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Professional Orders, Heterarchy, Hypermodernity and Political Reason

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The Emerging Outer Space Order

Professional Orders, Heterarchy, Hypermodernity and Political Reason

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THE EMERGING OUTER SPACE ORDER

The Emerging Outer Space Order

Professional Orders, Heterarchy, Hypermodernity
and Political Reason

Lisa Justesen



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DOCTORAL DISSERTATION

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| Abstract <p>Political order in outer space has so far been perceived as an extension of the terrestrial political order. In contrast, I argue that the political order emerging in outer space defines international relations on Earth. Therefore, with a refreshed understanding of the political dynamics of outer space, we will be better equipped to grasp the contemporary world order. Moreover, deeper knowledge about the kind of order that is emerging in outer space opens up possibilities to influence its evolving direction, should we find this desirable. Consequently, the overarching research question of this thesis is <i>how can we understand the kind of order that is emerging in outer space and the impact that this order has on the broader world order?</i> Exploring this question, I visit everyday working environments and key sites for outer space ordering where I conduct multi-sited ethnography and elite interviews (2017-2020).</p> <p>This explorative inquiry shows that the kind of order emerging in outer space can best be conceptualized not as anarchical, nor as hierarchical but as heterarchical. I find that quantum-mind entangled professional orders are the principal units that define the outer space order's evolving direction. Using space as a crucial and illustrative example of the world order, I argue that these professional orders constitute the depoliticized fabric of the world setting its direction. I find that the prominent and defining professional orders are the scientific, commercial and military orders, which trajectories extend well into the future. Moreover, I theorize that the emerging outer space order foreshadows a transition into hypermodernity as the constellations of satellites for fast-speed-Internet that are being launched in outer space are creating a gigantic 'transmission belt'. In addition, this inquiry reveals an imminent cosmological shift, as the world is yet again extended. This time further and more permanently into outer space with consequences for our sense of responsibility for Earth. I conclude that the increasingly heterarchical world, the 'emboosted transmission belt' and prevailing visions of the extended world call for a different 'way of being political' – for reflective political reason at the individual level including reconsiderations of professional identities.</p> | | |
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The Emerging Outer Space Order

Professional Orders, Heterarchy,
Hypermodernity and Political Reason



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*To my father
and for life*

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1. Introduction

The ongoing production of cheaper and smaller satellites exponentially alters the number and types of actors involved in outer space-related activities. For example, the aerospace company SpaceX is planning to launch as many as 12,000 satellites over the next few years. In contrast, over the past 60 years, only 9,000 objects in total have been sent into outer space (Sheetz & Petrova, 2019). Like SpaceX, more actors around the world are now looking for commercial opportunities in outer space.¹ Simultaneously, non-traditional space nations are increasingly interested in outer space. As outer space is becoming politically and commercially accessible thanks to technological advancements, power relations and dynamics on Earth are changing. Increased outer space activity is also altering our understanding of outer space. Yet, these changes are taking place largely unnoticed by the general public, policy-makers and scholars, which is striking for two main reasons.

First, outer space is vital for the functionality of our technically advanced societies. At an individual level, services from space-based assets are used in everyday life. We plan our days with the help of weather forecasts and switch on GPS-navigation to find our way. We make money transactions thanks to GPS-time synchronized financial systems. Satellite information, like GPS, is also vital for commercial navigation at sea, on land and in the air. Satellite imageries are making the production of forestry and agriculture more efficient as they help us to judge the quality of trees and crops.² Moreover, satellites bring TV and telemedicine to rural villages. In addition, satellite imagery contributes to more efficient disaster management, drought and wildfire observations, as well as water administration. In relation to the future of humankind

¹ The company, OneWeb for instance seeks to increase its planned satellite constellation with up to 48,000 satellites (Dowd, 2020). Although these plans seem ambitious, they represent an ongoing exponential shift in numbers of satellites (cf. O'Callaghan, 2019; Wilson, et al., 2020:1).

² For more details see, for example, The Royal Academy of Engineering (2011) and Wilson et al. (2020).

and the planet, satellite information also augments our knowledge about climate change. Hence, access to satellite services concerns us all.

Second, although outer space is vast, the most useful satellite orbits risk becoming overcrowded and the orbital environment is fragile (Moltz, 2014). Thus, satellites in an orbit, including the orbital environment itself, could be compromised because of satellites' vulnerability to intentional or unintentional damage and due to the cascading effect of space debris (Wong & Fergusson, 2010:130; Pasco, 2015:669).³ In 2009, a US Iridium and a Russian Cosmos satellite collided and the debris from that crash is still an operational risk to other satellites (Schrogl et al., 2015:679). In 2019, India shot down one of its own satellites and thereby demonstrated a capability that so far had been restricted to the United States (US), Russia and China.⁴ Thus, although we are increasingly dependent on access to satellites, this access cannot be entirely taken for granted.

Moreover, in contrast to the emerging outer space order, the first outer space order, taking place in the modern era, was stable and predictable with few actors (Sadhe, 2015:32). This first space order (commonly referred to as the first space age) began in 1957 when the Soviet Union launched the Sputnik 1 satellite. This era was defined by national symbolism and Cold War superpower antagonism as well as cooperation between the Soviet and the US (Sheehan, 2007). Information from space-based assets contributed to upholding regimes for global governance, thereby having a stabilizing effect on the global order. Although tensions were reoccurring between the superpowers, the two space actors understood the fragility of the orbital environment and developed a *détente* relationship in outer space (Sheehan, 2007:51; Moltz, 2014:47). At that time, the global order was typically conceptualized as a system of states, characterized by anarchy in which formally equal states were

³ The Kessler syndrome is a “[t]heorized situation where satellite destruction will lead to space debris, which leads to further satellite destruction and generation of more space debris in a cascading reaction. The result of the Kessler syndrome is that the density of space debris in the stable orbits will render low earth orbit unusable for decades” (Wong & Fergusson, 2010:130; cf. Bowen, 2014:49ff).

⁴ In 2007, China shot down one of its own satellites with a ground based anti-satellite weapon. The Chinese shooting down caused a cloud of debris affecting the orbital environment (Kaiser 2008:313 & 321). In 2008, US carried out an anti-satellite test for the first time since 1985. This time, space debris was avoided (Pasco 2015:666). Besides, space weather, such as solar storms, also poses a threat to satellites (Bowen, 2014; European Space Agency, (ESA), 2019a).

dependent upon self-help. As a result, international relations were defined by the distribution and balance of power (cf. Waltz, 1979). Alternatively, international relations were conceptualized as hierarchical shaped by hegemony with alliances, or empires with subordinated states (cf. Lake, 1996; 2009). Nonetheless, states were the primary units and only a few of them were engaged with outer space. To this day, satellite information and communications are essential for key military capabilities, such as the US Prompt Global Strike capability and nuclear early warning.⁵ Moreover, data from satellites provide an information advantage to actors with space assets. However, while satellite information mitigates terrestrial ‘security dilemmas’, new ones are arising in outer space. For instance:

America’s reliance on space is so extensive that a widespread loss of space capabilities would prove disastrous for both its military security and its civilian life. The Armed Forces would be obliged to hunker down in a defensive crouch awaiting withdrawal from dozens of no-longer-tenable foreign deployments. America’s economy, and along with it the rest of the world’s, would collapse (Dolman & Cooper, 2011:370).

Despite these systemic dynamics and societies’ dependence on outer space, the developments in outer space remain unknown and inconceivable to most of us. As a result, the functionality of satellites is habitually taken for granted (MacDonald, 2007). As the domain of outer space is literally rocket-science and often veiled in secrecy, highly political questions regarding it are not identified as such.⁶ Similarly, although increasingly an established field within International Relations (IR), Columba Peoples and Tim Stevens find that outer space has for

⁵ Prompt Global Strike is the main US military concept with global reach (Lambakis, 2001:31ff). Since the 1970s, satellites have been (and still are) used for nuclear missile detection for early warning and treaty monitoring (Norris, 2015:763f). The first space age ended with the end of the Cold War in 1991 (Harrison et. al., 2017).

⁶ Even in the US, historically a superpower and a national space power (Lambakis, 2001:72ff), this phenomenon has been observed (Correll & Worden, 2005:238; Sheehan, 2007:19). In Sweden, which is a relatively strong actor in space, a political discussion about outer space has been strikingly absent.

decades existed on the “outer limits of IR” (2020:313).⁷ This is surprising due to the substantial impact outer space has on the global order. For example, Raymond Duvall and Jonathan Havercroft fear that US space supremacy, which they frame as a ‘historically unprecedented form of empire’, could exercise power anywhere at any time, posing a constant global ‘bare life’ threat to everyone (2012:43ff). They further theorize that this empire would “re-constitute global political order” (2012:43). Moreover, James Moltz notices that despite the recent rise of multilateral space tensions, which could lead to self-destructive conflict, space diplomacy is a field that has received comparatively little attention since the 1970s (2014:8f).⁸ In addition, concerning the grand narrative of space expansionism, Daniel Deudney argues that “it is remarkable – and disturbing – how little critical scrutiny these projects and their rationales have received” (2020:25).⁹

Furthermore, the literature about outer space largely belongs to the ‘hegemonic account’ of IR, namely to deductive approaches based on different forms of realism with a focus on space power or military space power (Dolman, 2002; cf. Klein, 2006; Dolman & Cooper, 2011; Ziarnick, 2015; Bowen, 2020). Notably, Michael Sheehan observes that “terrestrial analogies” typically have been used to capture the novelties of outer space. He argues that although this is understandable it “has significantly shaped subsequent conceptualisations of outer space as a realm of political activity, but it has also often been misleading and

⁷ Important contributions are for example Deudney (cf. 1982; 2007), Michael Sheehan (2007), Natalie Bormann and Sheehan (2012), Jill Stuart (2014) and Joan Johnson-Freese (cf. 2007; 2016). At the same time, Jim Pass experiences that social scientists focusing on outer space tend to work in isolation at their departments as outer space is not a “proper subject matter” (2008:881). His observation and reasoning can hold some explanatory power to why outer space is an uncommon research object in IR and why a truly broadened cross-disciplinary approach to space politics sounds indisputable, but in practise is demanding to accomplish.

⁸ Moltz further notes that some of what humans have done in this environment is “little known to the average citizen” (2014:5). He exemplifies that “few people know that the United States and the Soviet Union tested nuclear weapons in orbit early in the space age, nearly halting the development of satellite communications and preventing further progress of human spaceflight” (2014:5).

⁹ Deudney goes into detail with the arguments of the dominating and ambitious space expansionism grand narrative. He questions the space advocate’s space expansionism “ideology” with his considerable darker view of the space enterprise. He argues that space expansionism might cause existential and catastrophic threats to humanity (2020:6ff).

unduly constraining in terms of conceiving of what might be possible on what has been called the ‘final frontier’” (2007:19). This is an important remark, and to mitigate this unfortunate situation, we need to try to think and see anew (cf. Skinner, 2002:64).

Instead of drawing on terrestrial analogies, I argue that the political order emerging in outer space defines international relations on Earth. Therefore, I contend that with a refreshed understanding of the political dynamics of outer space we will be better equipped to grasp the contemporary world order. In addition, deeper knowledge about the kind of order that is emerging in outer space opens up possibilities to influence its evolving direction, should we find this desirable. Consequently, the overarching research problem of this thesis is *how can we understand the kind of order that is emerging in outer space and the impact that this order has on the broader world order?*

This explorative inquiry shows that the kind of order emerging in outer space can best be conceptualized not as anarchical, nor as hierarchical but as a heterarchical.¹⁰ In addition, this thesis finds that the principal units that define the evolving direction of the world order are not states but quantum-mind entangled professional orders. These professional orders consist of like-minded professional community members spread over the globe. These communities are not necessarily in physical contact but still form a ‘we’. In other words, they are quantum-mind entangled.¹¹ These communities live and act in the same professional order, spread out but united, perhaps not aware of their strong professional identity. They have no common nation, flag or god. Yet, I argue that since outer space serves as a crucial, as well as an illustrative example of the world order, these professional orders constitute the depoliticized fabric of the broader world order. Thus, these orders propel the world in accordance with their deeply socialized realities.

This explorative study finds that the scientific, commercial and military professional orders are especially influential in setting the evolving direction of the broader world order. This situation can be compared to

¹⁰ Heterarchy in short means, “multiply ranked orders” (Donnelly, 2009:63). Heterarchy has mainly been used to describe early modern orders and historical transition phases.

¹¹ Alexander Wendt’s (2015) theory of the quantum-mind here serves as a fruitful metaphor for the homogeneity I ascribe the deep socialization of the professional orders.

the modern order, which was largely a political project, in which the political and legal professional orders were endowed with formal authority, as well as were *in* authority. Grounded in rich observations, this inquiry suggests that the emerging outer space order foreshadows a transition into hypermodernity. The transition is occurring because constellations of satellites for fast-speed-Internet are being launched and these are expanding and accelerating the world in both space and time (a process that I will refer to as emboosting) of a gigantic transmission belt. A belt that is becoming a principal material structure of hypermodernity with important impacts on political life. In addition, this inquiry reveals an imminent cosmological shift, as the world is now again extended.¹² However, this time further and more permanently into outer space with consequences for our sense of responsibility for Earth. This shift too can be related to hypermodernity and to political decay. Yet, I argue that in hypermodern conditions, innovative thinking and political reason are possible at an individual level, as well as can be literally built into the algorithms of the gigantic transmission belt.¹³

Expressed in more detail, the empirical analysis shows how the prominent and defining professional suborders of the emerging outer space order, the commercial, the scientific and the military suborders, push back the political suborder, simply filling the global spaces opening outside the formal political stagnated suborder. The political suborder suffers from temporal and spatial discrepancy as well as a loss of authority. The legal suborder has little authority and no agency. The analysis shows that authority and deep agency (influence on the direction of the emerging outer space order) are instead located with the commercial and scientific professional orders where missions and visions are articulated with enthusiasm in the name of humanity. At the same time, the military and the political suborders increasingly converge around the pessimistic perception of a new ‘great power game’ and outer space is renationalized. Yet, the familiar language of great power games is misleading unless updated with the contemporary actors, technology and dynamics of the emerging outer space order. Noteworthy though, the fragility of outer space and its overlap with cyberspace means that not

¹² Cosmology concerns how humans make sense of time and space and their place in the universe (cf. Allan, 2018:11).

¹³ Reason (to logistikon) is the capacity to distinguish good from bad (Lebow, 2008:126).

only the great powers but also small actors can rock the balance of power in every intertwined world order domain.

Furthermore, this study highlights that there are few places characterized by higher levels of political reason. Few consider the normative substance of a rule-based order or the common good. In addition, sustainable development is frequently associated with sustainable commercial development in outer space. Currently, the United Nation's Committee on the Peaceful Uses of Outer Space (UN COPUOS) represents a key site for dialogue and reflective political reason. However, as the stagnated political professional order, this site risks being outpaced by the defining professional orders.

From the main study, it is evident that the emboosted transmission belt of satellites even further accelerates, connects and synchronizes the world, which is made of big data extracted, processed and transmitted in artificial intelligence (AI) and 5G speed. The heterarchical outer space order described and analyzed in this inquiry provides us with some information about the trajectory of the world order and the gigantic transmission belt might take. Thus, the dynamics of the transmission belt can certainly be dangerous but also hold a promise of providing us with a more connected world and a clearer vision thanks to a collective mind. Moreover, the trajectory of the emerging space order reveals how human activities are planned to extend further and more permanently into outer space. I argue that the vision of this extended world affects our sense of responsibility, community and way of reasoning. Futures of remote continuous production ability, asteroid mining and waste disposal in outer space mislead us to postpone political responsibility for Earth, as does envisioned futures on the 'back up' planet Mars. The increasingly heterarchical world, the emboosted transmission belt and prevailing visions of the extended world call for a different 'way of being political' – for reflective political reason at the individual level including reconsiderations of professional identities.

1.1. Diagnosis and aims

Now, back to the beginning of the research process that has laid the ground for my analysis and claims presented above. My initial observations and diagnosis were that interpretations of outer space differed. It was evident that the very same piece of technology, such as a satellite, could be seen either as an orbital cleaning device or as an anti-satellite weapon depending on the actor's professional background. Hence, there was a clash on a deep ontological level between actors with different professional backgrounds. The clash was complicated by the possible dual (military and commercial) functionality of satellites. Another observation concerns the administrative situation in which outer space tends to fall in-between departments and bureaucracies. For instance, one diplomat noted that "Space is like cyber, it cuts across all areas, but it is no one's area, no one's responsibility" (informal conversation). As a result, authority and political agency circumvents the formal political professional order. Based on numerous observations, this situation could be explained by that, outer space is something new, and that the political organization and thinking, is reflecting yesterday's world. Now, this new order rapidly emerging in outer space serves as a contrastive and illustrative example, illuminating a salient path dependence, and a representation gap leading to a responsibility gap. Moreover, the political community has been assigned with the formal authority to care for the common good. This community is expected to have visions and political solutions, alternatively at least have formal political control from a position 'above' including from official political positions and locations. During my initial observations, this did not seem to be the case for the ongoing developments in outer space. At the same time, as the number and types of actors and technology was growing there was a need for political responsibility, sustainable development (in outer space) and for predicable behavior – for political order. Hence, my initial observation pointed to that it was essential to mitigate this representation and responsibility gap.

Therefore, *the main objective* of this inquiry is to provide a broad empirical and theoretical analysis of the emerging outer space order. This broad analysis aims to widen horizons. It also aims to merge horizons by making these explicit. In other words, this explorative, inductive, and multi-vocal inquiry seeks to encourage reconsiderations of ontological

and epistemological premises for the sake of increasing possibilities for a sustainable order in outer space.¹⁴ However, this requires a new theoretical framework, less fixated with states. Therefore, *the second intertwined aim* is to develop a conceptual framework taking its departure in a less modern and more ontologically unified (and less anthropocentric) conceptualization of order. *The third aim* is to use the emerging space order as an illustrative example to explore the more general question of the character of the contemporary world order, by focusing on the nature of political decay. The more we know about the phenomena of the emerging outer space order and political decay, the more possibilities arise.

Political decay is a challenging concept, and yet fundamental to explore and theorize.¹⁵ Political decay, in this thesis, is partly about the decline of the liberal world order. However, it is mostly about how time and material patterns (which I will refer to as constitutive materiality) diverge between the suborders. Therefore, political decay also concerns our inability to overview, and coordinate. Thus, it is linked to our inabilities to see and to see anew, as well as a more profound loss of agency. I find that a deepened understanding of political decay can be gained if the phenomenon is explored in relation to political order and political reason. Thus, I analyze political decay in relation to Plato's idea of political reasoning, as individual balance, meaning, self-restraint, sustainability and ontological equality. Moreover, I use the ancient Greek concept of *nomos* as pertaining to the socialized understanding of political order and the values it brings.

Notwithstanding my interest in political decay, since my approach is explorative and constructive, I am reluctant to describe the contemporary

¹⁴ This thesis mainly engages with IR-theory and, in line with Alexander George and Andrew Bennett, I find that producing “policy-relevant knowledge and theory is not at all inconsistent with efforts to develop international relations theory”. Rather, “efforts to develop policy-relevant knowledge is indispensable for the future development and refinement of international relations theory” (2005:267).

¹⁵ Francis Fukuyama reintroduces Samuel Huntington's concept of “political decay” and refers to dysfunctional political systems (2014:462, 470). Several scholars analyzing the world order plead for historical wisdom and a need to understand why political order matters (cf. Lebow 2008; Fukuyama, 2012, 2014; Kissinger 2014; Tooze, 2014). Furthermore, “[A] growing chorus of scholars, even from within the liberalist camp, have questioned the resilience of liberal order and the ability of its institutions to meet the challenges of the twenty-first century” (Dunne & Flockhart, 2013:1).

situation as a post-political “condition” of contemporary societies (cf. Bond et al., 2019:522). At the same time, my interest in political decay, as well as my empirical experiences, could of course be read in relation to the literature focusing on this condition. Within this literature, *politicization* in general terms means “the demand for, or the act of transporting an issue into the field of politics, making previously unpolitical matters political” (Schmidt quoted in Zürn, et al., 2012:73). The core of the field of politics is “characterized by public communication about and contestation over collectively binding decision concerning the common good” (ibid.). The process of politicization can also be seen as a “questioning or disruption of accepted norms and discourses [which] occurs when those things that are taken for granted and seen as permanent features of a social order are questioned and action or change is seen as possible” (Bond et al. 2019:522). In contrast, *depoliticization* is not indicative of an absence of politics, but “the reduced visibility and therefore scrutiny of these politics to the public” (ibid.). Depoliticization could broadly be defined as a process “increasing the distance between the political nature of decision making, and decision making itself” Bond et al. 2019:522). For example, “collective binding decisions made in a technocratic mode behind closed doors are depoliticized” (Zürn et al., 2012:73). Due to its frequent occurrence in contemporary societies, it is sometimes termed the “post-political” or “post-democratic” condition (Kenis & Mathijs, 2014:148).¹⁶ *Re-politicization* is a process founded on the principle of equality and the equal right to speak and to articulate alternative visions and practices (Bond et al., 2019:532). However, before we can assert our equality, we need to know how the order is constructed (Kenis & Mathijs, 2014:150). Thus, by enhancing the understanding of the outer space order, we can also “explore the conditions of possibility” for alternative visions (cf. Bond et al., 2019:523; cf. Zürn et al., 2012:72). Consequently, this inquiry investigates the possibility for order, and for re-politicization. However, the emphasis on political order and political reason notably shifts our focus from a ‘post-political condition’ and from contestation

¹⁶ This condition implies that “predominant representations of society tend to be consensual or technocratic and thus make power, conflict and exclusion invisible” (Kenis & Mathijs, 2014:148).

and struggle, to exploring structural and representational possibilities for dialogue as well as for alternative visions.¹⁷

1.2. Outer space order, global order, and world order

The outer space order is the primary phenomenon of investigation. It is an analytical construct not yet established within previous research. The concept of outer space order gives the advantage of looking beyond ‘space regimes’ and ‘space power’, and hence to see outside of the common themes of previous research.¹⁸ Thus, it sheds new light on what the contemporary space age is and its effects on the global order. In addition, in this inquiry, the outer space order represents an illustrative and crucial example of the contemporary world order. The emerging outer space order captures contemporary ordering and exposes what we might not detect if we look at more mature orders. The construct of outer space order is not only analytically significant but also normatively motivated, as I hope that the introduction of the concept can facilitate outer space ordering.

Outer space is a “ubiquitous, limitless and ever-expanding object” (Geppert, 2012:3). However, this study foremost concentrates on the dynamics of Earth orbits, including the geostationary orbit and satellites. The focus on the Earth orbits is motivated as the order of these will be important for the future and wider space order. The ideas, laws and

¹⁷ Chantal Mouffe for example finds that the de-political situation is a threat to democracy and “instead of erasing the traces of power and exclusion, democratic politics requires us to bring them fore, to make them visible so that they can enter the terrain of contestation” (Mouffe, 2000:33f). However, in this inquiry, I rather see it as the need for politics to enter the terrain of dialogue, political judgment and reason. Moreover, my interest in the nature of political decay lays in the structural and representational rather than understood as an intended act, nor as antagonism or struggle. My aim is to explore and to understand (cf. Kenis & Lievens, 2014:535).

¹⁸ Previous research has generally been focused on astropolitik (Dolman, 2001; Dolman & Cooper, 2011) space power (Wong & Fergusson, 2010; cf. Lutes, et al., 2011; Ziarnick, 2015), space war (Bowen, 2020), space strategy (cf. Klein, 2019), space law, (US) space policy (cf. Johnson-Freese & Handberg, 1997; Johnson-Freese, 2007; 2009; 2017), and space industry. Nicholas Peter has written the conference paper “The New Space Order: Why Space Power Matters for Europe” (2010) and observes that “the bipolar space world has been replaced by a pluralistic space context marked by a plethora of complex relationships” (2010:56). For excellent research about the space regime see for example M J Peterson (2004) and Jill Stuart (2014).

practices of these orbits will potentially form the basis for the future ordering of other orbits and space activities. However, the Earth's orbital order is part of wider narratives of the outer space order that will also be accounted for.

1.2.1. Orbits and satellites

There are many types of orbits. The most referred to type is the Low Earth Orbit (LEO). The LEO is the most frequently used orbit today, as it is the cheapest and easiest to reach and is especially useful for observations of the Earth and increasingly valuable for communication due to mega-constellations of microsatellites. The Geostationary Orbit (GEO) and the Geosynchronous Orbit (GSO) are further away from the Earth and the two share similar characteristics.¹⁹ The main benefit of a GEO orbit is that it remains stationary relative to the Earth's surface and is in the communication line of sight from about a third of the Earth's surface. Therefore, it is suitable for communication and television broadcasts since it is not necessary to track the satellite and move the antenna. As a result, "the geostationary orbit [is] one of the most popular orbits and every year a lot of money is spent getting satellites there" (Rogers, 2008:91). Thus, the LEO and the GEO are the more crowded orbits (Moltz, 2014:155). There are also polar orbits, in which the satellites pass the polar regions of the Earth from south to north and in one day are covering the Earth's surface as the Earth rotates. These paths are mainly used for weather observation and high-resolution images to map the Earth (Rogers 2008:91f). To track changes in the Earth's environment, polar Sun-synchronous orbits facilitate satellite passages

¹⁹ Lucy Rogers explains "to maintain a geostationary orbit, a satellite must be about 35,880 kilometers above mean sea level. If the satellite were any higher, it would circle the Earth slower than the Earth takes to rotate, any lower and it would orbit quicker than the Earth's rotation" (2008:90). "As the geostationary orbit is only at one altitude above the Earth, the number of satellites that can occupy geostationary positions is limited. It is further limited by the possibility of interference between the different satellite communication channels used to provide data between the Earth and the satellite" (Rogers, 2008:90f).

over the same spot on the Earth at about the same times each day, which is useful for example when estimating air pollution over a city (*ibid.*).²⁰

Microsatellites are satellites that are smaller, cheaper and, therefore, recently available to a wide range of actors previously excluded from space activity.²¹ An increasing number of diverse and uncoordinated actors imply a greater risk for accidents but also the need for spatial awareness and de-confliction procedures, as well as for procedures to end a satellite's life in orbit to minimize orbital debris for future users. The technology of miniaturization also makes satellites and their functions easier to hide and due to dual use functionality, "it is extremely difficult to differentiate peaceful from military use" (Wong & Fergusson, 2010:2). The technology in turn has an impact on the stability of the broader world order.

1.2.2. Global order and world order

In this inquiry, while the global order is the planetary (Earth order), world order incorporates the outer space- and the global orders. This categorization aligns with James Rosenau's view on global order as he argues that it is earthbound (1992:14). In addition, in line with Rosenau, I view global order as:

A single set of arrangements even though these are not causally linked into a single coherent array of patterns [...]. That is, the activities at the diverse sites may be quite unrelated to each other and their repercussions may not extend beyond their particular regions or relationships in which they occur; yet, they are an expression of the prevailing global order in the sense that the very narrowness of their scope is among the arrangements through

²⁰ Moreover, Medium and/or High Earth Orbits (MEO and HEO) are particularly useful for telecommunication. The HEO or Molnya Orbit allow extended time over specific areas, like the Arctic (Rogers, 2008:92). A list of abbreviations is provided in Appendix 2.

