signalled, long in advance. Hence, even if the government of Russia was not responsible for the actions on the internet, Estonia could assume that the Russian government was not going to do anything to stop them.

However, in other cases, where the overlap of interests is less clear, the picture grows much murkier. Consider this example from the former head of U.S. counterintelligence, Joel Brenner, in *International Security*:

> When Russian intruders penetrated JPMorgan Chase Bank's computer system in 2014 during tensions over Ukraine, no one could tell President Barack Obama whether Russian President Vladimir Putin was sending repercussions, and Chase's vulnerability was there for all to see. When evaluating his options, could the president ignore the possibility that exercising one of them carried the palpable risk that a major U.S. bank could be taken down? […] the incident demonstrates the way in which a critical vulnerability in the civilian economy could constrain the exercise of national power, including military power, in a crisis.[56]

Today we know that two Israeli and one U.S. citizen conducted the intrusions into JPMorgan Chase and other U.S. financial institutions. The extent of Russian state involvement remains unclear – in December 2016 the American agreed to voluntarily terminate his stay in Russia and face charges in the United States.[57]

[56] Joel Brenner and Jon R. Lindsay, "Correspondence: Debating the Chinese Cyber Threat," *International Security* 40, no. 1 (2015): 192.

[57] Federal Bureau of Investigation, "Wanted by the FBI: Joshua Samuel Aaron," news release, 2. June 2015, https://perma.cc/AY3N-6UFJ. On the return, see "American in Russia to Return to Face U.S. Charges in J.P. Morgan Hacking Case," *Reuters News*, 14. December 2016. https://perma.cc/L2CR-J443.

This situation raises two challenges. To start with, uncertainty about the actors' links to the state can be a source of power. If the U.S. leadership really did not know the true source and link to the Russian state, this could have had a positive impact on the success of Russian actions in the Ukraine, as a concurrent undermining of the U.S. financial institutions could have raised the stakes of policy action against Russian interests. In addition, the uncertainty about the links can create long-term advantages for the Russian state, as it can try to use the existence of "patriotic hackers" as a front for state led operations to gain plausible deniability.

However, the flipside of this reveals a challenge in the cyber offensive space. Using cyber attacks for signalling purposes is still an underdeveloped practice and the risk of miscalculation and misinterpretation is high. As a direct consequence of the assumed convergence of interests between the Russian state and Russian cyber criminals, the risk that a criminal action may send a signal, when none was intended, increases the escalatory potential.

To sum up: the Estonia case can be reinterpreted with the aid of the analogy to privateering and pirates. To start with, the case can be better understood with the background of how state-association was established for historical actors on the high seas. Whilst Grotius insisted on a matter of substance, Gentili advocated for a solution of political convenience. The case of Estonia showed elements of both. The Estonian government used the narrative of state-sponsored attackers to its political convenience, but it did so by arguing that it possessed the evidence to back up its claims. Furthermore, by choosing to construct the attackers as resources of the state in its narrative, Estonia made a political choice to raise the cyber attacks to the interstate level. This focus on political agency of the defender adds a new element into our understanding of public attribution. Finally, similar to state collaborations with pirates, the perceived blurring of

state and criminal interests highlighted opportunities and difficulties such strategic ambiguity introduces both for the perceived attacker and the defender.

B. Evidence of the state-criminal nexus 10 years later: the cases of Seleznev, Bogachev, and Dokuchaev et al.

Whilst this thesis cannot establish if the Russian state actively supported, instigated, directed, or steered the attacks against Estonia, the evidence documenting the relationships between Russian cyber criminals and organs of the state has changed significantly since 2007. Ten years later, the uncertainty about cooperation between cyber criminals and the Russian state has been somewhat dispelled. Official Russian policy still grants hackers great leeway in being active outside of Russia and in the direction of its general interests. Below is a quote by Vladimir Putin, made in June 2017, when the Russian president was questioned by the media about Russia's role in interfering in the 2016 U.S. election:

> Hackers are free spirited people, like artists. If they are in a good mood in the morning, they wake up and paint. It is the same for hackers. They wake up today, they read that something is happening in inter-state relations, and if they are patriotically minded – they start making their contributions which are right, from their point of view – to the fight against those who say bad things about Russia. Is that possible? Theoretically, it is possible.[58]

His romanticising of patriotically minded hackers reinforces the top-level political cover for hackers becoming active in Russian interests and demonstrates the strategic use of patriotic hackers as a front to establish plausible deniability. Research has uncovered several sub-pockets of the cybercriminal underworld that could not continue to exist, were

[58] Andrew Higgins, "Maybe Private Russian Hackers Meddled in Election, Putin Says," *New York Times*, 1. June 2017.

there not, at least tacit, support from state officials.[59] Many analysts have pointed to the political enablement of Russian and Eastern European cybercrime. Supporting evidence for this, is the way in which cyber criminals have become active in Russian political interests and engage in selective targeting, deliberately avoiding touching on Russian law enforcement interests.[60] Tacit support by a government is also inferred by the absence of honouring a mutual legal assistance treaty, or by the leaking of information to cyber criminals. Strong evidence, however, is hard to establish in this area of investigation. In addition, there is some evidence of high-profile arrests of Russian cyber criminals by the Russian police. Examples are the 2015 arrests of hackers associated with the Dyre Trojan, or the 2016 arrests of the criminal group named "Lurk."[61]

In this part B, the risks and opportunities associated with the closeness between cybercrime and politics will be explored further. The analysis will build on the insights of the historical chapter that highlighted the longevity and path dependencies that a reliance on privateers and pirates brought.

Three cybercriminal cases shed more light onto the pirate/privateer aspect of this state-criminal nexus. First, the case of Roman Seleznev highlights the political rift

[59] On Russia's cooperation with organized crime more broadly see contemporarily Mark Galeotti, "Crimintern: How the Kremlin Uses Russia's Criminal Networks in Europe," London, 2017. For a major work on the Russian mafia covering the turbulent 1990s, see Federico Varese, *The Russian Mafia: Private Protection in a New Market Economy*, (Oxford: Oxford University Press, 2001).

[60] Misha Glenny, *Darkmarket : Cyberthieves, Cybercops, and You*, 1st U.S. ed., (New York: Alfred A. Knopf, 2011); Krebs, *Spam Nation: The inside Story of Organized Cybercrime--from Global Epidemic to Your Front Door*; Max Goncharov, "Criminal Hideouts for Lease: Bulletproof Hosting Services," Cupertino, CA, 2015; "Russian Underground 2.0," Cupertino, CA, 2015, 7; Joseph Menn, *Fatal System Error: The Hunt for the New Crime Lords Who Are Bringing Down the Internet*, (New York, London: PublicAffairs, 2010); Nikolas K. Gvosdev, "The Bear Goes Digital: Russia and Its Cyber Capabilities," in *Cyberspace and National Security Threats, Opportunities, and Power in a Virtual World*, ed. Derek S. Reveron (Washington, D.C.: Georgetown University Press, 2012). On patriotic hackers, see also Soldatov and Borogan, *The New Nobility: The Restoration of Russia's Security State and the Enduring Legacy of the KGB*. Chapter 18.

[61] Sarmistha Acharya, "Dyre Malware Disrupted after Russian Authorities Raid Moscow Film Company Office," International Business Times, 7. February 2016, https://perma.cc/79RP-RKV2; Ruslan Stoyanov, "The Hunt for Lurk," Kaspersky, 30. August 2016, https://perma.cc/5VFR-RK5L.

between Russia and the United States, when it comes to the prosecution of their nationals. This establishes on the one hand that we are clearly not in an age, in which cyber criminals are accepted as *hostis humani generis* (i.e. enemies of mankind). On the other hand, it shows a case, where Russia voices a public intent to prosecute cyber criminals, but prefers to do so in its own courts. Second, the case of Evgeniy Bogachev substantiates another type of state proximity a cybercriminal could have with a state, namely the guaranteeing of a safe operating base in return for information leveraged through the cybercriminal enterprise. The cases of Seleznev and Bogachev highlight the institutionalized toleration of cyber piratical enterprises. Whilst the cases of Seleznev and Bogachev most closely resemble cases of piracy, the third and most recent case (Dokuchaev et al.) documents a joint operation between government officials and Russian hackers that closely resembles privateering-like structures. The analysis shows that the risk of not exerting control over the historical privateer also manifested itself in this contemporary case. [62]

i. Roman Seleznev – a politically supported cyber pirate

Discussing Roman Seleznev,[63] a career cyber criminal and son of a member of the Russian Duma, the United States government alleged that

> Federal agents eventually developed evidence that Roman Seleznev, the son of a Russian politician, was the true identity behind nCuX. On May 19, 2009, agents with the Secret Service and the FBI met with representatives of the Russian Federal Security Service (FSB) in Moscow, and presented substantial evidence of

[62] Part B relies heavily on U.S. court documents. As such, it privileges the U.S. governmental discourse over, potentially alternative, discourses from the individuals involved. Research commitments of symmetry and generosity towards all stakeholders meant that efforts were made to corroborate the accounts through other sources, and research alternative narratives by the accused individuals themselves. In the case of Roman Seleznev, there exist court filings on his behalf. In the case of Bogachev and Dokuchaev et al., no evidence documenting their perspective was found. Hence, the analysis presented here is a snapshot of the discourses available at the time of writing and may be revised upon availability of a future Russian account of the two cases.

[63] For a profile of the Seleznev case see Nicole Perlroth, "Russian Hacker Sentenced to 27 Years in Credit Card Case," *New York Times*, 21. April 2017.

> defendant's computer hacking activities including his credit card hacking and other computer crimes. U.S. law enforcement provided the FSB with defendant's online alias names and information that they believed nCuX's true name was Roman Seleznev of Vladivostok, Russia. The agents' attempt at international coordination backfired. Just one month later, on June 21, 2009, nCuX notified his co-conspirators on multiple criminal forums that he was going out of business. Shortly after that, nCuX completely disappeared from the internet.
>
> As U.S. Probation noted, the information that U.S. law enforcement was investigating Seleznev 'clearly got back to Mr. Seleznev.' Indeed, Seleznev had his own contacts inside the FSB. In chat messages between Seleznev and an associate from 2008, Seleznev stated that he had obtained protection through the law enforcement contacts in the computer crime squad of the FSB. Later, in 2010, Seleznev told another associate that the FSB knew his identity and was working with the FBI.[64]

This U.S. official narrative of a backchannel relationship with the FSB, reinforced by the connections of his father, leads to a picture of state complicity. Reinforcing this impression, but with a different narrative, is the way the Russian state took an interest in the case. Foreign Minister Sergei Lavrov raised the U.S. practice to arrest Russian criminals world-wide in an interview in 2016:

> The Americans, for example, literally 'steal' our people in violation of the laws of the countries on whose soil these abductions take place. This was the case of

[64] *United States of America V. Roman V. Seleznev*, CR11-0070RAJ - Sentencing Memorandum (Document Nr. 464), 5-6 (2017). Indeed, diplomatic requests for assistance had failed already in earlier cybercrime cases. For an early case, see e.g. Kevin Poulsen, *Kingpin: How One Hacker Took over the Billion-Dollar Cybercrime Underground*, 1st ed., (New York: Crown Publishers, 2011), 51.

> Viktor Bout, Konstantin Yaroshenko, Roman Seleznev and dozens of other people 'snatched' from Europe and other countries.
>
> But I am sure that this work will bring results, and indeed, we are already starting to see the fruits. If some cyber criminal is arrested, we would be the last to try to protect him. After all, these people steal money in Russia and abroad. But he [Roman Seleznev] should be put on trial here.[65]

Furthermore, the Russian Foreign Ministry labelled his arrest a "kidnapping" and criticised the sentence of 27 years in prison.[66] Hence, the Russian government claimed that whilst cyber criminals are to be prosecuted, if they are Russian, they should be prosecuted by Russia.

Remarkably, in this case we have an account of Roman Seleznev himself. He summarized his life story in a handwritten letter, testifying on his behalf (see Figure 4 below).

In the letter, he claimed, in broken English, that in 2009, when his wife and daughter were away on holiday:

> robbers suddenly show up in my home, our apartment. I was home. The robbers torture to me all night. They take all password from computer, laptop, money and everything of any value. […] The robbers knew I was doing wrong so they believe to never get caught. […] I was in fear and I take my family move to another country for our security.[67]

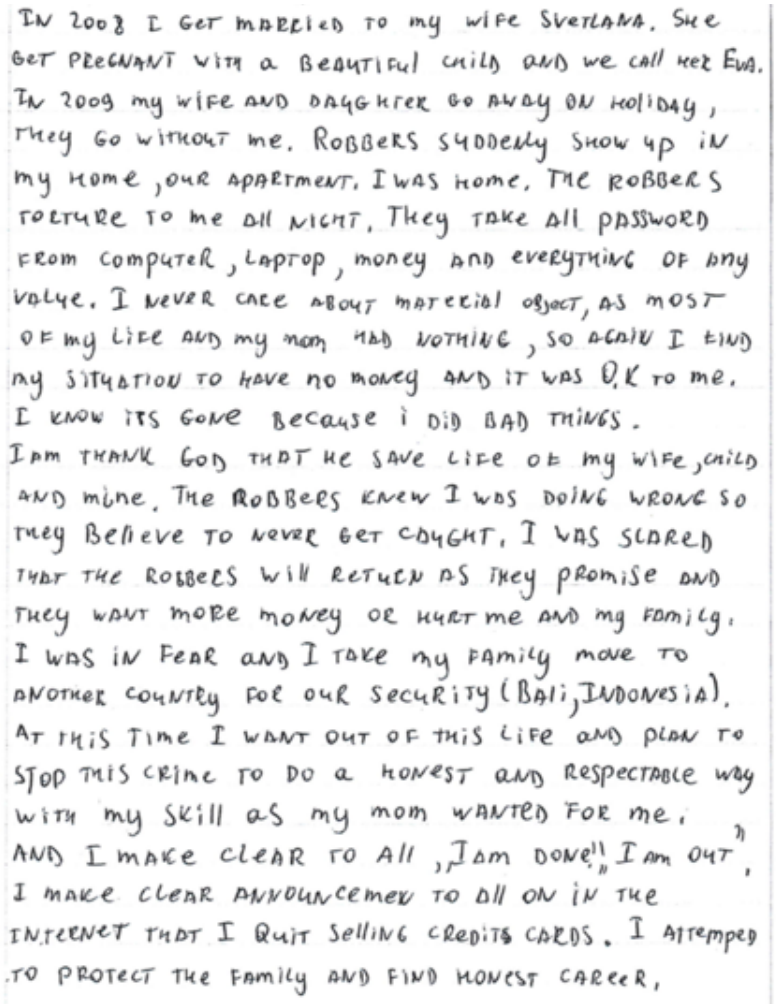
[65] Ministry of Foreign Affairs of the Russian Federation, "Foreign Minister Sergey Lavrov's Interview to Komsomolskaya Pravda Newspaper and Radio, Moscow," Russian Federation, 31. May 2016, [Transcript], https://perma.cc/938U-XQTA.

[66] Ministry of Foreign Affairs of the Russian Federation, "Briefing by Foreign Ministry Spokesperson Maria Zakharova, Moscow," Russian Federation, 27. April 2017, [Transcript], https://perma.cc/5DWJ-E86Z.

[67] *United States of America V. Roman V. Seleznev*, CR11-0070RAJ - Letter (Document Nr. 463) (2017).

He claimed that this was the time he announced to his cybercriminal associates that he would exit the business.

Figure 4: Extract of Roman Seleznev's handwritten testimony



In 2008 I get married to my wife Svetlana. She get pregnant with a beautiful child and we call her Eva. In 2009 my wife and daughter go away on holiday, they go without me. Robbers suddenly show up in my home, our apartment. I was home. The robbers torture to me all night. They take all password from computer, laptop, money and everything of any value. I never care about material object, as most of my life and my mom had nothing, so again I find my situation to have no money and it was O.K to me. I know its gone because i did bad things. I am thank God that he save life of my wife, child and mine. The robbers knew I was doing wrong so they believe to never get caught. I was scared that the robbers will return as they promise and they want more money or hurt me and my family. I was in fear and I take my family move to another country for our security (Bali, Indonesia). At this time I want out of this life and plan to stop this crime to do a honest and respectable way with my skill as my mom wanted for me. And I make clear to all „I am done!" I am out, I make clear announcemen to all on in the internet that I quit selling credits cards. I attemped to protect the family and find honest career.

Source: United States of America V. Roman V. Seleznev, CR11-0070RAJ – Letter. Document Nr. 463, p.4 (2017)

The letter is part of his criminal defence materials. Hence, one can expect him to present only facts that shed a positive light on his motivation and character. Equally, one would not expect him to bring up cooperation with the FSB (at least in publically available court transcripts), for fear of potential negative consequences. Rather, he mentioned a robbery as to have significantly altered the course of his life. Naturally, no corroborating evidence is expected to exist, when a cyber criminal is robbed alone in his apartment. However,

what this establishes, is a timeline that matches the assistant U.S. attorney's claims. This means something triggered Seleznev to leave his apartment, and, together with his wife and his one year old child, to move to Indonesia (a country without an extradition treaty to the U.S) and announce to his collaborators that he was leaving the world of cybercrime.[68] Whether the FBI is right in asserting collusion between the FSB and Seleznev, or whether, as Seleznev's account seems to imply, he underwent a violent form of persuasion, is unclear. We will probably never know the truth about what happened.

However, the Seleznev case establishes the politicisation of cybercrime between Russia and the United States. Roman Seleznev, with a father in the Russian parliament, has the political support of the Russian government. Even though the Russian government may have wanted to stop his criminal activities as well, it was not prepared to let the United States prosecute him. This substantiates the fact that the United States and Russia, at least in the Seleznev case, do not accept each other's judicial processes to prosecute their own nationals involved in cybercrime. As was laid out more fully in the historical chapter, privateering was only abolished once there was international agreement amongst states to prosecute pirates of any nationality and treat them as enemies of mankind (*hostis humani generis*). This happened in the early 18th century. Hence, this case gives an indication that, with regard to the analogy to pirates and privateers, the current situation found in cybercrime is better analogized to situations pre-18th century.

ii. Evgeniy Bogachev – a cyber pirate and cyber privateer

The United States did not let the claims of state-criminal collaborations rest on just that one case. Rather, it brought several cases against prolific Russian cyber criminals. The analysis of Elizabethan privateering has shown that a political-criminal nexus brings with

[68] 18 U.S. Code Chapter 209: Extradition. Title 18 Part II.

it self-reinforcing tendencies. The case against Evgeniy Mikhailovich Bogachev, one of the creators of the ZeuS trjoan, perhaps the most notorious online banking Trojan, shows the longevity and depth the special relationship with the Russian state entails.[69] This case is of particular importance, as Bogachev is one of the most-wanted cyber criminals worldwide.

Despite the U.S.' detailed criminal case against the individual, he continues to enjoy his freedom. His last known address was in the Black Sea resort Anapa. Having exhausted all legal measures to prosecute Bogachev, the U.S. instituted a $3 million bounty for information leading to Bogachev's arrest.[70] The absence of an official criminal case in Russia against Bogachev is substantial evidence of the existence of political cover for him. The evidence detailing cooperation between Russian state organs and Bogachev is further substantiated by private researchers' investigations. For example, in a joint presentation at Blackhat 2015 by Michael Sandee (Fox-IT), Tillmann Werner (Crowdstrike), and Elliott Peterson (U.S. FBI), the researchers detailed the workings of a variant of ZeuS called Gameover Zeus.[71] Both the presentation and the associated whitepaper detailed "a much lesser known side" of ZeuS, namely "its use for espionage."[72] The researchers discovered subparts of the botnet searching computers for

[69] Excellent profiles on the Bogachev case were published by *Wired* and the *New York Times*, see Garret M. Graff and Chad Hagen, "Inside the Hunt for Russia's Most Notorious Hacker," *Wired*, April 2017; Michael Schwirtz and Joseph Goldstein, "Russian Espionage Piggybacks on a Cybercriminal's Hacking," *New York Times*, 12. March 2017.

[70] Federal Bureau of Investigation, "Wanted by the FBI: Evgeniy Mikhailovich Bogachev," news release, 10. May 2017, https://perma.cc/66T4-YSH9. For the charges see *United States of America V. Evgeniy Bogachev*, CR14-00127-AJS - Indictment (Document Nr. 1) (2014). The one case known to the author, in which a bounty was successful, is the arrest of Sasser Worm author Sven Jaschan. Thanks to Clement Guitton for pointing this out.

[71] Michael Sandee, Tillmann Werner, and Elliott Peterson, "Gameover Zeus - Bad Guys and Backends" (paper presented at the Black Hat USA, Las Vegas, 5.-6. August 2015).

[72] Michael Sandee, "Gameover Zeus. Backgrounds on the Badguys and the Backends," Delft:Fox-IT, 2015, 2.

files with specific words (e.g. top secret) and e-mail addresses (e.g. of intelligence agencies) in the respective languages in Georgia, Turkey, and the Ukraine.[73]

The precise nature of the relationship between Bogachev and the Russian state is not publicly documented. However, the appearance of political cover confirms the long-standing impression of analysts that as long as cyber criminals in Russia seek their targets outside of the Russian state's interests, and as long as they provide some form of collaboration, when asked or coerced to do so, they remain beyond the U.S. criminal justice system's reach.[74] Whilst Seleznev's case could be regarded as a special case, due to his parliamentary connection, Bogachev's case indicates a deeper connection between cybercrime and the government. The governmental willingness not to prosecute the worldwide most-wanted cyber criminal sends a signal to the rest of the Russian cybercriminal community; namely, that there is a way the Russian government is willing to tolerate cybercriminal activities. The specifics of that collaboration, however, remain shrouded in secrecy.[75]

What one can surmise though, is that Bogachev was able to run his criminal enterprise for years with his base in Russia, despite the Russian authorities knowing about it. In terms of state proximity, this indicates, at the very least, a similar structure as a pirate port

[73] Ibid., 21-23. Note that the coordination between criminals and intelligence agencies is a significant challenge for both parties involved. See for example The Grugq. "Cyber Operators—Differences Matter", 29. September 2017 [Blog], https://perma.cc/JA9R-MAVP. See also The Grugq, "How Very APT" (Presentation presented at the 10th Troopers Conference, Heidelberg, Germany, 23. March, 2017).

[74] This is a confirmed assessment. For contemporary example of two sources confirming this to Meduza, see Daniil Turovsky, "America's Hunt for Russian Hackers: How FBI Agents Tracked Down Four of the World's Biggest Cyber-Criminals and Brought Them to Trial in the U.S.," Translated to English by Kevin Rothrock, *Meduza* (2017), https://perma.cc/VNX9-KU4T.

[75] In a newspaper article by a cybersecurity reporter with a credible track record, SecureWorks analyst Alex Tilley is quoted assessing Dyre to be "some or all of the same people including Bogachev." The same article quotes anonymous sources saying that many Dyre operators were "released without being charged" and are back in the cybercriminal business. See: Thomas Fox-Brewster, "Behind the Mystery of Russia's 'Dyre' Hackers Who Stole Millions from American Business," Forbes, 4. May 2017, https://perma.cc/HR3P-344A. If the claims were true, it would further substantiate the depth of the relationship between the state and cyber criminals.

that is willing to tolerate the lucrative activities undertaken by the hackers. Depending on the exact arrangements, the structure could also resemble privateering (i.e. the state profiting directly from the enterprise in the form of information or money). Both have precedent in the history of piracy and privateering. As the historical chapter showed, once such a structure is in place, it can instigate self-reinforcing tendencies. Officials that profit from the setup politically lobby for it to persist. As other criminals learn of the opportunity to seek political cover, the network of criminal-government interactions grows. A self-stabilizing feedback loop thus reinforces the tendencies that keep the privateering setup. Because a change in policy against cyber criminals is associated with much friction, the likelihood of a government undertaking one decreases.

iii. Dokuchaev et al. – a modern-day privateering setup

Both Seleznev's and Bogachev's cases of collaboration with the state ultimately rested on, even if available in significant quantities, circumstantial public evidence. This changed in 2017, when the U.S. chose to indict the FSB officers, Dmitry Aleksandrovich Dokuchaev and Igor Anatolyevich Sushchin, and career cyber criminals, Alexsey Alexseyevich Belan and Karim Baratov, for hacking Yahoo Inc. and other webmail providers between 2014 and 2016.[76] They charged the four men with a flurry of offences, including conspiracy to commit economic espionage, theft of trade secrets, and a range of U.S. Computer Fraud and Abuse Act offences. The interesting aspect of this indictment is the level of detail about the collaboration between criminal hackers and FSB officers,

[76] *United States of America V. Dmitry Dokuchaev et al.*, CR17-103 - Indictment (2017). Note for context: Dokuchaev, together with three others, including Kaspersky employee Ruslan Stoyanov, was arrested for high treason in Russia on 4. December 2016. Not many details are known about their cases, though there is some speculation about suspected links to Western intelligence agencies. Hence, though the Dokuchaev et al. provides the most detailed substantiation of FSB and cybercriminal cooperation to date, and no reason to question the veracity of the allegations exists, there is a question as to why the U.S. government chose to reveal that level of detail in February 2017. For background and coverage of their cases, see e.g. Brian Krebs, "A Shakeup in Russia's Top Cybercrime Unit," krebsonsecurity.com, 28. January 2017, [Blog], https://perma.cc/GX9Z-6VQY; "Russia Federal Agents Suspected of Treason Reportedly Passed Secrets to the CIA," *The Moscow Times*, 31. January 2017; Brian Krebs, "Four Men Charged with Hacking 500m Yahoo Accounts," krebsonsecurity.com, 15. March 2017, [Blog], https://perma.cc/PAK6-UL9Q.

working for the FSB Center for Information Security, that it reveals. The U.S. Justice Department expressed its discontent, as the FSB Center for Information Security also serves as the FBI's "main point of contact in Moscow on cybercrime matters."[77]

The indictment lays out in detail, how the four men conspired to hack Yahoo and profit from it. The theft of Yahoo's source code of its authentication system and user database enabled the attackers to impersonate any of 500 million Yahoo accounts. The targets included U.S. users affiliated with:

> webmail providers and cloud computing companies, whose account contents could facilitate unauthorized access to other victim accounts; Russian journalists and politicians critical of the Russian government; Russian citizens and government officials; former officials from countries bordering Russia; and U.S. government officials, including cyber security, diplomatic, military, and White House personnel.[78]

Further targets included personnel of financial and transportation companies. Specific examples of cooperation were given. On the FSB's side this included the target selection by the FSB officers, the tasking and payment of Baratov by Dokuchaev, and the provision of "intelligence information that would have helped him [Belan] avoid detection by law enforcement, including information regarding FSB investigations of computer hacking and FSB techniques for identifying criminal hackers."[79]

The FBI had issued an Interpol red notice (arrest alert) for Belan in 2012. He had escaped a European arrest in 2013 and subsequently travelled to Russia. The 2017 indictment

[77] U.S. Department of Justice, "U.S. Charges Russian FSB Officers and Their Criminal Conspirators for Hacking Yahoo and Millions of Email Accounts," U.S. Department of Justice, 15. March 2017, https://perma.cc/688M-8UY2.

[78] *United States of America V. Dmitry Dokuchaev et al.*, 10.

[79] Ibid., 1-2.

frames this as: "Rather than arrest him, however, the FSB officers used him."[80] Belan certainly proved to be a capable asset; he established covert access to the Yahoo network.[81] However, Belan did not use that access only for the purposes of exfiltrating information for the FSB, but also used it for personal gain. This included the collecting of credit card information, gift card information, contact information for spam campaigns, and the alteration of some Yahoo servers to promote a specific online pharmacy website. The scheme involved routing traffic from English language users searching for erectile dysfunction medications through one of Belan's servers, which in turn sent them to an online pharmacy site that payed kickbacks to the traffic originator.[82]

No information about the financial arrangements between the FSB and Belan are known. When coming back to Russia in 2013, he would have been in a very weak position (being wanted by the FBI). From the level of detail provided otherwise in the indictment, it is at least conceivable that the deal involved Belan avoiding arrest for his hacking (criminal and otherwise), and in return providing his services to the two FSB officers. Of course, there is no indication of how voluntary such an agreement might have been on Belan's part.