²¹ Microsatellites are usually lesser than 500 kilogram (kg), the popular CubeSats are typically in the dimension of 10x10x30 centimetres (cm) and weigh about 3-10 kg (ESA, 2019b). The first such satellite, Sputnik 1, was launched by the Soviet Union on 4 October 1957. Today, numbers increase fast. As of January 2019, there were 5,000 satellites (operation and non-operation) in space and the total mass of all space objects in earth orbit (of satellites and debris) was estimated to more than 8,400 metric tons (ESA, 2019a).

which the world politics get from one moment in history to the next (Rosenau, 1992:13f.).²²

The same applies to the world order; however again, the concept of world order is not limited to Earth, but the world order is all-encompassing. Global and world order are here closely associated with Hedley Bull's view that the study of world politics is concerned with the political process as a whole (Bull, 2012:267). Moreover, the global order and world order here include the constitutive materiality of relations (their time and material patterns) and hence goes beyond what Mathias Albert and Barry Buzan call "the social whole" (2013:117ff). The benefit of using the global and world order concepts is foremost that these are less theory-laden than the 'international system' concept that is strongly associated with modernity and states, which only pertains to international order.²³ Thus, in this inquiry, the broader world order and, in particular, the emerging outer space order are the primary phenomena explored.

1.3. Explorative research, multi-sited ethnography and data

Explorative studies aim to grasp new phenomena, spur new questions and reveal new areas of research.²⁴ In this explorative inquiry, I use the methodology of empirically driven theorizing, which is elaborated on in the next chapter. In turn, the empirical theorizing is facilitated by multi-sited ethnography, which is a suitable method for studying a phenomenon whose "contours, sites and relationships are not known beforehand, but are themselves a contribution of making an account that has different,

²² Aptly, Conrad Waddington's observes that it might not be "so much *a* world order, as *a set* of world ordering systems – different kind of relations between groupings of varying natures" (Hoffmann, 1995:2). Relatedly, Rengger advises us to look for ordering to understand order (2000:205). This is what I intend to do here.

²³ Because as Olaf Corry argues, "Post-internationalism's persistent claims about change thus end up sitting uncomfortable astride concepts and terminology soaked in what Rob Walker has called the 'discursive horizons that express the spatiotemporal configurations of another era'" (in Rengger, et al., 2011:158; cf. Bartelson, 2001; Rosenberg, 2006).

²⁴ Hence, as an explorative inquiry, or single case study, the case is the "product of the ongoing effort to define the object of study" (Venesson, 2008:289f). Explorative research is aiming at finding the questions with the most theoretical and explanatory potential or what John Gerring calls "areas of deeper-than usual ignorance" (2012:48).

complexly connected real-world sites of investigation” (Marcus, 1995:102; cf. Kapiszewski, et al., 2015:241). In other words, multi-sited ethnography is useful for exploring a landscape that is missing suitable conceptualizations. Since this is the case with the emerging outer space order, this inquiry starts in the field with empirical observations that then are theorized and subsequently linked to theoretical debates.²⁵

In the field, I used multi-sited ethnography to investigate and construct “the lifeworlds of variously situated subjects, [and] also ethnographically construct aspects of the system itself through the associations and connections it suggests among sites” (Marcus, 1995:102).²⁶ The investigation of sites allows drawing theoretical insights about the overarching outer space order by “reflective comparisons” between and beyond the sites, because although knowledge is context-bound the sites “speak to each other” (Björkdahl & Kappler, 2019:384; cf. Gingrich & Fox, 2002:163ff).

My ethnographic journey started in Swedish settings but soon took me into formal global sites. The five professional communities – the scientific, the commercial, the military, the political and the legal – inductively surfaced on the criteria of their ability, position and authority to shape the emerging outer space order. The data about the professional orders was produced by following and attending negotiations and conferences that turned out to be pivotal for the ordering of outer space, as well as visiting professional communities in a wide array of every-day environments. It was beneficial to go to the UN COPUOS in an early stage of the research process. This facilitated a swift familiarization with the site, issues, communities, relations and circulating discourses. The UN COPUOS visit also provided encounters with very initiated actors that gave me advice and guidance for the explorative journey. The sites

²⁵ George Marcus explains that multi-sited ethnography is a “mobile ethnography that takes unexpected trajectories in tracing a cultural formation across and within multiple sites” (Marcus, 1995:96). Multi-sited ethnography enables me to theorize the broad phenomenon of the emerging outer space order that is “multiply situated and holds an *emergent global dimension*” [my emphasis] (Marcus, 1995:102). Thus, it facilitates theorizing across sites that previously have been “worlds apart” (ibid.).

²⁶ In accordance with my view of order (and system), *multi-sited ethnography challenges the distinction between lifeworlds and system*. Since the global is always present. (cf. Marcus, 1995:98).

were then selected in accordance with the practitioner's accounts for where the outer space order is defined and shaped.²⁷

The formal field trips came to include, six weeks of participant observations in the UN COPUOS in Vienna, and participation in the International World Radio Union (ITU) during the World Radio Conference (WRC-19) in Sharm El Sheikh. Moreover, I also made field trips to the North Atlantic Treaty Organization (NATO) staff in Norfolk and the US Space Command in Colorado (2019).²⁸ Empirically, these participant observations including informal conversations, as well as 24 elite interviews, documents and pictures, all bring insights that assist in analyzing the emerging outer space order and the contemporary world order. Thus, starting with a local snowball process, I successively ended up exploring an overwhelming amount of 'global' data, which gradually and partially reached "conceptual depth" (Charmaz, 2014:215).²⁹

²⁷ The choice of the sites was not only to facilitate observations of relations and linkages at the different sites but also the linkages (or weak/non-linkages) between the sites (cf. Hannerz, 2003:206). When selecting sites, I aimed for broad coverage. The aim was that all communities should be visited in every-day workplaces but also in formal and symbolic global places. The UN COPUOS was chosen due to the formal authority. Many times, key insights about the emerging outer space order surfaced when and where I did not expect them to, in the least formal settings. Thus, it was invaluable to study how the global was reflected and generated in everyday relations, processes and patterns (cf. Björkdahl, et. al., 2019).

²⁸ Empirically, this inquiry is a broad political inquiry into the depoliticized realm of outer space, including key sites for ordering which are not always easy to access. Indeed, the inductive approach produced more data than I could make analytical sense of. My choice to keep empirical observations in this text despite their untheorized character is for the sake of validity of my overarching claims and for the sake of further theorizing.

²⁹ James Nelson too points out that the common concept of saturation could be misleading as it is associated with completeness (2017:556). Instead, the data should be evaluated in relation to the aim and research design of the study (Nelson, 2017).

1.4. Methodological and theoretical considerations

This is not a comparative study in which the outer space order is explicitly compared to another case.³⁰ Implicitly though, the emerging order is compared to the global order and the previous outer space order, represented by the first space age. In addition, discussions about an ideal political order based on political reason also serve as a contrastive example and alternative vision. While the suborders of the emerging outer space order hold comparative elements for within case comparison, which would have allowed me to ask each (sub)case the “same set of questions”, it soon became evident that it was not possible to do so without a translation into the language of each community (cf. George and Bennett 2005:182, 207). Therefore, even if the different communities are compared to each other in a structured way, including their constitutive focal points, we must bear in mind that this study is primarily concerned with different life-worlds, and therefore a too strict comparison would make them look more similar than they are.

For example, to see through the eyes of the actors, this inquiry does not take its departure in any specific space ordering issues such as space debris, space traffic management or nuclear power sources in space, but remains open to what the different communities define as the critical issues and legitimate reasoning.³¹ Another important reason for not posing the same set of questions is that the researcher is steadily increasing their understanding of the phenomenon, which spurs more initiated and critical questions. Hence, the fashionable concept of triangulation loses some of its worth in this type of inquiry, in which the

³⁰ Other potential cases to compare outer space with are Antarctica, the Arctic, the High Seas and cyberspace. However, even the aerospace order is different from outer space in the sense that it is influenced by gravity and territory in a different way, differences that of course could be of interest too, in another type of inquiry. Still, others warn that outer space needs to be better explored and understood on its own terms rather than compared to analogical cases (Mendenhall, 2018). With analogous thinking, there is a risk that meanings and aspects from the analogy are transferred to the novel phenomenon that might not be present. Thus, using the thoughts about the global order as an analogy implies to be attentive to the risk that, as Richard Swedberg notices, previous thinking and conceptions about the analogous phenomenon could be wrong (2014:86; cf. Skinner, 2002:74).

³¹ In line with Richard Bernstein (1983), I find that it is possible to sufficiently understand communities from the outside and to learn from them. Comparative tracing and translation between the sites are therefore possible, which is the fundamental methodology of multi-sited ethnography (Marcus, 1995:111).

target moves and evolves. More coherent with the hermeneutic approach and with this inquiry is the concept of crystallization.³² Therefore, by circling the phenomenon and observing it from different angles the phenomenon will be more fully described and its core more distinct with the help of many types of data (cf. Saukko, 2003:18ff).

Theoretically and normatively, in this inquiry, I propose one example of how the concept of order could be applied. The concept of order here, to some extent, serves to close the distance between IR and political theory. The unique meta-qualities of the concept likewise enable its functionality across ontologies, as well as across time and space. Thus, order ties the wisdom of ancient philosophers to the present and future, making the modern era and state system justice but at the same time, stretches the temporal and discursive horizons beyond it. I find that we have much to gain from theorizing with the ancient conceptualization of order, as it is more open and sensitive to ‘the political’ in terms of political space, time and reason, as well as to the unitary whole and sustainability. The classical understanding implies that order should be sustainable and, in that sense, in harmony with nature (Rengger, 2000:4).³³ The concept of order attunes us to what the concept of system does not. Essentially, it is a way to reinvigorate the notion and value of political reason.

Still, to engage with IR theories deriving from system theory, I intend to build on and relate to these theories as well. In this respect, heterarchy is a concept in parity with anarchy and hierarchy. However, heterarchy is a little developed concept within IR and rarely applied to empirical data (Baumann & Dingwerth, 2015:123). Still, it holds the potential to become a more open way of theorizing political order, change and continuity of world politics because, although it is open to plurality and multiplicity, it

³² According to the originator Laurel Richardson: Crystallization “combines multiple forms of analysis and multiple genres of representation into a coherent text or series of related texts, building a rich and openly partial account of a phenomenon” (quoted in Ellingson, 2009:4). Building my analytical narrative, I used sensitizing concepts which successively became more definite and instrumental (cf. Della Porta & Keating, 2008:303).

³³ One of the central problems with a more modern conception of order is that it tends to omit the material aspects and focus on the social dimensions exclusively. Order in classical thought “was often seen as a reflection of the unity of the natural world” (Rengger, 2000:4). With this perspective, order also holds the promise of incorporating the social as well as the physical materiality – a unified ontology. Hence, the physical constitutive patterns of sociality can be brought into the analysis.

is still overarching enough (cf. Hall, 2004; cf. Donnelly, 2016; Belmonte & Cerny 2021). Thus, this inquiry suggests how heterarchy might be conceptualized and applied within IR.

To visualize the professional suborders, their interplay and the possibilities for political order, I will build on Torsten Hägerstrand's unified ontology and his concept of a diorama. In this inquiry, a diorama is a concept and a technique of conceptualizing the process of an evolving order unfolding in a political space. The diorama model of political space captures deep structures and trajectories, as well as facilitates theorizing about order as a horizontal process and about the political time of becoming.³⁴ Since the emerging outer space order, discernable in the diorama model constitutes international relation on Earth its trajectory will have an impact on the broader world order.

1.5. Outline of the inquiry

This inquiry is devoted to the three guiding questions:

- *What kind of order is emerging in outer space and how might it be conceptualized?*
- *What does the emerging outer space order convey and illustrate about the deep structures of the world order?*
- *What are the possibilities for political order and political reason?*

Since this is an explorative inquiry, the iterative research process revolves around three steps or layers. The first step, which is mostly presented in chapters 6-8, is the core of this inquiry and is dedicated to the questions: *What kind of order is emerging in outer space and how might it be conceptualized?* In this step, I explore the empirical question, *who or what shapes or defines the emerging outer space order?* I identify that five professional communities define the emerging outer space order. Then, by using the analytical framework of focal points developed in

³⁴ Deep structures are the units and the underlying and arranging principles of an order (cf. Buzan et al.1993:38f). Deep structures represent a basic pattern that is not only durable, but also self-reproducing (ibid.). These basic patterns and structures can be discernible from a longer historical perspective. Deep structures will be further elaborated on in the subsequent chapters.

Chapter 4, I ask *what is the character of the professional suborders?* Chapter 6 generalizes the findings into the five real types of professional orders. Subsequently, with the aim to capture the character of the overarching emerging outer space order, I ask *how can the interplay between the professional suborders be characterized and conceptualized?* My empirical observations of interplay from formal key sites as well as everyday professional environments are accounted for in chapters 6 and 7. In Chapter 8, the observations are then conceptualized and analyzed with the diorama model capturing the overarching emerging outer space order, which is characterized by the nature of the units and the interplay between them.

The second step builds on the first step and addresses the second overarching questions: *What does the emerging outer space order convey and illustrate about the deep structures of the world order?* I argue that outer space is an illustrative example of an increasingly heterarchic world order. Besides, the findings highlights the possibilities for political order and political reason. Thus, in this step, which is presented in Chapter 8, I also start to consider the third question: *What are the possibilities for political order and political reason?*

The third and concluding step is more tentative. In Chapter 9, based on my empirical observations, I suggest and explain how the emerging outer space order contributes to technological, temporal and cosmological shifts, which as well informs us about *possibilities for political order, political decay and political reason*. I argue that outer space is a critical element of hypermodernity. Finally, I contend that there are possibilities for political reason at the individual and technological level; this is especially decisive among the formal and informal elites of the emerging outer space order. Thus, it is essential to reinvigorate reflective political reason and deliberation about what is political order is as well as why it matters. I conclude that professional identity formations could be reconsidered in the light of a hypermodern nomos.

To lay the ground for these three steps, Chapter 2 describes the methodology of theorizing and key concepts. Chapter 3 contains the conceptual elaboration and the diorama model. Chapter 4 outlines my analytical framework, and Chapter 5 accounts for methods used in the fields.

2. Theorizing, order and structures

In this chapter, I first present and elaborate on empirically driven theorizing, and define the key theoretical concepts for example real type, and analytical framework. Then, the central concepts of order and political order are outlined, including the classical view of political order. Subsequently, I show how my dialectic approach to theorizing and order relates to IR and relationalism. Consequently, I describe how I perceive of structures and briefly introduce the concept of a diorama, which is the foundation for my theoretical model. Finally, I situate the concept of heterarchy within a typology of structural order, which also includes hierarchy and anarchy. Situating heterarchy in this typology assists in defining the concept but also in highlighting its analytical fruitfulness.

2.1. Theorizing – to see and to see anew

Exposing our growing dependence on interlinked material systems and flows, Erik Brattberg and his colleagues conclude that the gravest security concern of today is “our inability to see” (2014:193). In a time of uncertainty, speed and change, it is extraordinarily challenging to distinguish between more general and fundamental trends and dynamics. At the same time, the stock of knowledge is increasingly specialized and differentiated. While this situation advances our knowledge in isolated research areas, it hampers us from detecting the wholeness, and hence, our ability to handle some of the most severe global challenges. Thus, although challenging to construct, broad or systemic theories are increasingly vital (cf. Albert, et al., 2010:3).³⁵

Our inability to see is further reinforced as we tend to be ‘bewitched’ by our intellectual heritage, and the belief that the mainstream schools of thoughts are the proper way of thinking. These perceptions result in the acceptance of hegemonic accounts as the truth (Skinner, 2002:6). This situation has led to a quest for constitutive theorizing that questions and

³⁵ One explicit response to this situation of academic “compartmentalization” within IR is “analytic eclecticism” advocated by Rudra Sil and Peter Katzenstein. Eclecticism is “any approach that seeks to extricate, translate, and selectively integrate analytical elements- concepts, logics, mechanisms, and interpretations – of theories or narratives that have been developed within separate paradigms but that addresses related aspects of substantive problems [...]” (Sil & Katzenstein, 2010:10; cf. George & Bennett, 2005:267).

tests the ‘given’ foundations, frames and assumptions on which more positivist research rests. Addressing the IR community, Stefano Guzzini calls for “ontological theorizing”, a reflective engagement with central concepts, as these concepts make up the “ontology of the field” (Guzzini, 2013:535). Along these lines, Felix Berenskötter (2018) suggests an increased focus on “deep theorizing” to mitigate what he calls the modern move to shallow theorizing and the postmodern resistance to (grand) theory.

In this thesis, the methodology of theorizing has foremost been inspired by Richard Swedberg’s thoughts. Following Max Weber, Émil Durkheim and Alexis De Tocqueville, Swedbergs’ view is that empirical data should drive the theorizing process (2012:7) . He encourages us to stay long in the open, inductive and initial phase of discovery, as well as “to theorize one’s own empirical work, not to use somebody else’s ideas” (2012:2 & 9). Similar thoughts are captured well in Hägerstrand’s words; the more crucial questions do not concern our ability to “portray the great men of science correctly, but what kind of a paper we are drawing on” [my translation] (2009:56). Hence, whereas Guzzini primarily directs the attention to critical reflection and questioning of the ‘inside’ core and logics, and hence to the analysis of basic concepts, Swedberg’s understanding of theorizing leans towards a questioning of the ‘ontology of the field’ from how it captures the empirical ‘outside’ or the ‘paper’. However, common for these approaches is that they are concerned with conceptual theorizing.

For theorizing, Hans Morgenthau emphasizes the value of participant observation. Detecting the rationalities of the men and women, Morgenthau urges the researcher to “put himself into the place of a statesman – past, present or future - and think as he has thought or is likely to think” (1959:21). This, Morgenthau argues, makes a theory of politics possible (ibid.). The main purpose of using participant observation as a method for discovery is to encounter the field complete, full and unfiltered by any other person and thereby un-theorized (Swedberg, 2014:45). It gives the opportunity of first-hand data and double hermeneutics, i.e., observations of the field, as well as of yourself as an observer entering the field (Swedberg, 2014:44). Apart from conducting participant observations in the phase of discovery, four principal techniques of theorizing were used in this research. These four techniques included a formal pre-study, which represents an eclectic

methodological and theoretical approach to unfold the phenomenon, theorizing in collaboration with practitioners, as well as meta-level theorizing to catch the whole by means of ideal types. Moreover, the application of the concept of order facilitated the elaboration of what Hägerstrand roughly calls a “behind language vocabulary” favorable for theorizing anew (2009:39).

2.2. Theory and analytical framework – making sense and making possible

Swedberg underlines a fundamental point for this inquiry as he directs our attention towards theorizing rather than theory (2012; 2014). Therefore, the value of this thesis lies less in presenting a theory than in the process of theorizing. As the process of theorizing is understood as a collaborative undertaking or as a general culture of theorizing (Swedberg, 2014:28). The aim of theorizing in this inquiry is related to constitutive theory. Fundamentally, constitutive theories should *make sense* of “how the world hangs together” and “what is” (cf. Waltz, 1992:23). Not only do these theories have a large descriptive dimension but also an explanatory function, concerning claims on how things “are put together” and what constitutive effect this may have (Wendt, 1999:86ff; cf. Gerring, 2012:124). According to Ned Lebow, a theory should “structure reality and make it more comprehensible by describing the relations between the parts and the whole” (2008:42).³⁶ Theories can be judged by whether they make intuitive sense (cf. Puchala, 1992:50). Moreover, according to Katarina Jacobsson and Daniel Wästerfors, a theory is valuable if it makes us see things sharper or differently and if it “moves our seeing” (2013:1). Nicholas Rengger remarks that we need theory “when we do not know ‘how it all hangs together’” (2000:199).

³⁶ To Donald Puchala, IR theorizing is “wholistic image-building” of “unobservable wholes” (1992:49). IR theory has from the start and by nature aimed to conceptualize an “infinite complex living world of reality” (Nitze, 1959:1). Theories are *pictures* or *images* which can be more or less fruitful for the understanding of a certain situation (Rothstein, 1992; Bengtsson, 2018:209). Moreover, Waltz argues about theorizing, “cleaning away useless facts is not enough; something new has to be created” (1992:23).

In line with Bo Bengtsson, I find that classifications, frameworks and models, often are ideal types, are theories (2018:108f). In this inquiry, heterarchy serves as an ideal type.³⁷ An ideal type should not be seen as an end in itself, but as a heuristic tool, primarily to be used to come up with new discoveries about the phenomenon and to spur the generation of new hypothesis (cf. Kratochwil 1989:11). In this inquiry, real types differ from ideal types, as they are grounded on empirical classifications and are possible to ‘operationalize’ i.e., the typical character of a real type can be observed in the field.³⁸ Hence, compared to ideal types, the real types are closer to have ontological status. In this inquiry, the real types aim to give a composite picture of the communities. This view depicts the real type communities as a pragmatically significant type as well as a theoretically comprehensive type (cf. Peterson 1964:28). Here, the real types categorize and characterize the professional orders (including the constitutive materiality), as these provide the actors meaning and orientation. These real typical professional orders are constructed in a dialectic between the actors’ narratives and the researcher’s analytical narrative (cf. Aronovitch, 2012).

As for the analytical narrative, even though the terms have somewhat different meanings, in the following, conceptual-, theoretical, and

³⁷ To Max Weber, an *ideal type* serves as a harbour to “navigate the vast sea of empirical facts” of a complex phenomenon (in Swedberg, 2014:63). It is an “idea”, a “unified ideal construct”, “abstracted out of certain features” and keeping the “essential features” (in Della Porta & Keating, 2008:206). It is “ideal” in the sense that it allows singling out relationships, which “our imagination accepts as plausibly motivated and “objectively possible”” (ibid.). Hence, importantly, ideal types are not empirical classifications possible to operationalize as mutually exclusive and exhaustive in relation to the material. Instead, ideal types should be logically coherent and not specified more than necessary to work as a theoretical relief (Bengtsson 2018:110; Swedberg, 2018:184).

³⁸ Weber did not use the concept of real type. Yet, I find the concept clarifying for the use and function in this inquiry that is different from how I perceive and use ideal types. Besides, later Weber did change focus from history to sociology with an emphasis on meaning rather than values. Then, his use of ideal types changed into what Swedberg calls a second version, derived from artificial assumptions about typical individual actors (Swedberg, 2018:185ff). However, the purpose is the same, to navigate empirics, confront data with the ideal- and real type, to use them for heuristic and classifying purposes, to construct conceptual building blocks and ultimately to come up with new ideas.

analytical framework are used synonymously.³⁹ Nevertheless, the value of a theory or analytical framework lays in whether it makes sense and contributes to some new understandings or seeing, preferably also envisioning new possibilities. This transformative view of theory aligns with Robert Cox, who argues that “it is impossible to predict the future; but it may be possible to construct a partial knowledge that can be helpful in making the future, i.e., in challenging the direction of events towards a desired option from among those that appear feasible” (1992:139). Finally, and conclusively, I echo the value of constitutive theorizing that Herbert Butterfield and Martin Wight emphasize when they observed that:

Above all they [the diplomats] saw theory of international politics not as ‘models’ or ‘conceptual frameworks’ of their own to be tested against ‘data’ but as theories or doctrines in which men in the international history have actually believed (Butterfield & Wight, 1966).⁴⁰

2.3. Order

Order is *the* enabling concept in this inquiry from which all other theorizing flows. Here order has three meanings: conceptual -, social-, and individual order. Conceptually, in this thesis order is understood in the lexical meaning as “the *arrangement* or disposition of people or things in relation to each other according to a particular sequence, patterns or method” [my emphasis] (Stevenson, 2010). Therefore, in this thesis order is “the overall state or condition of something” and “the quality or nature of something” (ibid.). Besides, order in this inquiry relates to “a state in which everything is in its correct or appropriate place” (ibid.).⁴¹ The value of including these lexical meanings of order is

³⁹ Initially, the term conceptual framework, understood as an embryo of a theory, was useful to characterise what I was aiming at (Stenelo, 1972:14). In the context of discovery, this framework helped me to identify some critical elements and issues of the phenomenon and to categorize my observations as well as to identify the conceptual building blocks, consider their relations and to study order (Stenelo, 1972:14; cf. Rothstein, 1992:142). As the thoughts were developed further and the framework evolved, I decided to shift language to analytical framework.

⁴⁰ Related to this Imre Lakatos (1970) highlights the “staying power” of a theory regardless of the number of analogies raised against it (in Sil & Katzenstein, 2010:5).

⁴¹ Order (or orders) can also refer to “social class” and “a particular social, political or economic system” (Stevenson, 2010)

that they pertain to people as well as things. Moreover, my further theorizing will highlight that the 'quality or nature', or character of something is a dimension of order. Nevertheless, the first core definition of order here aligns to order that "*describes any pattern or structure*" (Lebow, 2008:4).

As for social order, Cox simply defines order as "whatever pattern or regularity of interaction that is to be found in any social situation" (in Rosenau & Czempiel, 1992:137). Disorder then is, following Eckstein, a sharp discontinuity between routine and non-routine activity and occurs as a discrepancy between expectations and experiences (in Tilly 1984:52). Trust and security are often associated with order, as is the level and kind of violence. Abundant violence, especially violence perceived as illegitimate, is an indicator of disorder (Tilly, 1984:12 & 52). However, in its most elementary form, order must not have positive connotations because it also applies to authoritarian regimes. Instead, order absorbs insecurity about what will happen next (cf. Badersten, 2002:46). Predictability is at the heart of the concept. In relation to order, disorder should be understood as a scale and might contain local pockets of order. Furthermore, disorder is pivotal for change (cf. Lebow 2018:15).⁴² Therefore, in relation to social order it is fruitful to use Lebow's definition of order, in which order "enables societies to function because it provides guidelines for behavior, making much of it routine and predictable" (Lebow, 2008:4). Orders can also to a varying degree be closed or open and more or less formalized or institutionalized. The robustness of an order though has to do with whether it manages to cope with change (Lebow, 2018:67ff).

Moreover, any social order is dependent on its information content: "[o]rder is a situational relational restriction in human action, which through its information content contributes to regularities, reduces uncertainty and stabilizes expectations" [my translation] (Badersten, 2002:46). According to Björn Badersten's definition, information and knowledge are central for any social order to overcome distrust and for addressing collective challenges. The more actors interact, communicate and socialize, the more information about each other is exchanged which stabilizes expectations. Thus, overview, communication and coordination

⁴² Lebow argues that any kind of reasonably robust order must contain enough disorder, "productive disorder" (2018:15).

are required for addressing collective challenges. This has to do with the connectedness of an order and with order as convergence between parts. In this respect societal “convergence, like order, is more often an emergent property than a product” (Lebow, 2018:69).

In this inquiry, the individual understanding of order relates to perceptions of reality. The individual understanding of order draws on two of Raymond Aron’s definitions of order as “*any arrangement of reality, [and] order as the relation between the parts*” [my emphasis] (quoted, in Hoffmann, 1995:2).⁴³ Concerning the arrangement of reality, Peter Berger and Thomas Luckmann emphasize that reality is always socially constructed. Nevertheless, at the individual level deep frames (intersubjective frameworks of sense-making) serve to make the world orderly, coherent, and *meaningful* to the actors (Lebow 2015:60).⁴⁴ Thus, deep frames are arrangements of reality. I also use the concept of lifeworld to capture the “massivity” of the socially constructed reality of which identity is a key element (Berger & Luckmann, 1991:194). Socially constructed realities are stable, still small cracks in the coherent reality risk leading to a crisis if the reality cannot be maintained (Berger & Luckmann, 1991:175). If so, even the identity formation of the actors might become problematic (Berger, & Luckmann, 1991:200).⁴⁵ This can happen for example when the representations of the world do not match the reality ‘out there’ or when conflicting realities are encountered.

⁴³ Aron argues that there are commonly five approaches to order among scholars. Apart from the two descriptive mentioned above, he distinguishes two analytical, partly descriptive, partly normative: “order as the minimum condition for existence, and order as the minimum condition for *coexistence*. The fifth was purely normative, order as the conditions for good life” (cited in Hoffmann, 1995:2). Although there is no purely descriptive research, in relation to Aron’s theoretical categorization my approach to order is analytical, partly descriptive and partly normative.

⁴⁴ At the individual level, “everyday life presents itself as a reality interpreted by men and subjectively *meaningful* to them as a *coherent* world” [my emphasis] (Berger & Luckmann, 1991:33). For the individual, the lifeworld is taken for granted as *the* reality. *Deep frames* are “intersubjective frameworks that humans use to create order and find meaning”(Lebow, 2015:60). Intersubjective frameworks, in turn, are shared realities of collective intentionality, conditioning agency (cf. Ruggie, 1998:869; cf. Rengger, 2000:84).

⁴⁵ Concerning identity formations, Berger and Luckmann note that “specific historical structures engender identity *types*, which are recognizable in individual cases [emphasis in original] (1991:194). Moreover, identity types are relative stable socially generated elements (1991:195).

Lastly, more than one order can exist in parallel and to varying degree contest as well as overlap with other orders (cf. Badersten, 2002). The understanding of parallel orders relates to the conceptualization of order as *relations between the parts* and is fruitful for emphasizing the non-monist and non-linear theorizing, as multiple social orders and realities coexist. This centrality of reality and relations holds a dynamic, interpretive and dialectic quality. Concerning the possibility to define and direct an order, this is also dependent on the conceptualization of order as a rank. Because order also refers to “some kind of arrangement or rank, among people, groups or institutions” (Lebow, 2008:4). In IR, order is often depicted as a balance of power rank and as authority structures.⁴⁶ Rankings within the suborders, as well as between the suborders of the emerging outer space order, are of great interest for the understanding of the character and arrangement of realities as well as the positions and trajectories of the units. Ranking linked with authority, is one of the meanings of political order in this inquiry.

2.3.1. Political order

In this thesis, there are different interrelated meanings of the political order. The first is closely related to reality and to the concept of authority which ultimately is about who has the right and position to define the reality. As a result, everything becomes political, only to a varying degree. Of interest to this inquiry is political time and space in which the interplay between realities unfolds. Some view politics more as a zero-sum power struggle, which is understandable and instructive. Still, for the sake of elevating dialog, I prefer to downplay this antagonistic view of power and struggle and to term the politics of defining reality interplay. Patterns and structures of authority display the political order. In addition, the substance of the realities (the actors’ deep frames) is political, as the substance constitutes the collective intentionality and, thus, the direction of an order. Deep political structures are durable patterns of authority. These structures ultimately define the reality of an order and its direction. Thus, this view of political order is structural and descriptive.

⁴⁶ In this regard, Waltz points to the importance of the major, stronger actors for dominating the system, an overarching order (Waltz, 1979). Lebow underlines the behaviour of the political elite for the robustness of an order (2018:69).

The second meaning of political order in this thesis is also descriptive but linked to the nature of reality and order. The meaning concerns the everyday lifeworlds of the actors but with more weight on how they perceive themselves and the emerging outer space order in a broader historical or cosmological perspective. Cosmology concerns how humans make sense of time and space and their place in the universe (cf. Allan, 2018:11).⁴⁷ Consequently, I will use the term cosmology and cosmological shift in my overarching analysis. However, in the analytical framework, I subsume this meaning of order to the concepts of lifeworld and deep frames. Theorizing the political impact of cosmologies, like Bentley Allan, I concentrate on how specific cosmological elements and configurations of discursive elements figure in various context (2018:11). Here, the political nature of the realities is intrinsically linked to the ability to influence the evolving nature of order, or what I call deep agency (see Chapter 3 for a discussion). Likewise, how we perceive our place in the world and history are constitutive of our way of political reasoning.

2.3.2. Political order - balance at the individual level, types of political reason and nomos

The third meaning of political order in this thesis is classical and normative. Essentially, in accordance with the classical view of political order, political order starts at the individual level, with political reasoning. For Plato, Socrates, and Aristoteles, political order is dependent on balance, meaning and self-restraint at the individual level, in particular among elites (Lebow, 2008:79ff; 2018:145ff).⁴⁸ Different

⁴⁷ Cosmology, and cosmos, originate from the Greek meaning of “order, orderly, arrangement, ornaments” (Patomäki, 2011:183). Cosmology is used for Weltanschauungen and it concerns how the whole world is created in a historical perspective so that the individual might locate himself within it (cf. Berger & Luckmann, 1991; 27 & 114; cf. Allan 2018:11). However, I have deliberately chosen not to use Berger and Luckmann’s term “(symbolic) universe” nor “cosmos” in the analytical framework as these concepts could be mistaken for outer space (cf. 1991:114f).

⁴⁸ Disorder is associated with the lack of self-restraint, especially on the part of high-status actors, and considered a consequence of psychological imbalance (2008:83). For example, Lebow quotes Thucydides, “The truest cause of war was psychological imbalance in individuals, which replicates itself in their cities and in Hellas more generally” (in Lebow, 2008:199). Elite imbalance is when high status actors violate the principles on which their elite status is based, a process of undermining the order leading to decay as the natural practice and habitual order is questioned (2008:85).

contexts and historical periods have been characterized by different types of political reasoning. For example, Rengger argues that throughout history there have been different “ways of being political” (2000:6, 23). In the modern era, politics and ‘the political’ have been strongly associated with the state. I argue, in the analytical framework, that this connection diffuses the individual sense of responsibility for political reasoning in accordance with (the classical view of) political order. To capture the nature or quality of political reason in my analytical framework, I apply a descriptive yardstick of three different levels of political reason as, *instrumental*, *reflective* and *reason as motive* (see subsection 4.5).

Nomos is also a concept associated with the classical view of order. In the present inquiry, *nomos* implies a sense of an overarching order and knowledge about its substance. Knowledge about *nomos* means understanding the value of order, which is reinforced by the awareness that order and robust society are also of self-interest for fulfilling other goals. Elites and demos accept self-restraint to preserve *nomos* (Lebow, 2008:200). In other words, *nomos* is a common understanding of order that sustains order and predictability (Lebow, 2008:513). In a way, a socialized *nomos* informed by reflective political reason is the opposite of political decay.

In accordance with the classical Greek understanding of order, I also emphasize the unitary whole (cf. Rengger 2000:4ff). This implies that order should be sustainable and, in that sense, in harmony (including with nature), that the natural and the “human” order are perfectly at one (Rengger, 2000:4). In Chapter 9, I apply this normative understanding of order to make a political judgment of the more descriptive analysis in the previous chapters. In addition, the very concluding section ‘9.4. Glimmers of hope’ is explicitly normative for the sake of initiating alternative visions and for further dialogue, briefly addressing Socrates’ classical question ‘how should we live’?

2.4. Relationalism, structures, and diorama

In line with ancient Greek philosophy, I find that studying politics and order is a dialectic undertaking. Within the IR community, this approach can be associated with relationalism, which emphasizes how relations form agents and structures.⁴⁹ For relationalists “most of the sociality and politically significant aspects of actors – their identities their social roles, their preferences, their values and so forth – stem from their past and present interactions” (Nexon, 2010:101). Thus, relationalists emphasize the inherent dynamic quality of structures and are therefore “extremely careful about ‘top-down’ theorizing, that is, of accounts of social action that begin by defining categorical attributes of overarching systems and structures” (Nexon, 2010:101).⁵⁰ The great advantage of the relationalist approach is its dynamic conceptualization of structures, which thereby allows a sensitivity to change. To me, it is intellectually satisfying that neither the world (nor system) nor structures or phenomenon are understood before these are examined.⁵¹ Nevertheless, relationalism stresses the “theoretical and analytical significance of connections, ties, transitions and other relations among entities. These in crucial ways give rise to *both* actors and their environment in which they find themselves” (Jackson & Nexon, 2019:583; cf. Berger & Luckmann, 1991:204).

In the present study, relationalism is concerned with how *meaning* and the *constitutive materiality* of relations, positions and processes produce conditions for agency and action (cf. Jackson & Nexon, 2019:585). Structures are what the actors see as conditioning their agency, which together with the constitutive materiality define deep agency and the

⁴⁹ Relationalism criticizes agent-centered theory, which “builds from the myth of person as a preexisting entity” while structuralism “builds from the myth of society as some preexisting entity” (White 1992:8f, in Nexon, 2010:100).

⁵⁰ Hence, for this inquiry, it has not been intellectually satisfying to start from predefined primary institutions.

⁵¹ For a clear and more detailed account of relationism as well as an analysis and critique, see Daniel Nexon “Relationism and New Systems Theory” (2010). See also Jack Donnelly, who hopes that this strand will rebalance IR by maintaining a systemic approach albeit pluralist (2019). According to Donnelly, the relational approach has the potential of becoming a more genuine system theory compared to the Waltzian that is overwhelmingly disassembled, analytic and static (2019).

direction of an overarching order.⁵² Relations, social bonds and hierarchies are central in this inquiry to identify and characterize the defining communities, the bearers of the social orders and their shared realities. Relations (and commensurability of deep frames) are also key when studying the interplay between the professional orders constituting the emerging outer space order.

Relationalism enabled the dialectic process of this inquiry which included altering back and forth between the actors' narratives (deep frames), and the analytical narrative (the analytical framework in Chapter 4) as well as different sites. As a result, the research process evolved, my understanding deepened and the phenomenon of the emerging outer space order (including the real typical orders) could be considered as a real and meaningful object "released from its subjective identification" (Goddard, 1973:22). This epistemology affirms the dialectic relationship between subject and object in historical processes, which are characterizing the structures of an epoch (Cox, 1992:135). It also lays the ground for a discussion about what the emerging outer space order could be.⁵³

I view relations and structures as processes.⁵⁴ Still, for analytical reasons I refer to the conventional IR *deep structures* i.e., *units*, *organizing principle* and *internal* and *external* interaction of orders (cf. Buzan et al., 1993:38f;120). I do so less for logical coherence, but to conceptualize order, change and continuities, as well as for enhancing chances of exchange with IR strands familiar with the language set of these

⁵² See for example Nicolas Onuf "Structure? What is a structure?" who returns to Aristoteles to mitigate the "vacuous discussions of idealism and materialism" (2009:196; Ruggie, 1998:876).

⁵³ Along the lines of inefficient causation, Lebow (2015) or Maja Kurki's (2008) idea of thick conceptualizations of causes) enables us to ask what general situation and changes the real types reflect and foresee. Since the sum of narratives, covering social as well as material facts, tensions and possibilities, will allow hypothetical discussions or theorizing about the consequences for world politics (cf. Finnemore & Sikkink, 2001:394). Alternatively, in Lebow's words, they serve as starting points for forecast (2015:70).

⁵⁴ Process philosophy stipulates that time and change is among the principal categories of metaphysical understanding, as are contingency, emergence, novelty and creativity (Rescher, 2000:6). Accordingly, "nature is a process" and "becoming is as important as being, change as stability" (Bergson, quoted in Lebow, 2008:57). This philosophy downplays the interest in things, in favor of an interest in processes (Rescher, 2000:4). For process theorists becoming is no less important than being, rather the opposite (ibid.).

structures. Besides, I add *deep frames* and *deep agency* to the category of deep structures. These deep structures serve as *analytical* categories, which are not closed nor fixed, but open to investigation.

To capture structures, I use the concept of a diorama. A diorama conceptualizes the broad trajectory of an order unfolding in a political space. It displays the *units/trajectories*, *authority structures* and *social-, and material patterns*. Thus, a diorama enables us to analyze *deep agency*. It facilitates a conceptualization of order including the constitutive materiality.⁵⁵ The diorama concept, technique and model is applicable regardless of the level of analysis. Thus, the ‘everyday dioramas’ are not isolated but fundamentally generating the meaningful character of units (the professional orders) and their interplay and hence of the larger diorama of the political space of an overarching order, in this case, the emerging space order. The *model* of the diorama, in this inquiry, serves as a heuristic tool for analysis.⁵⁶

2.5. World order and political structures?

Since this is an open explorative inquiry, the types and strengths of structures, including the deep organizing principle of world order were not assumed beforehand but were uncovered during the investigation. Detection rather than assumption is important as Lebow notes about order, “deeper level change involves transformation in the ordering principles” (2018:106). Concerning the contemporary world and structures, Randall Schweller argues that “structure doesn’t constrain anyone anymore” (2014:48). He finds that globalization is now “thicker, quicker, cheaper and deeper than ever before”, which makes the cross-border flows largely “beyond the control of governments or any other authority, for that matter” (2014:58). Moreover, Schweller claims that “if

⁵⁵ My empirical observations called for a stronger “material lens”, than for example Alexander Wendt (1999:25). Therefore, the analytical framework and narrative incorporates the constitutive materiality, time-geography and seeks to embrace a more *unified ontology*. It explores how, when and if interaction can *take* place. My conceptualization of constitutive materiality together with the deep frames informs us about the possibilities for, and type of order.

⁵⁶ Robert Jervis advocates models, as politics is a “cloudlike” and complex phenomenon with a multitude of patterns and variables and this cloudlike nature of political phenomena requires modelling (1992:76f). Analytically models serve hypothetical and counterfactual purposes and reveal new relationships (Swedberg, 2014:120).

and when we reach a state of maximum entropy [disorder] *much of international politics as we know it will have ended*" (my emphasis, 2014:135).⁵⁷ In this situation, unconstrained behaviour can be random and chaotic; actors have limitless options and anything and everything is possible, "nothing is predictable or stable" (Schweller, 2014:46). Additionally, he finds that order quickly and without warning can collapse into chaos (2014:52). I read his conceptualization of entropy as a *new style* of a multi-multi polar order, in which the old concept of polarity and the theory of 'balance of power' loses meaning (Schweller, 2014:49 & 91). For Schweller, globalization, especially the digital transformation is the engine for rising entropy (2014:60). He deliberates:

One wonders what order and concerted action mean in a world that lacks fixed and predictable structures and relationships. Given the haphazard and incomplete manner by which the vacuum of lost state power is being filled, why expect order at all? (Schweller, 2014:56).

However, Ann-Marie Slaughter (2004) and especially Saskia Sassen (2006) show how non-state units are becoming more and more decisive for world ordering. Sassen, like Schweller addressing globalization, finds that "both the transformations inside the state and the novel 'external' geography are partial and incipient but strategic" (Sassen, 2006:411).⁵⁸ She theorizes an emerging order of high level of complexity and specialization, divided into specific domains. At the same time, she observes that this change and these processes are still largely represented in national terms (Sassen, 2006:411). Therefore, this transformation of units, from and alongside states, are not easily detected and there is a risk

⁵⁷ Entropy originally applies to closed, isolated systems, but is by Schweller used as a metaphor of the rising pressure of international structures and processes. This pressure stems from an increased number of interactions and the amount of information in the international system. Entropy is often associated with deconcentration, disorder, chaos and randomness (Schweller, 2014:38).

⁵⁸ Sassen finds that this novelty, or modernity, is built on particular novel normative orders internal to each assemblage, which might be a minor process, but may well be the beginning of a "multisite disruption of its existing formal architecture" (2006:421). This novelty shows "inequality, cut across the master units [... and] *coexists with older forms*" [my emphasis] (ibid.). These new normative parallel patterns/orders, could have a small scoop, be transnational, multiplication of partial, specialized and partial regimes (Sassen, 2006:417ff).

that we theorize in the same way, as if nothing has changed, or is changing. However, like Sassen, I discern a fundamental deep structure transformation alongside and cross-cutting the state units. Consequently, to address Schweller's question of order in the quote above, *yes*, we can expect order if we look for new types of orders, in this case for professional orders. Enduing patterns and structure of world politics have not ceased to exist but taken new forms. Besides, my empirical observations suggest that the organizing principle of the emerging outer space order appeared to be parallel and fluctuating, and neither hierarchical nor anarchical, but heterarchical.⁵⁹

2.6. Hierarchy, anarchy and heterarchy

Olaf Corry points out how Kenneth Waltz's influential structural theory, which laid the foundation for neorealism, resulted in a situation in which there was no need for more than two ways of conceptualizing the deep organizing principles of world order since anarchy and hierarchy claimed to cover the totality of organizing principles (2013:1ff). I agree, that most efforts to theorize world order to a varying degree are dependent on an anarchical state system and the "anarchy-hierarchy dichotomy" (Corry, 2011:60). The conceptualization of world order as anarchic has been a defining and persistent conceptualization, even though, Wendt famously stated that anarchy is "what states make of it" (1992). The common critique of anarchy is that it is picturing the modern era, which leads to state-centrism. It is also criticised for being static, as it is structurally deterministic and unable to account for change (cf. Corry, 2011:165). As we will become apparent, despite this criticism pertaining to state-centrism, I find that the few accounts about heterarchy anyhow start with the state.

⁵⁹ The concept of heterarchy also happens to open for a heterodox, transdisciplinary IR and broad theorizing about order and change that, for example, Ronen Palan calls for (2007). Moreover, Palan asks what then the international dimension of critical general theory of order and change would be. To him, the international sphere is not a system constituted on its own right but tends towards "a gigantic area, or a transmission belt, a huge communication device" (Palan, 2007:68). In this inquiry, the concept of *the gigantic transmission belt* proved fruitful to capture a critical material structure that has a substantial political impact on the world order. Thus, the concept I find is a different way of conceptualizing global order and political structures.

While heterarchy is not a common concept within IR, it is established and used within archaeology and anthropology.⁶⁰ However, within IR, Rosenau (1990) observes a bifurcation “between the state-centric world and ‘an equally powerful, though more decentralized multi-centric world that operates largely independently of the former’” (Baumann & Dingwerth, 2015:108). More recently, Rosalba Belmonte and Philip Cerny have discussed heterarchy primarily as an avenue to mitigate state-centrism within IR (2021). They find that “[s]tate structures and state actors have less and less ‘state capacity’ to act as Waltzian ‘unit actors’ in world politics” (Belmonte & Cerny, 2021:2). In this context, the nation-state is increasingly becoming what they call a “reactive state” in a world where “multilevel and multi-nodal policymaking and implementation processes are evolving above, below and cutting across states caught up in the dialectic of globalization and fragmentation” (ibid.). They view this development as an evolutionary restructuring process of world politics, and as a process, that requires a new, robust paradigm called heterarchy (2021:1f; cf. Donnelly, 2016).⁶¹

On the other hand, Rainer Baumann, and Klaus Dingwerth, convincingly claim that the world order is becoming more heterarchical and hierarchical at the same time (Baumann & Dingwerth, 2015:104).⁶² They argue that due to the US hegemony or even empire, world politics is characterized by the concentration of power as well as the dispersion of power and authority. Thus, order moves towards hierarchy and heterarchy at the same time (2015:104f). Moreover, from their literature review, they

⁶⁰ John Ruggie and Christian Reus-Smit have used the concept of heteronomy in IR. For more about these and other applications of heteronomy including the similarities and differences see Jack Donnelly (2009:64ff) and Martin Hall (2004:13f).

⁶¹ In addition, they argue, “heterarchical institutions and processes are characterized by increasing autonomous and special interest capture (Belmonte & Cerny, 2021:1). They define heterarchy as “the coexistence and conflict between differently structured micro- and meso quasi-hierarchies that compete and overlap [...] (ibid.).

⁶² They observe that the global governance literature pictures the diffusion of power and authority in world politics, which is described as a move from anarchy to heterarchy (Baumann & Dingwerth, 2015:104). In contrast, the empire literature identifies a concentration of power and authority in the hands of the US and a move from anarchy to hierarchy (ibid.). They argue that these two approaches are interpreting the same phenomenon, changes in the world political order after the Cold War, but that they come to “fundamentally different conclusions” (Baumann & Dingwerth, 2015:122). They conclude that hierarchy and heterarchy co-exist as a core element of world politics.

derive that world politics is becoming more complex and “that the anarchy assumption has become less useful to explain and understand it” (2015:115). Further, Baumann and Dingwerth encourage large-scale analysis of how anarchy, hierarchy and heterarchy intersect in world politics (2015:124). However, to conduct such analysis we need a better understanding of heterarchy.

Martin Hall argues that by paying more attention to political space rather than structures, or in addition to structures, IR would gain some “intellectual leverage over the issue of change and continuity, -or, in other words, world history” (Hall, 2004:5). He suggests that the concept of heterarchy as used by archeologists might be a useful “vehicle for a fuller development of a process account of political space” (ibid.). Hall criticizes neorealism and argues that the “fundamental weakness of structural conceptualizations of political space is that it is not temporal” (2004:11). He finds that the neorealist accounts of political space capture the political time of being, not becoming (Hall, 2004:11). Accordingly, Hall argues that neorealism, as well as world system theory, is concerned with how to define criteria for when change has happened but provides little guidance in how to explain change, nor tools to “draw an evolutionary tree” (2004:11). It is exactly in this sense I find the concept of heterarchy most promising. Thus, my conceptualization of heterarchy aligns with Hall’s processual account of political space that also corresponds to, and makes sense of my empirical observations.

To the best of my knowledge, within IR most substantial efforts to theorize heterarchy has been made by Jack Donnelly. He finds that heterarchies are “systems of multiple functionally differentiated non-territorial centers arrange in divided or tangled hierarchies” (2016:1).⁶³ Donnelly in his theoretical elaboration of the heterarchy concept is mainly concentrating on structures and conceptual logic. He finds that heterarchy is made up of a state-layer and a heterogeneous overlay of governance practices (2016:10, 24). However, he admits that he does not elaborate on *how* to conceptualize and *where* to analyze heterarchy. In Donnelly’s version, heterarchy “tells us more about how a system is not structured than how it is” (2016:24). Moreover, he finds that he is

⁶³ Compared to the idea of the state systems, heterarchies are multi-centric systems with *heterogenous* centers (Donnelly, 2016:5).

“unable [...] to offer anything close to a framework for analyzing heterarchies” (2016:24).

In this inquiry, I develop a suggestion for *how* heterarchy can be conceptualized and empirically observed based on the illustrative example of outer space *where* I find that heterarchy is pronounced. The aim is to suggest some answers for the right box in Figure 1, which Corry in its original version had filled out with a question mark.

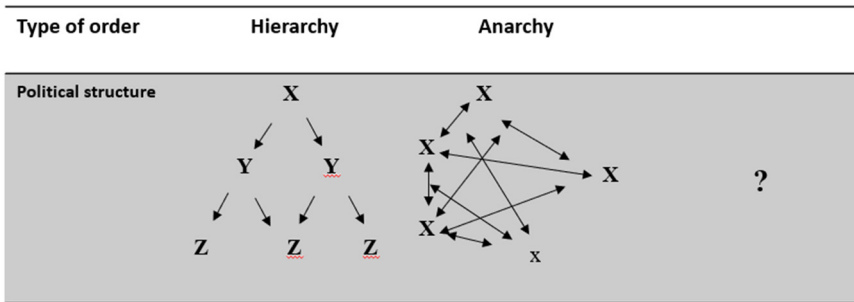


Figure 1: Typology of hierarchy, anarchy, with a question mark⁶⁴

Corry utilizes this model to picture political structures, which he terms political systems, “in which units interact sufficiently to have to take each other into account” (Corry, 2011:168).⁶⁵ (This definition of interaction also applies to heterarchy).

⁶⁴ This model builds on Olaf Corry’s illustration of Waltz’s theories of political structure (2013:164).

⁶⁵ He proposes that polity should be used instead of the concept of heterarchy, (the label in the upper right of the model). He illustrates a polity by arrows converging into a center, which represents a common governance object (Corry, 2011:169). Moreover, he finds that actors in anarchies and hierarchies do not necessarily have common governance objects (ibid.). Further, that in hierarchies, actors are arranged vertically, in anarchies polar and in polities concentrically towards the same center (although not necessarily with equal distance) (Corry, 2011:174, 171). Although I follow his argument, contrary to Corry, I hold that heterarchy is a concept that resonates within IR in general and is semantically suitable as a structural concept in pair with hierarchy and anarchy. In addition, as we will see, my empirical observations of heterarchy reveal more diverse governance objects. Moreover, my conceptualization of heterarchy is not pictured ‘head on’ but ‘offset’, i.e., from a different angle and as a process.

Hierarchy is about super- and subordination (Corry, 2013:164).⁶⁶ In a hierarchal political structure, the units are differentiated. As illustrated in Figure 1 while X is superordinate, Y is subordinated to X. At the same time, Z is subordinated to X and Y (ibid.). According to David Lake, hierarchy in the state system typically takes on two forms: hegemony with alliances, or in the form of empire with subordinated states (1996). While a system based on hegemonic alliances is the loser form of hierarchy and closer to anarchy, a system based on hegemonic empire is top-down control of the subordinated units from the center or above (Lake, 1996:7).⁶⁷ Understanding “membership” is therefore useful for an enhanced appreciation of the hegemony concepts as “the threshold of a hierarchy is ultimately guarded by the center” (Corry, 2013:171).

John Hobson and Jason Sharman find that hierarchies have been enduring in world politics. They trace and explain how successive sub-systems hierarchies have emerged, how they have been reproduced over time and eventually declined. In addition, Hobson and Sharman show how social logics, linked to *identity formation processes* have changed over time, as religious, racial, socialist and democratic identities have succeeded each other (Hobson & Sharman, 2005:64).⁶⁸ They note that “hierarchies are embedded with different ‘ordering principles’ [...] which cannot be gleaned from a singular and timeless logic” but from “ever-changing identity formations” (2005:93).

Anarchy and self-help imply that international systems tend toward functional undifferentiation. As we can see in Figure 2, all units have similar characteristics represented by an X. Thus, the distribution of power is the “*only* structural variable that distinguished between different international orders” [emphasis in original] (Nedal & Nexon, 2019:172).

⁶⁶ Donnelly defines heterarchies as “multiply ranked orders” (2009:63). Heterarchy comes from Greek with the prefix *hetero*, indicating difference, variety, or ‘the other’ and the root *arche* (rule) or *archon* (ruler) (Donnelly, 2009:64). “Heterarchy involves ‘differential rule’ or ‘multiple rule’ – in contrast to the ‘higher rule’ of hierarchy, the ‘self-rule’ of autarchy, and the ‘no ruler’ of anarchy” (ibid.).

⁶⁷ Outside the state system, hierarchies can also be dictatorial, oligarchic or democratic (Corry, 2013:172).

⁶⁸ Hobson and Sharman trace how religious ordering principles of Christendom led to racial conceptions of Western identity, which led to the predominance of imperial/colonial hierarchies, which later were superseded by new hierarchic formations that were founded on socialist and democratic logics after the Second World War (WWII) (2005:65).

Although the distribution of power ascribe statuses and identities to the units/states as superpowers and great powers, conceptualizations and research based on anarchy tend to (over)emphasize the similarity between the units. Anarchy is also linked to sovereignty and territoriality of states (Hall, 2004:14; Hobson & Sharman, 2005:67 & 72).⁶⁹ In anarchy, membership is systemically decided through mutual recognition among units (Corry, 2013:171).

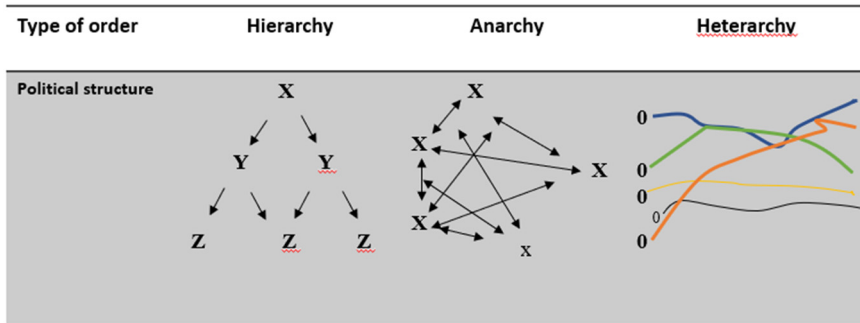


Figure 2: Typology of hierarchy, anarchy, and my proposed conceptualization of heterarchy

In my proposed model of *heterarchy*, political structures are conceived of as processes unfolding in a political space in which authority fluctuate. Theoretically, heterarchy does not have to be functionally differentiated, however, empirically this is often the case. The lines have different colors to distinguish the character of the units (communities), even though they sometimes are of the same undifferentiated category (like tribes). Thus, although the units do not have to be functionally differentiated they might be living in different realities. The nature of the different realities, the deep frames, are therefore part of the deep structures defining the directions of the trajectories. In addition, deep agency captures the strength of the trajectories extending into the time of becoming.