As part of the same scheme, the two FSB officers had further directed Karim Baratov to hack non-Yahoo webmail accounts (e.g. 50 Gmail accounts).[83] Compared to the operation with Belan, these webmail hacking assignments were more transactional in nature. The FSB officers would task Baratov with a specific e-mail address, which he would then

[80] Ibid., 2.

[81] The tactics, techniques, and procedures of Belan's intrusions in 2012-2013 are described in detail in Chris McNab, "Alexsey's TTPs," Medium, 19. March 2017, [Blog], https://perma.cc/3G55-KR9H.

[82] *United States of America V. Dmitry Dokuchaev et al.*, 11-13.

[83] Ibid., 14-16.

acquire the credentials for (usually through spear-phishing). In return, the FSB paid him ca. $100 per account.[84]

Unfortunately for the conspiracy, Baratov kept a large online footprint. He marketed his services online on various websites, kept an active social media profile, and used his substantial income on luxury cars.[85] Living in Canada, and as the only member of the conspiracy outside of Russia, the 22-year old was arrested by the Canadian police in March 2017.

In public hearings, former FBI Director James Comey pointed to this indictment as an example of Russian state-criminal collaboration:

> they have a relationship that's often difficult to define with criminals and that the Yahoo hack's actually an example of that. You had some of the Russia's greatest criminal hackers and intelligence agency hackers working together.[86]

However, many questions about that collaboration are still unresolved. For example, why the FSB officers were briefing Belan on the FSB techniques for identifying hackers, or why the FSB officers also instructed Baratov to hack accounts of Russian webmail providers, despite the FSB being able to access those based on Russian legislation, or why Dokuchaev used a Yahoo account to communicate with Baratov, despite the U.S. government's access to U.S. based communications service providers.[87] The data that

[84] Ibid., 16.

[85] Krebs, "Four Men Charged with Hacking 500m Yahoo Accounts".

[86] Washington Post Staff, "Full Testimony of FBI Director James Comey in Front of the Senate Judiciary Committee on FBI Oversight," Washington Post, 3. May 2017, [Transcript], https://perma.cc/3KDP-6TDK. The head of the UK national crime agency puts it more diplomatically: Having previously referred to the overrepresentation of highly sophisticated cyber criminals in Russia and neighbouring countries, they are often operating in "jurisdictions with relatively weak cybercrime-fighting capability, or where the mechanisms and/or policies required to facilitate effective bilateral law enforcement action are immature." Jamie Saunders, "Tackling Cybercrime – the UK Response," *Journal of Cyber Policy* 2, no. 1 (2017): 11.

[87] These are questions also raised and discussed in Marcy Wheeler, "Why Would FSB Officer Dmitry Dokuchaev Use a Yahoo Email Account to Spy for Russia?," emptywheel.net blog, 18. March 2017, [Blog],

would answer these questions lies outside the spectrum of what could be gathered for this thesis. At this stage, there is at least some doubt about whether the two FSB officers were operating the entire mission on the official books of the FSB.

This case, however, substantiates the privateering-like structure that shapes Russian cybercrime and parts of the Russian government tasked with investigating cybercrime. Dokuchaev et al. suggests that collaborating with hackers that also engage in criminal activity entails similar risks as were identified in the collaborations with privateers in the Elizabethan age. For example, the Russian model of enlisting criminal hackers carries considerable risks for the Russian leadership. Some of those risks are very similar to the ones that existed for states employing privateers. When commenting on the Elizabethan privateers, historian Paul Kennedy pointed out, that the privateers were "prone to alter carefully formulated plans in favour of rash enterprises and all too easily tempted by the prospect of plunder and glory into forgetting the national strategy."[88] As an example, he mentioned Sir Francis Drake's attack on the *Rosario*, abandoning the chase of the Armada.[89] The similarities with the Dokuchaev et al. case are significant: by using the access to Yahoo's network to enrich himself, Belan was risking the exposure of an operation with potentially significant signals intelligence value for the Russian Federation.

Ruslan Stoyanov, a cybersecurity expert working for Kaspersky and former investigator for the Moscow cybercrime unit, was arrested for high treason in Russia in December 2016, and described these risks further. In letters given to the press, he warned that Russian cyber criminals, fostered by the state, could eventually turn against Russian

https://perma.cc/5BHD-XTVE; Jeffrey Carr, "Was Yahoo a Sanctioned FSB Operation or a Rogue Operation?," Medium, 18. March 2017, [Blog], https://perma.cc/96KE-TD6M.

[88] Paul M. Kennedy, *The Rise and Fall of British Naval Mastery*, (London: Penguin, 2004), 38.

[89] Ibid.

interests. Because any investigation would implicate Russian officials politically, this would lead to nightmare scenarios.[90]

To the extent that his account is deemed credible, this further highlights the institutionalization of the collaboration between criminals and state officials.[91] This was similar to the arrangement in British colonies, where the economic base would be significantly dependent on the piratical trade. When Britain decided to counter this in the early 18th century, it took major efforts by London to crack down on governors, and implement law enforcement and justice reforms to eradicate piracy. As described in the historical part of the thesis, this included the replacement of personnel and a central administration of court cases against pirates, as some of the colonial courts were compromised. Similarly, Stoyanov pointed out that if the experts working on cybercrime investigations are also collaborating with cybercriminal groups, it is going to be very difficult for the Russian state to reverse this policy.

The analogy to privateering suggests that competition for skilled personnel is persistent and that it influences the way a formal state capacity can be developed. Several accounts substantiate that Russia hires skilled hackers from the criminal scene, sometimes under threat of a court case.[92] Indeed, Dmitry Dokuchaev, one of the indicted FSB officers, was

[90] First reported in Kogershin Sagieva, "Arrested in the Case of State Treasury, the Top Manager of Kaspersky Lab Asked the Authorities," TV Rain, 12. April 2017, [GoogleTranslate], https://perma.cc/G8G6-AY78. Partial letters were published in Eva Merkacheva, "The Internet as a Territory Where One Might Become a Super Villain," Moskovsky Komsomolets, 17. April 2017, [GoogleTranslate], https://perma.cc/V7LS-4J8V. (A professional translation of these excerpts is available in *"Paper Publishes Bits of Arrested Russian Lab Employee Memoir," BBC Monitoring Former Soviet Union, 11. May 2017.*)

[91] Being in pre-trial arrest makes Ruslan Stoyanev a source with a peculiar motivation, which, for an outsider, is difficult to assess. Nothing is known as to why Stoyanev decided to give his account to the newspaper and why he was able to do so. Hence, his account, while plausible, on its own is to be assigned low trustworthiness. However, in combination with the rest of the data presented in this thesis, it confirms the interpretation of state-criminal nexus in the area of cybercrime.

[92] Andrew E. Kramer, "How Russia Recruited Elite Hackers for Its Cyberwar," *The New York Times*, 29. December 2016; Brian Krebs, "The Download on the DNC Hack," krebsonsecurity.com, 3. January 2017, [Blog], https://perma.cc/S7XF-7ATZ; Daniil Turovsky, "Russian Cyber Army: How the State Creates

also a criminal hacker in the past and, according to some reports, started working for the FSB after having been caught in the mid-2000s.[93] One risk of this is, that they not only supply their services to the state, but also continue to rely on their criminal income on the side, like in the case of Belan. Further risk is taken on, in that criminal operators, especially those having been able to operate in relative freedom from law enforcement, do not necessarily bring the same strict awareness of operational security with them. An example of such low operational security was seen in Canada's ability to attribute cyber intrusions to Russia's intelligence services, due to personal use of operational infrastructure, and the infection of the malware development team with crimeware.[94]

For the state, relying on cyber criminals is not only a risk. It also brings benefits. First, the criminal ecosystem finances technical innovation itself, which offers a financial advantage to countries that can draw on such criminally financed technical innovation. In countries without such collaborations, the offensive capability market has to be paid for solely by the state. Second, a deep pool in technical know-how and operational experience is one of the great advantages of having a mature cybercrime market. The risk of the criminal market turning against the state is – at least partially – mitigated, if the criminals are responsive to Russia's political ambitions.

The interpretation offered in this part B, of a (at least partially) loyal and politically steered cybercriminal underground also fits within the larger pluralistic authoritarian

Military Detachments of Hackers," Meduza, 7. November 2016, [GoogleTranslate], https://perma.cc/9K4T-PF64.

[93] On Dmitry Dokuchaev being a former criminal hacker, see Svetlana Reiter, "What the Arrest of the Russian Intel Top Cyber-Crime Expert Has to Do with American Elections," The Bell, 8. December 2017, https://perma.cc/8P56-G5FR; Alexander Boreiko and Yulia Belous, "Face to Face with a Hacker," Vedomosti, 2. November 2004, [GoogleTranslate], https://perma.cc/HTV4-S7G5. On the hacker "Forb" being the Dmitry Dokuchaev of interest, see Mike and Forb, "Perl Bruteforce," xakep.ru, 17. January 2002, [GoogleTranslate], https://perma.cc/7NS9-WS8S; Dmitry Dokuchaev, (aka Forb), "Dedicated for the Hacker," xakep.ru, 2006, [GoogleTranslate], accessed 13. December 2017, https://perma.cc/9MBP-Z994.

[94] "Hackers Are Humans Too – Cyber Leads to CI Leads", Communications Security Establishment Canada: The Intercept, 2. August 2017, https://perma.cc/Y6TS-DCG5.

Russian political context, in which officials not only profit financially from their official position, but can call upon private resources to aid the survival and furtherance of the state.[95]

This collaboration offers some appreciation for the various ways in which states have tried to work with skilled personnel (be it militias, volunteers, public-private-partnerships, contractors, or army personnel). The risk of policymakers profiting financially from cybersecurity policies is always linked to this. Further research could highlight why some governments seem to enable economic and commercial espionage. Also, the job prospects of policymakers once they leave governmental employment should be more carefully evaluated. Parties that invested into historical privateering offer one possible understanding as to how governments are persuaded to sanction policies from which both officials and private corporations can profit. For example, one argument put forward by critics of historical privateering was that commerce raiding diluted the state's efforts to build an effective state-owned warfare capability. At least with regards to the situation in Russia, the politics-cybercrime nexus seems to have fostered a skilled cadre of professionals that supply their services both to the state and to further their own financial interests, generating similar international political conflicts and institutionalized incentive structures as in the late 16th and early 17th century. That is not to say that the Russian government does not possess advanced state dedicated capabilities – it does.[96]

[95] For an account detailing the reassertion of the state over organized crime in the late 1990s, see Varese, *The Russian Mafia: Private Protection in a New Market Economy*. For the broader political context, see Mark Galeotti, "Moscow's Mercenaries Reveal the Privatisation of Russian Geopolitics," openDemocracy, 29. August 2017, https://perma.cc/PL7R-TY88; Mark Galeotti, "Stolypin: Russia Has No Grand Plans, but Lots of 'Adhocrats'," intellinews, 18. January 2017, https://perma.cc/6VCV-Z47R; Thomas E. Graham, "The Sources of Russian Conduct," The National Interest, 24. August 2016, https://perma.cc/FZ5C-XC6Y.

[96] See the industry reports on APT28, APT29, Turla, or the Sandworm team (links to the various reports are best found on http://apt.threattracking.com). More generally on Russia's intelligence services, see contemporary account in Mark Galeotti, "Putin's Hydra: Inside Russia's Intelligence Services," London, 2016. For the long history, one of the best sources is Christopher M. Andrew and Vasili Mitrokhin, *The Sword and the Shield : The Mitrokhin Archive and the Secret History of the KGB*, 1st ed., (New York: Basic Books, 1999).

However, it has, in part, relied on criminal know-how to supply state-owned capabilities and has relied on the relationships detailed above.

This conceptual explanation extends the current literature on the political constitution of cyber(in-)security. Current studies of the political constitution of cyber(in-)security often frame the different actors as threat sources (intelligence agencies, criminals, terrorists, etc.), without analysing their reconstitution across time and space. One exception is the theorization of politically constituted cyber(in-)security with the aid of the security dilemma.[97] However, the argument made thus far, solely rests on analysing the security between states, with other actors only complicating the state-driven analysis.[98] Going beyond this, Lucas Kello included non-state actors into his theorization of the impact of what he calls the "cyber revolution" on the international system.[99] His theorization acknowledged the importance of including unconventional actors into the analysis, including true non-state actors (or non-state actors of the purest form), which want to change the fundamental framework of the international system. However, the semi-state actors discussed in this thesis are not treated separately. Rather, Kello's conceptualization splits the actors into two categories, private and state actors, with only a brief discussion of four degrees of closeness to the state that they might have.[100] The limitation of Kello's two-part categorization is shown, for example, in the categorization of Saudi Aramco as a private actor, whilst categorizing Huawei as part of a state.[101] This demonstrates that, even for a theorist who puts much emphasis on non-state action in

[97] Ben Buchanan, *The Cybersecurity Dilemma: Hacking, Trust and Fear between Nations*, (Oxford: Oxford University Press, 2017).

[98] Lucas Kello, "The Security Dilemma of Cyberspace: Ancient Logic, New Problems," Lawfare, 28. August 2017, [Blog], https://perma.cc/V2Y4-EMZP.

[99] Kello, *The Virtual Weapon and International Order*.

[100] Ibid., 176. However, the four degrees of closeness are not further developed. See, for example, the 2-by-2 matrix on p.183, which splits the actors into state and private actors, not incorporating the nuance introduced with the four degrees of closeness.

[101] Ibid., 183, 230.

cyberspace, the bifurcation of actors into state and non-state actors can hinder a more nuanced analysis of their relationships. This thesis thus refines the analysis by going beyond the bifurcation, and provides a coherent answer as to the presence and type of relations to the state of semi-state actors.

To achieve this, the case study has extended the realm of analysis beyond states by analysing the stability of cyber(in-)security through the political-criminal nexus in Russia. Using the analogy to privateering, part B has probed the presence of both the drivers and feedback loops that are characteristic of the path-dependent strategic choice associated with privateering, and thereby offered a conceptual explanation of the stability of politically constituted cyber(in-)security in the cases observed.

C. Conclusions and implications

The analogy to pirates and privateers has enabled the focus on the spectrum of state proximity, as well as the specific analytic approaches, through which the state–non-state actor relationships were analysed. In part A, the case of Estonia in 2007 demonstrated how an attacked government had significant influence in shaping the public narrative on the state proximity of the attackers. Just as, historically, the Mughal empire, attacked by pirates, used a state-sponsorship attribution to shift the blame politically onto the English Crown, the Estonian government faced choices about how to frame the responsibility and nature of the cyber attacks in the public narrative. Rather than just being an analytic puzzle or political judgement about who is attacking, the framing of the response entails political choices about the narrative being presented by the government. Much like in the cases of piracy and privateering, the government gets to choose when and how to associate an action to a government in public, or when to strategically ignore such links. Analysing the Estonian and Russian narratives demonstrated the usefulness of empirically applying the analogy to privateering and pirates. The application highlighted

the multiplicity of Estonian and Russian narratives, and showed the resulting strategic ambiguity that uncertainty about the attacker's proximity to the state introduces. This uncertainty is important for International Relations, as the perception of collaboration raises the stakes of non-involvement and escalatory potential.

The application of the analogy in the case of Estonia also changed our understanding of cyber(in-)security. First, reading the contestation of public and private attribution as taking place in a similarly contested space as the one from which the definition of the pirate and privateer emerged, refocuses our attention onto the political contestations about what is deemed acceptable, and consequently unacceptable, in the use and toleration of cyber means. It foregrounds the international competition in constituting an act of hacking in a frame, thereby stabilizing a particular interpretation of legitimacy and statecraft. In so doing, the privateering/piracy analogy improves our understanding of the international politics of public attribution. Second, reading the case as a case of piracy/privateering highlights the governmental choices in framing the actor. It starts with an act of hacking and observes governments define the figure that attacks ("state-sponsored hackers" vs. "patriotic hackers"). This lens is important in understanding the politically constructed nature of "state-sponsorship" in particular situations. The application of the analogy to pirates and privateers enabled a conceptual advancement in the analysis of "state-sponsored" hackers. Thus, the application of the analogy led to the development of a new conceptual element in attribution, namely by adding nuance to the analysis of the political choice about what public attribution claim is made.

In part B, the analysis of the three criminal cases showed three differing types of relationships to the state. Seleznev as a hacker with political cover through his personal relationships, Bogachev as a hacker that likely payed his dues to the state in the form of information, and Dokuchaev et al. as a direct (official or non-official) collaboration of

government employees and hackers. The analysis of Elizabethan privateering shed light onto the problems and opportunities for statecraft such collaborations entail. Whilst the Estonia case highlighted a) the political choice of public attribution, and b) the introduction of strategic ambiguity and its effects, the examination of the criminal cases unveiled c) the depth such collaborations entail (longevity, institutionalization, path dependency, and lack of control), and d) their effects on recruitment and capability building.

The application of the analogy to analyse the relationship between the state and hackers in the three criminal cases has changed the understanding of cyber(in-)security in two ways. First, applying a framework of institutionalized privateering to the modern cases identifies some of the possible drivers reconstituting the cyber privateering relationships. Specifically, personal investments, political structures, and financial and informational profits must be accounted for. The personal investments into offensive techniques of insecurity, the toleration of crime by the state, and the financial and informational advantages gained are all drivers to keep the privateering relationship in place. Second, the introduction of a long-term perspective is a unique advantage of applying this historical analogy. Given that there is very little history in cyber(in-)security to draw on, historical observations are often not made. Looking at cyber(in-)security through the analogy to a process that developed over centuries, opens the perspective to recognize elements of path dependencies. It allows for the observation of the longitudinal effects of political interaction, that would not otherwise be visible. It could be suggested that the cybercrime-political nexus could have been studied from a criminological perspective, leaving out the analogy entirely. Two arguments speak against this. First, researching it through the privateering/pirate lenses recognizes the fluidity of the legitimacy created by the state. By anchoring the analysis in a historical process, in this case state consolidation

of authority and responsibility to protect commerce, important elements of the constitution of political authority are brought into scope. Second, by using the analogy, questions about the politicised nature of cybercrime can be asked that cybercrime researchers today usually bracket.[102] Using the analogy thus enables an inquiry that would not otherwise have been made.

The empirical analysis of analogical relationships of pirates and privateers has shown that, while there are significant similarities, there are also notable differences. For example, first, the remuneration of state officials when tolerating pirates/privateers is not solely in the form of money, but may also be in the form of information. This potentially changes the logic of the collaboration relationships, since not all targets are of equal interest.

Second, the magnitude of the problem is uncertain and the interaction with the state is less globally accepted. At the height of state directed privateering and collaboration with pirates, the collaboration, in the form of *letters of marque* or agreements with pirates, was highly structured and widely known. Even foreign captains recognized the validity of privateering licenses and knew that Barbary pirates would not attack amicable polities. This is certainly not the case today. As introduced at the beginning of this chapter, the models of developing and integrating private capacity differ across countries, with different political contexts determining the boundaries of acceptable collaboration. There is no generic analogue of a *letter of marque* that applies across all the different contexts

[102] Specifically, one could say criminologists start with studying crime, whilst this thesis starts with the political rendering of the activity of hacking, which is sometimes rendered criminal, and sometimes not. Different focal points lead to different types of analyses. For an example of a criminologists' work on cybercrime, see Jonathan Lusthaus' excellent work on Eastern European cybercrime that focuses on the sociology and economics of cybercrime, but brackets the interrogation of the political constitution of its presence. Jonathan Lusthaus, "Honour among (Cyber)Thieves?," *Extra Legal Governance Institute Working Paper* 1 (2016), https://perma.cc/UF99-2AS8.

of cybercrime. However, the analysis was able to show how similar international political contestations are occurring with regard to state–semi-/non-state actor collaboration.

A third notable difference is that, the regulatory and coercive capacities of the contemporary state organs in all the states observed (Estonia, Russia, United States) differ in quality from the historical cases analogized to. The governments today do have a much stronger claim on regulating their citizen's behaviour than in the late 16th century, when sovereignty was still divided amongst many different polities. Furthermore, the states also differ from the 16th and 17th century polities with regard to their possibilities of mobilizing citizens based on patriotic and nationalist agendas. Whilst the analogy holds in that the current Russian government's nationalist agenda provides the analogical modern cyber pirates and privateers with legitimacy, the level of control exercised by the government is judged to be qualitatively greater than of Queen Elizabeth over her pirates and privateers.

In conclusion, the analytic lens uncovering the narratives deployed by officials regarding cybercrime shows that the activity is still highly politicised. Comparing this to piracy, it is similar – with some caveats – to the early 17th century, when different states were profiting from pirate bases, using them as trading hubs, and as means for undertaking undeclared warfare. As outlined in the historical chapter, the lines between pirates and privateers were blurred.

The state efforts for building dedicated cyber capabilities, and thereby drawing on private personnel with significant experience and skills, shows similarities to the early investments in the late 16th century, when some states transitioned from the use of privateers to professional navies. In naval warfare, this transition over time reduced the interest in the use of private actors. Judging by this process, globally speaking, state

actors' cyber capacities are in their infancy. The historical analysis has shown that once a state had opted to collaborate with pirates and privateers, this type of use of force became institutionalized over time. It unleashed a range of incentives to reproduce that model of collaboration, which in turn raised the difficulty to turn away from it. It can thus be labelled as a strategic choice that brings path dependencies. It created a new set of strategic problems, some of which this chapter found to be present today through the collaboration between cyber criminals and the Russian government.

Lastly, the analysis of the legal cases show an emerging discourse around regulating the activity undertaken in cyberspace. In the absence of legal enforcement against cyber criminals in Russia, the United States has started a global enforcement campaign against Russian cyber criminals. Whilst this is effective against the cyber criminals that travel to zones, where the U.S. can bring its pressure to bear, individuals such as Bogachev or Belan stay out of reach. The analogy to the regulation of piracy would suggest that regional enforcement regimes may take hold. Piracy was dealt with differently in the Atlantic prize court system and in the Indian Ocean inter-imperial system.[103] Whilst the Atlantic system was mainly based on colonial enforcement, and thus depended on inner-imperial management, in the Indian Ocean, mercantile companies had a large role to play negotiating the inter-imperial legal systems. If history were a guide, it could be expected that the large technology companies become equal political actors involved in the negotiation between the different great powers. The next chapter will thus focus on the insights generated by the analogy to mercantile companies.

[103] Lauren Benton, "Legal Spaces of Empire: Piracy and the Origins of Ocean Regionalism," *Comparative Studies in Society and History* 47, no. 04 (2005).

CHAPTER 6

Cyber Mercantile Companies

CONFLICT AND COOPERATION

Mercantile companies once ruled vast territories. They were in constant political struggles with different states, to defend their authority, to govern their own activities, and to expand their markets. Of course, there is no genealogically traceable line between the mercantile companies of the past and today's large technology companies. Notions of sovereignty in the international system today are fundamentally different from the ones in the early modern period, when multiple types of sovereigns populated the system. However, today's large technology companies do hold large influence and power over the way information is generated, transmitted, stored, accessed, and deleted. Some of them functionally resemble a state-like actor, incorporating teams of diplomatic staff across the world, and managing assets larger than many a state's gross domestic product. Some states have reciprocated the state-like interaction that the large technology companies seek. In some countries, their CEO's are received with state honours. Denmark has even gone so far as instituting a technology ambassador, recognizing that many of the technology companies "have a much greater degree of influence than most nations."[1]

As introduced in Chapter 2, the functional resemblance to a state is different to the spectrum of state proximity. The large technology companies can be functionally state-like, and closely aligned with a particular state's interests (e.g. Huawei with China) or they can be further removed in terms of state proximity, frequently opposing their home state's political leaders (e.g. Apple in the case of denying the FBI access to the dead San Bernardino terrorist's iPhone). So far, we have not witnessed a cyber mercantile

[1] Stine Jacobsen, "Silicon Valley Giants Outrank Many Nations, Says First 'Techplomat'," *Reuters News*, 19. June 2017.

company that consistently rejects the state framework (like a true non-state actor would).[2] As with the preceding chapter, this chapter looks at how such state proximity is established in practice, and how it creates complications and opportunities for the different actors involved.

A further difference in today's mercantile companies is that there are many more of them. Historically, there would only have been a few mercantile companies, whereas now there are multiple ones, spanning different domains. Since this thesis focuses on cyber(in-)security specifically, it only looks at mercantile companies in the cyber domain. It thus makes a sectoral distinction that did not exist historically. However, the distinction is reasonable and appropriate, as the security challenges introduced by state collaborations and confrontations with, for example, large energy companies differ in nature.

This chapter contributes to answering the research question of the thesis by using the role the mercantile companies played in the early modern system and their interactions with pirates, privateers, and navies to gain a better understanding of today's large technology companies' roles and their relationships to the analogical cyber navies, privateers, and pirates.[3] It is argued that the mercantile company lens can aid the understanding of how cooperative and conflictive relations to states, and practices of self-protection, influence

[2] Though some senior technology executives voiced their interest in creating their own lawless zones of experimentation. See e.g. Larry Page's comments regarding regulations: "we also haven't maybe built mechanisms to allow experimentation. There's many, many exciting and important things you could do that you just can't do 'cause they're illegal or they're not allowed by regulation." TechHive Staff, "Hello, Larry! Google's Page on Negativity, Laws, and Competitors," PC World, 15. May 2013, [Transcript of Keynote Address at Google I/O], https://perma.cc/B4LB-HSDH. Another prominent libertarian initiative working towards zones outside the state system is funded by technology billionaire Peter Thiel. See comments on "Seasteading" in: George Packer, "No Death, No Taxes," *The New Yorker*, 28. November 2011.

[3] Arguing for more research on mercantile companies for a better understanding of the resurgence of private violence today, see Andrew Phillips, "Company Sovereigns, Private Violence and Colonialism," in *Routledge Handbook of Private Security Studies*, ed. Rita Abrahamsen and Anna Leander (New York, NY: Routledge, 2016), 46-47.

cyber(in-)security. By doing so, it further refines our understanding of the role companies play in providing cyber(in-)security. The chapter develops this argument by applying the analogy in three ways.

One focus is on the protection of a company's assets from threats propagated through cyberspace. The historical shift from self-provided protection to more reliance on state resources informs the analysis of the shift witnessed in the protection from threats in cyberspace. This includes an analysis of corporate offensive action (i.e. hacking-back), which is an authority that mercantile companies possessed historically, and one that leads to considerable policy debate in today's context.

A second area of comparison is the competition for skilled personnel between mercantile companies and states. The competition emerges due to personnel being the key enabler and constraint of capacity in both cyberspace and historical maritime defence and offense. The focus on mercantile companies captures the converging and competing interests in the absorption of such capacity.

Finally, this chapter analyses the overlapping interest between states and mercantile companies in the pursuit of their business. In the historical case, mercantile companies were a form of gaining influence and power over large parts of the world that a state driven expansion would not have achieved on its own.[4] Analogically, in today's context, the large technology companies provide states with access to data, which the state on its own likely could not have collected.

[4] For an explanation why the statist organized Portuguese *Estado da India* failed, whilst the Dutch and English East India Companies succeeded, see Andrew Phillips and Jason C. Sharman, "Explaining Durable Diversity in International Systems: State, Company, and Empire in the Indian Ocean," *International Studies Quarterly* 59, no. 3 (2015): 440-41.