⁶⁹ Analytically, the units of anarchy do not have to be states, but for simplicity, I use the states, for “functionally undifferentiated centers that rule homogeneous peripheries”, often territories (cf. Donnelly, 2016:5 & 7). Moreover, “state systems have multiple relatively homogeneous centers” (Donnelly, 2016:5.). It is well known that Waltz’s conceptualization of anarchy presupposes domestic hierarchy and international anarchy.

This approach emphasizes endogenous dynamic forces rather than predefined systemic exogenous forces foremost associated with anarchy. For example, membership of a heterarchy is primarily decided within the suborders. Moreover, in the light of the illustrative case of outer space, I argue that contemporary multiple hierarchies are defined by professional identity formations – the large-scale quantum-mind entangled professional orders. Thus, compared to spheres of authority these orders have ontological status. Similar to the conceptualization of hierarchy, authority is in the foreground rather than power that is associated with anarchy. However, unlike hierarchy, heterarchy is not concentrated around a center (Hall, 2004:14). To further understand heterarchy, in the next chapter, I elaborate on deep structures and conceptualize the quantum-mind entangled professional orders, as well as develop the diorama model.

3. Conceptual elaboration and the model of an evolving diorama

This chapter aims to establish a ‘behind the language vocabulary’ of the core concepts used to capture the emerging outer space order. Thus, the conceptual elaboration amounts to the building blocks necessary for the construction of the analytical framework in the next chapter as well as for the subsequent analysis and discussion.⁷⁰ Engaging with traditional IR, this chapter starts with the deep structures of order, which include the units and their internal and external interaction as well as their organizing principles. Enhancing the comprehensibility of deep structures, the chapter also adds deep frames and deep agency. Then, the exogenous forces are described. Next, grounded in my empirical observations, the quantum-mind entangled professional orders are conceptualized, as these are the principal units of the emerging outer space order. Subsequently, the concepts of heterarchy and diorama are described. In the final section of this chapter, I introduce the diorama as a concept and a technique to conceptualize political space. This process of an evolving diorama is illustrated with a model aiming to capture the emerging outer space order. In short, this chapter presents the philosophical and theoretical ground for this inquiry.

3.1. Deep structures

Building on Barry Buzan, Charles Jones and Richard Little, “the deep structures are the *units* that are making up the world order and the *general deep organizing principles* of the world order” [my emphasis] (1993:38f). According to Waltz, ‘deep’ represents a basic pattern that is not only durable but also self-reproducing (in Buzan et al. 1993:38). I find that the

⁷⁰ Stephen Turner points to that theorizing is about capturing the new by combining theoretical concepts and seeking coherence between them (2014:132). This goes well with the idea that theorizing is about re-grouping pieces of a taken for granted pattern, into a different one (Swedberg 2014:92f; cf. Goddard 1973:19).

units that make up the world order are myriads of communities held together primarily by believed realities and common identities.⁷¹ Today, the Westphalian social structure of states is an important social structure. However, communities do not have to form states and states do not have to be held together like communities with a common identity. Indeed, failed and conflict-torn states show that states are not the deepest social structure, as communities are held together through interaction as well as a common identity and worldview.⁷² Importantly, the *character* (such as identity and worldview) of the units is critical to describe and understand the character of the overarching order. Thus, units that are assumed as empty and characterless do not contribute to any genuine understanding of order, nor do units with predefined attributes (cf. Donnelly, 2019). In addition, I contend that to analyse political order, the political character of the order must be incorporated into the analysis.

According to Waltz, structure is a generative notion, and the structures of a system are generated “by the interactions of its principal parts” (1979:72). Buzan and his colleagues identify two sets of structures, *internal* and *external* interaction (1993:120). This conception is empirically fruitful, as the structures of interaction *within and between the professional communities* are influenced and shaped by the professional communities’ collective identity and agency. The concept of deep structures, in this inquiry, is in line with relationalism (and process philosophy), that privilege process over structures and change over stability. The choice to still refer to structures is made to enforce an encounter with the state-centric theories and to engage with IR approaches based on the modern paradigm of systems theory. Moreover, to maintain the structure discourse might help us to generalize, capture change and navigate transformation (Ruggie, 1998:875). The key is to “historicizing structures” and to “bring them to life” (ibid.). Structures and their effects become visible in a political space, in which the emerging properties of structures are also generated (ibid.). In this inquiry, the diorama captures the political space in which the structures unfold.

⁷¹ In short, community is about the feeling of belonging together, about constituting a “we” that differentiates us from the “other(s)” (Buzan 2004:74). In Lebow’s words identity “embodies some sense of who we are and that connects us to and differentiates us from others” (2008:562). The concept of community will be further elaborated in section 3.4 and identity in section 4.1.

⁷² Yet, using the failed state epithet, as I do here, shows how deep-seated this structure is.

To summarize, the deep structures of the world order should be found by identifying and *characterizing* influential communities and their internal and external patterns of interaction.⁷³ To characterize the communities, I will also add *deep frames* and *deep agency* to my analytical categories.⁷⁴ Deep agency incorporates and highlights change, continuity, and the time of becoming. It sheds light on opportunity structures for change as well as possibilities for directional change and political order. Deep agency becomes visible in a diorama.

3.2. Deep frames

Deep frames are “intersubjective frameworks that humans use to create order and find meaning” (Lebow 2015:60). Intersubjective frameworks in turn, are shared realities of collective intentionality, conditioning agency (cf. Ruggie, 1998:869; cf. Rengger, 2000:84).⁷⁵ Deep frames relate to the foundational proposition that it is human to make the world conceivable, orderable and predictable to reduce complexity and uncertainty (cf. Luhmann, 2005). Trust and confidence are activated “when everything seems to be in appropriate order” (Lewis & Weigert, 1985:974). This also implies “trust in identity” i.e., that we know who is who, which is a constitutive bond in every social order (ibid). An important remark concerning social order is that “given the inequality in all social orders, and the exclusions, restrictions and compulsions they entail, it is nothing short of remarkable that most people in most societies adhere to stipulated practices and rules” (Lebow, 2008:4). However, at the individual emotional and psychological level, this is explained by the individual search for order, meaning and *belonging*. In other words, “[s]ocial integration confers identity, enhance self-worth”, and “most

⁷³ The character of communities and the interrelations between communities is likewise what Rengger finds to be the core and permanent feature of political reflection (2000:10).

⁷⁴ Deep agency is possessed by the units in the position to define the direction of a diorama.

⁷⁵ Deep frames are the most constitutive structures but also most difficult to document, since “they are taken for granted and seldom theorized, nor debated nor consciously acknowledged” (Lebow, 2015:79).

people believe that they are more secure, better off and have higher status within orders than outside them” (Lebow, 2018:10).⁷⁶

Berger and Luckmann emphasize that the world is made orderable and the importance of producing meaning to the world and one’s actions (1966:33). The dimension of meaningfulness is captured in the definition of deep frames above. However, compared to Lebow’s conceptualization of deep frames (2015), I specifically highlight the importance of our relations to and anticipations of the future, which condition our sense of agency, as well as responsibilities (Adam & Groves, 2007; Groves, 2017). Hence, conceptualizing deep frames attentive to the actors’ historical orientation and view of the future helps to capture the emerging order, including the political time of becoming.

3.3. Exogenous forces - contemporary conditions

Exogenous forces are contemporary conditions that constitute possibilities for political order. Schweller pictures a world in transformation and the systemic impacts of today’s information sphere. He calls attention to that in the contemporary condition customized and narrowly set algorithms polarize our realities and decrease our ability to reconcile different views (cf. Schweller, 2014:127 & 137). This implies, that individuals can create and live in their “own unique, fact resistant spaces”, and that individuals take the “centre stage” while truth is downplayed and replaced with a “misplaced certainty” (Schweller, 2014:124f, & 130). This is a process reinforcing the alienation produced by the autonomous self (Lebow, 2018:329ff). Alienation includes the contemporary discourses that legitimize the principal reference point as introspection and paying attention to one’s feelings, motives and goals. Thus, focus shifts to what makes the self, rather than society and the

⁷⁶ The fundamental ideas from Berger and Luckmann about the individual seeking for coherent self is similar to what is termed ontological security (cf. Kinnvall & Mitzen, 2017). For the sake of proceeding with this inquiry about outer space and ‘seeing anew’, I deliberately chose not to delve further into similarities with this literature here.

larger world (ibid.).⁷⁷ Moreover, the autonomous self faces us with a fundamental choice about who we are, which is liberating but also “anxiety-provoking” (Lebow, 2018:331). This situation, together with Schweller’s finding that we are short of *attention span* (2014:122), displays a change of considerable scale, with implications for the deep organizing principle.

In relation to time, interpretive research shows how “post-modern time” is replacing the modern national time with “calendric simultaneity”, squeezing the national present (Ekengren, 2009:16, 69 & 81). Magnus Ekengren finds that, in the European Union (EU), a political language of time has been marginalized by a short-term administrative language governed by coordination, synchronizing schedules, obeying deadlines and a “strong feeling of lost control”, thus “shrinking” the future (2009:55, 59, 61 & 147). He discusses the *parallel* national and European patterns of time and “nows” (2009:71).⁷⁸ Moreover, in a world order perspective, Oliver Kessler finds that many “governance problems” might be due to social and functional differentiation and the clash of different temporalities (2012:77). So, these different temporalities can be associated with different professions.

Contemporary life additionally involves an acceleration, as time is speeding up “the density of events per units of time” (Scott, 1982:48). In this information entropy, we are short of *human* attention and face-to-face interaction (Schweller, 2014:122). This affects the human ability to impose order and meaning and cope with the increasing “unknowability” or *inconceivability* of the contemporary world. According to Schweller, “the info sphere demands our attention and distracts us from engaging in

⁷⁷ In *The Coming of a Post-Industrial Society*, Daniel Bell finds that: “For most human history, *reality was nature* [...]. Then *reality became technics*, tools and things [...]. Now, *reality is primarily the social world* – neither nature nor things, only men – experienced through the reciprocal consciousness of self and other” [emphasis in original] (1973:488).

⁷⁸ Rosenau had previously pointed to how the phenomenon of “systemic simultaneity” and a process of aggregation and disaggregation contributed as “evidence of epochal change” (1997:31). I observe a contemporary situation of a multiplicity ofnows. The modern systemic simultaneity is increasingly synchronizing the world but at the same time, it is a world of parallel temporalities.

social and political activities” (2014:125).⁷⁹ He finds that information overload or information entropy produces boredom and alienation rather than engagement and awareness (2014:122).⁸⁰ Schweller refers this situation to ‘flatness’, as a “general sense of banality and loss of meaning in life” (ibid.).

In this situation and transformation, I observe that the professional world serves psychological and social purposes to mitigate the sense of anxiety, information overload and banality. Increasingly and essentially our professional identity induces order, meaning and goal into our lives, as does its inherent professional hierarchical social order. Belonging to a high-status profession has become a ticket to a predictable and meaningful future. Our profession makes us focus and directs our attention that we otherwise tend to diffuse due to the digital age’s information entropy creating a sense of lost control and faith. As a result, and as a general societal expectation and tendency, most of our time and agency is comfortably located within our professional lives.

On a more structural level, following David Singh Grewal, being part of the globalization process, we are all forced to adapt to certain standards (language, laws, technologies and frames of reference) and conventions set by dominant networks – or face isolation (2008:39). He argues that power is now within networks that can be seen as face- and agent-less structural-institutional forms shaped by anonymous self-interest elite (Grewal, 2008; cf. Schweller, 2014:60). To Grewal this represents a new world order driven by the groups formulating the standards for the entire globe (2008; cf. Sassen 2006). Structurally, this process of globalization is uneven, and some standards of social coordination become prominent and prevail over alternative ones (Grewal, 2008).

In this inquiry, the conceptualization of the professional quantum-mind entangled orders captures some of this transformation. Hence, while states are upholding the common surface of the world order (making it familiar and predictable), the professional orders are working in the

⁷⁹ Schweller, provocatively argues that “politics has become entertainment - an escape from boredom” (2014:127). He notes that Americans watch “an average of six hours of television a day” which he finds decreases the time and energy to engage in what is shown to them on the screen (Schweller 2014:125).

⁸⁰ Information entropy is according to Schweller, “the degradation of information processed through monotonous repetition and meaningless variety” (2014:123)

background, innovating, and setting the directions (see Figure 3). In the contemporary world the innovation potential, the ideational and technical agency, is no longer within the states but within these fluctuating professional suborders. These orders are not replacing the state units but are modifying them. On the global level, the role of the states is more of a “rubber stamp” giving formal authority to projects and visions already initiated outside the perceptual, conceptual and temporal horizons of the states. In addition, the structures of the states themselves are increasingly parallel. The figure shows that while states are upholding the world order surface from above, the depoliticized fabric of professional orders defines and propels the direction of the world order.

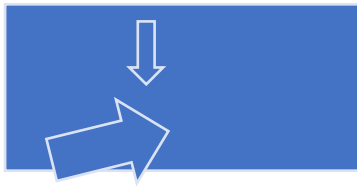


Figure 3: The depoliticized fabric of professional orders

3.4. Quantum-mind entangled professional orders

The suborders of professional communities are the large and deeper units of world order. Already in 1966, referring to Talcott Parson [1949], Berger and Luckmann's noted that "the decline in the position of the family with regard to secondary socialisation was well known" (1990:166). Now, globalization, individualization and the division of labour have reached a point when we feel best "at home" with colleagues (cf. Berger & Luckmann, 1991:144). In this specialized contemporary situation, we are forced to start specializing early in life and we increasingly become our professional selves.⁸¹ Moreover, as we spend a great time of our lives at work, the products and patterns of our professional lives are constitutive for the direction of world order.

The concept of *quantum-mind entangled* professional orders builds on Wendt's conceptualization of the "quantum mind", which incorporates the term "*intra-action*" borrowed from Karen Barad. This, in Wendt's view, implies that agents can never be fully separable but are *quantum wave entangled* (2015:172f).⁸² Wendt insists that "in the classical case biological separability implies mental separability, in the quantum case mental states can depend non-locally on other minds" (2015:152). Quoting Fredrick Zaman, he also finds that "quantum forces [...] are

⁸¹ Moreover, I argue that secondary socialization is more fixed today due to its highly specialized content. Additionally, stable identity can be even more pivotal in times of change and complexity and due to the promotion of different ideals of who we should be (Sveningsson & Alvesson, 2016:15ff). Further, I claim that this strong professional identity can sharply influence the self-view (20016:17). Consider, for example, the many work-related suicides, *karoshi*, in Japan. Additionally, regardless, the nuances, roles, and ambiguities of identity, at work identity is always work-related (Sveningsson & Alvesson, 2016:33). Mats Alvesson and Katja Einola depict how professional organisations are fostering a situation in which individuals do not question the structures and their objectives (2018:293). Globalization leads to increased human movements and dislocation of "spatial identities", and "place identities". Persons involved in activities in outer space are perhaps also coloured by the vastness of outer space, and a different spatiality than on Earth as well as an even more weakened territorial identity. Likewise, Lebow deliberates on how horizontal, de-territorialized identities are becoming stronger on the cost of national identities (2015:131).

⁸² In quantum mechanisms, some "quantum-level processes appear to have instantaneous effects across large distances, and some quantum effects occur before their putative causes" (Lebow, 2015:18). The first requires instantaneous, superluminal communication between events (ibid.). The second is an even greater challenge to traditional causal explanations (ibid.). Nevertheless, using the quantum wave entanglement as a metaphor will suffice in this inquiry.

potentially and often truly cooperative because everything that happens occurs through the mutual dissemination of information amongst the forces involved” (Wendt, 2015:173). My reading is that regardless of whether quantum-like waves and mechanisms *are* operating *cooperatively* in our brains, it is a fruitful metaphor for the homogeneity I ascribe the deep socialization of (sometimes geographically separated) large professional units spanning the globe.

In this regard, my conceptualization of professional orders is similar to Andreas Antoniadis work concerning epistemic communities and their increasing role in the construction and change of world politics. In line with Antoniadis, I find that the influence of epistemic/professional communities increases due to the power diffusion in the systemic environment and the increased complexity of policy problems. As a result, more issues are now transferred from the political sphere to the technocratic, expert sphere, which leads to the “technocratisation” of politics (Antoniades, 2003:34).⁸³ In Antoniadis extended version of epistemic communities, these are described as “knowledge and power structures” with an authoritative claim to knowledge and as exercising decisive power over the construction of (world) politics (Antoniades, 2003:27f & 38). This understanding of epistemic communities has a more “*constant and holistic character*” [my emphasis] than the common conceptualization of epistemic communities (Antoniades, 2003:28).⁸⁴

⁸³ Relatedly, Melanie Morisse-Schilbach argues that “expertise” or “science” has a “much more all-encompassing ‘hidden’ power of framing and shaping broader political *orders* at all levels” [emphasis in original] (2015:21). This she finds is done by producing, reproducing and transforming political discourse, for example, the script about global commons which are to be dealt with in a western way (ibid.).

⁸⁴ ‘The common’ here refers to the traditional version of an epistemic community (Haas, 1992b).

This fits well with my conceptual and ‘real typical’ theorizing about professional orders.⁸⁵

The choice to emphasize the professional, instead of epistemic, is because it has a wider and more general application than merely a focus on networks of elite experts (Haas, 1992b:17). Besides, these professional communities are not merely networks but solid homogenous units. Thus, professional communities have different conceptual properties. In addition, the elevated importance of professional identity is part of a broader historical trend than captured by the concept of ‘epistemic communities’. Moreover, as this inquiry is based on a unified ontology, it brings in the constitutive materiality of the communities. Therefore, professional orders are more instructive for the deep structure I wish to describe.

⁸⁵ My conceptualization of a professional community is close to an *interpretive community*. Building on Thomas Kuhn, Stanley Fish finds that “[t]hose who hold a theory in common are members of group of interpretive community” (in Dasenbrock, 1991:9). For example, scientists working as members of such different groups work in different “paradigms” and according to Kuhn, scientists in different paradigms “work in a different world” [...] and “are responding to a different world” (ibid.). “Kuhn’s key notion is that truth (or what is recognised as truth by a scientific community) is relative to a conceptual scheme” (ibid.). Quentin Skinner also discusses how this “epistemic rationality may be said to give the agent good grounds to suppose (as oppose to merely desiring or hoping) that the belief in question is true” (2002:31). Likewise, Ludwik Fleck (1935), one of the original thinker of epistemic communities or “thought-collectives”, finds that thought-collectives and its adherent “thought style” and “thought pressure” in principle not condition what you must think but ultimately what you “*can*” think (Forstner, 2008:216). *Epistemic communities*, within the discipline of IR have originally been defined as expert networks influencing a specific issue area (cf. Ruggie, 1972; Haas 1992:3). “A knowledge-based network of specialists who share belief in cause-and-effect relations, validity tests, and underlying principled values and pursue a common policy goal” (Haas, 1992:187). To me, the parallel communities are professional communities or thought collectives. Professional communities apply not just to scientists or experts, but also to the military, commercial, and other communities, and have a much wider application. Moreover, to Peter Haas a epistemic community consists of scientists *and* policymakers unified by a goal (Haas, 1992a:189). Hence, identity and professional background is not the primary ontological category in Haas version, nor the all-encompassing constitutive influence. Consequently, I prefer to use the term professional order, which (along with the idea of interpretive community) is held together by social and material reality.

3.5. Heterarchy and political space

The most common definition of heterarchy is archaeologist Carole Crumley's definition which suggests that "heterarchy contrasts hierarchy, which means that elements are ranked relative to one another, with heterarchies, the elements are unranked or possess the potential of being ranked in a number of different ways, depending on systemic requirements" (1979:144; 1995).⁸⁶ According to Crumley, "heterarchical structures are most easily envisioned as lateral", compared to hierarchy which is commonly understood as vertical ranking (1979:144). Heterarchy "emphasis the variety of connections of elements and the varying circumstantial importance of any single element" (ibid.).⁸⁷ Benoit Dubreuil finds that heterarchy refers "to horizontal power sharing among [...] groups" and that it "avoids the problems associated with complexity and emphasizes the importance of coordination processes among multiple centers" (Dubreuil, 2010:180). This suits well with my empirical observations of the professional orders. Of relevance for conceptualizing the empirical observations in this inquiry, is also that Elisabeth Brumfiel mentions that heterarchy has been used to refer to both "specialists who are not under control of political leaders and to specialization that is

⁸⁶ Brumfiel notes that in archaeology, the concept of heterarchy shed new light over foundational concepts, as well as social complexity and facilitated that data that previously had eluded understanding now "came together rather neatly" (1995:10). The concept has also been used within anthropology and applied to complex system systems like neuroscience, ecology and multi-agent control systems (Cumming, 2016). Within business and organizational studies, heterarchy has been used for an organizational form that is more apt to changing conditions than hierarchy (Dawson, 2009). In an encyclopaedia of the social sciences, it is written that heterarchy "meets requirements for robust social theory inasmuch as the concept can relate the micro (individual level) to the macro (social) level, the agency of social actors to the social structures in which they operate, and provide an explanation for discontinuous and fundamental changes in the social system as a whole" (Darity, 2008)

⁸⁷ Heterarchy is a corrective to the naturalized characterization of power relations, which conflates hierarchy with order. Crumley, explains that the concept grew out of her dissatisfaction with hierarchy and further that "[t]his calculus of power relations *within* and *between* polities aids understanding of how power shifts occur and under what conditions various power distributions constitute stable and unstable configurations. Power relations, while predicated on systems of values, leave physical evidence when their importance is ranked and re-ranked by individuals, groups, and organizations as conditions change. The hierarchy-heterarchy relation offers a new approach to the study of agency, conflict, and cooperation" [my emphasis] (Crumley, 1995:1).

geographically dispersed” (1995:127). Further, she mentions that heterarchy has been applied to describe “parallel hierarchies” (ibid.).⁸⁸

The sociologist David Stark defines heterarchy as “an *emergent* organizational form with distinctive network properties [...] and multiple *organizing principles*” [my emphasis] (2001:71). Likewise, to Matthew Davis heterarchy is a concept that recognizes that a system has multiple organizational principles and that these may involve hierarchies and might be “context-specific and involve *fluctuating* power relations” [my emphasis] (Davies, 2009:28; cf. Hedlund, 1986:22). From these definitions and my empirical observations, in the present study:

Heterarchy is an emergent order of horizontal power sharing among multiple heterogenic communities, which are held together by a common identity and deep frames. A heterarchical order has multiple centers, hierarchies and organizing principles. Ranks of authority are relative and fluctuating in time and place between communities.

Thus, hierarchy *is* a feature of the internal structures and external structures of the subsystems of heterarchy. This definition emphasizes the procedural and relational perspective of becoming, as well as of identity formations and deep frames. Moreover, as authority is a central concept in my definition and analytical framework, it captures nuances in power relations. My empirical observations, as well as the concept of order, attune my theorizing and conceptual framework to political time and space. Notably, Hall suggests that to truly capture continuity and change in world politics we need to pay more attention to *political space* rather

⁸⁸ This make sense as well, because initially, before I familiarized with the concept of heterarchy, I termed my analytical framework ‘*parallel fluctuating orders*’.

than structures (or as well as structures) (2004:5).⁸⁹ Conceptualizing heterarchy in a political space shifts the focus to process and the time of becoming (cf. Hall, 2004:11). However, to make sense of heterarchy as a process, as well as a political space, the next section introduces the concept of diorama, which is fruitful for conceptualizing the *emerging* outer space order. The concept of the diorama is useful as a heuristic tool to conceptualize political space and explain change, or in Hall's words to "draw an evolutionary tree" (ibid.) of an order at the more empirical level. However, to fully grasp the diorama, the next section will remain at the conceptual level.

3.6. The diorama – conceptualizing political space with a more unified ontology

Central to the construction of the diorama model is Hägerstrand's time-geography. Therefore, below follows a brief overview of some of his key concepts. These concepts sensitize us to the time-geographic patterns of the professional orders and lay the ground for an analytical framework of order based on a unified ontology. Hence, to an ontology that is also adhering to the classical view of order emphasizing the unitary whole that the natural and the "human" order are perfectly at one (cf. Rengger

⁸⁹ Donnelly also emphasizes the centrality of space but maintains the use of structures. He finds that "political structures establish/represent the fundamental relations of force and authority in a system" (2009:55). He understands differentiation as "the social process of distinguish between people (and groups) according to the social statuses they occupy" (ibid.). Moreover, he argues that the structures of heterarchy are unit differentiation (who counts), as well as vertical differentiation (how much do those who count count) and functional differentiation (what do those who count do) (2009:73). In this inquiry, I look for structures in a similar way. Still, my unified ontology and diorama incorporating deep frames as well as constitutive materiality is another proposal for a framework of space and deep structures, and possibly more composite, alongside Donnelly's suggested "3-2 structures" of three times differentiation, plus norms and institutions plus geography and technology (2009:77). The point is however the same, to characterize heterarchy. Hall suggests using the concepts of process, configuration, project and yoking for analyzing political space (2004). This can be related to the diorama concept that I use to make sense of my observations. However, I will not delve into contrasting similarities and differences here. Instead, I will explore how the diorama operates and serves as an analytical tool in the illustrative example of outer space.

2000:4ff).⁹⁰ In this fabric of the constitutive materiality, the concept of a diorama helps us to illuminate a part in which order unfolds.

Hägerstrand's time-geography, in this inquiry, is essentially about what conditions possibilities for interplay. It enlightens us about how the sociality can materialize and *take* place (Hägerstrand 2009:29). For example, who will be in a certain place at a certain time. Simply because you can only be at one place at the time and only you can be at your place, and now is only now. This seems obvious, but as Hägerstrand argues, “[s]ocial scientists know very little about interaction of constrains, as seen from the point of life-path of the individual. [...] I think it is true to say that the system of domains is much better understood with respect to flows of goods and money than with respect to flows of people. [...]. In the main, people are viewed as parts of activities to be performed within each domain in isolation, and not as entities who need to make sense out of their *paths between and through domains*” [my emphasis] (1991:152). Hägerstrand's overall thinking and his theory of the all-encompassing ‘web of being’ or fabric is the philosophical foundation for my analysis of the emerging outer space order. Accordingly:

It is not fruitful to comprehend the fabric by examining only one short trajectory in isolation. The key is to study how these converge and diverge, emerge and decay/cease to exist in longer periods. The patterns that then surface help us to discern big and small, persistent and temporary [...]. The picture will however not be complete before we also note what alternatives are filtered away. [...]. The fundamental question that the concept of fabric brings fore is thus, how the front of the fabric– ‘the edge’ towards the future– evolves, not just trajectory by trajectory [...] but in its full situational breadth. How do the spatial processes and the temporal flow of ‘nows’ affect each other? [my translation] (Hägerstrand, 2009:129).

⁹⁰ Let us also notice that the discussion, so far, has mainly been outlining the core and conceptualizations of social order, which is understandable, and intuitively correct, as IR falls under the social sciences, and given that “everybody seems to accept the demarcation between natural science and social sciences” (Hägerstrand, 1991:196). However, if the conception of order within IR did encompass the constitutive materiality, I believe our understanding of the contemporary world and its challenges would be further enhanced, as every order is fundamentally dependent on what constitutes it.

According to this perspective of the world, as a dense fabric of trajectories in interplay, everything and everyone is in touch with each other and must pass through the present as well as become one single web of being. This makes traditional separations, distinctions and categories dissolve (Hägerstrand, 2009:134). Then, when looking for what the constitutive materiality (the fabric) permits to *take* place, principal patterns of continuance surface. Thus, there are to be some principal patterns in the steady passage from the past to the future. The observer's question is "What orders are taking place in every now?" (Hägerstrand, 2009:133).

Hägerstrand uses the concept of *landscape* to capture the wholeness and *diorama* for the "thereness" (situation). Different *Paths* and *projects* (see below) move the fabric forward. A *landscape* is "the grand situation in which the initiator of the project finds himself and constitutes the conditions of his actions" (Hägerstrand, 1982:325). Notably, a landscape should be understood in a much wider, indiscriminate and inclusive sense than conventionally done. A wider understanding includes what is very close, even what is hidden and what is distant (like the human body subjects, the clouds, and stars). A landscape makes no sharp distinction between nature and society (Hägerstrand, 1982:325f). However, since 'landscape' in common language is used mainly for nature, to incorporate every entity, including humans, Hägerstrand uses the concept of diorama. Diorama is an all-encompassing concept, suitable for a more unified ontology.

Diorama is originally a term for arrangements of animals and people suspended in their natural environments found in museums (Hägerstrand, 1982:326). The fruitfulness of diorama is not in the visual properties but in the "thereness", as "[a]ll sorts of entities are in touch with each other in a mixture produced by history, whether visible or not" (1982:326). A diorama closely illuminates a certain part of the fabric, in this case, the emerging outer space order. By making explicit the grains of the diorama, aggregated patterns otherwise hidden will become evident. To an outsider, what the insider finds too familiar, will be of interest for capturing the fine-grained structures of the diorama. These, in turn, can be quite apart from "the specific intentions the actors might have had when they conceived and launched project out from their different positions" (ibid.). Nevertheless, "[i]n the configuration of grains in the diorama lies one of the keys to its subsequent transformation" [emphasis

in original] (1982:326).⁹¹ As a result “[s]ituations and projects move the diorama forward in time and gradually change it into something partly or totally different” (ibid.).⁹²

Path (or trajectory) is used to help us appreciate “the significance of continuity in succession of situations [...] it refers not only to man but to all other packages of continuants which fill up our world [...]. Continuity and corporality set limits on how and at what pace one situation can evolve into a following [situation] in a pure physical sense” (Hägerstrand 1982:323). Although abstract, Hägerstrand reminds us of the ‘lived corporeality’ of societies and humans, almost totally neglected in human and social sciences (ibid.) People are not paths, but they cannot avoid drawing them in time-space trajectories (Hägerstrand, 1982:324). A *project* are events that happen due to human strivings and desires for purpose and meaning (ibid.). A project “is meant to tie together all those ‘cuts’ in evolving situations that actors must secure in order to reach a goal” (ibid.). Thus, projects have agent properties, and the term is therefore in this conceptualization synonymous to the professional orders. These orders like all other “packages of continuants” draw paths/trajectories in time-space (1982:232).

To Hägerstrand “*the situation is undetermined until the project defines it.* On the other hand, to what extent an initiator of the project can bring it to the desired end will depend on what events the subsequent situations permit from movement to movement” [my emphasis] (1982:325). Thus, a diorama should make visual the pacesetters, pace and sequences in the landscape. A central aspect is the temporal and spatial availability of others, as well as their *non*-availability (Hägerstrand 1982:331 & 333). It should picture the weekly patterns of individuals and things such as train arrivals, workhours, distances, time and non-institutionalized time – free time projects. It should also include expressions of authority, symbols, gates and influence (1982:333). *When adding the dimension of the relative strength of projects in competition and given that certain values and technology limit the room, a diorama illustrates the possibility for projects to even be initiated* (cf. Hägerstrand, 1982:337). Especially, in situations when the room is limited, in what Hägerstrand conceptualizes

⁹¹ Before looking at the reflectivity between the more limited situations and projects, we have to picture the general situation, the landscape.

⁹² Relatedly, Ruggie argues that system transformation requires that the contingent nature of structures situated in time and space be made transparent (1998:875).

as the “waist of the sandglass” (or the neck of the hourglass). In this narrow passage from past to future, the competition among grains increases (Hägerstrand, 2009:165ff).⁹³

Hence, Hägerstrand’s time-geography reveals valuable patterns about the possibility of interplay. To me, it implies that an order is the existing *situation – an arrangement of things – of reality. A diorama illuminates the details in the environment, what brought them there and in what direction they are heading.* Principally, Hägerstrand’s thinking is vital for my analytical framework. His philosophy captures *endless materiality of patterns, sequences and relative positions* defining situations and configurations. These, I find are the deep distributive structure of time and space as well as positions and relations.⁹⁴ Together with the deep frames, it is possible to trace and cut into patterns of power and influence – the fabric of order.

With the conceptualization of a diorama *and* the deep frames of the projects, we can detect not only how positions and patterns of relations change but also how the character of the units *themselves change.* Moreover, the deep frames enable and constrain the actors as well as indicate their direction into the time of becoming. This inquiry also emphasizes authority within and between the professional orders, which in turn facilitates an analysis of possibilities for political order. There is no predefined system, nor order or structure ‘above’, but the order is constituted horizontally in the grains of the diorama. Diorama, in my theorizing, serves to conceptualize the political space in which order unfolds. Together with deep frames, a diorama conditions deep agency and thus the direction of an order.⁹⁵ Before we move on, this rather philosophical conceptual elaboration and ‘behind the language vocabulary’ need to be made slightly more concrete. In the next section, I

⁹³ Hägerstrand gives the analogy of families waiting for their turn to take a bath at a small beach during warm summer days. The point is that in human societies, there is limited space at certain times - due to values and technicalities (1982:337). “When trying to understand what Giddens, Pred and others call ‘structuration’ it is therefore an essential task to study relative strength of projects in competition. But then the factors at work can be fully appreciated only in a diorama perspective” (ibid).

⁹⁴ The principle of distribution is “how units stand in relation to each other, the way they are arranged and positioned” (Waltz, 1979:80).

⁹⁵ Deep agency is possessed by the units in the position to define the direction of a diorama.

introduce a conceptual model of a diorama, which also summarizes this conceptual elaboration.

3.7. Model of an evolving diorama – analyzing possibilities for political order

This diorama model serves to make sense of dynamic political spaces, of authority and deep agency. The purpose of this model is to analyse the interplay between the suborders, the room and the possibilities for political order.⁹⁶ The model below (see Figure 4) illustrates political space, time and the fluctuating suborders. Together with the characteristics of each suborder's materiality, sociality and temporality, the model gives a condensed picture of the evolving fabric including the condition of possibility. The primary units are, in this case, the professional suborders that inductively surfaced as being defining structures for the emerging outer space order.

Please note that in this version, the lines are only random and illustrative. The beginning and end of the lines will differ, as orders form and decline, and some suborders are older. Moreover, some of the orders are larger, some smaller and some denser.⁹⁷ The suborders fluctuate in terms of the defining power and authority upon the overarching order. Together with the vertical movement of fluctuation, the professional orders horizontally (in time) converge, diverge and synchronize. These interactions are

⁹⁶ Since the principal aim of this thesis is to fuse horizons the deliberate choice is made to conceptualize order and to present the findings in a parsimonious way of a model. This is also due to that when I deliberated how to understand the emergent outer space order; it intuitionally and suddenly “showed up” to me as this model. However, this choice is also motivated by the fact that in a world of limited attention span we should not assume that theories that are more complex would be preferable. Hence, for pragmatic reasons, I decided to use a model. This choice also aligns with my understanding of theory outlined in chapter two in which I make clear that my model is intended to serve as an ideal type. Typically, models are criticized for being too complex or too simplified, sometimes both (Jervis, 1992:77). Nevertheless, this model illustrates my thinking and in addition lays the ground for counterfactual reasoning in accordance with for example the idea of efficient causation.

⁹⁷ Please, also imagining that the horizontal line of time, the eternal pure form of time, aion continues into the future, as a reminder of hope, as well as the space between the suborders can be filled with paths of interaction. Moreover, think of that despite a world of speed and time compression, it *is* possible to stop clocks. Thus, linearity is not given. Well, let us return to the analytic function of the model.

sequenced in a fluid process constituting possibilities for overview, political reason, agency and coordination between the suborders. Hence, the configuration of the overarching order changes at different ‘cuts’ in time. The suborders are, at times, more defining for the overarching emerging outer space order than at other times. For example, the military and political suborders were defining the diorama of the first space order (age) evolving during the Cold War, spurred by the drive of pride and symbolism (cf. Sheehan, 2007).

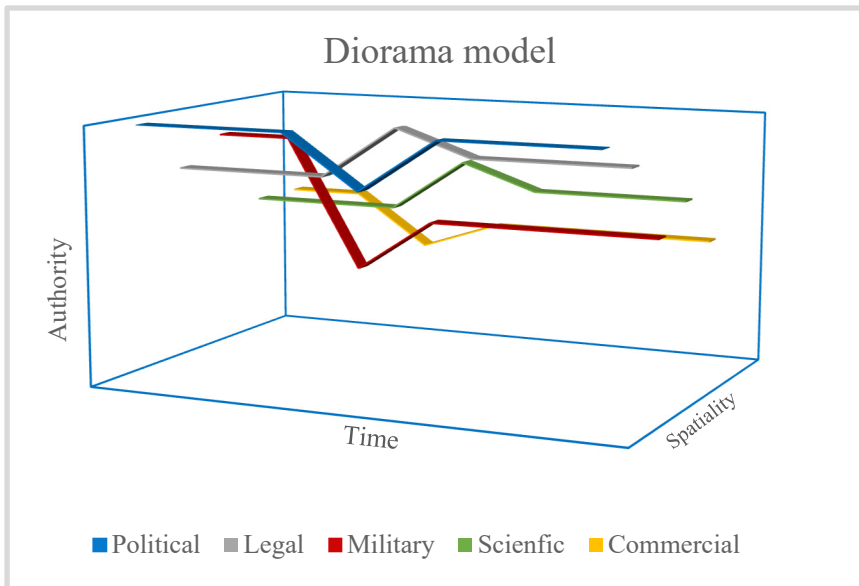


Figure 4: Diorama model - hypothetical illustration of the outer space order.

Spatiality: paths/trajectories of suborders, positions, degree of convergence, divergence, isolation and overlap. Vertically: authority to define the reality. Horizontally: time.

The degree of political decay is dependent on the level of overview of the phenomenon of outer space and of the suborders. It is also dependent on the degree of parallelism i.e., convergence and divergence between the suborders. Adding the truth-proximity axis, or dimension, allows theorizing about authority and reality. A political order is constituted by the characteristics of the suborder, their deep frames, notably identities, visions and level of political reason. Together with the real typical characteristics of the suborders, the model also facilitates an analysis of

whether political reason is co-located with agency and situated where influence and innovation potential are positioned.

Moreover, a diorama of an overarching order could be divided into *system dominant* or *subsystem dominant order* as well as in *directive* or *non-directive order* (Kaplan, 1957:30ff).⁹⁸ According to Morton Kaplan, “a sub-system dominant system is no system at all” (1979:58). For hypothetical reasons, in an order with states as principal units, a system-dominant and directive order would imply either a US or Chinese space dominance/control or a true United Nations (UN) space governance. The first could be characterized as a hierarchic/hegemonic order, the latter as a constitutive order. A system dominant and non-directive order could perhaps be an order with weak UN governance muddling through directionless. Theoretically, the emerging outer space order could be subsystem dominant and *directive* order – a heterarchy. According to Kaplan, “[a] subsystem becomes dominant to the extent that the essential rules of the system cannot be treated as parametric givens for that subsystem” (1979:30). This would be a subsystem dominant order with many different vectors multiply ranked. Thus, in a heterarchy at a particular moment in time, some of the suborders will be more defining for the trajectory of the diorama than other suborders.

Then, the empirical question arises, what suborders are defining the overarching diorama? How possible is political order? Given, for example, the hypothetical situations that the scientific community *is* defining the outer space order. The deep frames of this community will have a great influence on the world order, as this community will be reality definers and maintainers. In this perspective, the truth-proximity axis makes sense. Here, I believe that the scientific community will define itself closer to knowing what is possible and what is objectively true. This must not imply that this community will have the strongest shaping power on the emerging outer space order, especially not in a post-secular, post-metaphysics or post-truth world order (cf. Rengger, 2017:143). It could perhaps inform us about the importance of ‘reality’ in the contemporary world, which in turn could be related to the concept of hypermodernity. In addition, the diorama model spurs the questions: How are the suborders positioned in relation to each other? In what direction

⁹⁸ ‘Directional change’ is a useful concept in this inquiry and used by Kaplan (1957) as well as Rengger (2000:18). It is a clean and clear ‘behind language’ concept.

are they heading? What is happening in-between the suborders? Is there a sense of responsibility, a socialized nomos? In this thesis, there will be no complete or exhaustive answers to all these questions, but new insights and ideas will be generated. Because in the configuration of the dioramic grains lies the key to its subsequent transformation.

3.8. Conceptualizing change

Orders emerge, flourish and decay, or are transformed and modified. Alternatively, they collapse or are absorbed. Deep transformations (or transitions) can be distinguished from less transformational shifts (or changes) as the latter does not hold characteristics of substantial transformation in a longer historical perspective. For discerning historical transformation, Charles Tilly encourages us to focus on large processes and big structures that shape our era and making these concrete. This includes incorporating to the analysis, real places and people, and recognising time and sequence events (1984:14). Likewise, John Ruggie argues that maintaining a language of structures helps us to generalize, to capture change and to navigate transformation (1998:875). With a unified ontology, this applies to social, material and technology structures. Moreover, a central feature of a global order is the degree of connectedness and disconnectedness among its units (Rosenau, 1992:13). Concerning deep structures, a radical change in the *relationships*, the diorama of the units or even in the *identity* and *character* of the units is said to transform an order (cf. Kaplan, 1957:20). This resonates with Donnelly who emphasises the importance of the character of the units (2019). In addition, as Lebow notes about order, “deeper level change involves transformation in the ordering principles” (2018:106).

Process philosophy and the diorama attune us to the changing world and that orders must cope with change. Thus, a shift in ontologies is inherent in the very process of historical structural change (Cox, 1992:136).⁹⁹

⁹⁹ In addition, of relevance to this inquiry, Cox finds that the emerging units and the processes through which they emerge are significant to study to discern historical change, as are the ontologies, including possible new ones that that will become the heuristics for strategies of action in the emerging world order (1992:136). Relatedly, as Lebow argues, deep frames are the most constitutive of an order but also most difficult to document, since “they are taken for granted and neither theorized, nor debated nor consciously acknowledged” (2015:79).

Therefore, how the reality or the “objective world is made and remade through changes in intersubjectivity is the principal question to be answered in any attempt to understand historical change” (Cox, 1992:138). To capture this change, Robert Cox argues that:

Key is to focus on; the relationship between: “(a) the stock of ideas that people have about the nature of the world and (b) the practical problems that challenge them – on the aptitude or inaptitude of ideas to provide an effective and acceptable means of acting on problems that cannot be ignored because they do not go away. *Where there appears to be a disjuncture between problems and hitherto accepted mental constructs, we may detect the opening crises of structural transformation* [my emphasis] (1992:138).

He finds that the awareness of new problems makes us see the “inadequacies of conventional mental constructions that tend to make us focus on problems other than those of emerging salience” (Cox 1992:139). Thus, when deep frames do not provide answers to the problems, a structural transformation is imminent. Moreover, the self-evident character of an order could be questioned when the world is transmitted to the next generation or the other suborders (cf. Berger & Luckman 1991:111). In relation to the thoughts above, the outer space order is an illustrative example of an ongoing structural transformation of the world order, a transformation characterized by its pace and scale. Building on these formulations, in the present study, *transformation is a situation in which the influential suborders’ structures or character (i.e., their identities, deep frames, and pattern of interaction) change more fundamentally and ‘permanently’ in a longer historical perspective. Transformation can also be defined as a situation in which the deep frames do not match the problems and the self-evident character of an order breaks down.*

Detecting change is complicated by the fact that there is often a perceptual lag for decades before, for example, a real decline of power is

evident (cf. Reich & Lebow, 2013).¹⁰⁰ Even a collapse, systemic or not, is not obvious to the people involved and seldom evident until hindsight observations. In Erika Weiberg's words, an ongoing collapse could be a "non-experience" for the actors involved (2017:321f).¹⁰¹ A collapse can be rather slow as well as fast with more sudden breaks, or eruptive events initiating a gradual change or even immediate collapse can occur.¹⁰² Some orders, however, do not display much change at all. These can be stable and functional with directional power, or stagnated, obsolete and declining. Moreover, orders can be stable but dysfunctional and fragile due to paralysis or inability to see and adopt to exogenous forces of the changing environment. Orders can also surface rather unintentional and be driven by technical innovations and small incremental decisions. In the next chapter, the analytical framework used to capture change in more concrete terms as well as the general characters of the different suborders and the overarching emerging outer space order is presented.

¹⁰⁰ Henry Kissinger finds that power transitions can lead to major tension/crisis for the international order when it cannot accommodate a major change in power relations (2014:366). He pictures the first important crises of order, as the dangers aroused from our inability to see or "failure to understand the nature and scope of the challenges arrayed against it" (Kissinger, 2014:366). At a more concrete level change is presented by Rosenau as "the attrition of established patterns, the lessening of order, and the faltering of governance, until such time that new patterns can form and get embedded in the routines of world politics" (1992:1).

¹⁰¹ Examples of orders that have broken down are the Roman Empire, Bretton Woods, the Soviet Union, and the Versailles Treaty. However, orders can recover, "as happened in Greece after the Peloponnesian war, in Europe after the Napoleonic war, after WWI and after WWII and the EU emerged out of learning and the societies moved out of a fear-based world" (Lebow, 2008:429).

¹⁰² For example, if advanced societies suddenly would lose complexity and power, and other forms of order would surface. Hence, technology and even small things and errors have great implications (butterfly effects). Additionally, interdependence implies vulnerabilities (cf. Clark, 2013:25). Hence, eruptions can of course be intended, or they can be unintended.

4. Analytical framework

– matrix of focal points

This chapter outlines the analytical framework that produces the diorama of the emerging outer space order. The analytical framework is a matrix of focal points, which guides the construction of the thick description of the emerging space order. The matrix includes the focal points that I discovered to be the most constitutive and illuminating to capture the character of the professional orders as well as the diorama of the deep structures of overarching outer space order. The focal points have been refined in an iterative process. Hence, theory has not been operationalized. Instead, rich empirical observations and data have been theorized and the theorized work has been *matched* with theory. Therefore, extensive theoretical background explanations to each focal point will not be provided, rather methods used in the field and how the focal points make sense in the empirical main study of the emerging outer space order further clarify their meaning.

| <i>Focal points characterizing the projects (professional orders) and the diorama</i> |
|--|
| <ul style="list-style-type: none"> • <i>Identity, motives, structure and agency and organizing principle</i> • <i>Outer space - critical issues</i> • <i>Language set, visual frames, temporality and constitutive materiality</i> • <i>Form, robustness and authority</i> • <i>Responsibility, politics and political reason</i> |

Figure 5: Matrix of focal points

The focal points are chosen due to their constitutive properties, and because they proved empirically transferrable and detachable. Some focal points are more tied to deep frames and the construction of the real types, whereas some are more related to patterns of interplay – the diorama, deep agency and the analytical narrative. In this chapter, each focal point will be explained in concrete terms for the sake of enabling empirical

analysis. Yet, they are openly defined to remain flexible to empirical insights and tensions. Still, *together* these focal points facilitated the reach of deeper levels of understanding about the character of the emerging outer space order and its direction.¹⁰³

4.1. Identity, motives, structure and agency and organizing principle

Identity is the foundational focal point as identity offers “meaning, order and predictability” to our lives (Lebow, 2008:16; cf. Lebow, 2015:122ff). Identity “embodies some sense of who we are and that connects us to and differentiates us from others” (Lebow 2008:562). Identities are not fixed but relational. However, they might appear unchanging because (among other things) the individual needs to “uphold” itself “as a whole and continuous person in time [...] in order to experience a sense of agency” (Strömbom, 2010:34ff, 37 & 44).¹⁰⁴ Individual and collective identities are an innate part of the actors’ narratives (Strömbom, 2010:36). For example, “what an individual or a community choose to tell about themselves is intricately tied to how they construct their political identities” (Andrews, 2007:11). A particular identity is often constituted with an “anti-identity” (Sveningsson & Alvesson, 2016). Thus, to capture individual and collective identity, it is essential to pay attention to how actors describe themselves and their community, including other actors and communities.

Political science has long noted the importance of human *motives* and emotions.¹⁰⁵ In Michael Freedon’s words “[w]hether emotions are motives, feelings, moods or psychological dispositions, is not as important to understand political thinking and ideologies as is the nature of emotions in playing that direct political role in any discourse in which they surface” (2013:2). For William Wentworth, emotions are the original

¹⁰³ The focal points served as fruitful heuristic devices and empirical guiding devices for thick, broad and deep description (or thick causation in contrast to thin causation with seemingly separable and distinct variables) (cf. Kurki, 2008:298; Lebow, 2015:58ff). This also aligns to my dialectical approach to order that builds on the actors’ and analytical narrative.

¹⁰⁴ Identity can also serve as a “vehicle for self-esteem” (Lebow, 2008:16).

¹⁰⁵ For example, Jack Barblet notes “emotion is central to and not deviant in the everyday operations of social process” (quoted in, Freedon 2013:3).

mode of communication and especially emotions expressed through facial gestures, these emotions are the “primal language of sociality, of mutual sensitivity” (quoted in Turner & Stets, 2005:263ff). This, in his expression “deep sociality” affect the cognitive abilities, the focus and framing and regulates attention span and memories. It drives humans to behave in ways to meet cultural expectations. According to Jonathan Turner and Jan Stets “[e]motions, especially the anxiety and fear of isolation and alienation, are what drive individuals to monitor self, other, and situation to be sure that the social fabric is being upheld” (2005:264). Alongside the emotion of fear, optimism and pessimism will also be telling for the nature of an order (Stevens & Michelsen, 2020). As will be discussed, motives, drives, and emotions are also linked to political reason and the robustness of an order.

Another strongly constitutive and informative focal point is the actors’ deep frames of *structures and agency*. Structure and agency are about whether actors are “finding circumstance” or “making circumstances” (cf. Ruggie, 1998:877). Agency is when people perceive to have the skills and power to transform or maintain the order in which they live. At the other extreme, it is assumed that “human beings are caught in the grip of social structures, which they did not create, and over which they have no control” (Buzan, et al., 1993:103). (This also applies to technical and material structures.) However, structures are understood as (disciplining) ‘set of ideas’ that are present in micro situations as a reflection of our individual thinking or subjective realities (cf. Buzan 2004:12f). Moreover, one of the deepest frames is the *organizing principle* of the world order. This could be anarchy, the balance of power, the rule of law, God, or something else. Learning more about these focal points facilitate to characterize the deep frames of individuals, which then can be generalized into the professional real types.

4.2. Critical issues and outer space

Besides organizing principles, another focal point is what actors perceive as critical issues of the emerging outer space order. Thus, inductively I study what the actors perceive as critical issues in relation to outer space. Because, as Cox argues, identifying the salient problems of the present is critical in any attempt to understand historical change as the handling of

these problems will condition the kind of future to be made (1992:139). One example of a critical issue is space debris. Like the exploration of the other focal points, these critical issues or problems are analyzed and contextualized in a reflective manner to further characterize the professional real types.¹⁰⁶

4.3. Language set, visual frames, temporality and constitutive materiality

A *language set* has constitutive properties since it, like visual frames, is intricately linked to cognitive frames. Because in Ludwig Wittgenstein's words "[t]he limits of my language mean the limits of my world" (quoted in Antoniadou, 2010:31).¹⁰⁷ Language set is a term that captures the set of words and concepts, which are commonly used within the suborders. It captures the "thought style" of a community (cf. Forstner, 2008:215). Similarly, according to Lebow, *visual frames* establish things and categories prior to other frames and therefore have strong causal or constitutive properties (2015:74f). Visual frames can be contrasted to frames, which are shallower and more rhetorical. An example of a rhetorical frame is the discourse used to sell or justify behaviour or policies (Lebow, 2015:77). In gathering the empirics, I found that the professional orders relating to the field of the emerging outer space order widely used digital visual presentations, which offered valuable data as these were selected and designed to communicate the essence of the messages within as well as outside the community. In addition, documents and texts were informative for characterizing language set and visual frames of the community, as well as temporality (see below). Interestingly, the visual frames that appear natural to one community might be odd in the eyes of another community.

¹⁰⁶ Carol Bacchi and Susan Goodwin have explored how framing the problem influences and governs the policy processes, as well as the value of investigating the assumptions these frames represent (Bacchi, 2009; Bacchi & Goodwin, 2016). In this broad inquiry, the frame focal point is even more fundamental to identify critical issues.

¹⁰⁷ Hägerstrand prefers to include every part of the broad fabric but notes, "it is even possible to think that the language is an influential part of the large filter" (2009:130 & 139). By the large filter, he means the "waist of the sandglass", or the room through which every grain and trajectory of a diorama must pass, which at times is limited. Hence, the language set restricts/prevent some grains from even being part of the limited room of being/existence (Hägerstrand, 2009:165ff).

Another focal point for the analytical framework is *temporality*, which has two subcategories: the social time and the time of being (*chronos*) as well as the *future* (the time of becoming). However, time is often perceived or theorized in two other forms; being, and becoming, *chronos* and *aion* or social and natural time (Kessler, 2012). *Aion* is the never-ending, indeterminate time, the unwritten constant flow of time, the all-encompassing time, the “pure empty form of time” (Deleuze in Hutchings, 2007:86f). In this framework, *chronos* will instead be applied together with *future* (the time of becoming). Hence, future is not *aion*, but our construction of the time ahead. *Chronos* is chronologically organized, plotted with reference points and events, like clocks, calendars and plans. This plotted time integrates the orders and orders develop “their own abstract understandings of (social) time” (Kessler 2012:87).¹⁰⁸ *Chronos* is an important characteristic of the professional orders. It is essential for the understanding of a diorama - for the understanding of the synchronization and sequencing of the overarching order, as well as for the understanding of the broad and deep configuration of the fabric of world order.¹⁰⁹ *Chronos* could here be said to characterize the time of being.

In this inquiry, I also found it revealing to look for the time of becoming in the meaning of the actors’ conceptualization of the future (cf. Hutchings, 2007; 2011). I find that exploring the actors’ relation to the future is key to estimate agency and their sense of responsibility. Barbara Adam and Christopher Groves show that how we perceive the future have large consequences for the actions we take in the present. They illustrate how our relation to the unknown future has changed due to context. If seen from a monolithic evolutionary perspective, in the beginning, the future was told and we had to accept our destiny. Later we tamed the future with an afterlife and religion, which contribute to what Adam and

¹⁰⁸ Oliver Kessler does not refer to orders but to “societies as complex systems” (2012:87).

¹⁰⁹ According to Kessler, “functionally differentiated societies are characterized by a plurality of temporalities. Each functional system creates its own temporality of processing and generating information” (2012:86). “If functional differentiation alters the spatial and temporal configuration of world society, functional differentiation of world society should also lead to a fundamental change of how the ‘horizon of the possible’ is (re-)produced. Insofar as functional systems reorganize themselves on a global scale and thereby redefine space and time, we can expect the production of a new set of possibilities and risks [my emphasis]” (ibid.).

Groves call existential or structural security. Then, we traded the future in a contractual manner, which created predictability. Now, these embodied, embedded and contextual futures can be distinguished from the contemporary perspective of a decontextualized open future emptied of historical content (Adam & Groves, 2007:2). Adam and Groves show how our relation to the future is constitutive of our agency and sense of responsibility. They argue that whether the future is conceived as pre-given and actual, as an empty possibility, or as a virtual realm of latent futures in the making has “knock-on effect for the way future is perceived and responsibility anchored” (Adam & Groves, 2007:17). The actors’ deep frames of the future in relation to outer space, their place and agency, as well as responsibility, are central in constructing the real types to make sense of the direction of the diorama.