The analysis will unfold in three case studies. Each case highlights a different constellation between states and companies. While the first case features Google, a modern mercantile company, the second case looks at the U.S. government's reaction to the attacks against Sony Pictures Entertainment (SPE), which is functionally not a state-like actor in the domain of cyber(in-)security. The two cases allow for an analysis comparing and contrasting both the actions of the different types of companies as well as the actors involved in their defence. Finally, while the first two cases look at aspects of conflict, a third case of cooperation between modern mercantile companies and signals intelligence agencies highlights the cooperative aspect of the coexistence of mercantile companies and states. Before continuing with the Google case, the following paragraphs provide a short overview of each case.

Part A will focus on *Operation Aurora (2009/10)*, a conflict between a state, China, and a modern mercantile company, Google. How the company uses its own resources to fend off what it perceives to be an attack by another state is of specific interest. The case highlights the political debate about who is responsible to protect the company. Not having been protected by a state, Google subsequently fortified its own security posture. This in turn sheds light onto the recruiting problems unleashed by companies' demand for the best security engineers. The special case of Google also engages in the debate on hacking-back, and raises the question whether a company should be allowed to pursue offensive actions for defensive purposes. The discussion of the authority to act is then linked to mercantile companies and privateers.

Part B highlights the conflict between a state, North Korea, and a company, Sony Pictures Entertainment. As opposed to the Google case, SPE is a much weaker actor in terms of its cyber capacity and business model, and cannot usefully be classified as a cyber

mercantile company.[5] However, in contrast to the Google case, the SPE case shows how the U.S. government actively assumes defensive responsibilities on behalf of the company. The empirical application of the historical analogy contributes to the analysis by identifying a shift in the interpretation of the authority and responsibility to defend private actors in cyberspace, just as happened in the late 17th century on the seas. Furthermore, the case links the analysis to the previous chapter's focus on the topic of authority and control over cyber pirates, when discussing how the U.S. government's silence on the activity of independent hacking collectives can be read as a tacit endorsement of their actions.

Whilst the first two cases mainly focus on the conflictive interaction between a state and a company, in part C, the third case focuses on the cooperation between large technology companies and states for the purposes of signals intelligence. It draws attention to the cooperative aspects of such relationships and thereby enables an analysis of the opportunities and challenges that state proximity introduces. The case analogizes the modern mercantile companies to the historical ones of the 17th century, who pursued expansionary policies and displayed independent agency both towards their home government as well as abroad.

This chapter concludes that treating large technology companies as mercantile companies changes our understanding of cyber(in-)security by bringing into scope their imperial practices of expansion, which come through submission to other jurisdictions, integration into other systems, and renegotiation of responsibilities and control. Consequently, this

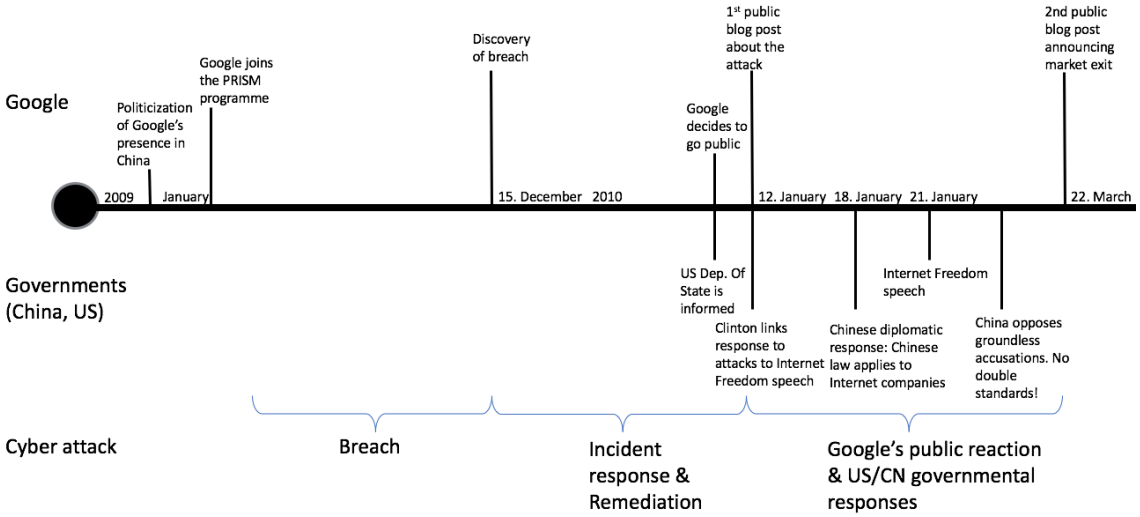
[5] Sony may well be a mercantile company domiciled in Japan in the entertainment and consumer electronics sector. However, it is not one in the cyber domain.

chapter closes with a discussion of the shared interests in terms of access to data, the still expansionary corporate policies, and the shared interest in stability.

A. Operation Aurora: a mercantile company responds

The case study of *Operation Aurora* highlights the relationship between one of the largest companies in the world, Google, and the two largest state powers in the world, the U.S. and China. If the analogy to mercantile companies can enlighten the politics of cyber(in-)security, then one would expect the politics of mercantile companies to come to the fore in this case. *Operation Aurora* was also selected, as it is one of the few publicly available cases of a company gaining access to the control servers of its attacker. As such, it is considered a key case. The case study first lays out the three different narratives offered by the three actors. The study then identifies analogical features to a mercantile company, which include the independent representation of itself towards both the home and foreign government, the independent capability and will to defend itself, and the competition for key personnel with the state's analogy of a navy. The analysis closes with a discussion of the hacking-back debate.

Figure 5: Operation Aurora (2009-2010) case timeline



i. Google's narrative

In mid-December 2009, Google's security team discovered traces of cyber attacks on their internal networks.[6] Someone had searched for multiple Chinese names on the internal legal discovery portal. When checking in with the employee from whom the search requests had supposedly originated, she denied having made the queries.[7] A long search for the attackers ensued, in which co-founder of Google, Sergey Brin, personally got involved.[8] A team of security experts traced the attackers' footprints back to an original breach via a spear-phished MSN chat message to an employee in Google China with a link to a photo-sharing site exploiting a zero-day vulnerability in Internet Explorer.[9] From there, the attackers moved laterally into Google's core network. In its public messaging, Google would later emphasize the attacker's interest in identifying human rights activists, such as Tibetan activists. What one would hear less about, but

[6] Gordon Corera, Intercept: The Secret History of Computers and Spies, (London: Weidenfeld & Nicolson, 2015).

[7] Michael Joseph Gross, "Enter the Cyber-Dragon," *Vanity Fair*, 1. September 2011.

[8] Ibid.

[9] Bryan Krekel, Patton Adams, and George Bakos, "Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage," West Falls Church, VA:Northrop Grumman, 2012, 98. See also: John Markoff, "Cyberattack on Google Said to Hit Password System," *New York Times*, 19. April 2010.

what must have been a major security concern for Google, was the attackers' successful exfiltration of source code (Gaia), as well as their demonstrated intent to find code-signing certificates.[10]

According to Bruce Schneier the attackers also accessed a database for law enforcement and intelligence, which raised major concerns for U.S. intelligence officials in the United States.[11] Several Snowden documents indicate that, since January 2009, Google was part of a surveillance programme called PRISM.[12] As part of this programme, authorized by section 702 of the FISA Amendments Act of 2008, Google had to provide data to the FBI for specific selectors. According to Ellen Nakashima of the *Washington Post*, this database, holding the surveillance orders including FISA court orders, was hacked as well.[13] Knowing the surveillance targets of the United States would be greatly beneficial to Chinese counterintelligence and directly contrary to the national security and intelligence investigations conducted by the United States. Confirmation of the motivation of the attackers was also signalled by Microsoft, another target of the same attack campaign, although they later retracted the statements given by one of their directors.[14]

[10] Gross, "Enter the Cyber-Dragon."; Markoff, "Cyberattack on Google Said to Hit Password System."

[11] Bruce Schneier, "U.S. Enables Chinese Hacking of Google," CNN, 23. January 2010, https://perma.cc/Y2SB-DL4U. Schneier's account is corroborated by further reporting, see Ellen Nakashima, "Chinese Hackers Who Breached Google Gained Access to Sensitive Data, U.S. Officials Say," Washington Post, 20. June 2013, https://perma.cc/G8UR-5SY2.

[12] See e.g. "PRISM/US-984XN Overview or the SIGAD Used Most in NSA Reporting Overview", National Security Agency: Washington Post, 6. June 2013 (Dated: April 2013), http://www.washingtonpost.com/wp-srv/special/politics/prism-collection-documents/.

[13] Nakashima, "Chinese Hackers Who Breached Google Gained Access to Sensitive Data, U.S. Officials Say".

[14] "'What we found was the attackers were actually looking for the accounts that we had lawful wiretap orders on,' Aucsmith says. 'So if you think about this, this is brilliant counter-intelligence. You have two choices: If you want to find out if your agents, if you will, have been discovered, you can try to break into the FBI to find out that way. Presumably that's difficult. Or you can break into the people that the courts have served paper on and see if you can find it that way. That's essentially what we think they were trolling for, at least in our case.'" Kenneth Corbin, "'Aurora' Cyber Attackers Were Really Running Counter-Intelligence," CIO.com, 22. April 2013, https://perma.cc/LJ8Y-E2GX.

Google swiftly undertook efforts to find out who was attacking them. A Washington Post article claims the attackers had been in Google's systems for at least a year.[15] The New York Times labelled Google's investigation a "counteroffensive". It quotes a government consultant saying:

> It [Google] managed to gain access to a computer in Taiwan that it suspected of being the source of the attacks. Peering inside that machine, company engineers actually saw evidence of the aftermath of the attacks, not only at Google, but also at least 33 other companies, including Adobe Systems, Northrop Grumman and Juniper Networks.[16]

In other words, Google gained access to one of the servers involved in the operation of the campaign. This is significant, as not many companies acknowledge accessing computers outside of their corporate network in public, preferring not to open themselves up to legal risk.[17]

By "early January" Google's investigation had "conclusively confirmed the origin and scale of the attack."[18] "Over the course of Google's investigation, it gathered sufficient evidence to know that the Chinese government or its agents were behind the attack."[19] Later, Sergey Brin, co-founder of Google, would be issued a temporary security clearance

[15] Nakashima, "Chinese Hackers Who Breached Google Gained Access to Sensitive Data, U.S. Officials Say".

[16] David E. Sanger and John Markoff, "After Google's Stand on China, U.S. Treads Lightly," *The New York Times*, 14. January 2010.

[17] The exact nature and circumstance of such access then also remain shrouded in secrecy. Access could have been gained, for example, by a) asking the owner of the system, b) gaining authority to access the system through the government, or c) accessing the system directly. Shane Harris quotes a former intelligence official saying "Google broke in to the server", but notes that it's still unclear how the company's investigators "gained access to the server." Shane Harris, *@War: The Rise of the Military-Internet Complex*, (Boston: Houghton Mifflin Harcourt, 2014), 172.

[18] Eric Schmidt and Jonathan Rosenberg, *How Google Works*, (London: John Murray, 2014), 148.

[19] Eric Schmidt and Jared Cohen, *The New Digital Age: Reshaping the Future of People, Nations and Business*, (London: John Murray, 2013), 109.

by the U.S. government and briefed on the specific unit of the Chinese People's Liberation Army that conducted the attack.[20] Brin, who was leading the investigatory team, wanted to publicise the findings and stop implementing the Chinese censorship requests as a reaction.

This reopened a debate amongst the executive management over whether Google should operate in China at all.[21] Brin had long objected to operating in China and thereby having accept having to implement the governmental censorship practices.[22] In 2009, China had tightened its censorship practices around several of Google's products and had put pressure on Google to remove its link to Google.com, allowing Chinese internet users access to an uncensored version of Google.[23] Brin decided the hacking went too far. In his own words:

> The hacking attacks were the straw that broke the camel's back. There were several aspects there: the attack directly on Google, which we believe was an attempt to gain access to Gmail accounts of Chinese human rights activists. But there is also a broader pattern we then discovered of simply the surveillance of human rights activists.[24]

[20] Michael Riley, "U.S. Agencies Said to Swap Data with Thousands of Firms," Bloomberg, 15. June 2013, https://perma.cc/5NT2-6QQJ.

[21] This debate was already spelled out in public when Google entered the Chinese market in 2006. Google, "Testimony: The Internet in China by Google Inc. (Represented by Eliot Schrage) before the Subcommittee on Asia and the Pacific, and the Subcommittee on Africa, Global Human Rights, and International Operations. Committee on International Relations, United States House of Representatives," Google Inc., 15. February 2006, [Transcript], https://perma.cc/B3U9-CUP5.

[22] Schmidt and Rosenberg, *How Google Works*, 144-45.

[23] Corera, *Intercept: The Secret History of Computers and Spies*. 258. Evidence of censorship is self-reported by Google both publically on its website and privately to U.S. government officials. Google, "Google Transparency Report: Known Disruptions of Traffic to Google Products and Services," Google Inc., 2017, accessed 20. March 2017, https://perma.cc/R9WC-TJZS; Google Claims Harrassment by Chinese Government, 12. July 2009, *Diplomatic cable from the U.S. Embassy in Beijing*, No. 09BEIJING1957_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/XS3P-ZV6H.

[24] Sergey Brin, interview by Philip Bethge, 30. March, 2010.

Others, such as Eric Schmidt, the chairman of Google, argued that through being present locally, Google would have the chance to inform on the questionable practices applied by other search providers and give greater access to information to Chinese users.[25] Larry Page, the second co-founder, had shared Eric Schmidt's view when entering the Chinese market in 2006, but by early 2010, considering the newly discovered behaviour, changed his mind. "The behaviour we were seeing was evil, he [Larry] told Eric, and wasn't going to stop; in fact, the harassment would likely get worse."[26] The founders "no longer felt that our [Google's] presence in the market was helping change government censorship practices, and didn't want to participate in any way in that censorship."[27]

Google's management took the decision to stop censoring its search results on Google.cn and to publicise the findings about the hacking attacks. The management knew that this would most likely result in Google's market exit out of China. Describing the decision Eric Schmidt and Jonathan Rosenberg wrote:

> The majority sided with Sergey, who believed that the Chinese government would eventually change their behaviour because their current model would not be sustainable, leaving the door open at some point in the future for Google to reenter the market.[28]

On the 12. January 2010, David Drummond, Google's Chief Legal Officer, posted a blog post, thereby implementing Google's decision.[29] The blog post informed the public about the cyber attacks but stopped short of publicly accusing the Chinese government as the

[25] Schmidt and Rosenberg, *How Google Works*, 144.
[26] Ibid., 146.
[27] Ibid., 148.
[28] Ibid., 149.
[29] Google, "A New Approach to China," Google Inc., 12. January 2010, [Blog], https://perma.cc/L9GP-BN5X.

author of them. Instead, Google detailed the targeting (intellectual property, Chinese human rights activists) and pointed interested parties "wanting to learn about these kinds of attacks" to a section in the 2009 annual report of the U.S.-China Economic and Security Review Commission, which detailed the Chinese intelligence activities targeting Chinese dissidents abroad.[30] Google also linked to an eighty-eight page Northrop Grumman report, prepared for said Commission, detailing the capability of the PRC to "conduct Cyber Warfare and Computer Network Exploitation."[31] Furthermore, it linked to the operation *GhostNet* report, one of the first public APT-reports detailing espionage practices against Tibetan activists, as well as to one of the report's co-authors', Nart Villeneuve's, blog.[32]

Three months later, after unsuccessful discussions with the Chinese government about being able to offer uncensored search results, Google announced that it would redirect all search traffic from China to their Hong Kong based site Google.com.hk, ceasing its operations in mainland China.[33] This meant that from now on, Google would no longer self-censor their search results, but rather would be censored by the technical censorship implemented at the internet service provider level on behalf of the Chinese government.[34]

[30] See U.S. Congress, U.S.-China Economic and Security Review Commission, Annual Report to Congress, 111th Cong., 1st sess., Washington, DC: U.S. Government Printing Office, 2009. http://www.uscc.gov. 163-65.

[31] Google, "A New Approach to China"; Bryan Krekel, "Capability of the People's Republic of China to Conduct Cyber Warfare and Computer Network Exploitation," McLean, VA:Northrop Grumman, 2009.

[32] Information Warfare Monitor, "Tracking Ghostnet: Investigating a Cyber Espionage Network," (2009), https://perma.cc/H27G-9RWX; Nart Villeneuve. Malware Explorer [Blog], https://perma.cc/YX34-Q8JA.

[33] Google, "A New Approach to China: An Update," Google Inc., 22. March 2010, [Blog], https://perma.cc/R86E-SUJ2.

[34] For current DNS based censorship technology used in China, see Oliver Farnan, Alexander Darer, and Joss Wright. "Poisoning the Well: Exploring the Great Firewall's Poisoned DNS Responses," In *Proceedings of the 2016 ACM on Workshop on Privacy in the Electronic Society*, 95-98. Vienna, Austria: ACM, 2016.

ii. The United States Government's narrative

In the first week of January 2010, Secretary of State Hilary Clinton attended a dinner with various leaders from the information technology sector. All the publicly available information indicates that she had not yet been briefed on the Google investigation. Rather, the U.S. State Department was briefed on Google's decision to publically accuse China of spying on 11. January 2010, one day after the decision had been taken in Google's executive management team, and a day before Google went public.[35] On the day of Google's announcement, Secretary Hilary Clinton issued a press release:

> We have been briefed by Google on these allegations, which raise very serious concerns and questions. We look to the Chinese government for an explanation. The ability to operate with confidence in cyberspace is critical in a modern society and economy. I will be giving an address next week on the centrality of internet freedom in the 21st century, and we will have further comment on this matter as the facts become clear.[36]

In so doing, Hilary Clinton tied Google's going public to a policy speech on internet freedom that had been in the planning since at least December 2009 already.[37] In the week leading up to the Secretary's internet freedom speech, the U.S. State Department highlighted the strong, mature bilateral relationship with China. They indicated that it was

[35] Harris, *@War: The Rise of the Military-Internet Complex*, 173.

[36] Hillary Clinton, "Statement on Google Operations in China," United States Department of State, 12. January 2010, [Press release], https://perma.cc/H3FQ-RTMY.

[37] See Re: 12/21 Revisions to Internet Freedom Speech, 29. December 2009, *E-Mail chain documenting the revision history of the Internet Freedom Speech*, Doc No. C05763238, U.S. Department of State FOIA Case No. F-2014-20439, U.S. Department of State, https://foia.state.gov/Search/Results.aspx?collection=Clinton_Email. The E-Mail references an e-mail from Tomicah S. Tillemann dated 21. December 2009 with the subject line: "Fw: 12/21 Revisions to Internet Freedom Speech."

a serious issue and that they expected China to explain.[38] Within that timeframe, various meetings between U.S. and PRC diplomats took place to discuss the issue.

Then, on 21. January 2010, Hilary Clinton delivered her policy speech on internet freedom. She addressed internet censorship and turned to Google's situation:

> Increasingly, U.S. companies are making the issue of internet and information freedom a greater consideration in their business decisions. I hope that their competitors and foreign governments will pay close attention to this trend. The most recent situation involving Google has attracted a great deal of interest. And we look to the Chinese authorities to conduct a thorough review of the cyber intrusions that led Google to make its announcement. And we also look for that investigation and its results to be transparent.
>
> The internet has already been a source of tremendous progress in China, and it is fabulous. There are so many people in China now online. But countries that restrict free access to information or violate the basic rights of internet users risk walling themselves off from the progress of the next century. Now, the United States and China have different views on this issue, and we intend to address those differences candidly and consistently in the context of our positive, cooperative, and comprehensive relationship.
>
> Now, ultimately, this issue isn't just about information freedom; it is about what kind of world we want and what kind of world we will inhabit. It's about whether we live on a planet with one internet, one global community, and a common body of knowledge that benefits and unites us all, or a fragmented planet in which

[38] See e.g. U.S. Department of State, "Daily Press Briefing by the Assistant Secretary Philip J. Crowley," U.S. Department of State, 14. January 2010, https://perma.cc/T265-PGUP.

> access to information and opportunity is dependent on where you live and the whims of censors.[39]

Hence, she strongly reiterated Google's call against censorship. In the same speech, she highlighted that the State Department was supporting tools to circumvent censorship: "Both the American people and nations that censor the internet should understand that our government is committed to helping promote internet freedom."[40]

The American national security establishment was also interested in the attacks. Following the discovery of the attacks, Google reached out to the National Security Agency. A former White House official told journalist Michael Joseph Gross that

> After Google got hacked, they called the N.S.A. in and said, 'You were supposed to protect us from this!' The N.S.A. guys just about fell out of their chairs. They could not believe how naïve the Google guys had been.[41]

The anecdote captures the uncertainty about the distribution of responsibilities around the protection of networks against state directed adversaries. The roles and responsibilities were uncertain.[42] This uncertainty was fostered by the ongoing political battle over authorities (who protects whom from whom?), approaches (market-based vs. regulatory vs. law-enforcement), and budgetary implications (which agency gets how much of the cybersecurity budget).

[39] Hillary Clinton, "Remarks on Internet Freedom," United States Department of State, 21. January 2010, [Transcript], https://perma.cc/HX6B-ZZY4.

[40] Ibid.

[41] Gross, "Enter the Cyber-Dragon."

[42] To a great extent they still are unclear. See Madeline Carr, "Public–Private Partnerships in National Cyber-Security Strategies," *International Affairs* 92, no. 1 (2016); Madeline Carr, *US Power and the Internet in International Relations*, (Basingstoke: Palgrave Macmillan, 2016), 102-07.

The NSA immediately drafted a cooperative research and development agreement.[43] Under such an agreement, Google could share the details of the cyber attack with NSA, whilst the NSA could aid Google with its expertise in information assurance and up-to-date threat intelligence. The company would profit from the NSA's evaluation of their hard- and software. In addition, according to Shane Harris, as part of the agreement, Google provided information about traffic on its networks and let the NSA analyse past intrusions.[44] Whilst reports indicate that Google came to terms with the NSA, Google "without any guarantees about the scope of the investigation, denied access" to the FBI.[45]

iii. China's reaction

Whilst the U.S. launch of the internet freedom agenda was not necessarily coordinated with Google, it sure looked like it from a Chinese perspective. To better understand the Chinese action and reaction, some context on the Chinese information security perspective is required. Between 2006 and 2009, the percentage of Chinese people using the internet almost tripled.[46] The Chinese government saw the internet both as a possibility for sustaining economic growth, "but also [as] a major threat to domestic stability and regime legitimacy."[47] To mitigate these threats, the Chinese government used the monitoring of the internet to identify discontent and corruption. It also played an active part in shaping the online conversations on social media, to guide the public opinion.[48] Thus, Chinese state leaders perceived the unguided expression on an open

[43] Two accounts report on the existence of such an agreement: Ellen Nakashima, "Google to Enlist NSA to Help It Ward Off Cyberattacks," Washington Post, 4. February 2010, https://perma.cc/VZ4T-2ESS; Siobhan Gorman and Jessica E. Vascellaro, "Google Working with NSA to Investigate Cyber Attack," The Wall Street Journal, 4. February 2010, https://perma.cc/TYC9-ES5B.

[44] Harris, *@War: The Rise of the Military-Internet Complex*, 175-76.

[45] Ibid., 176; The direct quotation is from Nakashima, "Chinese Hackers Who Breached Google Gained Access to Sensitive Data, U.S. Officials Say".

[46] From 10 to ca. 29 percent, see "Percentage of Individuals using the Internet between 2000-2016" in ITU, "Statistics," ITU, 2017, accessed 26. April 2017, https://perma.cc/ZKX8-RNQY.

[47] Adam Segal, *The Hacked World Order: How Nations Fight, Trade, Maneuver, and Manipulate in the Digital Age*, (New York: PublicAffairs, 2016), 29.

[48] Ibid.

internet as a potential threat to regime legitimacy and domestic stability, and undertook measures for state control. Hence, information security in the Chinese sense encompassed not only the integrity of computer systems and networks but also a broader understanding of government control of the information content.[49] In this understanding, censorship was considered a matter of state security to fight, in Chinese terminology, the three evils and five poisons.[50]

The Chinese government had applied pressure on Google to be more responsive to its censorship requests throughout 2009. Now, the company publically levied spying charges against the Chinese government, followed by an official statement by the U.S. State Department connecting its own statement with an upcoming policy speech on internet freedom.

The Chinese initial official reaction was to deny any hacking charges, stating that "Chinese laws strictly prohibit cyber crimes."[51] Up to that point, companies targeted by Chinese espionage campaigns kept quiet about it, often fearing that the disclosure would bring bad publicity and unnecessary legal risks. Hence, one can assume that the forceful reaction by Google came as a surprise to the Chinese leadership. That is not to say that Google had not contemplated exiting the Chinese market before.[52] Rather, the Chinese

[49] Jon R. Lindsay, "The Impact of China on Cybersecurity: Fiction and Friction," *International Security* 39, no. 3 (2015): 15.

[50] In Chinese Communist Party terminology, the three evils are terrorism, secessionism, and extremism, and they are currently represented by the five poisons, the Uighur and Tibetan independence movement, the regime critical Falun Gong, the Chinese democracy movement, and the Taiwan independence movement. See ibid., 38; Bundesministerium des Innern, "Verfassungsschutzbericht," Berlin, 2016, 271.

[51] Ministry of Foreign Affairs of the People's Republic of China, "Foreign Ministry Spokesperson Jiang Yu's Regular Press Conference on January 14, 2010," People's Republic of China, 15. January 2010, [Press release], https://perma.cc/PC2F-YAS8. See also "China Says Its Web Open, Welcomes Int'l Companies," Xinhua, 14. January 2010, https://perma.cc/HLF4-YE5U. The Chinese embassies around the world, including in the United States, usually reposted the Xinhua articles on their websites.

[52] Google Claims Harrassment by Chinese Government, 12. July 2009, Wikileaks Public Library of U.S. Diplomacy.

government could not have anticipated that Google would publicise this incident and that it would come in conjunction with an U.S. foreign policy initiative.

In the days after Google's publication, Chinese officials met with U.S. diplomats and explained the Chinese position.[53] After the U.S. internet freedom speech, Chinese Vice Foreign Minister He Yafei warned: "The Google case should not be linked with relations between the two governments and countries; otherwise, it's an over-interpretation."[54] Noting the differences in messaging between their working level partners and the Vice Foreign Minister, the U.S. embassy concluded that this suggested "that the negative reaction to the speech originated at higher levels in the foreign policy hierarchy."[55]

The next day, the Chinese government reacted to Secretary Clinton's speech by urging the "U.S. to stop accusations on so-called Internet freedom."[56] The article claimed that besides the hacker attack on Google, the Chinese search engine Baidu.com had suffered the worst attack to date on 12. January (the day of Google's publication).[57] A commentary published by the official Chinese news agency Xinhua sent a strong message: "Don't impose double standards on 'internet freedom'."[58] It referenced the U.S. measures to control activities on the internet and its own activities in cyber warfare. It claimed: "It is quite hypocritical to point one's finger at others without proper justification while

[53] Ministry of Foreign Affairs of the People's Republic of China, "Minister Xie Feng of the Chinese Embassy in the United States Reiterated China's Principled Position in Response to the Recent Announcement by Google on Possible Adjustment of Its Business in China," People's Republic of China, 18. January 2010, [Press release], https://perma.cc/773D-GDZF.

[54] "China Says Google Case Should Not Be Linked to Ties with U.S.," Xinhua, 21. January 2010, https://perma.cc/U8WE-VM99.

[55] Secretary's Internet Freedom Speech: China Reaction, 25. January 2010, *Diplomatic cable from the U.S. Embassy in Beijing*, No. 10BEIJING183_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/6VZB-W4DM.