Constitutive materiality also refers to the time-geography dimension of the internal and external structures of the professional orders. Hence, under this focal point, chronos (social time) is linked to spatiality, or in Hägerstrand’s words locality. It is ultimately aiming to embody and contextualize the dioramas of the professional orders and of the emerging outer space order. Together with the previous focal point, the aim is to picture the geographic patterns of the professional orders, how these fluctuate, converge and diverge in time and space. It is about spatiality, to capture the suborders and the level of suborder parallelism in time and space. Constitutive materiality could be said to conceptualize the space of the time of being, i.e., the sites and rooms of outer space ordering.

4.4. Form, robustness and authority

While language, time and space are important focal points for analysing the suborders, the suborders’ form, robustness and authority are equally as important. The form of each suborder implies an analytic focus on the size and density of socialization within the suborder. To estimate the size of an order is rather unproblematic. Analysing the *robustness*, I look for the depth of socialization, professional identity and deep frames. Moreover, I study hierarchies, which are more robust when status and

standing overlap (Lebow, 2008).¹¹⁰ Robustness implies whether the hierarchies, in the eyes of the actors, are reasonable and functioning. Thus, robustness is linked to perceptions. A widespread belief that an order is legitimate and robust contributes to the robustness of the order. On the other hand, a belief that the order is near collapse or weak will, in a self-fulfilling way, endanger the order (Lebow, 2018:15). Because a robust order “is above all a state of mind” (Lebow, 2018:159). The perception of order also relates to emotions, like the general sense of pessimism and optimism. Crucial to the robustness of an order is how strongly these sentiments are held by actors *in* authority.

Authority implies the process of defining reality and having the influence to initiate directional change or to refrain from a directional change of an order. In more empirical terms, the elite “explains and justifies” the reality (Berger & Luckmann, 1991:79). These definers, legitimators and reality maintainers “not only [tell] the individual why he *should* perform an action and not another; [they] also [tell] him why things *are* what they are” (Berger & Luckmann, 1991:111). This process of legitimation can be seen as a transmission of the social world and contributes to the “massivity” of the social reality (Berger & Luckmann, 1991:79). These elites have authority, i.e. legitimacy and status to define an order (cf. Katsikas in Rengger, 2011:116; cf. Reich & Lebow, 2013:36). Ruggie distinguishes between having authority and being *in authority* and emphasizes the significance of the latter, which “command respect and deference” (1993:465). In this inquiry, I am primarily analyzing authority as being in authority.¹¹¹

Berger and Luckmann argue that some people have the elevated status of universal experts, as they “are not only experts in this or that sector of the societal stock of knowledge, they claim ultimate jurisdiction over that stock of knowledge in its totality” (1991:135). These experts do not

¹¹⁰ Studying the suborder’s hierarchies, I find it fruitful to differentiate between status and standing. Status applies to “those who attain honor by virtue of their accomplishments”, while standing “refers to a position an actor occupies in a hierarchy” (Lebow, 2008:66).

¹¹¹ Relatedly, David Lake pictures a legitimate order, through a negotiated social contract which is always negotiated and always renegotiated (2010:592). The open and relational approach to authority in this inquiry takes us beyond statist’s views of authority privileging states, or what I term traditional or formal authority. Moreover, Lakes notes that the nature of authority “from the perspective of a collectivity, compliance with legitimate authority is voluntary, but from the standpoint of any particular individual, compliance is mandatory” (ibid.).

“claim to know everything, but rather [...] they claim to know the ultimate significance of what everybody knows and does” (Berger & Luckmann, *ibid.*). These universal experts appear to “exist in a sort of Platonic heaven of ahistorical and asocial ideation” (Berger & Luckmann, 1991:135). Because “as more complex forms of knowledge emerge and an economic surplus is built up, experts devote themselves full-time to the subjects of their expertise [...] and may become increasingly removed from the pragmatic necessities of everyday life” (*ibid.*). One of the methods for the maintenance of reality is to suppress concurring interpretations by framing these like stupid or ridiculous (Berger & Luckmann, 1991:175).¹¹² In short, these universal experts claim to define reality. Thus, when studying authority structures it is informative to pay attention to accounts about how the perceived reality hangs together and who has the right to explain this reality.

Language set is important for common objectification of everyday life (Berger & Luckmann, 1991:51ff). The ability to impose discourse “goes beyond setting the rules of the game and the agenda” and “includes the ability to influence people’s and collectives’ self-understanding (identity formation) and therefore their understanding of their wants and interests. This includes the ability to influence the knowledge and ideas compromised within social structures” (Antoniades 2010:29). Hence, possessing knowledge and defining the ideas gives the power to influence the direction of the interactions and structures (cf. Antoniades, 2010:29, 30 & 36). In the present study, this is referred to as authority. The problem of legitimation and authority arises when the self-evident character of an order can no longer be maintained.¹¹³ In a time of

¹¹² Here I cannot refrain from mentioning Wendt and Duvall’s article about human anthropocentrism and how every sign of extra-terrestrial life is explained away (2008). The article was perceived as odd and funny within social sciences, however, amongst astrophysicists and astrobiologists, the reaction would probably have been different – if they would ever encounter these journals.

¹¹³ Berger and Luckmann find that as long as competing definitions of reality can be conceptually and socially segregated “as appropriate to strangers” it is possible to have a fairly friendly relation with these strangers. The problems begin when the “strangeness” is broken down and appears reasonable. Then the universal or traditional experts turn to the “fire and the sword” (Berger & Luckmann, 1991:140). They emphasise that “*break down in the taken-for-granted acceptance of monopoly order accelerate social change*” [my emphasis] (*ibid.*). Consequently, it is of interest to look for cracks in the taken for granted.

transition, the key is what actors perceive to be legitimate and illegitimate (Lebow, 2008:570).

In the field, I look for how authority surfaces and is used and expressed in different situations. I study the authority structures within the suborders by asking what kind of authority and knowledge seem to matter and how this shape the different communities and professional hierarchies. I also explore who are the elites, i.e., the formal and informal definers and legitimators. This focal point includes attentiveness to what counts as knowledge and truth, what is thinkable and unthinkable and what is legitimate. Thus, I will look for what is perceived as normal and right including what is the appropriate way of thinking and behaving. Furthermore, I ask if the elites manage to uphold a discourse legitimating the current order and hence their elevated position (cf. Lebow 2018:11). I study the authority structure between the suborders by asking, what professional orders are *in* authority in relation to the other professional orders i.e., their relative *position* to the other projects in the diorama. Concerning positions of authority, deep agency is possessed by the projects *in* authority and with possibilities to define the direction of a diorama. Thus, expressed even more condensed, deep agency is possessed by the units in the position to define the direction of a diorama.

4.5. Responsibility, politics and political reason

Responsibility refers to the professionals' views of responsibility or obligation, which will be analysed in relation to political order. In this inquiry, I link responsibility to professional identity. For this focal point, some of the communities became categorized as guardians of the formal surface state order, whereas some are transformers or neglectors of that modern order. These labels were inductively formulated even though, evidently, 'the guardians' concept has been used within political philosophy and applied to space before.¹¹⁴ Tied to this focal point, the actors' view of *politics* is of interest. As Carl Schmitt discusses "the political" is usually linked to the state (2007:20). He notes that "[i]n one

¹¹⁴ Plato theorizes about guardians and merchants. Merchants refer to a group of people who encourage risk-taking and energy (Pace, 2011:130). The guardians are expected to be loyal, obedient, disciplined and serve to protect some larger goal or systems (Pace, 2011:129ff; Lebow, 2018:333).

way or another, ‘political’ is generally juxtaposed to ‘state’ or at least is brought into relation with it. The state thus appears as something political, the political as something pertaining to the state – obviously an un-satisfactory circle” (Schmitt, 2007:20). Similarly, my initial observations about outer space soon revealed that for some suborders ‘political’ questions signalled fixed state interests and intellectual rigidity, which blocked progress towards a sustainable outer space order and, thus, conditioned the sense of professional responsibility for the political order. However, as we know from the classical view of political order, the sense of responsibility and the ‘political’ could also be more of a general character when they are less formal, and less tied to the modern era. A wider understanding of the political brings attention to that despite, formal, practical and juridical arrangements; political reason is an activity, which is not reserved for the ‘state’ but concerns the professional orders and the individuals embodying them.

Therefore, the level of *political reason* is of specific interest to understand the character of the emerging outer space order. Following Plato, Aristoteles, Augustin and Rawls there are three levels of reason, which are expanded on here. The simplest level is *instrumental* reasoning, which is associated with the ego (Lebow, 2008:200). This kind of reason can explain case-by-case cooperation and strategic cooperation all to satisfy self-interests. However, it cannot explain self-restraint that is ranking persistent cooperation and long-term gains over individual short-term gains. In all communities and societies, *reflective reason* is needed. This means an understanding that a robust order needs to be based on socialized conventions, rules, procedures and laws. Individuals respect the order as a socialized *nomos*, and thereby have a shared understanding of the overarching order (ibid.). *Nomos* in the present inquiry implies a sense of an overarching order and knowledge about its substance. To preserve *nomos*, actors accept self-restraint (ibid.). The knowledge of *nomos* instills meaning and helps to formulate and refine goals. The goals in turn are dependent on predictability, which reinforce the need for order. It is also understood that “multiple and open hierarchies are ultimately in the common interest” (Lebow 2008:514).

The third level of reason is *motive*, which is the excellence of the human soul, “a form of true happiness and justice, achieved through wisdom about the purpose of life and the appropriate means of obtaining it” (Lebow, 2008:200). To reach this level of reasoning *empathy* is needed

“[...] which allow us to perceive ourselves through the eyes of others” (Lebow, 2008:200f). Empathy is developed through dialogue with others, which encourage close relations with others and leads to *ontological equality*. Dialogue coupled with ontological equality implies to open up for plurality. As a result, “[a]ffection and reason together make us seek cooperation, not only as mean to achieve specific ends, but of becoming ourselves” (Lebow, 2008:201). Cooperation becomes valuable for its own sake as collective identities reshape our understanding of self-interest, which gives additional incentives to constrain (ibid.). According to Socrates only a few reaches this level but the closer they come the happier they will be. In other words, “[j]ustice is analogous to mental health because it trains and constrains the appetite and spirit in a manner best suited to human nature” (Lebow, 2008:126).

Thus, there is no conflict between *nomos* and well-reflected self-interest because the first is essential to obtain the latter (Lebow, 2008:126). Lebow finds that one of the principal goals of Plato’s *Republic* was to demonstrate that a happy life also is a just life, which includes self-restraint and respect for others, “rather than depriving one of pleasures, making those we have more enjoyable and satisfying” (Lebow, 2008:126). Most importantly, Lebow’s historical reading of reason helps to understand and remind us that reason is not only a mental activity to obtain different goals but is in itself the highest goal of lifelong learning, dialogue and wisdom, and hence, the highest form of order in an idealized world. Reason helps us balance the other drives and “[a]t the macro level, balance sustains that instantiate the principles of justice on which all successful orders are based” (Lebow, 2008:6).

The highest form of reason can be compared to the English School’s theories about norms constituting ‘humanitarian responsibilities’ for instance Buzan’s (2004) solidaristic “world society” or to ideas about cosmopolitanism. However, I find Lebow’s argument about *reflective reason* straightforward and useful because it is applicable regardless of order as it originates from the balance within the individual and incorporates valuation of political order, as well as a sustainable order based on ontological equality. In the present study, I will use Lebow’s interpretation of political reason as an ideal-typical ‘yardstick’ of the character and quality of a political order. With the aim of estimating the level of political reason, the following question was instructive; “in what manner should the new order be shaped, and which are the guarantees

necessary for its continuance?" (Petersson, 1964:2). Despite the philosophical questions of the level of political reason, the answers surfaced in an unexpectedly concrete and informative form. In the next chapter, I will account for the methods I used to explore the character of the suborders and the overarching outer space order.

5. Methods – multi-sited ethnography and interviews

To characterize the emerging outer space order, I combine multi-sited ethnography with interviews. The following will describe these methods in relation to the sites, communities and people that I have encountered. This chapter also outlines the data, my positionality and access, as well as ethical considerations.

Ethnography seeks to be “holistic, and contextualize specific sets of language, practices, and habits into a recognizable pattern” (Salter & Mutlu, 2013:51). The foundation of ethnography is that *social* and *material* patterns cannot be understood out of context but must be experienced in order to be understood (cf. Salter & Mutlu, 2013:56).¹¹⁵ For example, the experienced or sensed power dynamics in a room is an indicator of the authority structure of a given context, which is central for the production of knowledge about politics (Kapiszewski, 2015:6). Robert Emerson and his colleagues argue that “[t]he primary goal of ethnography is immersion in the life-worlds and everyday experiences of others” (2011:43). For multi-sited ethnography, the global is observable as embedded in the social and material patterns of the communities’ life-worlds, in this case forming the realities of professional orders (cf. Marcus, 1995:97f). Studying life-worlds implies observing the usual, ordinary, habitual, non-sensational but still defining patterns. It implies

¹¹⁵ Within ethnography many types of data collecting methods are used such as establishing reports, selecting informants, transcribing texts, taking genealogies, mapping fields, keeping diaries, and so on (Salter 2013:51). Additionally, contemporary ethnography is characterized by the inclusion of a reflective stance in which the researcher’s reflections and reactions in the encounter, and their embeddedness with cultures and organisations, becomes valuable data as well (Salter, 2013:51; cf. Saukko; 2003:57ff; Wästerfors & Sjöberg, 2008:102). Nevertheless, it is not these undertakings that define the enterprise, “[w]hat defines it is the kind of intellectual effort it represents. It is an elaborate venture in, borrowing a notion from Ryle, ‘thick description’” (Greetz, quoted in Salter et al., 2013:51). Hence, this approach to ethnography lines up with inefficient causation’s thick cause, as well as with the call for methodological eclecticism within IR (Sil & Katzenstein, 2010).

observing what we normally do not take notice of, nor question, but yet is defining of where we are and who we are (cf. Highmore, 2002). Hence, everyday life is accessible, just there to be observed, but this is also difficult if no sensitizing concepts are used.

Thanks to the focal points the communities, the processes and relations of the outer space order materialized in a relatively concrete form. Generally, I did not have to push that many difficult questions, but these rather answered themselves. Moreover, due to the substantial number of visits and time in the fields, what I initially could not make sense of subsequently crystallized. It was also tangible when saying and doing did not convene, which is another advantage of ethnography and of conducting participant observations. Interviews have complementary advantages. In this inquiry, the interviews contributed considerably to the gathering of data as well as to come closer to communities and elites. However, people who offer their time for interviews were seldom in an everyday mode but consciously reflected over and considered their answers. Even so, the interviews, including the sometimes ‘proper’ answers, shed light on the emerging outer space order.

In addition to participant observations and interviews, reoccurring dialogues with some practitioners also enriched the theorizing process. In these dialogues, the practitioner became “the knower” (subject) rather than “the known” (object) and as they became increasingly informed about the research project, they took an active reflective stance (Saukko, 2003:91). It was evident that these dialogues set in motion “critical self-dialogues” fruitful for constitutive theorizing as well as emancipation (cf. Saukko, 2003:77; cf. Tracy, 2010:844). This technique, which I find advantageous for theorizing, did not aim at consensus, nor to find *one* generalized pattern, but many and new and deepened insights. Dialogic or member validity emerged as a result (Tracy, 2010:844).¹¹⁶

¹¹⁶ Paula Saukko suggests thinking about multiple validities, which “open up different and always partial and political views on realities” (2003:18). Multiple validities include dialogic validity, which corresponds to the hermeneutic approach. Here, my aim is that the community members who read my writings should recognise my interpretations and possible explanations, nodding their heads, thinking that this is exactly what used to happen in the UN COPUOS at lunchtime, and recognise their own interpretations of reality. The theoretical validity concerns resonance within the scholar community (cf. Tracy, 2010:844).

5.1. Data in detail

In 2015, I followed the Swedish space inquiry.¹¹⁷ However, a snowball process of identifying sites and interviewees soon took me into formal global settings and the field broadened considerably. A formal pre-study was designed as a conference where a paper of my initial observations was presented to space practitioners. The conference that was entitled *The Emerging Outer Space Order* was held in May 2017 in Stockholm.¹¹⁸ During the main study, I spent in total six weeks as a participant-observer following the negotiations about the future of outer space as a global common in Vienna in 2017 and in 2018 at the UN Committee for the Peaceful Uses of Outer Space (UN COPUOS). Here, I took part in the Scientific and Technical as well as the Legal subcommittees that preceded the general COPUOS meeting, which I attended in June 2018.¹¹⁹ I went to Luxemburg for the conference “New Space – breaking the barriers” to observe the commercial suborder. At the end of 2019, I conducted a field trip to the International Telecommunication Union’s (ITU) World Radio Conference (WRC) in Sharm El Sheikh, which also was a unique chance to gain insights about ordering and contemporary world order. In addition, I had the opportunity to visit military spaces and speak with the elites of that suborder. Some major events were the 2019 NATO workshop in Oslo and the smaller but still formative 2019 workshop “The Future of Space, 2060” held by the US Space Command in Colorado Springs. Besides, I met with several military professionals

¹¹⁷ After a series of seminars at different space-related places and with different stakeholders, the Swedish Space Inquiry was presented to the Minister of Higher Education and Research 2015 (Regeringen, 2015).

¹¹⁸ The conference paper covered the core ideas and my tentative analytical framework as well as a brief sketch of aspects that I was inclined to include in my conclusions. The pre-study was an important step to challenge and refine the initial diagnosis and ideas. Participants came from Estonia, Ukraine, the United Kingdom (UK), and Sweden and represented all five professional communities. Professor Michel Sheehan from Swansea University was invited as the keynote speaker and commented on my draft. For further reading about pre-studies see for example (Swedberg, 2014:25ff).

¹¹⁹ The UN COPUOS is informative for someone looking for the emergent global dimension. Moreover, on the UN and UN Office for Outer Space Affairs’ (UNOOSA) websites, useful information is available. This includes power points and seminars, as well as digital audio recordings of national statements translated into the six UN languages. This was helpful when clarifying some of my notes, especially due to language problems. In a way, the UNOOSA is a spot of transparency in regards to my focal points and illuminates the diorama of the emerging outer space order.

affiliated with the Strategic Foresight Analysis branch, in their workplace in the NATO Allied Commander Transformation (ACT) in Norfolk to discuss the developments in outer space.

Moreover, interviews were conducted with persons regularly attending the Space Symposium in Colorado Springs, as well as the International Astronautical Congress (IAC). These events are commonly held to be other sites for global interplay, alongside the UN COPUOS and ITU. Hence, insights and data were gathered from different communities, sites and key persons, as well as from different geographical areas. In sum, the data consists of 24 formal interviews with elites and 12 weeks of participant observation in meetings and conferences.¹²⁰ During the participant observation, I gathered data from informal conversations, documents and pictures as well as UN audio recordings. In addition, numerous and reoccurring informal every-day conversations have informed this inquiry.

5.2. Participant observations combined with interviews

The multi-sited ethnography in this inquiry is conducted in the form of participant observations. For example, I was part of the national delegation to the UN and the ITU. For successful participant observations, Kathleen and Billie DeWalt emphasize the importance of competence, including training before the field study starts (2011:56ff & 212). For me, the observations were nevertheless an ongoing learning process and the skills successively developed.¹²¹ Since most of my learning was made during my first field trips to the UN Office in Vienna, this section mainly focusses on this site even though I subsequently visited several other sites as well.

¹²⁰ For an overview of the field trips and the elite interviews, see Appendix 3.

¹²¹ One valuable lesson was that, when I first encountered the field, I was so overwhelmed by the opportunities to gather data that I did not spend sufficient time to write down my headnotes, nor to write and read my field notes. This was due to that everything appeared so interesting. From an IR perspective, I considered that being in the UN was something extraordinary informative. Besides, at that time I did not know how many more times I would have the chance to come back to the UN COPUOS. Therefore, I observed intensely 24/7, something that experienced field researchers advice against (Emerson, et al., 2011:48ff). Subsequently, I increased time off from observations for the sake of reflection, which improved the theorizing.

First of all, to follow the actors' annual time patterns of the UN COPUOS sessional meetings was beneficial for theorizing as these "time-outs" from the field helped me to maintain an observational stance (Emerson, et al., 2011:42f). This gave me the chance of multiple observations of the same phenomenon and the possibility to cast a fresh look and renewed opportunities, for example for personal relations. Successively, I became comfortable with my roles as a participant, observer, as well as an interviewer. I deliberately reflected on how, when and in what sequence to best combine the approaches and when to underpin or complement my observations with other data (cf. Kapiszewski, et al., 2015:28ff, 94 & 151ff).

Combining participant observations, i.e., my attendance as a delegate, and then becoming a researcher to conduct interviews with participants in the same meeting created tensions between the roles. To participants that had been interviewed, or to whom I had introduced myself, I belonged to the back rows in the plenary where the International Organizations (IOs), Non-governmental organizations (NGOs), experts and a few other researchers were seated. To the actors in the front, or to the ones with whom I had not introduced myself, I was still a participant in the negotiations just like any other, especially when I was seated in one of the chairs devoted to the national delegation. Hence, my role, positionality or level of participation differed from the practitioners in the same room. Generally, I remained as much as possible in the active participant role. Thus, I closely followed the discussions and patterns of the other participants. This was also a reasonable approach in the more official sites like UN COPUOS and WRC-19, which were too large events for me to introduce my project.¹²²

¹²² In the UNOOSA lists of participants, my affiliation as a researcher was documented, which too contributes to transparency.



Figure 6: UN COPUOS. Credit: the author



Figure 7: Vienna International Centre. Credit: the author

Informal conversations constitute a substantial part of my participant observation data. During these conversations, the approach was ad hoc, immediate and related to what was going on. For example, by asking the person next to me: What happened now? What was she referring to? Why is this so important? What are we supposed to do now, suggest a new UN working group? Why not? As I experienced what was going on, I could come one step further by asking why. Besides, being an active participant was crucial for the artlessness and effortlessness of the many and informative informal conversations.¹²³ Moreover, being invited to side events as well as evening events, I had the chance to speak with people when they felt more relaxed. This allowed me to ask where decisions were made, i.e., in more formal settings, ‘behind the scenes’ or outside the UN. Additional sites for outer space ordering were pointed out.

The interviews were semi-structured, open “phenomenological life-world interviews” (Brinkmann, 2015:195). Every interview was unique and adjusted to the specific situation. Generally, I tried to find ‘leftover time’, situations when elites had to be present, were outside their offices and

¹²³ In front of the delegate’s seats were approximately 400 pages in different versions of UN working documents, as well as finalized UN reports and texts. Now, besides observing the other delegates throughout the long plenary meetings, I experienced my attention fading and the thoughts drifting away as well as my attention rising along with the discussions. I started to consider suitable national positions in different issue areas and working groups and formulate hypothetical statements that could help the discussion.

formal duties and did not really know what to do. It was interesting how much the interviews differed in pace and tune due to the person interviewed and to the situation.¹²⁴ In the interviews, as well as in most informal talks, I practiced active listening and sensitive silence (cf. Kvale, Brinkmann, & Torhell, 2009:154: cf. Rubin & Rubin, 2004).¹²⁵

Thanks to ‘being there’, I had the opportunity to talk with more people in authority than I could hope for. For example, within the large military community, I spoke to John Warden who was the strategist behind the Gulf War (1991), which is recognized as the first war in where outer space was used as a force multiplier. Similarly, I had for example the opportunity to talk with Peter Martinez, Chair of the LTS Working Group at the UN, and Veena Rawat, Chair of the WRC-03 at the ITU. Importantly, the interpretations and conclusions of the interviews in this inquiry are foremost theoretical and hence, do not necessarily nor fully represent the thoughts and conclusions of the people who dedicated their valuable time to the interviews. In addition, as I mainly build the analysis on the participant observations and numerous informal conversations this inquiry cannot fully do justice to all the expertise or opinions provided in the elite interviews.

¹²⁴ Conducting interviews required close attention to smoothly follow up and navigate topics of greater interests. Therefore, during the interview, I was so focused that I could not evaluate the interview with more than a feeling. Later, when listening to the recordings, I was sometimes surprised by the ‘ease’ they appear to flow and how I came to produce data. On the other hand, when interviews did not flow easily, this was valuable data too. My approach to the recorder was first positive as it gave the sense of collecting ‘real’ data compared to observations and field notes in a notebook. However, experiencing the benefits of participant observations and informal conversations and hence, more natural, or less fabricated data, I tried not to record the interviews with the intention that the interview would be more relaxed and less formal. Then, when understanding that these key persons were used to interviews, I decided to use the recorder again. Undeniable, the recorded data was more complete, rich, and persistent than my notes.

¹²⁵ After my first interview with a key person, I picked up a piece of useful advice. The person passingly remarked, “you know, I like to contribute to research, only that some researchers talk too much themselves” (military, 2016). I am grateful for this comment and after that, during the majority of the conversations and interviews; I did not speak much at all, only to the extent that I confirmed with the interviewee that the interview was revolving around the relevant topics. I could tell that many times this approach was appreciated. Hence, the interviewees found themselves in a (ostensibly uncommon) situation when they had the chance to speak full sentences and fully elaborate on their lines of thoughts.

While participant observations were essential for this inquiry, they also came with challenges. In all the sites visited, the most intellectually demanding situations included the continuous encounter with double hermeneutic observations, particularly when the topic discussed was complicated. On many occasions, I aimed to alter between being an active participant and a distanced observer (Bray in Della Porta & Keating, 2008:307). Being there, paying attention to the topic, reflecting on my own thoughts and behaviour, at the same time observing the room from a position above/outside, and relating everything to order. At times, my brain turned into a more regular participant, just listening, being there in the chair. Fortunately, “just attending and experiencing” is also valuable for observations as it gives room for feeling and tacit insights when the observing role is set aside (DeWalt & DeWalt 2011:92). Yet, other times the more theoretically detached, writing mood observations were interrupted with active participation and interaction, rather than cognitive limitations (cf. Emerson, et al. 2011:22).

Nonetheless, in the case of outer space, ‘just listening’ could be rather demanding too, as seminars were about astrophysics, private law paragraphs or radio frequencies. It could be difficult to sufficiently understand, manage and navigate the specialized stocks of knowledge of the different professional orders. However, I judge my understanding of the different stocks of knowledge as increasingly adequate. In this regards, my military background was beneficial. The material lens, like most officers’, includes a basic understanding of technology and physics. I had not reflected on this lens before, but it probably facilitated the practice of translation and tracing between sites and communities, which according to Marcus is central when conducting a multi-sited ethnography of broad phenomena (1995:100f.). To remain an observer also within the military community, I aimed to see the familiar as unfamiliar (cf. DeWalt & DeWalt 2011:88).

5.3. Positionality and access

My positionality as a military officer likewise contributed to gain access to the military community, also outside of Sweden.¹²⁶ This is not to say that it was effortless to get access to the sites included in this study. Rather, it could take years of e-mailing before coming to the right person and being noticed as a participant of a military workshop or part of a delegation to the ITU. The establishment of access was a mix of luck and hard work. Again, the initial field trips to the UN COPUOS generated an understanding of how things hang together, who were the door openers, and how to plan the multi-sited, multi-year study, by weighting resources and time versus where and when possible insights about the phenomenon could be gained. Moreover, thanks to my evolving positionality, emanating from my increasingly broad knowledge about outer space and critical issues, and due to the unformed political space of outer space, I eventually established access.

In the field, when allowed to introduce myself and speak with key persons, it seemed to me that many of the actors appreciated, and in some cases, even had a wish to talk about these ‘philosophical questions’. Before, they had from time to time deliberated on these matters on their own, but never really had the chance to sit down and devote full attention nor entire discussions to them (this was true also for the political community). Generally, people were interested and optimistic about the research, including the possibility to read the thesis in the future. Some reasoned that they were talking to a future shaper or decision-maker and that they, therefore, had to ‘make time’ for an interview.¹²⁷

As a researcher, I do have the power and positionality to interpret, select and inscribe data. Therefore, Diana Kapiszewski and her colleagues suggest a collaborative, transparent and participatory approach towards actors to establish trust and fruitful relations in the field and to smoothen the uneven power relations (2015:148). In this inquiry, this was facilitated by the on-going dialogue with the theorizing partners and I also aimed to establish this situation more generally when I conducted the interviews. This approach was used to obtain as deep knowledge about

¹²⁶126 It was also beneficial that my military rank as a major is ordinary, not too low to be neglected, and not too high to become an obstacle.

¹²⁷127 For me, being perceived as influential was a sign of the unformed and emergent state of the outer space order and of the power of writing.

the emerging outer space order as possible. However, compared to classical field research, I did not find it necessary to make the informant more resilient in the researcher-actor relation, because these people were generally not weak in relation to me as a researcher (cf. Richmond et al., 2015:41). Rather, these actors were often strong and active, possessed authority as well as agency and a few even explicitly offered their further assistance in the research project.¹²⁸ I find this relatively equal relationship more enlightening than if I would ‘level up’ my researcher authority. Besides, many times this was not even possible as many in the field had at least a Ph.D. Instead, we had something more in common, besides being part of the emerging outer space order, or being at the same location, we had the experience of being a Ph.D. candidate. Robert Mikecz finds that interviewing elites requires more pre-interview preparation, and is more dependent on the researcher’s positionality to gain access and establish trust (2012:482ff). Thanks to my physical position, for example in the UN COPUOS and WRC-19, it was not difficult to get access to elites willing to participate, perhaps because I was asking them face to face.

During this multi-site and multi-year study, my positionality changed with the site and context. This always-changing positionality was of great interest during the journey. On some occasions, I was having authority or possibly becoming an authority in relation to the field. On other occasions, I was a misplaced political ‘scientist’. This was invaluable data. To maintain access, I remained as much as possible in listening and participating mood. Moreover, rather than discussing political issues, I concentrated on what was going on, what was the normal, taken for granted, practice and way forward. Generally, my presence was rather unproblematic, as I was not focusing on specific detailed questions, nor national positions. However, attending WRC-19, some perceived my open and broad approach to outer space as odd. Nevertheless, being in the fields provided chances to reflect on detailed situations as well as about the vast universe. It made theorizing vivid as emotions and patterns

¹²⁸ I took notice of these offers, thanked them for their interest in the project, but said I would rather do this on my own. In the end, I do not think the authority of the actors affected my work as I always like to see and think for myself and as I relied on my conceptual theorizing about political order. This anyhow shows that the actors had strong agency and that research projects like this seemed to matter among the shapers of the emerging outer space order.

appeared. Compared to (for example) network analysis, I had access to, and tools for, observing relations face-to-face. Hence, I could also observe whether the actors were mentally present and engaged in the shaping of the emerging outer space order, or less so. Thus, thanks to access, I observed processes, relations as well as the positions formal and informal locations. As a result, the diorama successively formed.

5.4. Ethical considerations

Except for the theoretical advantages of using real types, to generalize and synthesize the data crucial for capturing large-scale patterns, working with real types also has ethical benefits as the presentation of personal data is subordinate to more general observations and trends. Especially since outer space turned out to be increasingly ‘political’ through its contested meaning, than I initially assumed. Moreover, the real type concept has been essential in adhering to what Svend Brinkmann and Steinar Kvale call the modernist “procedural account” to ethics and formal principles and rules, as well as to develop contextual skills to “perceive and judge” the situation “thickly”, thus from the different perspectives (2005:159f; cf. Ryen, 2016).¹²⁹ Accordingly, I found it beneficial and fruitful *not* to collect personal data (except when conducting the interviews). Instead, the observations immediately went in under the heading of a real type, for example ‘the commercial’.¹³⁰ Obviously, this has implications, especially for more positivist readers who will find this a weakness in terms of reliability. However, for the aim, claims and arguments of the study, I do not find it to be a flaw;

¹²⁹ Along the same lines, the ethnographer David Wästerfors calls attention to that the procedural accounts to ethics do not fit well with explorative research in which the unfolding of situations cannot fully be anticipated, nor can each situation be planned in advance, or controlled (2019).

¹³⁰ A technique to account for informal conversations is to use codes that then refer to a detailed list of situations and people. This could have been an alternative here. However, the informal conversations were numerous, and I did not deem this resolution of referencing necessary for the overall theorizing. Thus, I did not create nor handle an extensive list of personal data. Moreover, for the reason of anonymity, I did not provide dates. Instead, observations consisted of written hand notes.

rather it facilitates a closer exploration of the phenomenon. The empirical data became richer as community members increasingly trusted me and spoke more freely. Moreover, ethically, the societal benefits of carrying out this type of study that gives voices and insights to the political spaces of the outer space order I find outweighs the lack of personal data.

However, the elite interviews include personal data, which is accessible in Appendix 3.¹³¹ Concerning these interviews, I like to underline that like any interview, the accounts of the interviews presented here are my understandings of our conversations. This has ethical implications, as the full account of the person who kindly agreed to be interviewed has not been presented in its completeness. Nevertheless, new insights gained by the interviews have contributed to challenge and develop my arguments as well as strengthened them. Thus, the interviews have been pivotal to map the explorative journey conceptually as well as literally.

Moreover, for ethical reasons some data that would have made an exciting contribution to the written text were sometimes excluded. This was not always an easy judgment. However, as Kathleen and Billie DeWalt argue “ethical considerations span the life of every ethnographic research project” (2011:211). In this type of inquiry, with an all-encompassing field, and close interaction with the different professional communities, the ethical considerations span the life of me as a researcher and as a person. Therefore, generally, although I could have made stronger empirical claims for my conceptualizations, some observations were dropped whereas some were instead supported and illustrated by documents and other data.

Further, Anne Ryan highlights that there are no universal research ethics and that it is important to study the culture you are about to encounter (Ryan, 2016:31ff; cf. Brinkmann & Kvale, 2005:162). In this inquiry, for example in the UN COPUOS and the ITU, ethical particularity was evident, largely since the views about the autonomy and value of research differed. In a few situations, I felt that researchers were watched with skepticism. However, this helped to produce a better understanding of the outer space - and broader world order.

¹³¹ General Data Protection Regulation (GDPR) was issued in the EU in May 2018. In addition, the Swedish “Good Research Practice” (2017), by the Swedish Research Council and “The European Code of Conduct for Research Integrity” by All European Academies (ALLEA) apply.

6. Real types of professional orders

In this chapter, my empirical observations are generalized into the five professional real types, the suborders of the emerging outer space order. This chapter addresses the guiding research question: *What are the characters of the professional orders?* In accordance with the focal points, this chapter captures the essential character of the professional suborders. Once again, these real types are simplifications created for analytical reasons to enable generalization and further theorizing.¹³² Yet, even though these “simplified abstractions” might be recognised as “fictions” by the actors themselves, they are constitutive of the professional orders (cf. Schimank, in Albert et al. 2013:188; cf. Andrews, 2007:11).

This chapter together with the next present the empirical observations. These two chapters are linked and should be read together for deepened understanding of the suborders and their interplay. For example, the description of the military real types in this chapter is richer than the other real types. This is due to that the military suborder will not be included as much in the next chapter describing the key sites and interplay as the military suborder was not as present or separate from these sites. Nevertheless, together the two chapters of the main study will capture the emerging outer space order at large. In this chapter, we will learn about the real types - transformers, neglectors and guardians of the formal political order - their perception of the developments in outer space (and the broader world order).

¹³² As much as these real types erase the more traditional state territorial boundaries, arising demarcations between communities should be carefully considered. Besides, Quentin Skinner reminds us that not even the great philosophers had one “unit idea” but their work is characterised by the process of thinking as well as contradictions and tensions (2002:60ff). A community is even more diverse of course. However, using real types gives the possibility to “generalize, abstract and connect” which is the core in theorizing according to Martin Hollis and Steve Smith (1991:61).

6.1. The scientific – universal experts and neglectors

6.1.1. Identity, motives, structure and agency and organizing principle

The identity of the scientific real type is built on the perception of being the ones who *understand* space. The core ethos of *the* self-claimed space community is the lifelong and fulltime devotion to outer space, exemplified in statements such as “I am proud of being a space nerd” (scientific), “Space is everything” (scientific), and “We are space nerds” (scientific). Acknowledgments such as “[w]e are a worldwide network. We consist of the most clever and skilled [...] Sometimes it is difficult, but together we make it” (scientific) emphasize that there is a strong sense of collective and global identity. To the contemporary world outside the space community, astronauts have an elevated status. However, from inside the community, their status is tied to their scientific background. Astronauts nevertheless have an important role within the space community because of their many and worldwide personal relations and International Space Station (ISS) experiences. They also commonly contribute to public relations (PR) and outreach. While to outsiders, rocket scientists have a high status, from within the astrophysical community, ‘rocket science’ is a less complicated and advanced discipline than some of the other research areas.

As the astrophysicists made a sharp distinction between themselves and the engineers, it soon became evident that the scientific community was divided into two distinctive co-constitutive parts. Nevertheless, the scientific and engineer communities are intertwined and perceive themselves as ‘*the* space community’. One example of this perception is the audit of research funding applications to the European Space Agency (ESA). The ESA board consists of members with scientific background estimating the scientific significance of a project and engineers assessing whether it is even technically feasible to accomplish. As the astrophysical community is the primary definer and legitimator of this true “space community”, the following characterization of the scientific real type is mainly built on the characteristics of the astrophysical community.¹³³ Closest to the astrophysical community are the engineers constructing the

¹³³ See section 6.6. for a further discussion about how I refer to engineers.

instruments for scientific research. Generally, the engineers are spatially stationary and in need of definite answers. Compared to multi-dimensional astrophysicist, the real typical engineer is hence dichotomous, as they for instance ask “does this device work or not?” or make statements such as “[t]hey have already decided that there will be no weapons in space” (engineer). For the real typical engineer, the truth is fixed, a premise to work from that enables full attention to the technicalities.

For the scientific real type, there is a general search for ‘breakthroughs’ for ‘writing one’s name into the history’, for scientific and technical progress and achievements. Most efforts are devoted to advancing in difficulty, speed, distance and miniaturization as well as to reach faster, higher and further.¹³⁴ The more remote, difficult, invisible and farther from our understanding the more prestigious. Thus, one strong motive is spirit/pride and status, which are achieved through complexity. One member of the substructure captures this sentiment when explaining that “the head of space agency has a research background in the most difficult discipline – gravity. Those equations are *really* complicated” (scientific). Money and wealth are traditionally not primary drivers for status and standing. However, there is a form of appetite, which implicates exploration, novelties and ‘firsts’.



Figure 8: Ångström laboratory, Uppsala. Credit: the author

¹³⁴ Competing for the highest altitude *amateur* rocket launch, the highest *student* rocket launches etc.

Alongside the *motive* of spirit (which is satisfied by ‘break troughs’) and the appetite for space, curiosity is a fundamental and genuine drive. Figure 8 depicts a rocket scientist, in a lab, enthusiastically explaining their work. The poster in the background is saying, “The cure for boredom – CURIOSITY. There is no cure to cure curiosity”. Curiosity is (and has been) a driver for many in the suborder as a fascination for space since childhood facilitated education and specialization. Many senior and influential members of the community grew up under the Apollo-era. As a result, the members have little, or often no experience of other professional practices/careers. Thus, space is everything.

Advancing the knowledge about the birth of the universe requires a planetary collegial collaboration. The interests are outside and far beyond Earth, the solar system and the galaxy. Regress and setbacks are seldom heard of, as science is understood as a long-term commitment. Instead, technical innovations have laid the ground for several breakthroughs that infuse a general sense of excitement. For example, the level of excitement scored high at the historical breakthrough of gamma wave detection on 17 August 2017. Then, waves appearing to steam from galaxy NGC 4993, and a crash between two neutron stars, 130 million light-years from Earth, and possibly a neutron star-black hole collision, as space-time curbed or rippled. The Laser Interferometer Gravitational-Wave Observatory (LIGO), the Hubble telescope (based on a large satellite) and the gamma wave detection made by the smaller Fermi satellite (gamma-ray space telescope), made the detection.¹³⁵ The achievement involved more than 1,000 researchers from more than 70 research institutes. A similar historical event of excitement was the first-ever picture of a shadow of a black hole.¹³⁶

A professor in astrophysics explained, “even for big science small satellites have become meaningful” (scientific). To solve these big questions of *real science*, finding the brightest minds around the globe is pivotal. As well as finding (in a science perspective) the right location for

¹³⁵ This was the first direct evidence of the theory that a collision of two neutron stars creates energy (LIGO Scientific Collaboration, 2017).

¹³⁶ This event was described by the project leader of the Event Horizon Telescope (EHT), Sheperd Doeleman, as “an extraordinary scientific feat accomplished by more than 200 researchers” (EHT, 2019). The scientific EHT collaboration links telescopes around the globe to form an “Earth-sized telescope with unprecedented sensitivity and resolution” (ibid.).

scientific instruments, whether it be on Earth or in the orbits, including the ones of Mars and other planets. Increasingly, the Earth is too small. The innovation potential and ambitions are high when it comes to thinking far outside the planet and technical box but it still remains ‘inside the box’ of astrophysics and engineering.



Figure 9: Swedish Institute of Space Physics, Kiruna. Credit: the author

This picture shows the global character of the scientific community. At one workplace, several different nationalities are working side by side in their effort to advance science. The number of flags is not far from a match with the numbers of employees at the research institute. In addition, many flags signal scientific authority and contribute to the validation of the institute.

To this community, *structures* are physical, technical and financial. Structures that condition the possible research progress are, for example, weather conditions, gravity, atmospheric density etc. The innovation potential, especially associated with the profession of engineers, is high and *agency* is strong. The scientific community is centred on *one* global hierarchy of research groups and institutes. Global abilities and skills rather than sovereignty are organizing elements. Hence, the organizing

principle is ‘humanity’s accumulated knowledge’. Anarchy is generally not understood as an organizing principle but as chaos or possibly just as a philosophical idea within the social ‘science’ community.

However, “exploration is also becoming more commercialized” (scientific). This contributes to academic competition, ‘fight and struggle’ over academic titles, research area and groups – hence, over scientific standing. Competition also increases the instability of the order, as standing does not routinely overlap with status, which leads to tensions as well as constant reproduction of hierarchies and the need to define the ‘real status’ of different research areas and achievements. Thus, regardless of the persistent dependence on collaboration and the intellectual power of *groups*, labs and institutes, there seems to be a counter-tendency of a desire to write the *individual* name into history. This leads to an inward-looking situation and great sensitivity to hierarchy and incentive structures, which contrasts with the outward-looking historical gaze of humankind’s accumulated knowledge to the end of the universe.

6.1.2. Outer space and critical issues

In relation to the inward and outward-looking situations, a critical issue for the scientific suborder is to keep decision-makers optimistically attuned to the scientific necessities of exploration. This critical issue is not always easy to address, as the outside is not familiar with the research of the scientific community. Due to this and the complexity of issues, some within the community “do not speak about asteroids, nor planetary defence, as [they] like to be taken seriously” (scientific). In an interview about communicating the importance of *why* space exploration is important, the astronaut Sandra Magnus reflects:



Figure 10: Sandra Magnus. Credit: NASA

What I have observed over the years is that those of us in the space community understand why space is important. You know, at space conferences there are space people, and we talk about how important space is, but yet when we go outside our community, it is a much more difficult [...] conversation because we assume that everybody understands that basic level of *why* space is important. I think if, as a space community, we could create some very simple, very short high-level themes and discussion points... and all of us go collectively and say those things externally it would help all of us collectively. That communication is very important, and it is very difficult. Because a lot of people, I find, who are not in the space community, are very excited when you talk to them about space, and they are interested, but they don't have a lot of time to spend on it and think about it. So, if we, as a space community, have some short messages that are consistent it would be valuable (Sandra Magnus, interview, June 2017).¹³⁷

¹³⁷ In February 2017, at the UN COPOUS Plenary, Magnus gave a speech on “Why we go to space”. The symposium title was “Space as a dream of yesterday, hope of today, and reality of the future” which showed a great belief in agency. Even though the US astronaut Sandra Magnus, in her first sentences stated that “we are not international stars”, I think she is. She is one of the key shapers and definers of the outer space community. For instance, from 2012-2018, Magnus was the executive director of the American Institute of Aeronautics and Astronautics (AIAA). AIAA is a technical society with nearly 30,000 individual members from 88 countries and 95 corporate members (AIAA, 2018). She also served as a member of the Trump transition team as a representative for NASA in 2017 (Space for Women Symposium, 8 February 2017 Vienna).

In 2020, I observed that this might be changing, as it seems more common to talk about ‘asteroid mining’, ‘extra-terrestrial life’ and ‘planetary defence’. The popular awareness of outer space might have increased. Still, neither human space flight nor the topics just mentioned, represent the critical issues within ‘big science’. Rather big science is concerned with gravity and relativity. In very general terms, the tiny forces that hold the world together. Moreover, real scientists devote their time to the birth of the universe.

6.1.3. Language set, visual frames, temporality and constitutive materiality

The *language and visual frames* circle around numbers and models which are essential as first “you have data, but then you need the models, you need models to understand” (scientific). For instance, a professor highlighted the importance of models when wittingly started his presentation by stating, “I will show some models, because that is what we do”. He explained that “he is occupied with the equations of an equation in one equation” (scientific). These visual frames, models and equations are in turn presented in very detailed and specialized scientific reports. The language set concerns *what* and *how* but there is no vocabulary for *why*. Interestingly, once at a lab, a Ph.D. candidate constructing a scientific instrument could not explain why he was doing it, completely overwhelmed by the question.¹³⁸ This observation also holds for senior researchers. One researcher reflected that “if you are in the front, research horizon, you are satisfied once you advance, if you come small steps further, but you tend to forget what is behind you and why you are doing it” (scientific).

Besides numbers, models, figures, graphs and diagrams, visual frames are most often images and PowerPoint presentations of satellites and space

¹³⁸ He told me what the instrument could do. I insisted and asked *why* once again. He had no answer and became uncomfortable, excused himself and when leaving the room suggested me to ask his supervisor as “professors were responsible for those kinds of questions” (scientific). I did never mean to offend him but was very curious to learn. This episode, however, is telling. Perhaps he could not answer as he was surprised by the stupid questions as “why” was inherent to him. On the other hand, perhaps he just did not know and had been working with a very specialized part of a project without greater reflections. I have encountered more than one astrophysicist saying something similar.

from space. This has implications for political reasoning due to the shifted spatial perspective on humanity. The implications of this “overview effect” on boundaries, sovereignty and stewardship have been addressed in previous research (cf. White, 1987; Stuart, 2009; 2012). Still, to personally experience this creates a substantial visual deep frame shift (see the example below).

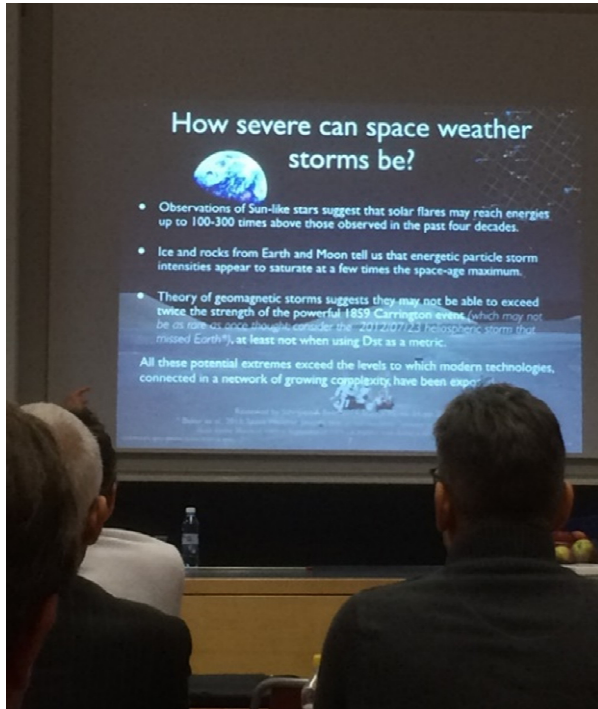


Figure 11: Space weather conference, Uppsala. Credit: the author.

Experiencing the Copernican revolution: moving into the Solar system

After the solar storm seminar, I reflected on what I had learned. Very strongly, I recalled the sense of being relocated. Listening to talks about solar storms and watching PowerPoint slides showing the Sun, and something in between, and the Earth, I was no longer

having the same perspective. I remember the sense of being moved to a spot outside Earth, like traveling to a position from which I could overview the Sun, space (before the seminar empty but now with protons, and illustrations of solar storms) and the Earth. I found my position for the first time not on Earth, looking into space, but in outer space. Moreover, the space between celestial bodies was not empty but contained things such as protons.

Even though I had heard about the Copernican revolution before, I have never understood it by experience. After that, I could not only travel between communities but also into outer space. My sense for the astrophysical community, I assume, augmented. I was there with them, in the room, watching graphs and sharing their concerns, and with them exploring space from space. The fundamental deep frame is outer space, and everything, such as social time, comes to relate to space. Moreover, listening to 'rotating flux ropes', 'inverse and reverse' and 'axial-tilt', suddenly made IR appear so few-dimensional, flat and poor. I felt eager to learn more, to understand the models, to advance in math. I think we (IR) have something to learn not just about space, but also about elaborative thinking.

The social time within the space community clearly revolved around different missions and launches. For an insider, it is mandatory to know all the major space missions by date and time. You are supposed to know what missions, instruments, rockets and equipment will be used. For ESA, the "most prestigious mission ever" is the JUpiter ICy moons Explorer (JUICE) in 2022 (scientific). It also follows that the developments and launches of different instruments require multiyear projects and set the social time for the research groups and engineers. The PowerPoint slide below is from the Japan Aerospace Exploration Agency (JAXA). Similar roadmaps are found at the major space agencies, for example the Indian Space Research Organisation (ISRO) and the Chinese National Space Agency (CNSA). Interestingly, the history of NASA is less linear in this respect as it is not presented as a scheme with arrows and includes several human faces and stories.

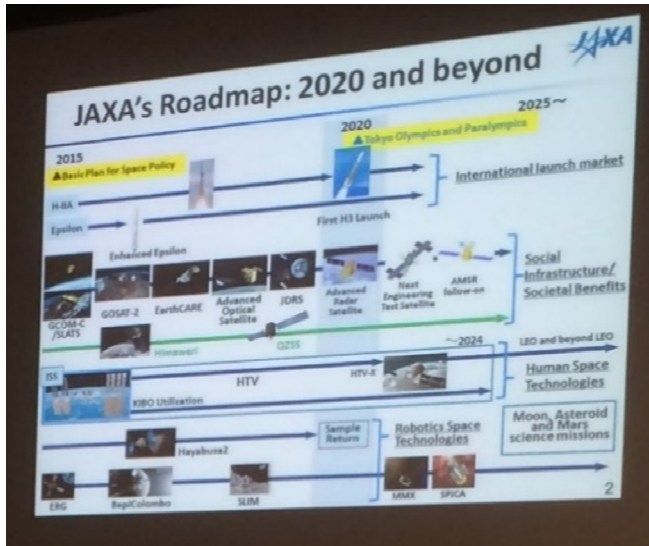


Figure 12: "JAXA Roadmap: 2020 and beyond" (JAXA, 2017)

However, generally, events are marked by the introduction of new rockets and rocket launches, as well as of missions. Social time is closely entangled with materiality and technical achievements. Compared to the first space age, when time and development were linked to the Cold War and earthly dynamics, the contemporary social time (chronos) is rather detached from non-space related time and events on Earth, including state politics. In a way, for the scientific real type chronos is in touch with the eternal time of aion.

The constitutive materiality of the community conditions the order. Notably, space observatories are typically located in dark areas, far from cities. The same goes for launching sites due to noise and security restrictions. This implies that many of the professionals seldom encounter, for example, the political community.¹³⁹ However, some labs and research institutes are located in larger cities. Still, even when workplaces are spatially located close to the government and political and social science institutions, this real type did seldom encounter the other suborders. For example, I observe that once the astrophysicists came up from the metro, they walk in towards their workplace and had lunch in

¹³⁹ This was for example evident by the practitioners surprised and positive reactions when I took time to travel to rural areas for a visit.

the restaurants in connection to their workplace. The astrophysicists and engineers were left to their places and absorbed by the group's chatty cloud of English and technicalities. Another telling observation is that it is 500 meters to a space lab from my office; still, it took me two years from that I started this research until I walked into the space centre! I try to excuse myself with the argument that I invited people from the 'other side of the road' to my initial pre-study conference as well as that I did visit other research institutes and labs. Anyhow, it is remarkable how routinized we are in our spatial, social and temporal professional patterns.

6.1.4. Form, robustness, authority, responsibility, politics and political reason

Compared to the other four suborders, the scientific suborder is medium-sized, robust and displays high levels of optimism and self-confidence. The suborder is nourished by the surrounding, large and worldwide natural science community. The real typical scientific community does not bother with the state order or politics but promote its global research project order. Even the scientists engaged in the work of the UN COPUOS are working in groups and networks of other like-minded scientists rather than within their delegations. Moreover, when scientist represents their delegation and turn on the microphone, they often start the intervention with the sentence, "I am *not* a diplomat" followed by giving to the point comments on the text and procedures as well explicitly speaking out on issues in a way others (diplomats) did not. For the scientific community, diplomats or other governmental representatives could be termed as the anti-identity as political engagement is perceived as unrewarding. In contrast, it is legitimate to concentrate and specialize to advance science. At the same time, the community holds an implicit belief that someone else is enabling the political conditions for progressing deeper and faster into outer space. One scientist explicitly reflected that "somebody else is probably working on it" (scientific). Thus, as hard as they are working with exploration, somebody else is expected to be working with policy and politics, something that the scientific community is carefully avoiding.

Interestingly, it was common that people stepped back and kept a distance from me after I had introduced myself as a political scientist or

interested in international relations.¹⁴⁰ Especially the notions of politics and, to a lesser extent, political science, created a sense of discomfort. It was as if the real typical person felt unsure what to expect from me, or even how to communicate with me. One comment exemplified this dynamic: “[s]o, you are a political scientist? Then you know nothing about outer space” (informal conversation).¹⁴¹ Sometimes I was met with a little more interest; “Oh, interesting that you are from social sciences! We tend to focus on the material things and achievements. Then, sometimes you wonder, how would this be regulated? What effect might this have?” (scientific).

Hence, although the scientific real type considers the political professionals to lack adequate knowledge, especially about outer space, the political suborder was still perceived as responsible for space policy. This was evident at a scientific conference when after a long presentation about different technical projects, the presenter stopped and stated, while looking up at the ceiling, that questions about the project’s political suitability were “way above [his] head” (scientific). Still, he continued, “[w]e know about Brexit, we should no longer have any cooperation, well we continue anyway, it is a successful project. It works well. Well, you know, we have worked together for a long time, *it’s good for us*” (scientist). Thus, the presenter found himself in a situation where he could take informal responsibility and circumvent formal procedures, and at the same time escape formal responsibility, as this belongs to the political suborder.

Expressed by a quote from another occasion, “Big science is so complicated, not many understand why big science is needed, why it is important. Right now, the parliament is [at an] all-time low in educational background. How would they understand these questions? These

¹⁴⁰ To reduce the likelihood that this unusual situation (the encounter with me/political scientist) would create an awkward situation, I turned to formal interviews and informal conversations with elites, who generally were more comfortable with encountering different types of researcher. Moreover, when visiting scientific spaces like conferences, I had the opportunity to be part of the larger crowd.