[56] "China Urges U.S. To Stop Accusations on So-Called Internet Freedom," Xinhua, 22. January 2010, https://perma.cc/U7EX-UTGS.

[57] Ibid.

[58] "Commentary: Don't Impose Double Standards on 'Internet Freedom'," Xinhua, 24. January 2010, https://perma.cc/8FAJ-XLGA.

managing to strengthen one's own cyber warfare capacity."[59] On 25. January, a Chinese government spokesman issued the official denial of government involvement:

> Accusation that the Chinese government participated in [a] cyber attack, either in an explicit or inexplicit way, is groundless and aims to denigrate China. We [are] firmly opposed to that.[60]

Meanwhile, the U.S. embassy in Beijing informed the U.S. government that one of their well-placed contacts claimed the attacks against Google were "coordinated at the State Council Information Office with the oversight of Standing Committee members Li Changchun and Zhou Yongkang."[61] The embassy staff noted that it was yet unclear whether the Chinese President and Premier Minister had been aware of the attacks before Google's going public.

iv. The reaction of a mercantile company?

Three aspects of this case are of special interest. The first is Google's fight against the Chinese government. From the documentation of the case it is clear, that Google's leadership decided to exit the Chinese market as a response to the attack. This section analyses how this compares to a mercantile company's policies. Two further aspects are particularly relevant for the analysis of the research question and will be discussed below, namely the competition to hire the best security professionals and the hacking-back undertaken by Google.

[59] Ibid.

[60] "Accusation of Chinese Government's Participation in Cyber Attack 'Groundless': Ministry," Xinhua, 25. January 2010, https://perma.cc/A4D2-QNTF.

[61] Google Update: PRC Role in Attacks and Response Strategy, 26. January 2010, *Diplomatic cable from the U.S. Embassy in Beijing*, No. 10BEIJING207_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/L2WS-SAR8.

Google acted decisively by combining a business decision with publicly taking on the Chinese government. Google knew that this would have political and commercial implications. It tried to motivate other U.S. technology companies to support their stance – but to no avail. One can draw the analogy to the political and economic competition between the different mercantile companies. As shown in the historical chapter, mercantile companies would not be afraid to lobby with the Mughal Court against other companies' interests. Contemporaneous examples are plentiful. For example, Steve Ballmer, Microsoft's CEO, commented at the time that Google's decision was an irrational business decision. He cited oil imports from Saudi Arabia that were also ethically acceptable, despite the country's abhorrent human rights record.[62] This was followed by Bill Gates informing the U.S. public on Good Morning America, that "Chinese efforts to censor the Internet have been very limited. It's easy to go around it, and so I think keeping the Internet thriving there is very important."[63] In a different interview, he claimed that Google essentially pulled a publicity stunt: "They've done nothing and gotten a lot of credit for it."[64] He added: "if Google ever chooses to pull out of the United States, then I'd give them credit."[65] Two days later, Ballmer followed up his earlier comments over the Microsoft PR channels. The message read that Microsoft supported internet freedom, but "our business must respect the laws of China. That's true for every company doing business in countries around the world: we are subject to local laws."[66]

[62] Christopher Helman, "Microsoft's Ballmer Calls out Google over China Stance," Forbes, 22. January 2010, https://perma.cc/ML39-SBA9.

[63] David Morgan, "Bill Gates Says Internet Needs to Thrive in China," *Reuters News*, 25. January 2010.

[64] Steve Lohr, "Bill Gates Defends Google, Then Pans It," *The New York Times*, 25. January 2010.

[65] Ibid.

[66] Steve Ballmer. "Microsoft & Internet Freedom", 25. April 2010, Microsoft On The Issues [Blog], https://perma.cc/28CG-L4A6.

Google's Sergey Brin voiced staunch criticism of Microsoft: "I'm very disappointed for them [Microsoft] in particular […]. As I understand, they have effectively no market share – so they essentially spoke against freedom of speech and human rights simply in order to contradict Google."[67] Of course, Microsoft's statements at times of crisis were not just against Google, but can also be read as aiming to strengthen Microsoft's position with the Chinese government.

To better understand this situation, the 17th century mercantile companies are particularly instructive, as they too operated in multiple spaces of political authority. As detailed in the historical chapter, in the East India Company's case, the company secured an authority to trade both from the English Crown and from the Mughal emperor, formally submitting to both. In the Mughal empire, it inserted itself into the local political fabric by adopting local practices. It had to submit to local rule to be allowed to trade. By submitting to the Mughal as "exotic vassals" and thereby confirming his authority to rule universally, the mercantile companies strengthened the emperor's power.[68] In smaller island polities in South-East Asia, local rulers used "stranger king" norms to accept companies as foreign suzerains, using it "as a means of strengthening their own authority."[69] Observing the modern case, Google's executive team's confrontational response towards the Chinese government clearly falls outside the spectrum of submission. Google chose to independently interpret the security needs of its Chinese users, and consider the Chinese government a threat towards them. This open challenge to the Chinese government's interpretation of how to govern their information space undermined the government's claim to authority. Other companies' leaders, such as

[67] Bobbie Johnson and Ian Katz, "Google Co-Founder Sergey Brin Urges US to Act over China Web Censorship," *The Guardian*, 24. March 2010.

[68] Phillips and Sharman, "Explaining Durable Diversity in International Systems: State, Company, and Empire in the Indian Ocean," 444.

[69] Ibid.

Microsoft's Bill Gates, did exactly the opposite. They had long-standing policies of submitting themselves to local power structures, thereby confirming the government's authority to rule.[70] In China, internet companies had to integrate themselves into the Chinese system of rule, for example by signing the "Public Pledge of Self-Regulation and Professional Ethics for China's Internet Industry."[71]

Google picked a fight with the Chinese government and lost. The Chinese asserted their sovereign right to enforce their laws the way they choose. A realist scholar may read this as the absence of important agency on Google's part, reflecting a broader state-centric trend. It was not Google's reaction, either, that was highlighted in the Chinese response, but rather the concern that Google and the U.S. government have decided to jointly implement the "internet freedom" policy. The fact that Microsoft executives distanced themselves from Google's response shortly after Hilary Clinton's internet freedom policy speech could also be read in that light. Microsoft did not want to become associated with Google's confrontational response. However, to discount Google's response as irrelevant would be missing the security dynamics that are particular to this large economic and political actor. Google chose to react politically to the cyber attack. Instead of keeping quiet, Google chose to publically reveal the details of the attack, only stopping short of directly calling the Chinese government responsible. As seen in the previous chapter, this element of public attribution is political in nature. Instead of opening a criminal investigation, Google's executive team chose to respond on their own. This is crucial, as it differentiates a private company from a mercantile company. The mercantile company

[70] On the history of the large Western technology companies' relations with the Chinese government from a business ethics perspective, see Gary Elijah Dann and Neil Haddow, "Just Doing Business or Doing Just Business: Google, Microsoft, Yahoo! And the Business of Censoring China's Internet," *Journal of Business Ethics* 79, no. 3 (2008); Justin Tan and Anna E. Tan, "Business under Threat, Technology under Attack, Ethics under Fire: The Experience of Google in China," ibid.110, no. 4 (2012).

[71] Internet Society of China, "Public Pledge of Self-Regulation and Professional Ethics for China Internet Industry," 26. March 2002, https://perma.cc/M95N-HSQG.

perceives itself to be important enough to act independently on the stage of international politics. Hence, it does not rely on a single state to defend its interests. Rather, it asserts its interests with its own capabilities. It represents itself differently towards various governments and finds political accommodation with them, sometimes by submission, sometimes by confrontation. Two implications follow from Google's response to the intrusions: a heightened competition for security personnel and a debate about hacking-back.

Google undervalued the importance of ensuring their own security. Whether one believes Google's alleged reaction to having been caught unawares about whether or not NSA would protect them, Google retrospectively invested in hiring more security staff. Michael Joseph Gross reports:

> Caught unawares and shorthanded, the company made a list of the world's top security professionals, and Brin personally called to offer them jobs – with $100,000 signing bonuses for some, according to one person who received such an offer – and quickly built Google's small, pre-Aurora security operation into a group of more than 200.[72]

Up until today, Google runs one of the most respected security teams worldwide, counting more than 550 employees.[73] The competition for talent between large corporations and governments in cyber(in-)security is acute. Whilst industry's big attractions are the financial incentives, workplace environments, and engagement with the security community, the government offers mission motivation and the ability to make offensive actions legal. Google expanded its efforts to protect users against state-sponsored attacks

[72] Gross, "Enter the Cyber-Dragon."

[73] Google, "Google Cloud Security and Compliance: Google Has a Strong Security Culture," Google Inc., 2017, accessed 25. April 2017, https://perma.cc/D2GP-K86Z.

and notify users when they have identified a specific threat. This mirrors the early expansionary years of activity on the seas. Just like on the seas, users of cyberspace were largely left to protect themselves. In the absence of a state capacity and/or willingness to provide redress, users have to rely on their own abilities to withstand threats propagating through cyberspace. In such an environment, defensive and offensive skills are sought by a variety of actors. Just as mercantile companies in the early 17th century could not rely on the Royal Navy to protect their trade, and hence armed their merchant navies and sometimes sought protection from specialized private men-of-war, large companies today are able to attract some of the most skilled cyber(in-)security experts in the industry.

Google reacted by going on the offensive. They accessed one of the operations servers (presumably command and control servers) in Taiwan. This is of interest, as it is – if done without authorization by the respective agencies and asset owners – a violation of both the U.S. CFAA and the Taiwanese Criminal Code. The decision of the company to investigate themselves and its reluctance to have the FBI on its premises demonstrate some of the elements of the corporate-state we have seen in the era of mercantile companies. Google did call the NSA, but was disappointed with the lack of protection they provided. There was a negotiation between the NSA and Google about what kind of information exchange there would be. The accounts of that exchange described this as a contract negotiation and not a hierarchical act of authority.[74]

The account of the corporate offensive operation raises the question about the extent to which companies can protect themselves against state-directed attacks and about whether private actors should be engaged in state sanctioned hacking-back.[75] Hacking-back, as

[74] Harris, *@War: The Rise of the Military-Internet Complex*, 175-77.

[75] The discussion of hacking-back extends and refines arguments originally published in Florian Egloff, "Cyber Privateering: A Risky Policy Choice for the United States," Lawfare, 17. November 2016, [Blog], https://perma.cc/ME95-WAXZ. Plenty of evidence exists as to why a state might adopt an offensive measures against attackers, see "SID Today: '4th Party Collection': Taking Advantage of Non-Partner

used in this thesis, means reactive offensive actions undertaken for a, from the defender's perspective, defensive purpose and excludes self-initiated (i.e. not responsive) offensive actions.[76] The last part of this section discusses, based on the analogy to privateering, the risks introduced when companies are seen to be engaged in state sanctioned hacking-back.

Whether a private company can defend itself from a state-directed attack depends on the intent and capacity of the attacking state and the defensive capabilities of the company. If a company with a high cybersecurity maturity is a generic target, it may be able to dissuade an attacker by making itself a hard target. However, when private companies are the direct target of a motivated, well-resourced state attacker, their defensive capabilities will not deter the attacker. It is worth reflecting on what the aims of hacking-back may be for a private company.[77] Is it to impose costs on the attacker? Is it to help attribution of the attack to a particular actor? Is it to research the motivation of the attack? Given the uncertainty about the ramifications of any offensive or retaliatory actions against an attacker, it is unclear to what extent private actors would deem such actions to be in their interests. In the United States, the government tries to dissuade corporate hacking-back

Computer Network Exploitation Activity", National Security Agency: Der Spiegel, 17. January 2015 (Dated: 2008), https://perma.cc/X85G-7NGW; "Tutelage 411", NTOC, National Security Agency: Der Spiegel, 17. January 2015, https://perma.cc/5NWD-TDVV; "Transgression Overview for Pod58", S31177, National Security Agency: Der Spiegel, 17. January 2015 (Dated: 7. February 2010), https://perma.cc/HMD3-7DTS.

[76] It captures what Lucas Kello defines as active defensive measures. See Lucas Kello, *The Virtual Weapon and International Order*, (New Haven: Yale University Press, 2017), 231-34.

[77] One of the most extensive treatments of hacking-back, identifies information gathering, which potentially leads to criminal prosecution, and the publication of the gathered information, in order to shame other governments, as the purposes. *Jeremy Rabkin and Ariel Rabkin, "Hacking Back without Cracking Up," Stanford:Stanford Universtiy, 2016.* For the broader debate on authorizing private hack-back, see Kello, *The Virtual Weapon and International Order*, 229-46; Paul Rosenzewig, "International Law and Private Actor Active Cyber Defensive Measures," *Stanford Journal of International Law* 50 (2014); Paul Rosenzweig, Steven P. Bucci, and David Inserra, "Next Steps for U.S. Cybersecurity in the Trump Administration: Active Cyber Defense," Washington DC, 2017; Dave Aitel. "Cyber Deterrence 'at Scale'", 10. June 2016 [Blog], https://perma.cc/9YEN-P6UC; Dave Aitel. "How 'Active Defense' Would Work", 1. December 2016, CyberSecPolitics [Blog], https://perma.cc/2KLB-P2NK; Center for Cyber & Homeland Security, "Into the Gray Zone - the Private Sector and Active Defense against Cyber Threats," Washington DC, 2016; Joseph Cox, "Inside the Shadowy World of Revenge Hackers," The Daily Beast, 19. September 2017, https://perma.cc/C9S8-UNUD.

by claiming that it is illegal under the Computer Fraud and Abuse Act and highlighting the danger of escalation against unknown adversaries.[78]

However, the Google *Operation Aurora* case gives an indication about why a company might want to hack-back an attacker: to gather information about the intent and scope of an attack. Having access to a command and control server also has the potential to allow a more fine-grained analysis of the origin of the attack. Such hack-backs could also be used to identify and aid further victims, improve defensive capabilities, and, potentially, stop further distribution of malicious software.[79]

As most companies do not necessarily possess the skillsets for offensive actions, one could expect them to hire the skillsets privately.[80] This resembles the private men-of-war that were hired by mercantile companies to protect their ships and trade routes. Such offensive action incurs many risks for both the company and the state that would be, or could at least be seen to be, sanctioning the hacking-back operation. Three risks are worth highlighting here: an increased risk of unnecessary escalation, the potential for reprisal, and the setting of an international norm that may be strategically destabilizing.

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[78] Leslie R. Caldwell, "Assistant Attorney General Leslie R. Caldwell Delivers Remarks at the Georgetown Cybersecurity Law Institute," Department of Justice, 20. May 2015, https://perma.cc/M2AE-VWYD. For information how the U.S. tries to boost cooperation with industry see Department of Homeland Security, "Enhanced Cybersecurity Services (ECS)," Department of Homeland Security, 2017, accessed 29. September 2017, https://perma.cc/DU43-BDLF. For the background history of the precursor to the ECS program see Milton Mueller and Andreas Kuehn, "Einstein on the Breach: Surveillance Technology, Cybersecurity and Organizational Change" (paper presented at the 12th Workshop on the Economics of Information Security (WEIS 2013), Washington DC, 2013).

[79] The motivations can be the same as when states engage in hack-back, see Ben Buchanan, *The Cybersecurity Dilemma: Hacking, Trust and Fear between Nations*, (Oxford: Oxford University Press, 2017)

[80] There is anecdotal evidence of such hacking-back occurring. See e.g. Cox, "Inside the Shadowy World of Revenge Hackers"; Craig Timberg, Ellen Nakashima, and Danielle Douglas-Gabriel, "Cyberattacks Trigger Talk of 'Hacking Back'," Washington Post, 9. October 2014, https://perma.cc/2H4V-BM2V; Hannah Kuchler, "Cyber Insecurity: Hacking Back," *Financial Times* (2015), https://perma.cc/U8UM-VLBY; malware.lu and itrust consulting, "APT1: Technical Backstage - Malware Analysis," malware.lu, 27. March 2013, https://perma.cc/56GS-QTLB. For people with moderate offensive skills, hack-back of command and control servers is sometimes a realistic possibility, see Waylon Grange, "Digital Vengeance: Exploiting the Most Notorious C&C Toolkits" (Briefing presented at the Black Hat USA, Las Vegas, 27. July, 2017).

Firstly, the company may overstep its defensive aims and be tempted to profit from their offensive undertaking. This is not without historical precedent. Historically, privateers were hard to control. They regularly overstepped their commissions, especially when it was in the interest of their sponsors' government. Such overstepping was highlighted in the previous chapter in the case of Belan's use of his access against Yahoo for private purposes. It is likely that companies who hack-back also face situations with such adverse incentives.

Even if it is assumed, for the sake of argument, that the private sector could perform cyber operations with a high degree of discrimination and proportionality and it is stipulated that the corporate sponsors weigh the potential blowback carefully against their business interests, in such a case, offensive actions still constitute a means of engaging in conflict. Which countries should a country be willing to issue hacking-back licenses against?[81] Such a licensing would surely be seen as a hostile act by the receiving party.

Once the private sector engages in these limited offensive operations, at some point, they may be discovered. A foreign government will be informed that part of their supply chain suffered an intrusion. Will the targets recognize the attackers and their intentions? A capable adversary may trace the attack back to the attacking country. Distinguishing between a company working for evidence-gathering for another company and one working for the government will be hard. This can be an advantage for a state that intends to use strategic ambiguity to its advantage. However, as this policy would further cloud the government's intent, it would compound problems for cyber defence. Given the

[81] Recall also the difficulty of precise attribution, which makes the issuing of a licence, depending on the attribution capabilities of the issuing country, a highly risky affair.

possibility of a worst-case analysis by the defender, hacking-back magnifies the risk of unintentionally setting off an escalatory spiral.[82]

Intentionally breaching foreign domestic law brings risks upon the hackers, their corporate sponsors, and, if done at scale, their government. Under domestic law, the injured party may have a legitimate criminal case to pursue in court. The full range of consequences for people engaging in hacking-back, and potentially their sponsors, are unclear, but among other things, some restrictions on their ability to engage in international travel, unless they are willing to stand trial abroad might be expected.

But there are further countermeasures that might be taken against hackers – reprisals. The injured party could appeal to their own government to seek retribution. A country that adopts a policy of hacking-back needs to be prepared to accept intrusions sponsored by other countries' companies. In such a system, each country is their own arbiter of whether their claims are legitimate – recall, for example, the analysis of the competing narratives deployed by the Russian and Estonian government in Chapter 5. Furthermore, retribution may not be restricted to cyberspace. Rather, having sponsored a cyber attack, company assets residing in the country that was attacked may suddenly be exposed to legal risk abroad. Other countries may also choose to broaden the definition of whom to take reprisal against. After all, historically privateering was a tool to seek redress against harm suffered by another national. What restricts a foreign power to take a more expansive definition of privateering?

Once hacking-back is established as a legitimate course of action in the cyber realm, the question then arises: who profits most from such a regime? Historically, privateering was

[82] For a book-length elaboration of the analysis of the security dilemma between states see Buchanan, *The Cybersecurity Dilemma: Hacking, Trust and Fear between Nations*.

the policy tool of the challengers, not the incumbent great power. The power with the largest trade interests had the most to lose. By the end of the 18th century, when Britain became the dominant naval and trading power, it was France and the United States that relied heavily on privateers. As seen in the historical chapter, Britain took the threat of U.S. privateering so seriously that it struck a deal with most other naval powers to abolish privateering in 1856. Recalling the quotation from Chapter 3, England's Prime Minister Lord Palmerston summed up the logic as follows:

> Privateering is a Practice most inconvenient to the Power which has the largest number of merchant men at sea, and the least useful to the Power which has the largest War Navy. England is that Power and we should therefore willingly agree to abolish that Practice in regard to all Powers which would enter into the same Engagement towards us.[83]

As laid out in the analysis in the historical chapter, no power today holds the same dominant position as Britain did in the 19th century. Hence, multiple powers may opt for a policy of hacking-back, potentially endangering user trust in the viability of a global digital system. The analogy to privateering suggests that the most likely states to adopt such a strategy would be those that do not yet have a large state-owned offensive cyber capacity and thereby rely on private-sector capacities as their only option for hacking-back, or those that use privateers as a strategy to deliberately increase the difficulty of disambiguation between government and private offensive actions. Amongst corporations, the historical analogy to mercantile companies would suggest that their modern analogues, the largest technology companies, are the likeliest candidates to seek

[83] Palmerston to Clarendon, 5. April 1856, *letter*, MSS. Clar. Dep. C. 49, 241-242, Clarendon Papers, Bodleian Library, University of Oxford.

strategies for enhancing their own defences by incorporating reactive offensive measures, if the states they are operating from within are not willing to enforce the law against it.

To sum up, treating Google as a mercantile company in the *Aurora* case focuses the attention on the politicised aspects of the crisis and its further implications. It draws out how the Chinese perceived close state proximity between Google and the United States government, whilst Google had a self-perception of political and economic agency that was further removed from the government. This was reflected in Google's refusal to let the FBI investigate, but rather choosing to cooperate with the NSA on a contractual basis. Furthermore, in strong resemblance to the mercantile companies of the past, Google tried to fend off the attack by a foreign state actor by accessing the servers in a different country and by extensively recruiting security experts.

Both elements have the potential to trigger similar effects as were present in the naval security in the 17th century. Then, the British East India company competed with the Navy for personnel, and organized its owns protection force to fend off foreign ships and protect its sea lanes. Both then and now, this brings interaction effects with states. The offensive actions in other state's jurisdictions increase the risk of escalation, invite the potential for reprisal, and could set an international norm that may be strategically destabilizing.

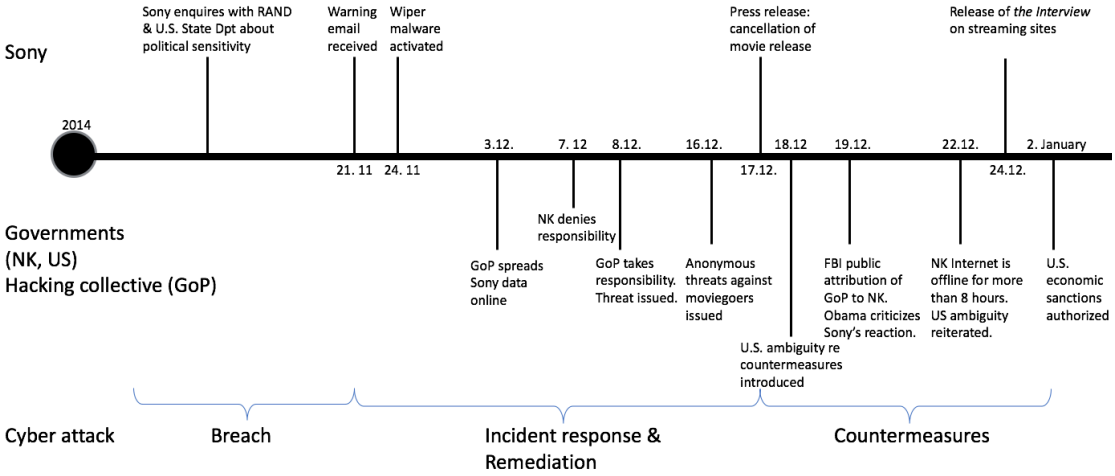
B. Sony Pictures Entertainment (2014): the interplay of governments, a private company, and independent hackers

The analysis of the attack against Sony Pictures Entertainment (SPE) in 2014 reveals several characteristics of the dynamics amongst actors with various types of state proximity. It details a (non-mercantile) company that was attacked by a state actor. The case contributes to answering the thesis' research question by examining the governmental responsibility to protect companies that cannot protect themselves. The SPE case contrasts the Google case by showing how the U.S. government was actively

involved in the response to the attacks against SPE. The response to the attack also highlights the management of independent hackers responding in concert with the government. The case study is structured into a case overview, followed by an analysis of how the different actors used their capabilities against one another. It will then discuss how strategic ambiguity can be advantageous not only to the attacker and but also to the defender. The case closes with the finding that the SPE case may mark a transition in the protection of private companies in cyberspace from self-provided towards a more public form of protection.

i. Case overview

Figure 6: Sony Pictures Entertainment (2014) case timeline



On 21. November 2014, SPE received a warning "to behave wisely" by email.[84] On 24. November 2014, a wiper malware was activated on a large part of SPE's infrastructure, crippling the company's ability to continue their work. The malware issued a warning that company documents would be released if demands were not met by 11:00 at night. Having let that deadline pass, the group Guardians of Peace (GOP) published several movies, SPE internal documents, and e-mail archives of SPE executives over the

[84] Notice to Sony Pictures Entertainment Inc., 21. November 2014 2010, *E-mail from 'God'sApstls' (dfrank1973.david@gmail.com) to five Sony executives*, E-mail ID 83432, Sony Archive, Wikileaks, https://perma.cc/6YB5-DVMY. Note: although no authenticity guarantee is given, the e-mail originates from the GMT +0900 time zone.

next month. Given the upcoming release date of the movie *The Interview,* speculations about possible North Korean connections were raised. North Korea reacted by issuing a press statement denying responsibility, but praising the attacking group for their actions and condemning SPE for producing a film "abetting a terrorist act."[85] This was followed by a statement by GOP on 8. December 2014, which directly connected the showing of a movie to their actions. It demanded that SPE should "stop immediately showing the movie of terrorism which can break the regional peace and cause the War!"[86] Lacking any indications of cancelling the movie, it was a threat of terrorist attacks against moviegoers issued on 16. December 2014 that changed the dynamic. Despite the U.S. Department of Homeland Security's claim of having no intelligence about a plot against movie theatres, many movie theatres opted-out of showing the movie.[87] The next day SPE issued a press statement cancelling the release, which had been scheduled for Christmas day. On 18. December 2014 the White House announced it was considering a proportional response.[88] On 19. December 2014, the FBI attributed the GOP's actions to the North Korean government.[89] The same day, U.S. President Obama criticized SPE's decision.[90] SPE then prepared to release the movie online, and several theatres opted to

[85] "Spokesman of Policy Department of NDC Blasts S. Korean Authorities' False Rumor About DPRK," *KCNAWatch*, 7. December 2014.

[86] Sean Gallagher, "Sony Pictures Attackers Demand: 'Stop the Terrorist Film!'," *ars technica*, 8. December 2014.

[87] David Perera, "DHS: No Credible Threat to Sony Movie Launch," *politico*, 16. December 2014; Mark Seal, "An Exclusive Look at Sony's Hacking Saga," *Vanity Fair*, 28. February 2015. The threat assessment was reiterated on the 24. December 2014, see U.S. Department of Homeland Security and Federal Bureau of Investigation, "November 2014 Cyber Intrusion on USPER I and Related Threats," *Joint Intelligence Bulletin* (2014), https://perma.cc/X6YN-XY26.

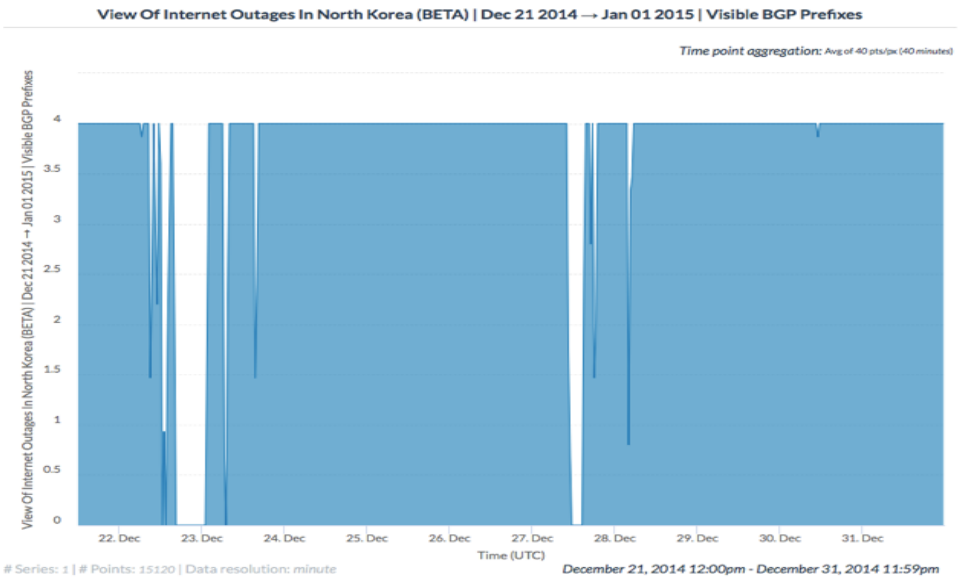
[88] White House, "Press Briefing by the Press Secretary Josh Earnest, 18. December 2014," 18. December 2014, [Press Briefing], https://perma.cc/JS4N-JTYL.

[89] Federal Bureau of Investigation, "Update on Sony Investigation," news release, 19. December 2014, https://perma.cc/Z745-YR3S Later, more details were released, see James B. Comey, "Adressing the Cyber Security Threat" (paper presented at the International Conference on Cyber Security, Fordham University, New York, 7. January 2015).

[90] Barack Obama, "Remarks by the President in Year-End Press Conference," White House, 19. December 2014, [Transcript], https://perma.cc/AQ6V-MEXN.

show it on Christmas day. On 22. December 2014, North Koreas internet went offline multiple times, including for an eight-hour timeslot.[91]

Figure 7: Internet outages in North Korea (21.12 - 01.01.2015 in UTC)



Source: Center for Applied Internet Data Analysis, "View of Internet Outages in North Korea: Visible BGP Prefixes," University of California San Diego.

On 2. January 2015, President Obama authorized the U.S. treasury to impose economic sanctions on North Korea.[92] Sony estimated the remediation efforts to have cost about U.S. $41 million, with the total costs incurred by the corporation being estimated at U.S. $80 million.[93]

ii. How did different stakeholders use their cyber capabilities?

The SPE case is a good example of the interaction between different types of state and non-state actors. It highlights how not only attackers but also defenders deliberately

[91] Jim Cowie, "Someone Disconnects North Korea – Who?," Dyn Research, 23. December 2014, [Blog], https://perma.cc/SA39-YDJK ; Center for Applied Internet Data Analysis, "View of Internet Outages in North Korea: Visible BGP Prefixes," University of California San Diego, accessed 15. October 2017, https://perma.cc/K8C7-KCEL.

[92] U.S. Department of the Treasury, "Treasury Imposes Sanctions against the Government of the Democratic People's Republic of Korea," news release, 2. January 2015, https://perma.cc/C7WV-HREF.

[93] Sony Corporation, "Consolidated Financial Results for the Fiscal Year Ended 31. March 2015," 30. April 2015, [No. 15-039E], https://perma.cc/SH42-EK4K.The total costs are estimated in Travis Sharp, "Theorizing Cyber Coercion: The 2014 North Korean Operation against Sony," *Journal of Strategic Studies* (2017): 18.

introduce strategic ambiguity to sow doubt about their relationships to other actors and the authorship of actions taken. Following the case time line, the events can be abstracted as follows. SPE, an actor not allied with a particular state was attacked by an attacker with unclear relations to a state. The attacker attempted to coerce SPE's leadership into forgoing the publication of a movie but failed in the first instance. Hence, it raised the pressure and strategically published material gained through a cyber attack, which raised the interest of the media in SPE's activities. SPE hired Mandiant, a firm with significant cyber capabilities including many ex-government employees (i.e. a semi-state actor). The media speculated that this attack was state-sponsored. North Korea reacted to the media and denied any involvement, but endorsed the attack. At this point, the convergence of interests between the attacker (GOP) and the North Korean state was a fact. This raised profile captured the interest of the U.S. government; the FBI and NSA got involved (both state actors). The veracity of the terror threat could not be established, but the U.S. government reacted in an official capacity (DHS statement). By this time, the U.S. intelligence community and its international partners had concluded that the GOP could be attributed to the North Korean government.[94] Thus, the U.S. government prepared a reaction strategy, including publicly attributing the attacks, reaching out to the Chinese about discussing countermeasures, weighing options for proportional cyber responses, and assessing the sanction options.

[94] Penetration of North Korean networks had been a priority of U.S. signals intelligence for a long time (See Appendix B in "SIGINT Mission Strategic Plan FY 2008-2013", National Security Agency: New York Times, 2. November 2013 (Dated: 3. October 2007), http://www.nytimes.com/interactive/2013/11/03/world/documents-show-nsa-efforts-to-spy-on-both-enemies-and-allies.html. See also Enduring Targets – North Korea in "United States SIGINT System January 2007 Strategic Mission List", National Security Agency: New York Times, 2. November 2013 (Dated: January 2007), http://www.nytimes.com/interactive/2013/11/03/world/documents-show-nsa-efforts-to-spy-on-both-enemies-and-allies.html. According to press reports the U.S. had indeed penetrated North Korean networks years earlier. See David E. Sanger and Martin Fackler, "N.S.A. Breached North Korean Networks before Sony Attack, Officials Say," *The New York Times*, 18. January 2015.

The most interesting aspect for the discussion of the interaction between different types of actors is the ambiguity the U.S. government introduced about whether they would use an offensive cyber response. In its press briefing on 18. December 2014 the White House spokesperson informed on the deliberations about the proportional response:

> I wouldn't speculate at this point about the range of options that are currently under consideration. I also wouldn't commit at this point to at some point being entirely transparent about what that response is.
>
> […] I don't anticipate that we'll be in a position where we're going to be able to be completely forthcoming about every single element of the response that has been decided upon.[95]

On the day of and the day after the cyber attacks against North Korea, the State Department held press briefings:

> [W]e are considering a range of options in response. We aren't going to discuss publicly operational details about the possible response options or comment on those kind of reports in any way except to say that as we implement our responses, some will be seen, some may not be seen.[96]
>
> [after several questions whether the U.S. took North Korea offline]
>
> Well, there's a range of options. I don't think I want to put anything on the table or off the table at this point, but that's – there're obviously financial options. But again, I'm not ruling anything in or out from a policy perspective. There are a

[95] White House, "Press Briefing by the Press Secretary Josh Earnest, 18. December 2014".

[96] U.S. Department of State, "Daily Press Briefing by the Deputy Spokesperson Marie Harf," 23. December 2014, https://perma.cc/SPX8-L7J4.

> range of both seen and unseen options that we have, though. And if we ever have anything to outline publicly, we will do so.[97]

Whilst the media wondered whether the U.S. government had performed a distributed denial of service attack (DDoS), other experts pointed to activist chatter that detailed how such an attack could be performed.[98] Two specific points are noteworthy about the interaction between different actors. First, the U.S. government made a policy choice not to publicly clarify, whether it had taken down the North Korean networks. Second, when activists incited others to DDoS the North Korean networks, the U.S. government did not publicly distance itself from these incitements. Both points are important when considering the strategic impact of the response. Tying this back to the privateers and pirates, the U.S. government's silence in this case could be read as a signal to activists that it does not consider their activities worth prosecuting or dissuading (despite the publicly announced intent to disrupt someone else's computing networks).

As introduced in Chapter 5, introducing ambiguity over the authorship of an action can be a strategic choice. What the SPE case adds, is that this is not only true for the attacking side, but also for the defending side. On the attacking side, North Korea never took credit for the GOP's attacks. This left the onus of attribution on the defenders' side.[99] When the FBI first attributed the attacks to North Korea, there was significant backlash from various experts. They received so much disputation that FBI director James Comey released more details to back up their attribution claim and the Director of National Intelligence, James

[97] Ibid.

[98] Dan Holden, "North Korea Goes Offline," Arbor Networks, 22. December 2014, https://perma.cc/GK3E-LPNS.

[99] On attribution see Madeline Carr, "Cyberspace and International Order," in *The Anarchical Society at 40: Contemporary Challenges and Prospects*, ed. Hidemi Suganami, Madeline Carr, and Adam R. C. Humphreys (Oxford: Oxford University Press, 2017); Clement Guitton, *Inside the Enemy's Computer: Identifying Cyber-Attackers*, (London: Hurst & Co, 2017); Thomas Rid and Ben Buchanan, "Attributing Cyber Attacks," *Journal of Strategic Studies* 38, no. 1-2 (2015).

Clapper, named General Kim Yong-Chol, the director of the North Korean Reconnaissance General Bureau, as ultimately responsible for giving the go-ahead for the cyber attack against SPE.[100]

However, the U.S. government also inserted ambiguity into their response. They left no doubt that some responses would be unseen, but did not discuss whether that would include the DDoS attack. By creating that ambiguity, the U.S. engaged in the same strategy as other actors, leaving open the speculation of why North Korea's internet went down that day. Indirectly, this encouraged the activists, who had incited attacking North Korea, to react the same way in future cyber crises.

Some commentators thought the White House distanced itself from the attacks with the announcement of the sanctions on the 2. January 2015: "As the President has said, our response to North Korea's attack against Sony Pictures Entertainment will be proportional, and will take place at a time and in a manner of our choosing. Today's actions are the first aspect of our response."[101] Those observers read the use of "first aspect" as signalling the commencement of the official reaction, thereby negating taking responsibility for North Korea's network outage.

However, North Korea publicly blamed their network outage on the United States. The state newspaper reported that "the U.S., a big country, started disturbing the internet operation of major media of the DPRK, not knowing shame like children playing a

[100] Comey, "Adressing the Cyber Security Threat."; James Clapper, "National Intelligence, North Korea, and the National Cyber Discussion" (ibid.). Note: just as in the Estonia case, the contention of the public attribution claim would itself be worthy of study. However, it is not the focus of this case study, and hence no further analysis is performed here.

[101] White House, "Statement by the Press Secretary on the Executive Order Entitled 'Imposing Additional Sanctions with Respect to North Korea'," White House, 2. January 2015, [Press Release], https://perma.cc/ET5V-VGSM.

tag."[102] Investigatory reporting by the New York Times at the time, and supported in follow up articles years later, attributed North Korea's internet outage to the Chinese government.[103] For example, an article in December 2016 noted: "the Chinese even cooperated, briefly cutting off the North's internet connections."[104]

iii. What features of this case are analogous to mercantile companies, privateers, and pirates?

The Sony Pictures Entertainment case raises questions pertaining to a longer-term impact about the responsibilities of responding to cyber attacks: who must respond? When does the state become active? The SPE case highlights a state taking public responsibility of the security of a company hosted in its country. The U.S. government publicly attributed the attacks to North Korea – only a month after the destructive attacks against SPE. This was an unprecedented move. The U.S. government opted for taking public political steps to seek retribution for a specific cyber attack.

This stands in stark contrast to the reaction to the Chinese cyber attacks on Google four years earlier. In the 2010 Aurora case, the U.S. government commented on the intrusion, but did not respond confrontationally. It allowed the Chinese government to save face by referring to it as cyber intrusions that needed a transparent investigation from the Chinese government's side. Whilst it politically rallied on the side of Google, the U.S. government did not officially oppose the Chinese government.

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[102] "U.S. Can Never Justify Screening and Distribution of Reactionary Movie: Policy Department of NDC of DPRK," *KCNA*, 27. December 2014.

[103] For reporting on the discussions with the Chinese at the time, see David E. Sanger, Nicole Perlroth, and Eric Schmitt, "U.S. Asks China to Help Rein in Korean Hackers," *The New York Times*, 20. December 2014.

[104] Eric Lipton, David E. Sanger, and Scott Shane, "The Perfect Weapon: How Russian Cyberpower Invaded the U.S.," ibid., 13. December 2016. This is the most credible account, as the first reports about this option were published a day before the actual outage took place. The discussions hinged on an American operation necessarily touching on Chinese sovereignty. Additional corroboration is offered by former DNI James Clapper in Shaun Waterman, "Clapper: U.S. Shelved 'Hack Backs' Due to Counterattack Fears," CyberScoop, 2. October 2017, https://perma.cc/6JX3-TY4Y.

Similarly, in the summer of 2014, the U.S. government had opted to publicly address Chinese cyber attacks against U.S. companies, by publicly indicting five People's Liberation Army (PLA) officers for committing commercial espionage.[105] However, they did not launch economic sanctions against China. Rather, the U.S. used the criminal proceedings, and the threat of sanctions, as a diplomatic pressure point.

One of the fundamental differences driving the U.S. reaction may have been the target of the two cyber attacks. Whilst Chinese economic espionage threatened the economic well-being of the U.S., U.S. leadership discussed the attacks against SPE as a threat to freedom of expression, one of the cherished political values in the United States.[106] NSA Director Admiral Mike Rogers and Commander of U.S. Cyber Command summarized his viewpoint of the SPE attack as follows: "Sony had in some ways encapsulated everything we had seen before. Theft of intellectual property, theft of personally identifiable information, destructive activity, the use of a nation state to use cyber as a coercive tool." He argued, firstly, that the government could not ignore it, secondly, that it must publicly attribute the attack to the threat actor, thirdly, that the unintended consequences of doing nothing would be too great. The government worried about sending a permissive signal to other actors (i.e. a non-response would encourage more action). Finally, Rogers was also concerned about the signal sent to the private sector:

> if you're in the private sector, you're a company, you're being – you [are] receiving this attention from another nation state in this case and if the government is not going to do anything, what does this drive the private sector to? Do we start to get under the hack back? Do you get into cyber mercenaries? Do you get into this idea

[105] *United States of America V. Wang Dong et al.*, 14-118 (2014).

[106] Walter Isaacson, David E. Sanger, and Michael Rogers, "Beyond the Build: Leveraging the Cyber Mission Force," Aspen Institute, 23. July 2015, [Transcript], https://perma.cc/DBV6-EMGT.

> that the private sector believes well if I can't count on the government then I'm going to have to do this myself?[107]

To prevent such a world, he believed that the government was right to take responsibility of the response to the SPE situation. Rogers' highlighting of this point is significant, because the need for protection was deemed so high that the governmental actor in charge felt compelled to take action, lest the private sector armed itself. Or, read differently, the self-perceived governmental capability by the Commander of the U.S. Cyber Command was mature enough that he deemed it appropriate to be used for public protection. Precisely what was driving his interpretation, the quality of the threat, or the possibility to supply protection remains unclear. The SPE case marked a transition, in which the protection and response shift from being provided entirely privately, to a more public and political form of protection and response. In naval history, this mirrors the shift towards navies taking over the protection functions to stabilize trading operations at sea. As was detailed in Chapter 3, in Britain, this happened in the early 18th century, when the admiralty and the navy had become a fully-fledged administrative body with the capacity to sustain a fleet roaming the seas worldwide and over some significant amount of time.[108] The Royal Navy's counter-piracy operations in the 1720s could be interpreted as early indicators of this larger process towards the public protection of trade.[109]

Since there is both a difference in time and a difference in actors, it is difficult to ascertain what generated the different outcomes in the Google and SPE cases. Whilst the descriptive case of transition in the supply of protection indicates a difference in time as

[107] Ibid. Advocating for a digital right to self-defence due to the state not protecting private actors, see Bryan Reinicke, Jeffrey Cummings, and Howard Kleinberg, "The Right to Digital Self-Defense," *IEEE Security & Privacy* 15, no. 4 (2017).

[108] On the administrative changes, see Nicholas A. M. Rodger, *The Command of the Ocean : A Naval History of Britain 1649-1815*, (New York: W.W. Norton & Co., 2006), 291-311.

[109] On the navies involvement in the counter-piracy operations in the 1820s see Peter Earle, *The Pirate Wars*, (London: Methuen, 2003), 183-208.

being important, there are also some significant differences between the actors. In contrast to Google, no-one expected SPE to be able to respond to a state-driven cyber attack. To the contrary, other subsidiaries of Sony had been the target of cyber attacks before and were known to be a badly defended target. Thus, having the U.S. government accuse the North Korean state was a convenient way to shift the blame away from its own responsibility and its inadequate security practices.[110] In contrast to Google, which had an incentive to stay at arms-length from the U.S. government, there was no risk for SPE to be perceived as an arm of the U.S. government. The market of SPE films as well as other U.S. products in North Korea was small. Hence, there was also not much to lose economically from antagonizing the North Korean government. Thus, it was politically much easier for the U.S. government to involve itself in the response to the attacks against SPE publically.

The calculated strategic ambiguity on both the attackers and defenders side can be analogized to situations involving pirates and privateers. As laid out above, no state ever took credit for the attacks sponsored by North Korea, as well as for the network outages in North Korea.

North Korea's creation of the hacker group the "Guardians of Peace" introduced an element of deniability into the attack against SPE. This left the onus of public attribution on the defender. This was similar in piratical attacks undertaken by sailors of a specific country. If no-one is physically caught, despite the knowledge of who might have been involved, the country itself can deny having authorized the mission, whilst agreeing with its result. This raises the question about when a country would publicly claim responsibility. In Elizabethan times, the queen's control of the privateers was very

[110] For this point on Sony Pictures Entertainment's response, and more broadly on the diverging expectations between the government and the private sector of investment into security see Carr, *US Power and the Internet in International Relations*, 104.

limited. Actions by English sailors abroad could thus often not be directly attributed to a command given by the Crown. Nevertheless, this did not stop the Queen from claiming victory in successful operations to bolster her domestic claim of authority, whilst denying involvement or even denouncing the activities in the event of failure. In the case of North Korea, the house of Kim was in a very different position. Contrary to the domestic politics of Queen Elizabeth, who struggled to assert her claim of authority over the operations of the men at sea, Kim's claim to power and control of the operation was not endangered through the mission. On the contrary, given the dictatorial rule in North Korea, claiming that the attacks were "a righteous deed of the supporters and sympathizers with the DPRK in response to its appeal" and informing the U.S. that "there are a great number of supporters and sympathizers with the DPRK all over the world as well as the 'champions of peace' who attacked the SONY Pictures," may be proof enough for Kim Jong Un's domestic base to claim success in this operation.[111] After all, North Koreans were able to strike the U.S. in its homeland and punish the company who, in the regime's eyes, disrespected its rightful leader.

By its ambiguous messaging about the network outage in North Korea, the United States government engaged in the same tactic as North Korea, leaving the attribution open to the victim state. Furthermore, by not discouraging activists from counterattacking North Korea, it left the possibility open for a non-state sponsored counterattack. Silence during a crisis could be regarded as tacit support. This has implications. In naval history, there is a long history of coastal communities engaging in predation at sea. Depending on the strength of the authority of the state, their actions could be rendered legitimate or illegitimate politically, and depending on the capabilities of the state to enforce their

[111] "Spokesman of Policy Department of NDC Blasts S. Korean Authorities' False Rumor About DPRK," *KCNAWatch*, 7. December 2014.

authority, their actions could also be controlled. As detailed in the historical Chapter 3, the English state's authority and ability to control actions at sea grew over time. In cyberspace, there is a similar phenomenon with regards to the authority and capacity to control "coastal" communities, that is, communities harbouring the skilled workforce that can deploy offensive capability through cyberspace. Thus, silence about offensive actions, initiated independently by the citizenry, weakens a state's claim of control of the activities resulting from its territory. As discussed above, this can be beneficial, if, by having such activist chatter, the response benefits from the same ambiguity as North Korea used in the attack.

To sum up: the analysis of the attack against Sony Pictures Entertainment revealed several characteristics of the different actors. Most fundamentally, it contrasted the arms-length U.S. governmental response in the Aurora case with the interventionist response in the attacks against Sony Pictures Entertainment case. Differences were observed in the perceived governmental responsibility to protect a company that could not protect itself. In contrast to the Google case, the SPE case shows how the U.S. government actively deemed the protection of the company as part of its responsibility, also to prevent corporations arming themselves. In addition, the response to the attack raised the question of managing independent hackers, who called for a retaliatory strike on North Korea. The case demonstrated that strategic ambiguity can be a choice, both on the attacker's as well as the defender's side, involving similar situations as when, historically, pirates became active in a state's interest.

C. Signals intelligence: cooperative cyber mercantile companies

Whilst the Google and the SPE case focused mostly on the conflict between a government and a corporate actor, this final case study will look at the cooperation between mercantile companies and signals intelligence agencies. Chapter 4 already introduced the basics

about modern signals intelligence (SIGINT) with regard to digital network intelligence. This case study will zoom in on one particular aspect of SIGINT, namely its access to digital information with the cooperation of technology companies. The case will highlight the advantage of an indigenous technology sector to modern signals intelligence and explore how aligning interests between companies and states can be better understood using the concept of the mercantile company.

This case starts with an overview of the modern signals intelligence environment with regard to digital data. Two specific instances of collaboration are focused on: the sharing of data between service providers and governments, and the efforts to weaken encryption standards, both in the context of Five-Eyes, particularly the U.S. and the United Kingdom. These two instances of collaboration are of interest, as they are especially well-documented, both with technical and documentary evidence, a rare occurrence in the field of signals intelligence.[112] The shared interest between businesses and governments will be discussed with regard to data collection and storage. To close, an analysis of which historical time period the constellation of actors and interests encountered in the signals intelligence space can be best analogized to will be offered.

To appreciate the global importance of the U.S. technology sector, some numbers are illustrative. Apple, Alphabet (formerly Google), Microsoft, Amazon, and Facebook are the largest five – in that descending order – companies in the world by market capitalization.[113] All were founded and are headquartered in the United States. In 2016, 3.488 billion people had internet access globally.[114] A large percentage of those users use

[112] The reader should take note: Just because the Snowden archives have given us extraordinary access and insight into Five-Eyes SIGINT operations, this does not mean that other states do not engage in the same types of operations.

[113] Antoine Gara et al., "The World's Biggest Public Companies," Forbes, 24. May 2017, https://perma.cc/NZ4C-Y49H.

[114] ITU, "Statistics".

services provided by these U.S. technology companies. For example, about half of the global internet users have a Facebook account, and a third uses their Facebook account daily.[115] Just under a third of all global users have a Gmail account they use at least once per month (further statistics see figure below).[116] There are over a billion Apple devices used globally, with an estimated 588 million users.[117]

Table 9: Amount of users of selected large U.S. technology companies

U.S. Tech Companies (selected)	Amount of users
Facebook	1.9 billion people, 1.2 billion active per day[118]
Alphabet (formerly Google)	Over 1 billion Gmail users per month[119]
Microsoft	1.2 billion office users[120]
Yahoo	1 billion monthly active users[121]
Apple	588 million users (estimate)[122]

This global user base creates large traffic volumes, most of which is routed through North America. This is represented in global network connectivity, which is still heavily focused on the North America (see below).

[115] Mark Zuckerberg, "Facebook Status Update," Facebook, 1. February 2017, https://perma.cc/J2K4-U33X.

[116] Ross Miller, "Gmail Now Has 1 Billion Monthly Active Users," TheVerge, 1. February 2016, https://perma.cc/NBP7-UP9A.

[117] Kif Leswing, "Investors Are Overlooking Apple's Next $50 Billion Business," Business Insider, 4. April 2016, https://perma.cc/3N27-WAQB.

[118] Zuckerberg, "Facebook Status Update".

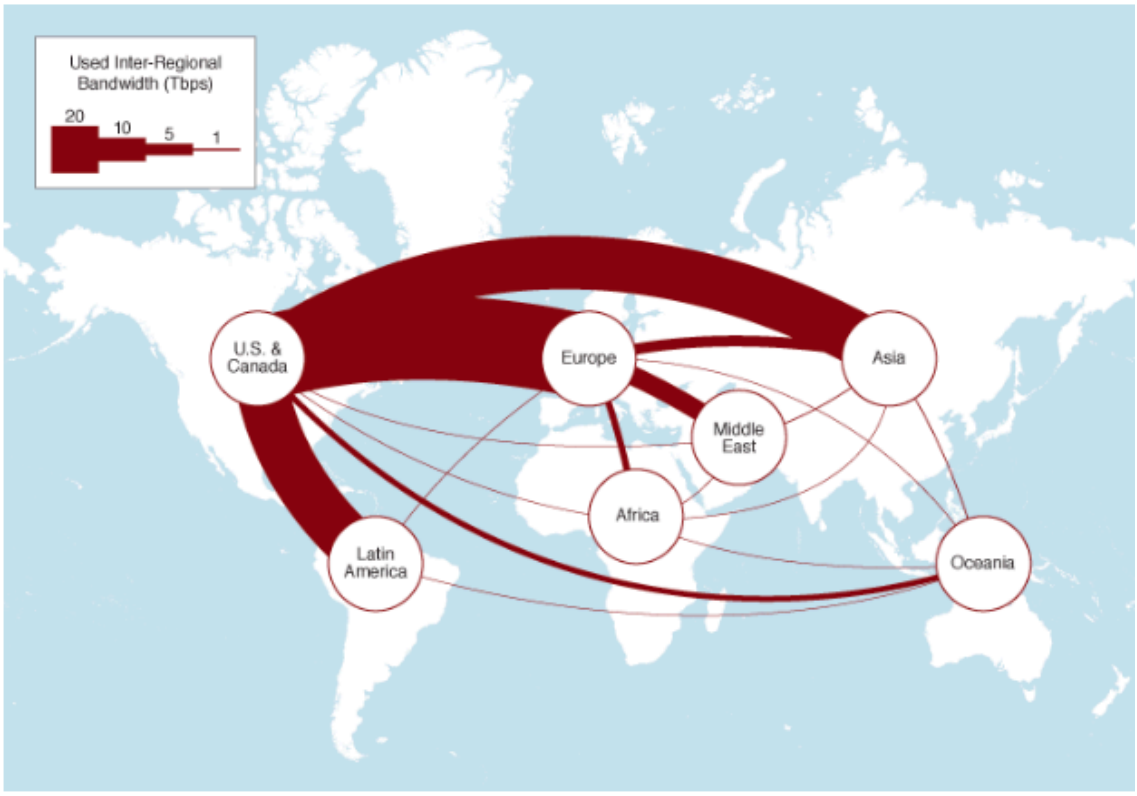
[119] Miller, "Gmail Now Has 1 Billion Monthly Active Users".

[120] Microsoft, "Microsoft by the Numbers," 2016, https://perma.cc/R5X5-CH2S.

[121] BBC, "'One Billion' Affected by Yahoo Hack," 15. December 2016, https://perma.cc/J566-AJEV.

[122] Leswing, "Investors Are Overlooking Apple's Next $50 Billion Business".

Figure 8: Used inter-regional bandwidth in 2015



Source: Global Bandwith Research Service, "Executive Summary," TeleGeography, 2016, https://perma.cc/SG9J-FZK6.
Note: Bandwidth is a good proxy for overall traffic. It correlates with pricing, which correlates with total traffic (also due to least-cost-routing algorithms used by telecommunication companies).

In 2015, 83 percent of used interregional bandwidth was connected to the United States and Canada.[123] A large part of that bandwidth was used by content providers, such as Google, Facebook, Amazon, and Microsoft, who have become major customers of inter-continental traffic for their internal networks.[124] In 2015, for example, 64 percent of the transatlantic capacity was used by private networks, and about a third of new capacity is deployed directly by content providers.[125]

[123] Global Bandwith Research Service, "Executive Summary," TeleGeography, 2016, https://perma.cc/SG9J-FZK6. 1.

[124] Ibid., 4. See also Craig Labovitz et al., "Internet Inter-Domain Traffic," *SIGCOMM Computer Communication Review* 40, no. 4 (2010).

[125] For the 2015 statistic see Global Bandwith Research Service, "Executive Summary" 4; On new capacity, see Alan Mauldin, "Shaping the Global Wholesale Bandwidth Market," PriMetrica, 28. July 2017, [Blog], https://perma.cc/A7QQ-XBQX.

For SIGINT agencies, such large traffic flows pose both an interesting target and a challenge. The Snowden archives have documented the efforts that the Five-Eyes intelligence sharing partnership expends on accessing these global data flows. Because of the large data flows through the Five-Eyes, and their overseas territories, a significant share of the data can potentially be accessed in their domestic jurisdictions.

The easiest way to gain state access is to compel companies, who handle or own the data, to cooperate. Then Director of the U.S. Central Intelligence Agency Michael Hayden described the situation in 2006 in a U.S. Senate Committee Hearing:

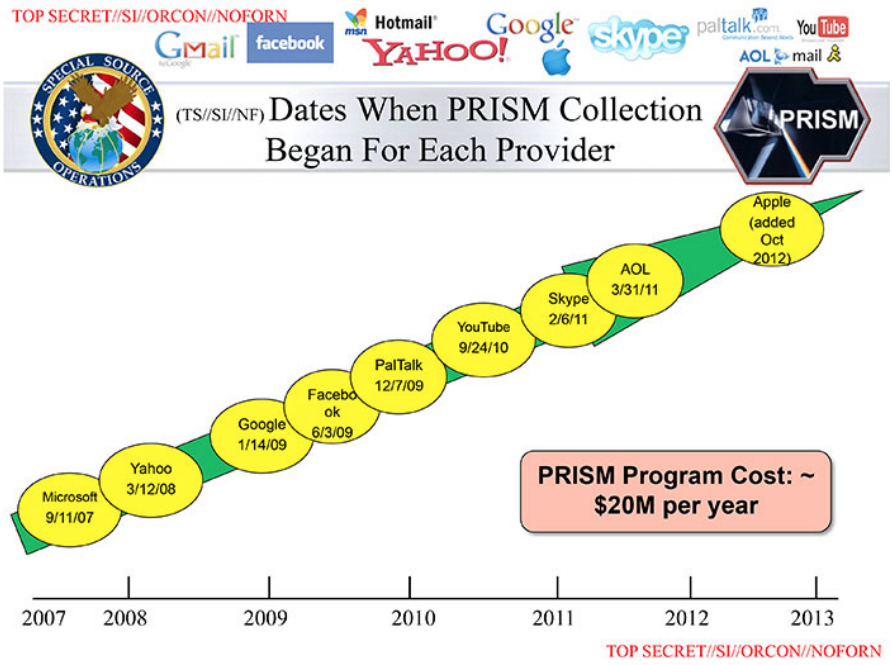
> Because of the nature of global communications, we are playing with a tremendous home field advantage and we need to exploit this edge. We also need to protect this edge and those who provide it.[126]

Recalling Palmerston's quote on shaping the law of the seas around norms from which Britain would profit the most, the imperial analogues are noteworthy. In Hayden's view, the nature of global communications was such, that the powers, who have the best access to the companies supplying global communications, gain an advantage. That power, in 2006, was the United States. Thus, Hayden was protecting America's edge. In subsequent legislation, the U.S. Congress followed that logic. It enabled the collection of information from U.S. service providers first in the Protect America Act of 2007 and later in enacting the Foreign Intelligence Surveillance Act Amendments Act of 2008 (FAA). Under FAA Sec.702(h)(1) U.S. electronic communication service providers are compelled to provide the government secret assistance in the acquisition of information on non-U.S. persons

[126] Michael V. Hayden, "FISA for the 21st Century. Testimony to the United States Judiciary Committee of the US Senate " 26. July 2006, [Transcript], https://perma.cc/CTN9-RXRP. Note also the title of Hayden's autobiography reflecting the motivation to use their legal powers to the fullest extent possible Michael V. Hayden, *Playing to the Edge: American Intelligence in the Age of Terror*, (New York: Penguin Press, 2016).

located outside of the United States. They provide assistance both for access to the raw data flow (upstream collection) as well as to their customers' account data through a programme named PRISM.

Figure 9: Dates of enrolment into the PRISM programme

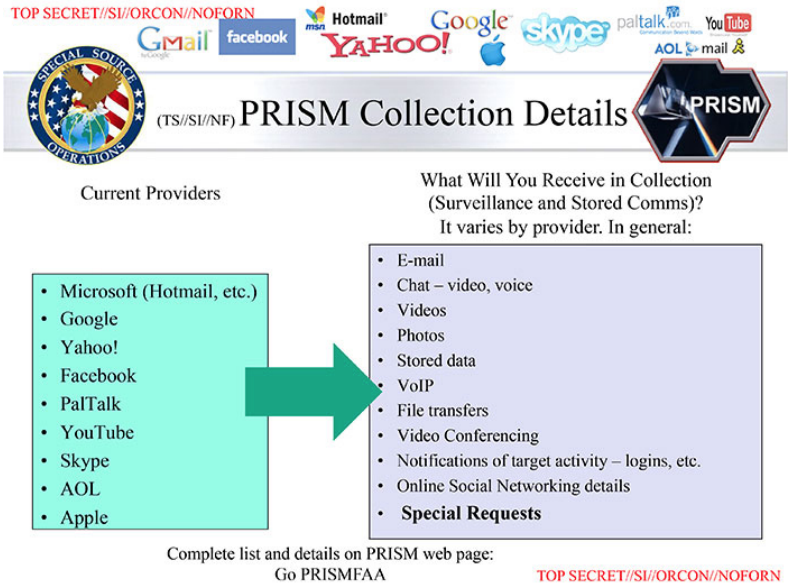


Source: Slide from presentation entitled "PRISM/US-984XN Overview or the SIGAD Used Most in NSA Reporting Overview" (dated: April 2013)[127]

The Snowden archives reveal how the U.S. government has compelled various U.S. service providers to cooperate (see Figure 9). The PRISM programme gives the U.S. National Security Agency (via the FBI) access to internet records stored by service providers (see Figure 10). The degree of willingness to cooperate on the service providers part is unclear and will be discussed below.

[127] "PRISM/US-984XN Overview or the SIGAD Used Most in NSA Reporting Overview". The date for Yahoo has been established to be demonstrably wrong. Rather than 3/12/08 it should read 5/12/08. Hence, the exactness of the dates, unless corroborated with other sources, should be read with caution; the order can be assumed to be broadly accurate. The existence of collection with these providers can be established with various other sources.

Figure 10: PRISM collection details



Source: Slide from presentation entitled "PRISM/US-984XN Overview or the SIGAD Used Most in NSA Reporting Overview" (dated: April 2013)[128]

Why is this important? The NSA strategy for 2012-2016 referenced the characterization of the current environment as a "golden age of SIGINT."[129] The spread of internet technology has made more data accessible about more people than ever before. However, there is a clear trend towards a higher share of total traffic being encrypted.[130] According to the U.S. Director of National Intelligence, the Sowden disclosures have significantly accelerated the trend towards universal encryption.[131] This trend has two consequences. First, access to content and metadata directly provided by service providers becomes more valuable. This increasing valuation of the PRISM programme is also reflected in the Snowden archives. For example, PRISM was the most cited signals intelligence

[128] Ibid.

[129] "SIGINT Strategy 2012-2016", National Security Agency: New York Times, 23. November 2013 (Dated: 23. February 2012), https://perma.cc/3NEH-SGDH. The type of information collected is corroborated, amongst other documents, in the Privacy and Civil Liberties Oversight Board, "Report on the Surveillance Program Operated Pursuant to Section 702 of the Foreign Intelligence Surveillance Act," 2. July 2014, https://perma.cc/2RZC-RC4F.

[130] Google, "Google Transparency Report: HTTPS Usage," Google Inc., 2017, accessed 26. April 2017, https://perma.cc/WR4M-6JYB; Sandvine, "2016 Global Internet Phenomena. Spotlight: Encrypted Internet Traffic," 11. February 2016, https://perma.cc/US7S-R6F7.

[131] Jenna McLaughlin, "Spy Chief Complains That Edward Snowden Sped up Spread of Encryption by 7 Years," *The Intercept*, 25. April 2016.

source contributing to the U.S. president's daily brief in 2012.[132] The programme is used across various targets derived from NSA's strategic mission list.[133]

Second, the NSA included countering "the challenge of ubiquitous, strong, commercial network encryption" into its strategy.[134] In part, to make up the loss of its bulk interception capacity (due to loss of visibility and diversification of traffic), the NSA invested in undermining the encryption systems, as well as broadened its capacity to infect midpoints (i.e. networking gear) and endpoints (end-user devices and servers). In its 2013 budget request, the NSA requested U.S. $250 million for a project labelled "SIGINT Enabling". It was described as:

> The SIGINT Enabling Project actively engages the US and foreign IT industries to covertly influence and/or overtly leverage their commercial products' designs. These design changes make the systems in question exploitable through SIGINT collection (e.g. Endpoint, MidPoint, etc.) with foreknowledge of the modification. To the consumer and other adversaries, however, the systems' security remains intact. In this way, the SIGINT Enabling approach uses commercial technology and insight to manage the increasing cost and technical challenges of discovering and successfully exploiting systems of interest within the ever-more integrated and security-focused global communications environment.[135]

[132] "PRISM (US-984XN) Expanded Its Impact on NSA's Reporting Mission in FY12 Through Increased Tasking, Collection and Operational Improvements", National Security Agency: Henry Holt and Company, 13. May 2014, https://perma.cc/8QRE-NEZ5, 111. The importance was also highlighted in "SSO Corporate Portfolio Overview", National Security Agency: New York Times, 15. August 2015 (Dated: 2012), https://perma.cc/WEB2-PZR4.

[133] "United States SIGINT System January 2007 Strategic Mission List"; "What Is Known About NSA's PRISM Program". 23. April 2014, Electrospaces [Blog], https://perma.cc/2EJD-JATV.

[134] "SIGINT Strategy 2012-2016".

[135] "Computer Network Operations – SIGINT Enabling Project", National Security Agency: Pro Publica, 5. September 2013, https://perma.cc/U7EZ-SSFZ, 115.

Amongst other things, the project suggested (1) to "influence policies, standards and specification for commercial public key technologies," (2) to "shape the worldwide commercial cryptography marketplace to make it more tractable to advanced cryptanalytic capabilities being developed by NSA/CSS" and to "insert vulnerabilities into commercial encryption systems," and (3) to collect data "via cooperative network carriers."[136] Several instances of how such efforts were successful have been uncovered since 2013, although not all of them have been attributed to the NSA. The following paragraphs explain how this three-step process was implemented in collaboration with key U.S. telecommunications and technology companies.

First, the initial reporting on the efforts to undermine encryption standards in a standard issued by the United States National Institute for Standards and Technology (NIST) in 2006 pointed to a dual elliptic curve pseudorandom number generator (named Dual_EC_DRBG). The *New York Times*, *ProPublica,* and *TheGuardian* reported jointly:

> Classified N.S.A. memos appear to confirm that the fatal weakness, discovered by two Microsoft cryptographers in 2007, was engineered by the agency. The N.S.A. wrote the standard and aggressively pushed it on the international group, privately calling the effort 'a challenge in finesse.' 'Eventually, N.S.A. became the sole editor,' the memo says.[137]

Whilst the potential of a backdoor was highlighted in 2007, after this new reporting the exploitability of the weakness in applied cryptographic products (specific Transport

[136] Ibid., 115-16.

[137] Jeff Larson, Nicole Perlroth, and Scott Shane, "Revealed: The NSA's Secret Campaign to Crack, Undermine Internet Security," *ProPublica*, 5. September 2013; Nicole Perlroth, Jeff Larson, and Scott Shane, "N.S.A. Able to Foil Basic Safeguards of Privacy on Web," *The New York Times*, 5. September 2013; James Ball, Julian Borger, and Glenn Greenwald, "Revealed: How US and UK Spy Agencies Defeat Internet Privacy and Security," *TheGuardian*, 6. September 2013. The exact quote is taken from ProPublica and New York Times articles.

Layer Security (TLS) implementations) was demonstrated.[138] Subsequent research into the emergence of this backdoor conclusively tied the origin to the NSA.[139]

Second, upon the recommendation of NIST, the backdoored algorithm was implemented by various products providing TLS encryption. In December 2013, Joseph Menn, a *Reuters* journalist with extensive experience reporting on cyber(in-)security matters, reported on a contract between the NSA and RSA, a major U.S. encryption and network security provider. Menn claimed that "RSA received $10 million in a deal that set the NSA formula as the preferred, or default, method for number generation in the BSafe software, according to two sources familiar with the contract."[140] The U.S. $10 million would have been a significant source of revenue for the small BSafe part of the company in 2006. Though spending much money on signals intelligence, U.S. $10 million for one contract was, in 2006, also a significant expenditure for the NSA – their total budget request in SIGINT enabling projects in 2013 was U.S. $250 million.

RSA adopted the Dual EC DRBG in its BSafe suite even before NIST had approved it, but emphasized never to have "entered into any contract […] with the intention of weakening RSA's products."[141] In a context, in which many other companies who demonstrably did collaborate with the NSA issued similar denials, the veracity of RSA's statement is hard to assess. The details of the contract are unknown, and we do not know

[138] I use the term 'backdoor' following other experts, such as Stephen Checkoway and Daniel J. Bernstein, who describe it as a backdoor. Dan Shumow and Niels Ferguson, "On the Possibility of a Back Door in the NIST SP800-90 Dual EC PRNG" (paper presented at the Proc. Crypto, 2007); Stephen Checkoway et al., "On the Practical Exploitability of Dual EC in TLS Implementations" (paper presented at the Proceedings of the 23rd USENIX conference on Security Symposium, San Diego, CA, 2014).

[139] Daniel J. Bernstein, Tanja Lange, and Ruben Niederhagen, "Dual EC: A Standardized Back Door," in *The New Codebreakers* (Springer, 2016).

[140] Joseph Menn, "Exclusive: Secret Contract Tied NSA and Security Industry Pioneer," *Reuters News*, 20. December 2013. See also further reporting in Joseph Menn, "Exclusive: NSA Infiltrated RSA Security More Deeply Than Thought - Study," *Reuters News*, 31. March 2014.

[141] RSA. "RSA Response to Media Claims Regarding NSA Relationship", 22. December 2013 [Blog], https://perma.cc/LSE5-GY6E.

how much RSA knew about the backdoor. However, there would have been good reasons for RSA to be more critical of the standard, at the latest following the research presented by Shumow and Ferguson in 2007.[142] RSA's implementation, combined with NIST's recommendation of using the provided mathematical points for government certification, created a powerful incentive to adopt this default setting in the corporate world.[143]

Thus, RSA was not the only company that was impacted by this backdoor. Juniper Networks, another large U.S. computer security company producing corporate grade network equipment adopted the Dual EC DRBG in 2008. However, in Juniper's case it was not the adoption of this backdoor that led to the exploitability of their product (which included Virtual Private Network (VPN) functionality). Rather, research undertaken by Checkoway et al. traced a series of changes in the Juniper implementation in 2008 as giving rise to the possibility of exploiting the Dual EC DRBG vulnerability.[144] Interestingly, in Juniper's case, an unknown attacker modified the backdoor in 2012, as disclosed by Juniper in December 2015.[145] U.S. Director of National Intelligence, James Clapper, mentioned this unauthorized change in the source code in his worldwide threat assessment in February 2016, thereby highlighting the danger of such backdoors being abused by a third-party attacker.[146]

[142] Shumow and Ferguson, "On the Possibility of a Back Door in the NIST SP800-90 Dual EC PRNG."

[143] For a list of implementations before the Snowden revelations see National Institute of Standards and Technology, "DRBG Validation List," 1. June 2013, https://perma.cc/3LQP-8YCJ.

[144] Stephen Checkoway et al., "A Systematic Analysis of the Juniper Dual EC Incident" (paper presented at the Proceedings of the 2016 ACM SIGSAC Conference on Computer and Communications Security, Vienna, Austria, 2016).

[145] Derrick Scholl. "Important Announcement About ScreenOS", 17. December 2015, Security Incident Response, https://perma.cc/MSC9-APX9. This vulnerability was given the CVE 2015-7756. Someone also added an undocumented administrator password to the ScreenOS source code (CVE 2015-7755). See HD Moore. "CVE-2015-7755: Juniper ScreenOS Authentication Backdoor", 20. December 2015, Rapid7Community, https://perma.cc/78EE-6TDU.

[146] James Clapper, Worldwide Threat Assessment of the U.S. Intelligence Community Hearing at the U.S. Senate Select Committee on Intelligence, 114th Cong., Washington DC: Government Printing Office, 2016. https://perma.cc/Y4UR-6TZU.

Finally, in a third step, the NSA was able to profit from this weakness by spying on global internet traffic. The U.S. ensured this through partnerships, both with other countries' governments as well as corporations. Partnerships with global telecommunications providers represent "a large portion" of the NSA Special Source Collection team.[147] For example, AT&T's "extreme willingness to help" allows for elaborate on-the-net operations and integration of active-passive SIGINT.[148]

To summarize this three-step process: first, the U.S. was able to influence cryptographic standards both through its participation in the standards creation process (through NIST) and through contractual agreements with companies (e.g. through allegedly paying RSA for adopting the backdoored random number generator). Second, the standard adoption was encouraged through making the backdoor a requirement for getting federal certification and, potentially, through influencing the implementation of it in large network equipment (in the case of Juniper). Third, the exploitation of the backdoor only worked by having global network traffic visibility, and such visibility is enabled in large parts through corporate partnerships.

A close look at the Snowden archives reveals that some companies were displaying a much closer degree of cooperation with the state than others. For example, AT&T and Verizon stand out as having NSA's monitoring tightly integrated into their systems.[149]

[147] "SSO Corporate Portfolio Overview", 5. See also Julia Angwin et al., "AT&T Helped U.S. Spy on Internet on a Vast Scale," *New York Times*, 15. August 2015.

[148] On active passive integration see also: "Analytic Challenges from Active-Passive Integration", S324, National Security Agency: Der Spiegel, 28. December 2014, https://perma.cc/H7K8-JCUE; "Network Shaping 101", National Security Agency: The Intercept, 28. June 2016, https://perma.cc/PKM5-QWVB.. Specifically with regard to VPN IKE interception, see "Turbulence – Apex Active/Passive Exfiltration", S32354, T112, National Security Agency: Der Spiegel, 28. December 2014 (Dated: August 2009), https://perma.cc/DTZ9-DA5X; "Turbulence – Turmoil VPN Processing", National Security Agency: Der Spiegel, 28. December 2014 (Dated: 27. October 2009), https://perma.cc/5U2N-BJZD.

[149] This assessment is based in part on the literature on NSA and supported by the Snowden archives. Note also that Verizon sold much of its data centre infrastructure, which is suspected to have a key role in the U.S. government's traffic monitoring and interception, in 2017. Equinix, "Equinix Completes Acquisition of 29 Data Centers from Verizon," news release, 1. May 2017, https://perma.cc/JY4H-W8VU.

Similarly, in the United Kingdom, BT and Cable&Wireless (a subsidiary of Vodafone since 2012) stand out as having close collaboration with the British signals intelligence agency GCHQ.[150]

The revealed collaborations caused significant media coverage, with many media outlets acting very surprised about the interaction between government and businesses. Had analysts taken the analogy to mercantile companies as a lens of analysis, the surprise would have been unwarranted. To a historically informed analyst, these government-industry partnerships are unsurprising. Many large U.S. telecommunications companies have an institutionalized relationship with the U.S. government. For example, for much of the 20th century, AT&T had held a government sanctioned monopoly over telephone communications in the United States.[151] The signals intelligence integration of telegraph, telephone, and later internet traffic can be traced back at least to the Second World War. In project Shamrock, after the end of the Second World War, the U.S. government (first the military, later the NSA) sought the cooperation of commercial communications companies.[152] Through this, it secured access to international communications routed over these commercial circuits.[153] Uncovered through an intelligence scandal in the 1970s, involving the NSA spying on Americans, U.S. Congress then passed the Foreign Intelligence Surveillance Act (FISA), creating a court regulating spying by the NSA on

[150] Frederik Obermaier et al., "Der Lohn Der Lauscher," *Süddeutsche Zeitung*, 21. November 2014.

[151] On the effects of the divestiture and its impact on NSA, see "The AT&T Divestiture & National Security," *Cryptolog* XI, no. 8-9 (1984). Quotation first found in: Corera, *Intercept: The Secret History of Computers and Spies*. 208.

[152] For a primary source on Shamrock, see Church Committee's counsel's recollections in L. Britt Snider, "Recollections from the Church Committee's Investigation of NSA: Unlucky Shamrock," *Studies in Intelligence* (Winter 1999-2000), https://perma.cc/8PXD-KXSJ. Best multi-sourced accounts are found in: James Bamford, *Body of Secrets : How America's NSA and Britain's GCHQ Eavesdrop on the World*, (London: Arrow, 2002). A shorter discussion, but with an integration into the modern packet-switched interception, see James Bamford, *The Shadow Factory : The Ultra-Secret NSA from 9/11 to the Eavesdropping on America*, 1st ed., (New York: Doubleday, 2009).

[153] Commission on CIA Activities Within The United States, Report on Inquiry into CIA-Related Electronic Surveillance Activities, Washington DC: Rockefeller Commission, 1976. https://perma.cc/A7DM-A99J. 32-36. 32-36

people in the United States and American citizens worldwide. According to the counsel of the investigative committee, the companies acted "out of patriotic reasons" and never received compensation.[154]

Since then, much has changed. However, as detailed in Chapter 4, after 9/11, many companies once again started to cooperate with the U.S. government to enable it to spy on foreign communications.[155] Intelligence historian James Bamford notes: "By the late fall of 2001, [NSA Director] Hayden succeeded in gaining the secret cooperation of nearly all of the nation's telecommunications giants for his warrantless eavesdropping program," but this time the NSA paid for the access.[156]

Whilst the U.S. has an advantage in terms of access to service providers (e.g. Alphabet, Amazon, Apple, Facebook, Microsoft, etc.), due to its geographic reach, and its historic imperial efforts to shape the global telegraph routes, the United Kingdom has an advantage in terms of access to diverse cable traffic.[157] Cable&Wireless, which emerged out of the imperial network of telegraph and wireless companies, has a long history of working with the British state (it was both nationalized and privatized in the 20th century).[158] Intelligence historian Richard Aldrich traces the "tradition of handing over all its [Cable&Wireless'] cable traffic to GCHQ" back to the First World War.[159] According to the BBC's national security correspondent, Gordon Corera, the cooperation

[154] Shamrock, see Church Committee's counsel's recollections in Snider, "Recollections from the Church Committee's Investigation of NSA: Unlucky Shamrock".

[155] For AT&T's involvement, see e.g. Angwin et al., "AT&T Helped U.S. Spy on Internet on a Vast Scale."

[156] Bamford, *The Shadow Factory : The Ultra-Secret NSA from 9/11 to the Eavesdropping on America*, 181.On remuneration of telecommunication companies for services provided, in this case GCHQ, see Obermaier et al., "Der Lohn Der Lauscher."

[157] Corera, *Intercept: The Secret History of Computers and Spies*. 347.

[158] On the late 19th century British strategic telegraph politics, see Paul M. Kennedy, "Imperial Cable Communications and Strategy, 1870-1914," *The English Historical Review* 86, no. 341 (1971).

[159] Richard J. Aldrich, *GCHQ : The Uncensored Story of Britain's Most Secret Intelligence Agency*, (London: HarperPress, 2011), 240. Of course, back then, it would not have been called GCHQ, but first was known as "Room 40" and then as "Government Code and Cypher School".

between telecommunication companies and the British state was formalized under section 94 of the 1984 Telecommunications Act.[160] The vast scale of GCHQ internet traffic interception, with the aid of telecommunications companies, was revealed before the Snowden documents. However, the Snowden archives substantiated the scale of interception further with specific evidence.[161] By 2010, GCHQ claimed to have the "biggest internet access in the Five Eyes."[162] GCHQ had also become the biggest real-time storage unit of internet traffic. By 2012, Tempora, GCHQ's internet buffer capability, stored three days of pre-selected full internet traffic and roughly thirty days of internet metadata.[163] The investment into the Mastering the Internet programme had paid off. GCHQ was providing a capability that outmatched the NSA's own storage, and it was trying to keep it that way.[164]

i. An alignment of corporate and state interests

Up to this point, the analysis of signals intelligence collaboration looked through the lens of the state – collaborations with large corporations give the state access to information it would not otherwise have access to. The analysis will now turn to examine the particular comparison to mercantile companies.

The strongest contribution of the concept of the mercantile company is in the management of the relationships to states from the perspective of the companies. The Five-Eyes were aware of the sensitivity of their partnerships. The briefing on cryptanalytic capabilities

[160] Corera, *Intercept: The Secret History of Computers and Spies*. 337.

[161] Aldrich, *GCHQ : The Uncensored Story of Britain's Most Secret Intelligence Agency*, 543-46. Note especially Aldrich's discussion on the "Internet Modernisation Programme" and the "Mastering the Internet" project.

[162] Ewen MacAskill et al., "Mastering the Internet: How GCHQ Set out to Spy on the World Wide Web," *The Guardian* (2013), https://perma.cc/P7Q5-ZCR5.

[163] "Tempora – News", Government Communications Headquarters: Der Spiegel, 18. June 2014 (Dated: May 2012), https://perma.cc/Z6ML-X54V.

[164] See quote on matching NSA's investment in building capabilities in Malaysia and India in MacAskill et al., "Mastering the Internet: How GCHQ Set out to Spy on the World Wide Web".

against network security technologies highlighted, that the capabilities "require a long lead time," "are very fragile," and, "if lost, may never be regained."[165] They include "CNE, interdiction, industry relationships, collaboration with other IC entities, and advanced mathematical techniques."[166]

Bruce Schneier, an applied cryptography expert and industry insider, highlighted the mutually constitutive aspects of the political and economic goals:

> Corporate surveillance and government surveillance aren't separate. They're intertwined; the two support each other. It's a public-private partnership that spans the world. This isn't a formal agreement; it's more an alliance of interests. Although it isn't absolute, it's become a de facto reality, with many powerful stakeholders supporting its perpetuation. And though Snowden's revelations about NSA surveillance have caused rifts in the partnership […] it's still strong.[167]

The quote highlights the mercantile aspects of the relationship. Many of the technology companies' business models are built on having interconnected and data-rich business relationships with their consumers. These business relationships generate a large amount of fine grained data about the individual users' lives, which often translates into a better experience for the customer. In their role as security guarantors, governments find these data an attractive target. This case study exemplifies this.

[165] "Bullrun Presentation", Government Communications Headquarters: Der Spiegel, 28. December 2014, https://perma.cc/2X7W-BDYE.. See further "Bullrun Col – Briefing Sheet", Government Communications Headquarters: Der Spiegel, 28. December 2014, https://perma.cc/DL6X-EDB3.

[166] "Bullrun Classification Guide", Government Communications Headquarters: The Guardian, 6. September 2013 (Dated: 16. June 2010), https://perma.cc/BK74-QG3Q.

[167] Bruce Schneier, *Data and Goliath : The Hidden Battles to Collect Your Data and Control Your World*, (New York: W.W. Norton and Company, 2016), 92.

The interest of governments in the access to data also stabilizes the viability of the business models.[168] An example of this is the internet freedom agenda that not only includes the freedom of people to connect to the internet, but also, the freedom from taxation of data, or the freedom to move data into different geographical spaces. From the perspective of the mercantile company, the lack in taxation and the freedom to move the data lowers transaction costs (i.e. makes it more profitable), whilst, from the perspective of the state, it facilitates overt (as in disclosed to the company) access to the data of the companies' global userbase.

However, the analysis of this case study would be insufficient, if businesses would only feature as longer arms of the state. Rather, the lens of the mercantile company allows for the discovery of aspects that exemplify independent agency. For example, the historical East India Company had its own foreign policy with different countries, quite apart from the official government policy in the state of its headquarters. Similarly, in the case of government access to data, companies had independent agency as to the extent of the cooperation they would venture into. They were aware of the sensitivity surrounding their cooperation. Evidence points to some companies being very cooperative with the U.S. government in the response against terrorism after 9/11. Some observers label this cooperation as "patriotic."[169]

In the wake of the Snowden disclosures, several companies displayed public outrage at the practices that were uncovered. Partially, this can be explained as a market strategy. Clearly, many technology companies are competing in the global marketspace and are

[168] To further explore this point in book-length format, see authoritatively Shawn M. Powers and Michael Jablonski, *The Real Cyber War: The Political Economy of Internet Freedom*, History of Communication, (Urbana: University of Illinois Press, 2015).

[169] There is some substantiation of the claim of patriotism offered by people involved in the cooperation. See e.g. statements from the ex-CEO of HP (from 1999-2004) in Michael Isikoff, "Carly Fiorina Defends Bush-Era Torture and Spying, Calls for More Transparency," Yahoo News, 28. September 2015, https://perma.cc/PW45-5D2U.

therefore dependent on international users' trust. Hence, public voicing of their outrage served to work towards a recovery of such trust.

The newly declassified documents after the Snowden revelations allow for a more detailed look into how individual companies cooperated. Yahoo, for example, objected to the initial cooperation order under Protect America Act of 2007.[170] Yahoo's objections are significant. The representations made to the Foreign Surveillance Court of Review consisted of Yahoo claiming that they were being asked "to participate in surveillance that we [Yahoo] believe violates the Constitution of the United States."[171] One can but speculate about the motivation Yahoo had. But it is significant that they raised concerns about the constitutionality and tried to resist the government's broad interpretation of the governing statute. Yahoo raised their customers' 4th amendment concerns, in a secret setting, one in which they could not anticipate a direct publicity benefit from their objection. This rules out a publicity objective. To date, only Yahoo's objections are a matter of public record. It seems likely that, had other large technology companies objected, they too would have had an incentive to appeal to the Foreign Intelligence Surveillance Court for declassification. No such proceedings are known today.

ii. From early investor to reaping the benefits of monopoly

As outlined in the history chapter, mercantile companies exerted independent agency in their framing of the proximity to the state. Depending on the audience, companies chose to represent their affiliation and status differently. Both in the Aurora and in the SIGINT cooperation case, similarities to this historic behaviour can be seen. The companies observed chose to represent themselves in different ways in the U.S. or abroad. State

[170] *In Re Directives to Yahoo! Inc. Pursuant to Section 105B of the Foreign Intelligence Surveillance Act*, 105B(G) 07-01 (2008).
[171] *In Re Directives to Yahoo! Inc. Pursuant to Section 105B of the Foreign Intelligence Surveillance Act. Oral Argument. 19. June 2008*, 08-01 (2008).

proximity of the companies was found to be empirically variable and not uniform across all global technology companies. In the Aurora case, Google thought it was protected by state resources, although it was not. This can be read as a judgement about state proximity from Google's side. In the analysis of signals intelligence cooperation, some companies represented themselves as publicly distant when privately they were collaborating with the state.

The world's five biggest companies – all U.S. technology companies – were all founded in the last 50 years. In that time, they have developed from small start-ups into large multinational companies that try to defend their, in some areas monopolistic, market positions. The case study showed that a large share of the global user base generates data within those five companies. Currently, there is a battle for authority between states and companies on who gets access to that data, and through what processes access can be gained.[172] The SIGINT case has shown a settlement within the United States starting in the early 2000s, in which companies give the government access to their data for national security purposes. However, they did so in expectation that the collaboration would stay a secret. Now, in a post-Snowden environment, such collaboration is much harder to sustain. Thus, technology companies have a large interest in publically distancing themselves from the government so as to protect their global markets.

iii. From predation towards interest in stability

The history chapter captured an important shift from an interest in maritime predation towards an interest in trade relations. In the late 17th century, maritime violence still played a large role, but the uncontrolled nature of piracy increasingly became a nuisance to both the state and mercantile companies. Analogizing this process, the modern

[172] For the same tension in the law enforcement space, see the battle between Microsoft and the U.S. government about U.S. compelled access to data stored in Ireland in *United States of America V. Microsoft Corporation*, U.S. Supreme Court Docket Nr. 17-2 (Case Nr. 14-2985).

mercantile companies have not made their own cyber(in-)security affairs of the state. As seen in the case of Google, rather than gaining protection from state resources, the company opted to reinforce its own security team. In the case of the signals intelligence cooperation, the state profited from access to the data of the companies.

With regard to the historical analogy, this confirms the time period for analogical reasoning in the 17th century, when companies were still protecting themselves, by investing into their own protection fleets, but when they also had significant shared interests with their imperial home states. However, in the 17th century, predation and expansion was still the major interest of the mercantile companies. They were still capturing new markets, by making deals with other sovereigns, or by capturing territory by force. Similar interests can be seen today, for example with regard to the Chinese market, where the five biggest companies of the world all have a major stake in expanding their market positions. As happened historically, the companies chose specific strategies to integrate themselves into the Chinese market. For example, Apple, who strenuously fought the U.S. government against being compelled to provide aid in accessing a dead terrorist's phone, recently agreed to store Chinese users' data within China, and to remove VPN applications, which allowed users to access the internet past the Chinese censorship authorities, from the Chinese AppStore.[173] A political reading of the largest technology companies' interaction with different states has foregrounded varying practices when it comes to providing access to data, and thereby improved our understanding of these companies as political actors of an own kind.

[173] Hannah Kuchler and Max Seddon, "Apple Removes Apps That Bypass China's Censors," *Financial Times* (30. July 2017), https://perma.cc/FQ3X-RYEH.

D. Conclusions and implications

This chapter applied the conceptual toolkit elaborated in Chapter 4 to analyse how it contributes to an understanding of the modern day mercantile company, and how it changes our understanding of cyber(in-)security. The research followed a commitment to leaving state proximity as something to be defined, rather than something that is assumed, and detailed the conflicting and cooperative relationships between the different actor types.

The case of the cyber attacks against Google has identified the political discourse around the responsibility to protect companies in cyberspace. The analogy to a mercantile company has been applied in multiple ways. The focus on state proximity aided the understanding of the political conflicts that arose in the Aurora case. It identified the simultaneous conflicts between Google and the Chinese government and the tensions resulting from the perceived proximity to the U.S. government. Furthermore, the case highlighted challenges in recruitment and the risks of corporate offensive cyber attacks as analogical to the situations encountered in the 17th century. Importantly, the Google case highlighted how political ideals sometimes shape international corporate actions. Google's reaction in the Aurora case could not be understood without recourse to the political convictions of its founders and managers, especially Sergey Brin's. Being in the powerful position to both lead the operational response and influence the business strategy, it was his conviction against censorship that led to a confrontational response. Thus, using the concept of a cyber mercantile company improved our understanding of Google's actions.

The case of Sony Pictures Entertainment contrasted the Google case. SPE relied on the U.S. government to defend it. Whilst the cases are not completely comparable due to the different nature of the attacks (espionage vs. coercion), the different attitudes of both the

companies and the U.S. government surrounding the protection of the companies were stark. Whilst the company, SPE, was able to use the state-affiliation of the attacker as a claim to absolve itself of the responsibility for its own insecure systems, the U.S. government worried about the impact on companies if it was seen not to be protecting them. Linking the case to the discussions in the previous chapter, the case also identified the strategic use of ambiguity by not only attackers, but also defenders with regard to their collaboration with non-state actors and the authorship of actions taken.

Finally, in the case of signals intelligence cooperation between the large technology companies and the Five-Eyes signals intelligence partnership, the analogy to the mercantile companies was used to better understand the overlapping interest in the fine-grained data and the interest in corporate expansion. Both elements suggested that the analogy is best suited to comparing modern technology companies to 17th century mercantile companies. Whilst the companies display independent agency with regard to their own protection and, due to their still expansionary policies, with regard to their representations to various governments, their shared interest with states in terms of access to data introduces a cooperative element to their relationships.

CHAPTER 7

Conclusions

IMPLICATIONS FOR INTERNATIONAL SECURITY AND INTERNATIONAL RELATIONS THEORY

This thesis explored the role of non-state actors with varying degrees of state proximity in cyber(in-)security. It examined how the historical analogy to mercantile companies, privateers, and pirates can be applied to better understand non-state actors' links to states in the contemporary cyber domain. The research entailed a starting assumption that investigating the role of non-state actors in cyber(in-)security will aid our assessment of whether and how cyber(in-)security fits within International Relations more broadly. The thesis has advanced the theoretical claim that non-state actors in cyber(in-)security are increasingly exerting agency beyond the control of states and, in so doing, are affecting the security and insecurity of citizens. Whilst this could lead theorists to focus on the radical challengers of the state, the interest of this thesis lay on those actors who collaborate and compete with states at the same time. Their activities, both when cooperating and conflicting with state agendas, are of such importance to cyber(in-)security more broadly that they merited independent study.

The thesis took a historical perspective that analogizes the modern actors to those of a different domain; namely, that of the sea in the age of sail between the late 16th and mid-19th century. In so doing, the preceding chapters answered the following research question: *how can the historical analogy to mercantile companies, privateers, and pirates be applied in order to understand the role of non-state actors, with varying degrees of state proximity, in cyber(in-)security, and how does such an application change our understanding of cyber(in-)security?* Two main research outcomes were attained. Empirically, the thesis showed the degree to which we can usefully analogize the security

dynamics on the seas between the late 16th and mid-19th century to the dynamics we witness in cyberspace today. It found that the security dynamics amongst 17th century naval actors are most helpful to better understand cyber(-in)security. Conceptually, the thesis clarified how mercantile companies, privateers, and pirates as thinking tools can disrupt our current understanding of, and generate insights for, cyber(in-)security, in areas such as attribution, constitution of insecurity over time, and the cooperative and competitive dynamics of cyber mercantile companies.

This concluding chapter presents the main insights of the thesis and assesses their broader implications for the study of international security by returning to the main insights of Chapter 3 and Chapter 4, and by reassessing the limitations of the analogy. It then discusses the implications for international security of the three main claims advanced in Chapter 5 and Chapter 6, and the broader implications for International Relations theory. The thesis concludes with an outlook on the further study of non-state and semi-state actors in cyber(in-)security.

A. Anchoring the historical analogy in time

Over the last thirty years cyber(in-)security rose from being a nuisance to a question of national security. The problem has become highly politicised.[1] Alongside the rise of the threat discourse, interest in the topic in the International Relations discipline rose as well, though slowly. Today, book-length arguments are made about whether cyber(in-)security presents a fundamental challenge to the states system, or whether it is much ado about nothing. At the extreme, the challenger side argues that technological progress has changed the opportunities for revolutionary states and non-state actors to such a degree

[1] For a theorization of politicisation, see Michael Zürn, "Politisierung Als Konzept Der Internationalen Beziehungen," in *Die Politisierung Der Weltpolitik - Umkämpfte Internationale Institutionen*, ed. Michael Zürn and Matthias Ecker-Ehrhart (Berlin: Suhrkamp, 2013); Colin Hay, *Why We Hate Politics*, (Cambridge: Polity, 2007), 79.

that systemic and systems change became more likely.[2] On the other side, the sceptics of the "cyber revolution" hold that technological change has empowered states – the traditional masters of the international system – to an even greater degree, reinforcing the state-centric paradigms of International Relations.[3] Both sides find merit for their claims in the empirical observation of the politics of cyber(in-)security today. Not submitting to either side of the debate fully, this thesis has centred its focus on non-state actors with varying degrees of state proximity. To better understand the interaction of non-state actors with states, there is no need for an ex-ante theorization of either their revolutionary capacity or their insignificance. Rather, and this is the pathway chosen in this thesis, the intellectual merit lies in the middle of these two options. Neither demonstrating the insignificance of non-state actors, nor the underlining of the novel revolutionary political actor attaining primacy in the international system is the main interest, but the semi-state actors both collaborating and competing with states.

Before concluding the main insights of the different chapters and discussing their implications and effects on international security, a "use with care" warning is in order. Historical analogies are tricky beasts. They have great potential to enlighten novel subjects, but are just as often used for political purposes.[4] Both functions are inherent elements of any historical analogy, though with some analogies one function is more pronounced than with others. With regard to the analogy studied in this thesis, this poses some hazards. To mitigate those, a "use with care" warning for three specific aspects is issued. It includes the risk of further militarizing the discourse on cyber(in-)security, the

[2] Lucas Kello, *The Virtual Weapon and International Order*, (New Haven: Yale University Press, 2017).

[3] Brandon Valeriano and Ryan C. Maness, *Cyber War Versus Cyber Realities: Cyber Conflict in the International System*, (New York: Oxford University Press, 2015).

[4] Halvard Leira, "Political Change and Historical Analogies," *Global Affairs* 3, no. 1 (2017).

risk of advocating empire, and the risky temptation of assuming that history can be used to predict the future.[5]

The analogy considers cyberspace with relation to another relatively aggressive and militarized discourse, namely that of naval (in-)security between the late 16th and mid-19th century.[6] Whilst it demonstrated its utility in generating insights in the analysis of the cyber domain, for policymakers, civilian analogies may be more productive in creating opportunities for dialogue and cooperative solutions. Other, more peaceful, analogies could be more desirable in the context of a multilateral forum, to reshape the perception of the cyber(in-)security problem and to extend the possible range of solutions.

A superficial reading of the analogy could entail advocating for empire, including all its oppressive and dominating aspects, as a solution to the security problems of cyberspace today. After all, when privateering was abolished in 1856, the Royal Navy was the dominating naval power. The British had a very strong position from which to influence norm development, as they were able to assert those norms by force. Thus, to clarify, not only does the present analysis of the analogy claim that the mid-19th century is not a useful time to compare to today, the thesis also explicitly does not advocate this pathway as a desirable solution for cyber(in-)security.

Finally, historical experience does not guarantee a parallel course of events today. Just as policymakers in the past were taking decisions in the face of uncertainty, knowledge of the past should not lead the scholar into the misguided belief that history will repeat itself.

[5] The following paragraphs on the risks of using the analogy were originally developed for Florian Egloff, "Cybersecurity and the Age of Privateering," in *Understanding Cyberconflict: Fourteen Analogies*, ed. George Perkovich and Ariel Levite (Washington DC: Georgetown University Press, 2017).

[6] A development various scholars have warned about, see e.g. Jonathan Zittrain, "'Netwar': The Unwelcome Militarization of the Internet Has Arrived," *Bulletin of the Atomic Scientists* 73, no. 5 (2017); Myriam Dunn Cavelty, "The Militarisation of Cyber Security as a Source of Global Tension," in *Strategic Trends 2012*, ed. Daniel Möckli (Zürich: Center for Security Studies, ETH Zurich, 2012).

Whilst considering the insights from the analogy to mercantile companies, privateers, and pirates, policies for the 21st century must take into account the idiosyncrasies of today's political landscape. The 21st century offers some new opportunities, which can and should be embraced by policymakers. Thus, whilst the thesis does put forward the analogy as a diagnostic tool to identify and interpret novel problems, it refrains from advocating the analogy as a prescriptive tool for following historically selected solutions.

After having set up the theoretical grounding and conceptual framework in Chapter 2, Chapter 3 investigated mercantile companies, privateers, and pirates in the context of British naval history. Being intrigued by the specialty of privateers and their peculiar connection to states, this historical investigation focused on the changing institution of privateering between the late 16th to mid-19th century. It identified the different constellations of non- and semi-state actors at different points in time. The late 16th century offered insights into the early-modern world of overlapping sovereignties and a chaotic interplay of personal ambition and political state projects, in a world in which states were still weak. The Crown, the admiralty, and early mercantile companies all contributed to a system of contested and blurred boundaries between pirates and privateers. England's situation as a small competitor, spurred by the willingness to emulate Spain and Portugal's successes in conquest and bullion, generated a flurry of private and semi-state initiatives. Formal naval capacities were in their infancy and were used both for personal and political gains, and the no peace beyond-the-line agreement still separated the colonial sphere from European international relations. The late 17th century period showed a world in flux. Imperial lines were redrawn, navies bolstered and given extensive responsibilities, privateers controlled more tightly, and pirates hunted. Strengthened commerce, through mercantile companies, left England stronger financially and opened possibilities for a more developed administrative state body and a

bolstered Royal Navy. Finally, the mid-19th century case of the abolition of privateering showed a world transformed. Britain had become the dominant power that protected its colonial interests with a blue-water Royal Navy. The evolved model of generating profits from trade, which was built on the protection of private property and free trade, rendered predation of commerce at sea a threat to British interests. Consequently, efforts to eradicate piracy (early 19th century), and later the abolition of privateering (1856) were the result.

The thesis then explored the history of cyber(in-)security and integrated the naval historical findings into the conceptualization of mercantile companies, privateers and pirates. It expanded the purview of the analysis to comparing both domains – the sea in the age of sail and cyberspace. As detailed in Chapter 4, both fundamental similarities and differences of the two domains impact the analogy. Whilst the thesis shows the merit of the insights that can be generated due to the similarities, the differences contextualize and situate the scope of the analogy. Some differences introduce more rapid interactions between the actors and aggravate the problem of insecurity. In contrast, an increasingly integrated international society and global institutions potentially soften the impact of insecurities by expanding the range of solutions available between states (remember: reprisal was an action of last resort, a breakdown of diplomacy). Finally, the possibility to change the fundamental characteristics of the cyber domain also allows for a transformation of the security problem. Thus, it limits the applicability of the arguments made in this thesis insofar as insecurity is a consequence of the characteristics associated with the domain.

Based on the historical comparison of both domains, Chapter 4 found that the late 16th and late 17th century periods are superior analogues to cyber(in-)security than the mid-19th century period. The argument hinges on key turning points in the history of privateers

and pirates between the 1700s–1720s. Around 1700, a transformation of the British state took place, which enabled a redrawing of the boundaries between pirates and the state. After this key turning point, the status of the Royal Navy in the provision of protection changed, and privateers were used as an auxiliary rather than as a main method of naval conflict. The interest in the stability of trade and the more mature naval capabilities and responsibilities for protection are key indicators of that transformation. In cyber(in-)security, despite the investment into state owned cyber capacities, they are still in their infancy, and their responsibilities for the protection of private cyber assets are still nascent. While several similarities lead to an assessment of the general comparability of the domains, the analogy to the mid-19th century was rejected for two reasons. First, there is no comparable dominant power in cyberspace today. To analogize cyberspace today to *Pax Britannica* would fundamentally misconstrue the nature of the domain and the actors' possibilities to act within and through it. Second, states' function in the protection of commerce in cyberspace today is fundamentally different from the mid-19th century high seas, and most comparable to their involvement before the 18th century, when companies mostly had to rely on themselves to provide protection.

Consequently, Chapter 5 and Chapter 6 explored the comparison of cyber pirates, privateers, and mercantile companies to their historical late 16th and late 17th century analogues. In a detailed empirical and conceptual application of the analogy, these chapters advanced three main claims about how best to apply cyber pirates, privateers, and mercantile companies to semi- and non-state actors in cyber(in-)security, which will now be discussed in the ensuing three parts.

B. Cyber pirates: narratives of state proximity, attribution, and emerging shared understandings of state sponsorship

The first main claim is that the analogical analysis of the contestations in cyber(in-)security with the contestations of piracy and privateering improved our understanding of how state proximity is used politically by attackers and defenders. The application of the analogy to pirates and privateers in the case of Estonia showed that both the attacking and defending governments had significant influence in shaping the public narrative of state proximity. The discursive framing thereby resembled the contestations in the 17th century, when lines between privateering and pirates were still blurred. Both offensive and defensive parties had possibilities in legitimising certain kinds of violence and delegitimising others, and sometimes made a sovereign responsible for the actions of a third party, as evidenced in the case of Captain Kidd and the Mughal emperor's dealings with English piracy. The modern analysis highlighted the multiplicity of Estonian and Russian narratives, and showed the resulting strategic ambiguity that uncertainty about the attacker's proximity to the state introduced. The narrative interpretation of the pirate further improved our understanding of the multiplicity of connections to states that illegal hackers may have.

The application of the analogy in the case of Estonia also changed our understanding of cyber(in-)security. By focusing the analysis on public and private attribution it conceptually advanced the analysis of "state-sponsored" hackers. The implications of this claim for the analysis of international security are twofold. For one, it encourages a shift of the analysis of attribution in cyber(in-)security from a factual analysis (i.e. is attribution possible and if so how?), to an analysis of the political drivers of public attribution (i.e. what logic drives a government's decision making to frame its attribution claims?). The thesis established that the presence of ambiguity in international cyber conflicts leaves large leeway for both defenders and attackers to use it as a political opportunity. Further

research could thus analyse the international and domestic drivers of the specific attribution claims advanced. For example: what strategic logics do policymakers apply? And, of special relevance to the International Relations analyst, to what degree are international political concerns present in those strategic logics?

As a second implication, the analogical comparison also highlighted the long process of contestations sovereigns had over the international status, legitimacy, and responsibility of privateers and pirates. The historical analogy suggests that differing interpretations over the legality and responsibility for actions are likely to persist for some time. Whilst the analogical structures to regional regimes of enforcement may form and strengthen (for example through the Budapest Convention on Cybercrime in analogy to the Atlantic system of Prize Courts), a global order in analogy to Britain's 19th century rule of the sea is neither desirable nor in sight. Further important research could thus investigate responsibilities arising from specific types of attacks. Are there clusters of reactions from states and other actors that are stabilizing the expectations of responses from particular actors after different types of attacks? In analogy to the historical crystallization of the pirate and the privateer in the late 17th century, the indications to look out for would be increasing agreement on the types of attacks that are deemed attacks against all.

For the state system, the recent failing of the UN GGE indicates that though some possibilities of such normative consensus have been offered, few are currently universally operative.[7] However, when including large technology companies, the reactions towards

[7] For a discussion of the norms construction process in cybersecurity, see Toni Erskine and Madeline Carr, "Beyond 'Quasi-Norms': The Challenges and Potential of Engaging with Norms in Cyberspace," in *International Cyber Norms: Legal, Policy and Industry Perspectives*, ed. Anna-Maria Osula and Henry Rõigas (Tallinn: NATO CCD COE Publications, 2016); Martha Finnemore and Duncan B. Hollis, "Constructing Norms for Global Cybersecurity," *American Journal of International Law* 110, no. 3 (2017).

specific attacks allow researchers to chart out the normative expectations companies hold towards particular actors in cyberspace.[8]

C. Cyber privateers: longevity and its effects on state capability building

A second main claim of this thesis concerns the longevity and path dependencies of historical privateering setups, which refined our understanding of the constancy, and the long-term risks and rewards of state collaboration with cyber criminals. The application of the analogy in three criminal cases highlighted the depth of state-criminal collaborations in terms of their longevity, institutionalization, path dependency, and lack of control. The cases also discussed the secondary effects on recruitment and capability building.

By identifying the drivers stabilizing insecurity across time, this analysis refined our understanding of the difficulty to exit a policy of political cybercriminal collaboration. The analogy was uniquely placed to make this long-term observation. Partially as a result of the short and patchy availability of cyber(in-)security history, many analyses focus on the newness of cyber(in-)security. In contrast, the analogical claim put forward in this thesis, highlighted the constancy of one aspect of cyber(in-)security studied.

This finding has important implications for the analysis of agency in international security. The analysis of longevity and depth of privateering structures suggests a prolonged period of blurred lines between state and non-state actors. This is an outflow of the two domains' chief characteristic: availability of skilled personnel is one key constraint driving – both defensive and offensive – capability. Hence, the question that presents itself to all the actors in this space is how to motivate skilled personnel to become

[8] See, for example, Microsoft's statement after the WannaCry attacks Brad Smith. "The Need for Urgent Collective Action to Keep People Safe Online: Lessons from Last Week's Cyberattack", 14. May 2017, Microsoft On the Issues [Blog], https://perma.cc/E5NT-3H6M.

active in the respective actor's interest. Thereby, privateering, as a hybrid form of agency, is a particular type of incentive structure, in which one actor (the sovereign/the state) tries to channel the self-interested capacities to become active in the state's interest. The longevity that this entails is of interest for the assessment of cyber(in-)security in the long-run. The analogy suggests that states that opt for a privateering structure are likely to experience a lock-in effect, in which a policy change against privateering is associated with much friction (from within parts of the government, the profiting ventures, and the privateers themselves). Due to such lock-ins, governments experiencing them will have an interest in legitimising their own approach internationally, lending further support to the blurred boundaries between governments and non-state actors. Thus, the clarification between cybercrime and state-supported hacking is unlikely to originate from governments locked-in a privateering-like structure.

Since there is overlap in the recruitment of skilled personnel between normal trade and security structures, some interaction between the two is also to be expected. Regions that do not possess enough economic opportunities for skilled personnel can thus be expected to have a higher likelihood for pirate/privateering like structures to emerge than regions where the normal economy can absorb skilled personnel. Such interaction was a feature of historical privateering. There was an interaction effect with trade and with piracy both regionally and temporally. Regionally, certain areas that did not generate much economic surplus made a living off piracy (e.g. the buccaneer communities, the Barbary states). Temporally, in times of conflict, trade could absorb less personnel, and a higher share was employed in the navy and privateering business. After conflicts ended, and trade picked up again, some went back to trading, whereas others sought their luck as pirates. Analogizing this situation to Russia in the mid-2000s, one could expect a higher share of highly skilled personnel to have sought their luck within the privateering part of the

economy than if Russia had had a strongly growing digital economy offering globally competitive salaries.

D. Cyber mercantile companies: from strategies of expansion to strategies of monopoly

The third main claim of the thesis is that the application of the analogy to mercantile companies sharpened the focus on how cooperative and conflictive relations to states, and practices of self-protection, influence cyber(in-)security. The historical investigation identified strategies of expansion and monopolization, and examined how companies used their state association strategically, and selectively framed this association depending on their relationships with other states. Thus, whilst at home mercantile companies were perceived as a specific type of domestic polity, abroad they chose self-representations ranging from mere traders to sovereigns.

In the contemporary analysis of the Google and Sony Pictures Entertainment cases, the thesis used the focus area of self-protection of private companies and analogized it to the transformation in protection offered by the state starting in the late 17th century. The Google case detailed how a private company took its own action to retaliate against a government. In the case of Sony Pictures Entertainment, it used the publicity generated by a state actor to distract from its own inability to defend itself. By 2014, the U.S. government had built up capabilities and evolved its own understanding of its public duty to protect the private sector from specific threats. Historically, the form of shared rule between the sovereign and the companies licensed by the sovereign, shifted over time. Thus, the reading of this process as a process of state transformation, generated insights for the way the state accommodates and integrates other powerful actors domestically, and expands its influence abroad.

The third case, focusing on signals intelligence, explored how cyber mercantile companies provide states with access to data, which the state, on its own, could not have collected. The SIGINT case thus analogized the cyber mercantile companies to the historical ones of the 17th century, who pursued expansionary policies and displayed independent agency both towards their home government as well as abroad. They represent a symbiotic alliance between different types of polities.

This third claim thus changes our understanding of cyber(in-)security in identifying the large technology companies as international political actors of an own kind. Using the mercantile company lens drew out imperial practices of expansion, reflected in their submission to other rulers, the integration into other systems, and the renegotiation of responsibilities and control at home.

The mercantile company lens impacts our assessment of international security. Due to the importance of the private sector in both owning and securing the cyber domain, the private sector's prominence in the political debate of cyber(in-)security is ensured. The politicisation of cyber(in-)security moved the debate, first, from entirely private decisions about corporate and individual insecurity, to a public debate about wider insecurities generated by the cyber domain. In a second step, there is now a further politicisation from the public sphere towards the governmental sphere, contesting the extent of state authority and responsibility in protecting private assets.

Cyber mercantile companies are key political actors, not just domestically, but internationally, as they can authoritatively contribute to such political contentions, due to their multi-jurisdictional spread, large size, and technical competency. Their alliances and conflicts with states vary across time. As seen in the historical analogy, the expansionist phase of the mercantile companies was followed by a monopolistic phase of

consolidation. The cyber domain is still expanding. By 2020 another two billion human users and twenty billion devices are expected to come online. The analogy suggests that cyber mercantile companies are in the late part of the expansionist phase. Thus, we could still expect cyber mercantile companies to have a major stake in gaining access to new markets and to embedding themselves into local systems of rule. The more infrastructure and services are provided by cyber mercantile companies, the more they will use their political power to advocate for their authority in making autonomous security claims to defend their monopolistic enterprises. At the same time, as connectivity of societies deepens, the common stake in higher levels of security generated by companies also rises. Thus, in a global trading system, the incentives for more cooperative, jurisdictionally compatible solutions, can also be expected to rise.

The technology industry is undergoing a process of renegotiating authorities over the control of data, and over the adjudication of just and unjust action in cyberspace. In so doing, it is inextricably linked to money and power. Pirates and privateers were the pioneers of their time. Through their experimenting they shaped the outcome of how a global empire was experienced, both by the dominators and by the dominated. However, as the history of captain Kidd showed, pirates and privateers' power was limited. They were powerful in that they were the masters of their profession, quick to find investors and allies, and often acting in conjunction with politicians and large companies. However, their power was limited, as the boundaries over the legitimacy of their actions were often policed by others, masters of more powerful interests than their own.

Today, these opportunities and risks are present again. Hackers, the masters of the new technologies of cyberspace, have found allies in governments and investors. The expansion of global technology companies has once again brought opportunities and risks to companies and individuals involved. However, civil society worldwide has suffered

from this alliance between companies and states, particularly parts of it that were already weak and oppressed.[9] Thus, just as mercantile companies of the past had a vast influence over how the process of expansion took place, and whose power structures they reinforced or challenged, today's cyber mercantile companies have a major moral stake in guiding the spread of technology worldwide, and how its insecurities are used and abused for processes of influence and control.

E. Broader implications for International Relations scholarship

The analysis of the analogy can also make some contributions to theories and concepts of International Relations and more specifically security studies. It does so particularly in relation to the understandings of neo-medievalism, non-state actors, and private-sector violence.

The thesis contributes to Hedley Bull's notion of new medievalism in that it takes historical redescription seriously.[10] Thus, it brought to the fore a new conceptual toolset and language to address the state–semi-/non-state linkages. The analysis undertaken allows for a reassessment of Bull's three factors in favour of a new medievalism: the restoration of private violence, the analogy of multinational companies to the East India Company, and the effects of a unified technology across the planet. Bull's analysis of private violence concluded that it was mainly motivated by a longing for statehood. Without judging whether this is the case or not today, the phenomena observed in this thesis are certainly not classified as a struggle for statehood.[11] Neither the hackers who

[9] For a narrative treatment of the Citizenlab's research, see Ronald J. Deibert, *Black Code: Surveillance, Privacy, and the Dark Side of the Internet*, Expanded edition. ed., (Toronto: Signal, 2013). See also https://citizenlab.ca/publications/.

[10] For the notion of historical redescription, see Ronald J. Deibert, "Exorcismus Theoriae: Pragmatism, Metaphors and the Return of the Medieval in IR Theory," *European Journal of International Relations* 3, no. 2 (1997).

[11] Indeed there is some indication that this is not the case for physical violence either, see e.g. the struggle for control by the Mexican drug cartels. Keith Krause, "From Armed Conflict to Political Violence: Mapping & Explaining Conflict Trends," *Daedalus* 145, no. 4 (2016).

attacked Estonia, nor the attacks against Yahoo can be read as a claim for independent statehood. Rather, criminal and political motivations overlap. They are more complicated phenomena, that can be interpreted under the wider category of political conflict, but would be missed in a purely state-centric analysis.

Bull's contention that the ability of states to deny multinational corporations access or restrict their activities was still found to be valid for large states. The Aurora case confirmed China's ability to deny access to a very large corporation. Further research could consider whether and how smaller states can restrict their activities in the same way. However, the claim that, for the running of their operations, multinational corporations are dependent on security provided by states, is invalidated with respect to the cyber domain's mercantile companies. Up to the time of writing, states have not comprehensively provided security: the Sony Pictures Entertainment case being the exception rather than the rule. Most large technology companies provide their own cybersecurity. What is more, the provision of cybersecurity to individuals is also predominantly in corporate hands.

Finally, the impact of a unified technology on political integration is still unclear. The technology companies observed in this thesis have their own audiences: they are authorities of an own kind. It is yet unclear to what degree their security claims will continue to clash with governments' security claims, or whether durable settlements between them will be found. At least for the time being, there are contentions about who is the right authority to protect private assets in the cyber domain.

This also links the neo-medievalist literature to Nye's treatment of non-state actors in the cyber domain. Nye's work on power diffusion provided a theoretical motivation to analyse non-state actors more closely. The research of the analogy both evaluates a claim

made by Nye, as well as provides greater detail to how non- and semi-state actors are linked to states. The thesis provided supporting evidence of power diffusion. In the cyber domain, non- and semi-state actors can exert significant influence over international events, as evidenced in the case of Estonia.

The thesis detailed how particular non-state actors are linked to states. Nye argued that cyberspace alters state sovereignty, just as town markets changed sovereignty in feudal times. In Nye's words, cyberspace creates "new wealth, new coalitions, and new attitudes."[12] It brought forth actors that share the stage with states and change them. The pirate, privateer, and mercantile company lenses developed in this thesis allowed for a detailed discussion about how they feature in the international debate of legitimate cyber actions and how they change particular states. The contention about the state connection of the pirate in the early 17th century was precisely such a process. The (sometimes weak) sovereignty claims of different sovereigns (e.g. the United Provinces or the Barbary Pirates) were politically debated with regard to their ability to sponsor privateers. In this process, the definition of the privateer and pirate changed as well. Thus, the legal and political rendering of violence at sea served as a point of contention for elaborating broader changes in the interpretation of state sovereignty.

Today, the legal and political cyber pirates and privateers serve a similar, yet also a slightly different function. Whilst some states use semi- and non-state actors as resources, others are in the process of trying to impose costs on such usages. The construction of particular narratives about how to govern transborder hacking, be they cybercriminal or state-sponsored political hacking narratives, reflects different political judgements about the usefulness of keeping non-state originated acts of hacking at a distance, or drawing

[12] Joseph S. Nye, Jr., *The Future of Power*, 1st ed., (New York: PublicAffairs, 2011), 118.

them into the realm of state vs. state interaction (i.e. politicising them internationally). Thus, the difference to the debates about the legitimacy of pirates and privateers in the early 17th century is that today's debate is about the status of the actors and the responsibilities of the sovereigns, whilst the fundamental sovereignty claim of states is not called into question.

Some states were found to be affected by such unconventional actors. In the case of Estonia in 2007, it found itself on the receiving end of an attack conducted largely by non-state actors. Yet, the Estonian government brought a state responsibility claim against Russia. On the opposite side, Russia's President Putin implied uncontrollability of hackers, thereby trying to absolve the state from non-state action. Thus, this shows, not only a world of non-state actors colliding with particular states, but increasingly, non-state actors being a point of contention in interstate interactions.

What is even more poignant, with regard to Nye's town markets, is that the analysis of cyber mercantile companies has brought to the fore new wealth, with new coalitions, and new attitudes. Thus, each cyber mercantile company has emerged in a particular political context and is positioning itself with differing degrees of state proximity. The current international political contention, about how to get cyber mercantile companies to cooperate more closely with states, demonstrates the power such companies hold. If they were not as powerful, states would just legislate their preferred solution. Rather, some governments, for example the U.K. government, have to convince their citizens, who, in the case of the large consumer facing technology companies, have a personal relationship to these companies, that governments are not making cyberspace more insecure through their actions. Thus, at least in some states, governments have not attained the legitimacy to decide on the politicised issue of cyber(in-)security.

The thesis also raised questions with which to think about the role of private violence in International Relations. This literature has added the context of the interconnection of state development and normative shifts that have – in Western states – produced a monopoly of violence. The cases of cyber pirates and cyber privateers have contributed to this discussion by demonstrating the absence of a monopoly of offensive action in cyberspace. As previously detailed, offensive action in cyberspace is undertaken by many different types of actors. In the offensive space, different states seem to have varying tolerances for employing non-nationals for generating state used capabilities.[13] Further research could focus on which factors shape a state's willingness to collaborate with foreign actors in the cyber offensive space, and whether this correlates with a collaboration with non-nationals outside of the cyber domain.

With regard to mercantile companies, the incidences of hacking-back have also raised the question about state control over the cyber domain. In the absence of government ability or willingness to protect private actors, some private companies are using offensive measures for their own protection. In the United States this has led to a policy discussion about legalizing limited offensive measures undertaken by companies, thereby legitimating a practice that some private actors are already engaged in.[14] Theoretically, this strengthens the argument that multiple loyalties and authorities coexist, and that states are currently not controlling offensive action in the cyber domain.

[13] Examples are Dokuchaev's collaboration with Karim Baratov (Canadian), the UAE recruitment attempt of Simone Margaritelli, or the Saudi Arabian recruitment attempt of Moxie Marlinspike. See Jenna McLaughlin, "Spies for Hire," *The Intercept*, 24. October 2016; Moxie Marlinspike. "A Saudi Arabia Telecom's Surveillance Pitch", 13. May 2013, moxie.org [Blog], https://perma.cc/RTP5-XH5A; Simone Margaritelli. "How the United Arab Emirates Intelligence Tried to Hire Me to Spy on Its People", 27. July 2016, evilsocket.net [Blog], https://perma.cc/MC6S-5ABZ.

[14] Joseph Cox, "Inside the Shadowy World of Revenge Hackers," The Daily Beast, 19. September 2017, https://perma.cc/C9S8-UNUD.

Echoing Aydinli's suggestion for the literature on non-state armed actors, the analysis in this thesis suggested that theorists and analysts should pay closer attention to state proximity in cyber(in-)security. State proximity is crucial, as it allows for the conceptual classification of actors that coexist alongside states, but are distinct from those that actively threaten the state system. Some of the actors observed profit from their state proximity by gaining stable operating conditions. Whilst the state cannot fully control them, it is able to shape the boundaries of the activities undertaken. Thus, state proximity is an important characteristic when theorizing a hacker's ability to generate independent effects over time.

Finally, the thesis investigated Kello's argument about the two global realms of action in the cyber domain: an international set of relations between states and global interactions between various types of actors, including not only states but also global companies and transnational groups with the capability of carrying out independent offensive actions.[15] The two conceptual realms were found to be interacting. This thesis went beyond Kello's two-part categorization between private and state actors to capture the phenomena of interest. Rather, the semi-state actors observed are of such importance to understanding cyber(in-)security that a more nuanced conceptual framework, based on the spectrum of state proximity, enabled the capturing of the diversity of relations to states.

The actors observed in this thesis have considerable power in influencing their relationships to states. Sometimes they take actions that are impossible for states to ignore, so that their actions become a matter of the state. States then decide on how to interpret their actions, sometimes raising them into the realm of interstate relations. The risks emanating from this clash between the two worlds are plentiful – some of them were

[15] Kello's framework shares intellectual similarities with that offered by James N. Rosenau, *Turbulence in World Politics: A Theory of Change and Continuity*, (London: Harvester Wheatsheaf, 1990).

detailed in the empirical chapters. However, what the analogy also showed, was that these actors serve as transmission belts for interstate relations. A mercantile company, not formally a part of a state's organs, can generate a wealth of interaction between the host government and the home government. They need not be conflictual – mercantile companies can also act as stabilizing forces. To the degree that we can read technology companies as such transmission belts, they strengthen Nye's claim of the transformation of states themselves, and challenge the utility of the conceptual distinction between the two international realms. When these semi-state actors possess the authority over managing their own security judgements (both offensively and defensively), they start performing important functions in the international system. Future research could thus further unravel the conceptual and theoretical conundrums that this empirical analysis has offered.

F. Emerging trends and outlook

We are currently witnessing a double transformation of cyberspace. First, accelerated by the leaks by Edward Snowden, the strategic use of cyberspace by states is growing rapidly, driven by the potential for advantage it promises. Second, cyberspace itself is growing rapidly in terms of both users and devices, rendering societies more interconnected than ever before, and magnifying the impact the fundamental vulnerabilities of the cyber domain have on individuals, companies, and states. The combination of these two transformations renders the problems of insecurity in cyberspace, observed in this thesis, more acute.

The analogy establishes grounds for both optimism and pessimism. On the pessimistic side, structural insecurity abounds. The pirate and privateer phenomenon was observed to have inherent drivers stabilizing its own existence. Change should not be expected to come swiftly. Similarly, cyber mercantile companies are renegotiating their rights and

responsibilities, with potentially large consequences for individual users. As shown in the Google and signals intelligence cases, the cyber mercantile companies are fighting for their own political agendas, and are not shying away from offensive action or collaborating with states when deemed necessary. The actions of cyber mercantile companies remain opaque to observers outside of them.

On the optimistic side, while the age of pirates and privateers may adequately capture some of the (in-)security dynamics present in the current environment, this need not be the future. Countervailing trends exist. Cybersecurity will become more important to all stakeholders. Even actors profiting from the cyber *in*security of their adversaries have a growing interest in more defensible cyber infrastructures and platforms. And, whilst investments in personnel will offer the best long-term hope for a more secure environment, in the absence of the skilled personnel required in the short- and medium-term, actors' investments into better technologies could spread swiftly and improve security for all.

The cyber mercantile companies need not be a menace either. Their inventions and investments make the world more globally connected; their existence in between the world of states opens spaces for change in the international political system. An example could be their political resistance against excessive government surveillance, and their insistence on globally compatible jurisdictional solutions to cyberspace curtailing some states' extraterritorial ambitions. Furthermore, some cyber mercantile companies' investments into privacy preserving communication technologies, in practice, may protect some of the fundamental human rights more effectively than the UN Declaration of Human Rights.

States remain the main actors in the cyber domain, but they share this domain with others, including the actors observed in this thesis. The common practice of labelling them "non-state" actors obscures their interlinkages with the current international political system. This thesis offered a new way to witness the transformation of the current international political system by zooming in on these linkages. By doing so, it enlightened the international political contentions about state-sponsored actors, the political reconstitution of the state-criminal nexus in cybercrime, and the role and contribution of cyber mercantile companies to the international politics of cyber(in-)security.

Appendix

A note on sources

The research uses Wikileaks and the Snowden Archives as archival sources.

Wikileaks Archives

Out of the Wikleaks archives, the Wikileaks Public Library of U.S. Diplomacy and the Sony Archives are used. A subset known as "Cablegate" are used from the former. The Chelsea Manning is the source of "Cablegate," that leaked ca. 250'000 U.S. State Department cables to Wikileaks. Most of these documents fall within the time span between 2004 to 2010, and represent a sub-sample of the total U.S. diplomatic cables sent in that period (2.4 million).[1] They only encompass those diplomatic cables marked SIPDIS (i.e. the ones deemed worthy to be shared with users of SIPRNET, a classified network for sharing secret information mainly with Department of Defence users).[2] Independent statistical analysis, based on the message resource numbers of the cables, corroborates the witness statements given at Manning's trial and increases confidence in this assessment.[3] Since the analysis performed in this thesis uses these documents as evidence, the caveat of other diplomatic reporting possibly outlining a different narrative exists. However, where a narrative persists throughout multiple documents from various embassies, it is unlikely that the narrower distribution channel's narrative (e.g. state department internal) would completely diverge. The authenticity of the documents is to be judged as high. Not a single case of forgery has been reported in that dataset, and the U.S. government prosecuted Chelsea Manning for the release of the documents,

[1] Freedom of the Press Foundation, "United States V. PFC Bradley E. Manning. Vol. 10, Unofficial Draft. Morning Session. Witness Patrick Kennedy," 5. August 2013, [Unofficial Court Transcript], https://perma.cc/5YYA-JN8T.

[2] "United States V. PFC Bradley E. Manning. Vol. 10, Unofficial Draft. Morning Session. Witness Charles Wisecarver," 26. June 2013, [Unofficial Court Transcript], https://perma.cc/46A5-PWTU.

[3] Michael Gill and Arthur Spirling, "Estimating the Severity of the Wikileaks U.S. Diplomatic Cables Disclosure," *Political Analysis* 23, no. 2 (2015).

confirming the authenticity of at least some of the documents. The original dataset was redacted by Wikileaks. Following the release of the decryption key in 2011, the unredacted dataset is now available for research. Comparison of the two datasets for the documents used in this thesis has indicated that the redactions solely concerned people who may have been at risk from the publication of the documents. This increases the confidence in the authenticity of the archive, as no political censorship was found.

The following documents from the Wikileaks Public Library of U.S. Diplomacy are cited in this thesis:

Estonia: Demonstrators Quit Estonian Embassy as Ambassador Returns to Tallinn, 4. May 2007, Diplomatic cable from the U.S. Embassy in Moscow, No. 07MOSCOW2065_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/LHZ5-GCFP.

Estonia's Cyber Attacks: Lessons Learned, 6. June 2007, Diplomatic cable from the U.S. Embassy in Tallinn, No. 07TALLINN374_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/3ABQ-6J7D.

Estonia's Cyber Attacks: World's First Virtual Attack against Nation State, 4. June 2007, Diplomatic cable from the U.S. Embassy in Tallinn, No. 07TALLINN366_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/CC35-NBCM.

Google Claims Harrassment by Chinese Government, 12. July 2009, Diplomatic cable from the U.S. Embassy in Beijing, No. 09BEIJING1957_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/XS3P-ZV6H.

Google Update: PRC Role in Attacks and Response Strategy, 26. January 2010, Diplomatic cable from the U.S. Embassy in Beijing, No. 10BEIJING207_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/L2WS-SAR8.

Russian Bear Hug Squeezes Estonian Economy, 29. May 2007, Diplomatic cable from the U.S. Embassy in Tallinn, No. 07TALLINN347_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/F383-N7JQ.

Secretary's Internet Freedom Speech: China Reaction, 25. January 2010, Diplomatic cable from the U.S. Embassy in Beijing, No. 10BEIJING183_a, Wikileaks Public Library of U.S. Diplomacy, Wikileaks, https://perma.cc/6VZB-W4DM.

The Sony Archives contain documents and e-mails stolen from Sony Pictures Entertainment (SPE). According to the U.S. government, the documents were stolen by hackers under the direction of the North Korean government (see case study). SPE is in

the business of producing movies and is a U.S. subsidiary of the Japanese corporation Sony. So far, no forgeries were reported in this dataset. The e-mails observed further indicated authenticity, as various copies of e-mails are concurrently present (multiple recipients). Additionally, the full headers of the e-mails allow one to verify that they were cryptographically signed by the respective domain owners (DKIM), which further enhances trust into their authenticity.

The following e-mail from the Sony Archives is cited in this thesis:

Notice to Sony Pictures Entertainment Inc., 21. November 2014 2010, E-mail from 'God'sApstls' (dfrank1973.david@gmail.com) to five Sony executives, E-mail ID 83432, Sony Archive, Wikileaks, https://perma.cc/6YB5-DVMY.

Snowden Archives

In June 2013, Edward Snowden, a contractor for the National Security Agency, leaked a large cache of documents to two journalists (Glenn Greenwald and Laura Poitras). The total number of documents is in dispute. At the upper end, the worst case analysis by the U.S. government claims that Snowden removed 1.5 million documents sourced from two classified networks, NSANet and JWICS (both cleared at Top Secret / Sensitive Compartmented Information). The documents referred to in this thesis as sourced from the "Snowden Archives" are documents that were previously released into the public domain by journalists. Because the documents were released in support of stories written by journalists, they are scattered around the world and hosted online by various news organizations. Sometimes, one organization would release a part of the document, whilst another would release a different part. This makes piecing together the source documents a tedious task that requires much contextual knowledge.

Some online repositories have sprung up to facilitate the task. Three websites are worth mentioning. “IC off the Record” maintains one of the most complete timelines of the Snowden leaks, as far as could be verified. Two other websites, one operating in support of the leaker (edwardsnowden.com), the other operated by the Canadian Journalists for Free Expression (cjfie.org), host better indexed and searchable versions of Snowden documents.

One problem encountered is that of multiple leakers. There is enough evidence pointing towards other leakers having been active since 2013 to shed doubt onto the sourcing of a subset of the documents released into the public domain.[4] If any of those documents are used, it will be explicitly stated.

The documents are to be judged as authentic. None of the documents released were identified to be forgeries. However, in order to interpret the meaning of the documents, a deep contextual knowledge of the SIGINT organizations producing them is required. This was acquired by reading up on the histories of these organizations, reading and listening to contextualization offered by the officials making public representations (e.g. in congressional hearings), reading oversight reports, and familiarizing myself with the legal frameworks governing the activities.

The following documents from the Snowden Archives are cited in this thesis:[5]

“Analytic Challenges from Active-Passive Integration”, S324, National Security Agency: Der Spiegel, 28. December 2014, https://perma.cc/H7K8-JCUE.

“Bullrun Classification Guide”, Government Communications Headquarters: The Guardian, 6. September 2013 (Dated: 16. June 2010), https://perma.cc/BK74-QG3Q.

“Bullrun Col – Briefing Sheet”, Government Communications Headquarters: Der Spiegel, 28. December 2014, https://perma.cc/DL6X-EDB3.

[4] One of the best overviews of those discussions is given in “Leaked Documents That Were Not Attributed to Snowden”. 20. April 2017, Electrospaces [Blog], https://perma.cc/M7FR-HYEL.

[5] The date indicates the time the document was made publically available, the original date is provided if available in the document itself. Both the originating source and the publisher are provided.

“Bullrun Presentation”, Government Communications Headquarters: Der Spiegel, 28. December 2014, https://perma.cc/2X7W-BDYE.
“BYZANTINE HADES: An Evolution of Collection”, NTOC, V225, National Security Agency: Der Spiegel, 17. January 2015 (Dated: June 2010), https://perma.cc/H79D-PMXA.
“Chinese Exfiltrate Sensitive Military Technology”, National Security Agency: Der Spiegel, 17. January 2015, https://perma.cc/LW4W-R7ZQ.
“Computer Network Operations – SIGINT Enabling Project”, National Security Agency: Pro Publica, 5. September 2013, https://perma.cc/U7EZ-SSFZ.
“CSEC SIGINT Cyber Discovery: Summary of the Current Effort”, Cyber-Counterintelligence, Communications Security Establishment Canada: Der Spiegel, 17. January 2015 (Dated: November 2010), https://perma.cc/JQ3V-K4TK.
“Hackers Are Humans Too – Cyber Leads to CI Leads”, Communications Security Establishment Canada: The Intercept, 2. August 2017, https://perma.cc/Y6TS-DCG5.
“Iran – Current Topics, Interaction with GCHQ”, S2E4, Iran Division Chief, National Security Agency: The Intercept, 10. February 2015 (Dated: 12. April 2013), https://perma.cc/W9K4-ZSHG.
“Network Shaping 101”, National Security Agency: The Intercept, 28. June 2016, https://perma.cc/PKM5-QWVB.
“PRISM (US-984XN) Expanded Its Impact on NSA's Reporting Mission in FY12 Through Increased Tasking, Collection and Operational Improvements”, National Security Agency: Henry Holt and Company, 13. May 2014, https://perma.cc/8QRE-NEZ5:111.
“PRISM/US-984XN Overview or the SIGAD Used Most in NSA Reporting Overview”, National Security Agency: Washington Post, 6. June 2013 (Dated: April 2013), http://www.washingtonpost.com/wp-srv/special/politics/prism-collection-documents/
“SID Today: '4th Party Collection': Taking Advantage of Non-Partner Computer Network Exploitation Activity”, National Security Agency: Der Spiegel, 17. January 2015 (Dated: 2008), https://perma.cc/X85G-7NGW.
“SID Today: Digital Network Exploitation (DNE), Digital Network Intelligence (DNI) and Computer Network Exploitation (CNE)”, Deputy Director for Data Acquisition, National Security Agency: The Intercept, 10. August 2016 (Dated: 16. July 2003), https://perma.cc/W9K4-ZSHG.
“SIGINT Mission Strategic Plan FY 2008-2013”, National Security Agency: New York Times, 2. November 2013 (Dated: 3. October 2007), http://www.nytimes.com/interactive/2013/11/03/world/documents-show-nsa-efforts-to-spy-on-both-enemies-and-allies.html.
“SIGINT Strategy 2012-2016”, National Security Agency: New York Times, 23. November 2013 (Dated: 23. February 2012), https://perma.cc/3NEH-SGDH.
“SSO Corporate Portfolio Overview”, National Security Agency: New York Times, 15. August 2015 (Dated: 2012), https://perma.cc/WEB2-PZR4.
“Tempora – News”, Government Communications Headquarters: Der Spiegel, 18. June 2014 (Dated: May 2012), https://perma.cc/Z6ML-X54V.
“Transgression Overview for Pod58”, S31177, National Security Agency: Der Spiegel, 17. January 2015 (Dated: 7. February 2010), https://perma.cc/HMD3-7DTS.
“Turbulence – Apex Active/Passive Exfiltration”, S32354, T112, National Security Agency: Der Spiegel, 28. December 2014 (Dated: August 2009), https://perma.cc/DTZ9-DA5X.

"Turbulence – Turmoil VPN Processing", National Security Agency: Der Spiegel, 28. December 2014 (Dated: 27. October 2009), https://perma.cc/5U2N-BJZD.
"Tutelage 411", NTOC, National Security Agency: Der Spiegel, 17. January 2015, https://perma.cc/5NWD-TDVV.
"United States SIGINT System January 2007 Strategic Mission List", National Security Agency: New York Times, 2. November 2013 (Dated: January 2007), http://www.nytimes.com/interactive/2013/11/03/world/documents-show-nsa-efforts-to-spy-on-both-enemies-and-allies.html

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IOR	India Office Records and Private Papers.

The National Archives, Kew, Richmond, Surrey.

Calendar of State Papers	Calendar of State Papers, Domestic Series, of the Reigns of Elizabeth and James I, Addenda, 1580-1625, Ed. Mary Anne Everett Green. London: Longman & Co., 1872. Also accessible under State Papers Online, Gale, Cengage Learning.
CO	Records of the Colonial Office, Commonwealth and Foreign and Commonwealth Offices, Empire Marketing Board, and Related Bodies.
HCA	Records of the High Court of Admiralty and Colonial Vice-Admiralty Courts.
PC	Records of the Privy Council and other records collected by the Privy Council Office.

The Special Collections Archives, Bodleian Libraries, University of Oxford, Oxford.

Clarendon Papers	Papers of George William Frederick Villiers, 4th Earl of Clarendon, 1820-1870. Also includes correspondence, diaries and papers of Lady Katharine Clarendon, with some correspondence of her husband, George, 4th Earl of Clarendon, and some miscellaneous family papers, 1815-92.

Snowden Archives

Snowden Archives	For the leaked documents, the date indicates the time it was made publically available. Both the originating source and the publisher are provided. A list of all the cited documents is available in the Appendix.

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United States of America V. Dmitry Dokuchaev et al., CR17-103 (2017).

United States of America V. Evgeniy Bogachev, CR14-00127-AJS (2014).

United States of America V. Fathi et al., 16-348 (2016).

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United States of America V. Roman V. Seleznev, CR11-0070RAJ (2017).

United States of America V. Su Bin, 14-1318M (2014).

United States of America V. Wang Dong et al., 14-118 (2014).

U.S. Department of State

U.S. Department of State	Records of the U.S. Department of State FOIA Case No. F-2014-20439, U.S. State Department.

Wikileaks Archives

Wikileaks	Public Library of U.S. Diplomacy. A list of all the cited documents is available in the Appendix. Sony E-Mail Archives. A list of all the cited documents is available in the Appendix.

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