¹⁴¹ End-users are seen as amazingly uninterested in and uninformed about outer space, as they only care about having a button, or a simple switch between ‘yes’ and ‘no’ to access the satellite services. In general, the space community does not try to hide its attitude towards this kind of ignorance about space. Ridicule and stupidity are sometimes used, even intentionally as “people do not like to come out looking stupid” (scientific).

questions are *way* above their heads” (scientist). Therefore, the scientific real type tends to neglect the formal order. Alternatively, the real type sees the need to inform the political suborder, and not only about outer space. For example, in the press conference about the shadow of the black hole, it was stated: “Science today is giving a lesson to politicians” about the necessity of worldwide collaboration and about the autonomy of science (European Commission, 2019). Commonly, the scientific real type also possesses the *authority* and right to inform the political suborder (as well as the military suborder). For example, in a streamed online debate, an astrophysicist reacting to comments from a military commander stated “Well [...] okay, but we scientist like to stay in the *reality box*” (scientist). Thus, the scientific real type is the universal experts in a double sense.

In generalized terms, the scientific suborder typically consists of *neglectors* of the formal political order. The suborder is not overly interested in politics, and the world order is outside the scope of its responsibility. Astrophysicists are concerned with abstractions and have a godlike above and beyond character. Thus, the space community is rather immune to critique. To question this community, others need to know their models a little bit better than they do, as well as to judge their achievements not only in the present but also for the future. How then could an outsider question their authority? If impossible to judge for outsiders, then the responsibility for deliberation of the ‘common good’ should take place within the community. At the same time, not even the scientists developing the new quant computer processors know what consequences these will have for outer space (scientific). Hence, judging the common good of a scientific project is not easy even for these universal experts. Nevertheless, the traditional deontological idea has been that science drives advances in technology (which is good for society) and that scientific progress will in the end, in some future somehow benefit society and contribute to progress.¹⁴² While the logical link to the common good remains vague, this legitimates exploration as does a more widespread sense of responsibility.

¹⁴² For example, “the main motivation of our work is a curiosity about our origins and a drive to educate and inspire the next generation scientist” (scientist). However, “our principal motivation is fundamental curiosity about our universe” (scientific web page). “Science should be free, free to explore the unexpected and counter-intuitive” (scientist).

6.2. The military – guardians in a massive trajectory of long-term planning

6.2.1. Identity, motives, structure and agency and organizing principle

The military *identity* is shaped by war and fighting, or preparations for war and fighting. Typically, the military career starts on the battlefield at the tactical level. During this initial and formative phase of the career, the focus is on exercises to master the military choreography, i.e., standing, marching and shooting in a synchronized and unified pattern. Given that the chances of survival are greater when being a member of a group than alone, a significant characteristic of this community is ‘belonging’. Your brothers in arms rely on you and you rely on them. As, sometimes, your life depends on them and vice versa, there is an interest and pressure to belong. For effective fighting and personal security, it is also beneficial that you can predict how and when your group and unit will act. Training, doctrines and exercises contribute to this competence of conformity.¹⁴³ Compared to, for example, the stereotypic armchair academic who value originality, personal integrity and individual freedom, the military identity is formed by tactical experience in a threat environment and with a mindset of survival. As a result, a strong collective identity develops.

A related characteristic of the military suborder is the readiness to make decisions and act. For survival, it is better to decide, than to hesitate and risk being killed in the meantime. It is common to give an answer immediately and to be assertive, which contributes to other characteristics of the military real type such as upholding a sense of action, power and authority as well as to take and hold the initiative. Efficient fighting, which is the traditional, specialized knowledge and skill of the community, also fosters control over feelings. Thus, for an officer or soldier, it is crucial not to show weakness or uncertainty and to be at least one step ahead. However, this agency is firmly located within the predefined military structures. The drive of spirit is met by serving and dying for the state. This is made possible by an unquestionable, although sometimes implicit, believe in the state. The *motive* of spirit and self-

¹⁴³ Most military personnel remain at the tactical and operational levels. This core identity of fighting, belonging, and conformity, is commonly expressed as being “operational” and “mission ready”.

esteem is satisfied by fighting for the state, and by working in different prestigious positions representing the state and serving the ‘state interests’. You should ‘make a difference’ for the state power and the world, as defined by the state. The identity is foremost to be the *guardian* and representative of the state and the established order. Altogether, this contributes to the massivity of the professional reality.¹⁴⁴

Within the military suborder, outer space awaked emotions of *patriotism*. An illustrative example of this is the 35th Space Symposium 2019 in the US when General Jay Raymond showed videos and pictures to the large audience and honoured the “heroes” of the “past, present and of the future”. These heroes were handpicked individuals who in different ways had contributed to the security of the nation (US Space Command, 2019a).¹⁴⁵ The event, including a video, is an illustrative example of the strong motivation of *spirit* as well as (revived) sentiments of *optimism*.¹⁴⁶

¹⁴⁴ Guarding the state implies protecting the population and the functionality of the society. This is true also in expeditionary missions, like military intervention in the name of human rights, as these are understood as operations to rebuild law and order of a state. In military interventions and peace operations, space is used and understood as a “force multiplier”. Albeit human security has been the focus for the last two decades, the observations of the military order in the emerging outer space order pointed back to the state.

¹⁴⁵ The past and present heroes had in common the devotion to space and a strong will to serve the country and “team”. During the session, the video “Generation Space” was shown. In the video, young people in uniform explain; “Some of us liked to go higher, to some of us the sky was not the limit. We answered, we went higher. Before we provided space effects to the warfighters, today we are the warfighters [...]. We are different, we are innovative. We know no limits [...]. In this great power competition, we are becoming the Air Force we need to become, our nation is calling” (US Space Command, 2019a).

¹⁴⁶ After the video, General Raymond calls the ISS and have a video conversation with a junior astronaut, after showing a picture of Colonel (ret) Buzz Aldrin. This meeting or ceremony supports the progressing development of a Space Force culture or ethos. Creating such a culture can be interpreted as concentrated on how to express patriotism without using the word and how to highlight the specific professional space skills and knowledge that differentiate the Space force from the other military branches.



Figure 13: Establishment of the US Space Command (2019).
Credit: Christian Murdock, The Gazette.

The picture above is not from the Space Symposium mentioned before but from the ceremony of the reestablishment of the US Space Command, in September 2019 at the Peterson Air Force Base (AFB) (The Publics Radio, 2019). At this event, an autonomous US Space Command stood up during yet another formal, symbolic and ceremonial gathering. This event shows that despite the new establishment, the command is part of the traditional and typical military assemblage that includes uniforms, signs, flags and firm handshakes (US Space Command, 2019b).¹⁴⁷

Because the military real type is occupied with the internal military organization and hierarchies, there is no tangible anti-identity, other than the other military branches.¹⁴⁸ Standing and status are mainly overlapping which creates solid hierarchies of the separate branches. Personal qualities are frequently evaluated and graded by your closest colleagues. Conformity and belonging to the suborder are more rewarding and

¹⁴⁷ On 20 December 2019, the US Space Force was established as the newest independent branch of the US Armed Forces (US Space Force, 2019a).

¹⁴⁸ Perhaps there is no necessity for an anti-identity, as the military identity is so well established, reproduced, and persistent. Hence, the military identity is well defined. However, due to the world order transformation, the apparently solid surface does enclose tensions.

decisive than innovation, or reflective reason.¹⁴⁹ The parallel branch hierarchies are reinforced by the relatively peaceful historical era and the general bureaucratization of societies. Thus, in the wide middle of the military hierarchy, administrative skills are now valued high such as presenting a PowerPoint presentation in a specific manner. Hence, there is a tendency that the bureaucracy is maintained, regardless of its relevance and ability to cope with the changing world. The general observation below appears valid, familiar, revealing, and conclusive:

Generally, military organisations are like this; army, navy, air force... the services are sub-arrows pointing in different directions. I do not have the impression, that any of the services have a coherent view of what they want other than get more airplanes, ships and tanks [...] - *Why is it like that?* In part, that is how bureaucracy works, the primary goal of any bureaucracy is to sustain themselves, it is what they do, they sustain themselves, maintain the same relative power. Compared to the commercial sector, the military bureaucracy has not been challenged from the outside, there is no competition, so the progress is very, very slow, very slow, very bureaucratic (military).

At the hierarchical level of colonel or general, rests authority and hence, responsibility for reasoning and strategic decision-making. However, a problem is that when someone reaches the higher ranks, they are expected to start thinking in strategic terms, but during their career, the skills that they have advanced are practical or tactical. As a result, many high-ranking officers are still “stuck in the weeds” and have little experience of actual strategic thinking (military). During the career, you do more of the same, increase your knowledge and professionalism on tactics, “but being a good pilot has nothing to do with your skills as a strategist” (military). Hence, regardless that decisions appear to be made and despite slogans of transformation and innovation, there is an overwhelming risk that a military organisation will be reluctant to

¹⁴⁹ One concrete example of this is the constant personal and formalized evaluation of the individual. The annual 360-degree evaluation consists of a detailed survey filled out by colleagues. It is a clear format of what characteristics should be developed by a successful officer and your personal qualities are graded. This evaluation then forms the basis for promotion and income. This infuses conformity and directs attention to inward hierarchic structures and personal privileges. At the same time, it secures loyalty, which is crucial for the suborder.

changes that affect the resource allocation to the own branch.¹⁵⁰ It is an inward-looking professional order.

Subsequently, the external ordering principle of the *balance of power* in an anarchic system of states has never been scrutinized within the military suborder. In essence, there is a belief in Waltz's structural realism. It is the deep frame.¹⁵¹ Most officers have also heard about Joseph Nye and soft power. Within the Air Force, but also the other services, John Wardens article *The Enemy as a system* (1995) has become more than canonical as a theory and can be seen as reflective of system theory, operationalized and applied in the warfighting domain. Systems theory is military thinking, and military thinking is systems theory, for good and bad. At higher ranks, officers are aware of the pitfalls of this thinking. Still, military practice, doctrines and processes are firmly based on system thinking. This contributes to upholding a coherent reality. It makes you as an individual meaningful and important as part of a system, you are a function of the system, your unit is a node, and your service is a part of the armed forces in a system of states. In a world of danger and uncertainty, this provides meaning and order.

¹⁵⁰ Especially so towards those changes that would affect the own profession and identity. The nascent obsolescence of the pilot and the stagnation of the air force, in an era of unmanned and autonomous platforms in air *and* space, expose tensions accentuated by the spatiality of space and the need for several different stocks of knowledge. Still, the establishment of a space force is described in air force terminology, as a “g-turn” towards space superiority (General Jay Raymond speaks at the 35th Space Symposium, US Space Command, 2019a). This term appeals to pilots and Air Force personnel. A g-turn is a very sharp turn that can be painful, a dramatic change of direction of a fighter aircraft. If you are not made of the ‘right stuff’, you can pass out. The relevance of mentioning the air force in this explorative study about the emerging outer space order is that the space domain is and will probably be handled to a large extent by air force professionals before the space profession has established itself.

¹⁵¹ See for example the introduction to *Strategic Foresight Analysis Report 2017* (SFA), NATO, 2017. “The report provides the wide-range shared understanding of the future security environment” [to 2030 and beyond] (NATO, 2017:vii). This high-end report, together with the Framework for Future Alliance Operations (FFAO), is the intellectual foundation that informs the NATO Defense Planning Process (NDPP) as well as for the allies’ national processes that requires a long-term assessment of the future (ibid.). The report is concentrated on the balance of power in terms of the ongoing power transition to the East, i.e., “the resurgent Russia and a more assertive China”, natural resource, and regional conflicts (NATO, 2017:2ff). Compared to structural realism, the report has an increased focus on complexity, interconnectedness, vulnerability, and power diffusion outside the state. Balance of power is nevertheless the central concept.

Strategies and long-term plans are made, and problems are solved by initiating system analysis to find out what capabilities are needed and how these should be protected. Solutions to the problems are calculated and cutting-edge technology is sought. The definitions and development of advanced programs and future systems are produced based on knowledge about potential adversaries' technological capabilities and military professionals' assessments of the adversaries' intentions. Hence, all this plays out within the dynamics of the quantum-entangled military order occupied with these self-induced critical issues.

In some strategic document, there is a discussion about upholding a 'rule-based order'. Still, by mentioning this goal, the responsibility of the military suborder of the emerging outer space order ends. Therefore, when I asked questions about what kind of rules the emerging order should safeguard, there were no answers. The silence might have been a deliberate choice, but plausibly, thinking about the substance of the rule-based order fell, just like the question, outside the professional and, hence, personal frames. Nevertheless, one thing is evident, according to the military suborder the nature of anarchy and the security dilemma will remain regardless of the rules of the rule-based-order. During this study, the rhetoric of political leaders increasingly reinforced and normalized this deep frame. Even the few skeptical to the deep frame of the anarchic system of states, those few who reflected on possible alternatives, would argue that they had to think in these familiar terms because other states did. States and humans were given a unitary character and there was not a sign of a deep frame change.

6.2.2. Outer space and critical issues

For the military real type, it is apparent that outer space is part of national power and great power competition focused on pursuing new capabilities to strengthen the national position in an international system of states. Hence, great powers are defining the order, but there is also some attention to new states rising as capable spacefaring nations. Increasingly, there were some attempts to discuss the role and influence of larger companies, as well as their relations to the major spacefaring nations, which commonly equals the traditional great powers. The US military attention to, and interest in outer space, has recently augmented due to perceived peer or near peer 'competition', which in real typical terms can

be interpreted as a sign of a multipolar order. In a document released by the US Air Force, it reads:

For decades, the United States experienced unimpeded freedom of action in the space domain. This freedom allowed the delivery of space capabilities essential to the global operations of the US Armed Forces with unmatched speed, agility and lethality. However, peer or near-peer competitors understand the competitive advantage the US derives from space capabilities and view this reliance as a vulnerability. To exploit this perceived vulnerability, adversaries are developing capabilities to negate (deceive, deny, disrupt, degrade and destroy) our space systems and capabilities (US Air Force, 2018:3).¹⁵²

According to the above-mentioned doctrine, the military necessity makes US counter-space operations a high priority for the joint forces, which also contributes to success in all other military domains (US Air Force, 2018:2). Moreover, hostile acts against the US space system will likely cause effects beyond space, including disrupting worldwide services “upon which the military, civilian and commercial sectors depend” (ibid). So, not only is US space dominance portrayed as a military necessity for the US Armed Forces and its partners, but also for the worldwide services in the civilian and commercial sphere. This indicates a sense of responsibility for these worldwide services. Consequently, the military professional “must prepare to defeat attacks on the US space *enterprise* should they occur” (my emphasis, US Air Force, 2018:3).

These ideas of a space ‘enterprise’ and ‘competition’ are interesting and point to the potential market of resources in outer space, most notably asteroid mining. It was for example mentioned that “[s]pace is an enormous, resource. It might be crowded closer to Earth, but it is a huge resource” (military). For the establishment of the potential space market, as well as exploration and military purposes, the Moon and cislunar space were identified areas to control. The Moon and the cislunar space are positions from which the control of the inner accessibility of outer space

¹⁵² In the same document, when referring to the US National Security Strategy (2017) it is declared that; “any harmful interference with or attack upon critical components of our space architecture that directly affects this vital US interest will be met with a deliberate response at time, place, manner, and domain of our choosing” (US Air Force, 2018:3).

can be established.¹⁵³ Besides, the Moon and the Moon's orbital space might in the future become the 'gateway' to space.¹⁵⁴ The patriotism of today might include protecting a potential market with potential national spinoffs in terms of market shares and job opportunities infusing the economy, which is traversing and upholding every piece of the nation. Still, the military suborder is characterized more by the drive of spirit than of appetite.

In the military suborder, especially China's space capabilities have expanded and diversified during the last decade and now includes satellites with potential ASAT-capability (Lindström & Rydqvist, 2019).¹⁵⁵ For many states, including states outside of Asia and Africa, China has become an attractive space nation associated with stability, predictability, and high ambitions.¹⁵⁶ However, as there were serious concerns about China's long-term goals, the US and its allies did not encourage this development. For instance, Australia halted cooperation with China in areas like communication and Earth observation. Likewise, the cooperation between ESA and China within the European Global Navigation Satellite Systems (GNSS) project Galileo stopped in 2007 (Lindström & Rydqvist, 2019:55, 58f). Nevertheless, China's GNSS system 'Beidou' is planned to have full global coverage in 2020. In 2015, China established the Strategic Support Force (SSF) to better integrate space assets within the Armed Forces (Pollpeter, et al., 2017). Russia, the

¹⁵³ Influential, military space theorists, Everett Dolman who with the book *Astropolitik: Classical Geopolitics in the Space Age* (2002) provided a geopolitical vocabulary for space, and others like John Klein (2006) also pointed to the importance of controlling the Lagrange points (L1-5) which give beneficial gravity (Klein, 2006:9).

¹⁵⁴ For example, the NASA lunar orbital platform is named Gateway and aims to become a point of departure for deep space human transportation (NASA, 2020).

¹⁵⁵ In 2018, China launched the most satellites in the world (Lindström & Rydqvist, 2019:25, 44ff). During this period, several space companies were being registered in China and tests with reusable rockets were carried out. The industry strategy "Made in China 2025" (2015) and "the Belt and Road Initiative" clearly contributed to the Chinese space boom (cf. Lindström & Rydqvist, 2019:15). Moreover, China's satellite manufacturing capability is rapidly increasing (Euroconsult, 2020). Now, countries in Asia and Africa are offered "national pride satellites" launched from China at an affordable price (commercial). States that have signed up for the Beidou system are for example, Thailand, Brunei, Laos, Pakistan, Tunisia, Russia and through the Arabic Information and Communication Technologies Organization (AICTO) some of the Arabic counties (Lindström & Rydqvist, 2019:16, 41).

¹⁵⁶ For example, in the national document, *China's Space Activities in 2016*, collaboration with European countries is mentioned (Lindström & Rydqvist, 2019:54).

very first space nation and for the last decade *the* launching state, is one of the great space powers within the military suborder, and is for example, since 1995 operating its own GNSS ‘Glonass’ (Moltz, 2008:242). In 2015, the Russian Armed Forces integrated air and space into the Aerospace Forces (Bodner, 2018). India announced the new Space Defence Agency in Bengaluru, after the successful Indian anti-satellite test in March 2019 (Economic Times, 2019).

The new military order has not fully crystallized yet. However, given the importance of outer space, what patterns and relations this will take are indicative not only of the emerging outer space order but also of the contemporary world order. For example, days after the creation of the US Space Force, an article about multinational space operations was published on the brand-new website (US Space Force, 2019b). In this article, partnerships with the UK, Canada and Australia were mentioned as well as collaboration with Germany, France, and New Zealand. Besides, by the end of 2019, NATO recognized space as an operational domain (NATO, 2019). These examples further emphasize the growing military importance of outer space, spreading horizontally throughout the suborder, framed as an explicit warfighting or operational *domain*.¹⁵⁷ Notably, the rhetorical frame of a domain has implications for the military organization, as it is a fundamental ordering concept within this suborder.

For the great powers, a common denominator is to strengthen their own, or their allies, space capabilities and at the same time limit or deter other great powers’ ability to do so. Space capabilities are linked to conventional, nuclear, cyber and global power projections (Wong & Fergusson, 2010; Harrison, 2015; Pasco, 2015; Sgobbi, 2015; Bowen, 2020; Deudney, 2020).¹⁵⁸ In addition, due to the mere possibility of dual-use satellites, there is an increased blurring of commercial and military

¹⁵⁷ For further reading about space power, see for example the journal *Astropolitik* edited by Everett Dolman.

¹⁵⁸ Even though the number of nuclear warheads worldwide has been reduced considerably, from 65,000-70,000 in the mid-1980s to approximately 15,000 in 2018, all nuclear arsenals have been modernized (SIPRI, 2019:12f, 287-356).

technology.¹⁵⁹ In the ‘worst-case scenario’, the military suborder has to handle speeds and effects on worldwide services on which most of the states depend. In this perspective, the most critical issue for the creation of a sustainable outer space order is information sharing about the objects in outer space. There is an expressed official requirement for wider transparency including updated information from facilities tracking and characterizing space objects. This is essential to mitigate suspicion, as well as to enhance possibilities to determine attribution (what or who was behind it) and responsibility should an incident occur. Until now, the US Joint Space Operations Centre has provided real-time information on satellites and debris globally.¹⁶⁰ However, there is a wish for wider knowledge about what is happening in outer space. For instance, “countries need to contribute to this broader global knowledge of outer space” (military). Because “when more states observe misbehaviour in outer space, actors can also be made responsible, and when many people look into outer space and see what is going on, there will be more consensus on what is good behaviour” (military). Hence, there were calls to divide the global responsibility to uphold standards:

When responsibility is distributed more globally, it contributes to stability. If there is only one country saying that this is true...Much better if more countries can validate this [...] To avoid situations when one country sees the possibility of exploiting space without understanding the consequences [...] Attacks in

¹⁵⁹ In 2016, an expert had to admit that his statistics of satellites launches, and the graphs categorized to represent military respective civilian satellites could no longer be justified. “We’ll here you see, the lines simply stop, I cannot decide whether to categorize them as military or civilian” (engineer). In addition to this difficulty, data from commercial satellites could be sold on the free market to both civilian and military customers, as well as to individuals and groups.

¹⁶⁰ Like the term superiority, situation awareness is a term borrowed from the military air terminology. Space Situation Awareness (SSA) is a rather technical framing of a fundamental information or ordering problem. From the start, military radars have been used for SSA. The US Joint Operation Centre has sent thousands of close approach warning e-mails to civilian and military space operators around the world. Due to the rapidly growing amount of data, there are discussions that these tasks should be handed over to a civilian entity (cf. Weeden, 2016).

space are not like sinking a ship or taking out an aircraft [...] Due to Kepler, it creates thousands of pieces of debris (military).¹⁶¹

6.2.3. Language set, visual frames, temporality and constitutive materiality

The real typical *language set* in the military suborder suits well with the military reductive power of balance thinking. Generally, messages should be clear and loud. The style of talking is in rather short and commanding messages or stories, suitable for radio communication and short meetings. The language set is limited due to time constraints on the battlefield, which affect the style of talking also at the higher levels of the military. Generally, and especially on lower levels, the language is specialized and contains many abbreviations. Following Wittgenstein, this has implications for greater deliberation, for example about responsibility and the direction of the suborder.¹⁶² Moreover, for an outsider, or even a member of a different branch, this specialized language would take some time to crack. Interestingly, the language appeared to include more commercial terms than I expected.¹⁶³

Visual frames are geographical maps with state borders on which sensor, weapon system and ranges are layered. Arrows are also common, as well as maps with areas controlled by different military units. Models that make the reality appear more orderly and controllable than it is are

¹⁶¹ Generally, the issues of debris and the increased activity in the orbital environment appear to be peripheral. As long as these issues cannot be linked to the great power game, they are framed as being situated outside the military realm. As one member of the military suborder noted, “cleaning up [debris] is not an overwhelming problem, technically you can direct the satellites to decay orbits, exit them for the things you put up, so it burns up. The problem ends up solving itself in technical solutions” (military).

¹⁶² Recalling the quote from Wittgenstein from the theoretical chapter, “[t]he limits of my language mean the limits of my world” (quoted in Antoniadis, 2010:31).

¹⁶³ This could of course reflect the general state of the world order. However, an article written by the influential military space thinkers, Dolman and Cooper, illustrates this discourse. “What we advocate is a *new* international legal regime that recognizes the lawful use of space by all nations, to include its commercial exploration under appropriate rules of property and responsible free-market values, to be enforced where necessary by the United States and its allies” [emphasis in original] (Dolman & Cooper 2015:379; cf. Dolman, 2002:177). Thus, the market rather than humans or the planet is the critical issue.

frequently used. Sometimes, admittedly by purpose, to ‘keep up the good spirit’. For example, central to military thinking is a simplified version of John Boyd’s OODA-loop, which originally was developed for tactical air battle. Somewhat similarly, the second slide of a typical military PowerPoint presentation contains a general organizational chart, contributing to the impression of a well-functioning coherent organization or system with flawless processes and links.¹⁶⁴

In the general military suborder, space has just started to be explicitly and formally expressed as a military domain, or a domain for warfighting.¹⁶⁵ This decisive shift does imply a horizontal historical change of the outer space order. Space is understood as ‘high ground’ from which to defend the nation. To the military real type, outer space is not empty but an electromagnetic space, with sensors, systems and effects. The critical issue is to defend and protect satellites, ground stations (terrestrial or not) and communication, and the “potential multitrillion market of outer space” (military). The strategy is to establish space superiority. Noteworthy, the definition of the US Space Force’s area of responsibility is above the altitude of 100 kilometers (cf. Hitchens, 2019). That is a considerable volume, and this expression of the area shows no horizontal concerns.

Altogether, this gives an impression of the completeness of the control and the efficient reach and strike of the arrows in a system thinking perspective. Moreover, it contributes to reestablish and reproduce the military reality as a solid system spanning the globe. The battle is carried out using weapons with high accuracy. Together with systems theory, this discriminates the surrounding constitutive materiality. As a result, the ‘frictions’ and ‘fog of war’ theorized in the 1830 by Carl von Clausewitz

¹⁶⁴ This chart is typically presented after the first slide that introduces the officer as a professional position within a unit. At the same time, with the mandate to use violence, there is of course reasonable that the organization behaves very orderly, and that responsibilities are delegated on units and areas of operations etc. However, this routine of displaying the organizational chart seems to be mandatory even in situations when the relevance is questionable. In a sense, it contributes to disaggregate and spread the attention and responsibility from the individual presenter to the system.

¹⁶⁵ General Jay Raymond, Commander of US AF Space Command: “We have acknowledged that Space is a warfighting domain similar to air, land and sea”, 9 January 2020 (US Air Force Space Command, 2020).

disappear. In space, constitutive materiality is suppressed further by the perceived emptiness of outer space. The appearance of control and power is, however, almost as important as the actual capabilities. Sometimes, studies, conceptualizations and more complex and uncertain models are only used in a limited, initiated group.

To the military real type, reality and complexity should be simplified to facilitate action. Standard operation procedures (SOP) and orders are developed for standard situations and planning processes, etc. These practices are based on an ontology that suggests that when you control the materiality of the world, you are a hegemon or an initiator of a project in the diorama. The practice is also designed to mitigate unpredictability and uphold control over the situation. Still,

Procedures and techniques, as well as the mastery of checklists, have served us well in the ICBM-era. However, we must also be mentally prepared for sudden and unexpected situations. You cannot only rely on checklists and contractors, but you must comprehend exactly what the keystroke or mouse-click does [...]. There will be no time to make PowerPoint slides, brief them, review them or to staff the action approval process (military).

The military *temporality* is historically contextualized as a part of the national heritage and the future, as well as a guard and symbol of the state. Ceremonies in historical buildings, receptions, flag rooms, uniforms and military exercises contribute to a military order that reinforces unity and historical linearity. The military profession is preserving continuity and stability in a cyclic history, altering between peaceful times to more violent episodes. Short stories from tactical situations are mentioned frequently also during coffee breaks far from the battlefields or training grounds. Historical anecdotes and knowledge about different battles are valued high and work as a background sound tying the everyday practice into a coherent historical pattern of interstate relations and conflicts.¹⁶⁶ To a higher degree than the other suborders, history is present and singular.

¹⁶⁶ Even during forward-looking workshops, in the breaks and at events, people fell into the normal discourse of historical battles, most commonly WW I, WW II and the Cold War. In relation to space, typically the first Gulf War (1991) is understood to be the first war in which space assets (GNSS) played a crucial role in enabling precision strikes.

For the military suborder, innovation equals an evolutionary claim for technical achievements that are improving existing systems and organisations. There is a familiarity in striving for more of the same. The temporal frames are concentrated on the procurement of key capabilities, i.e., technical equipment. The typical time frame is always referred to as “16.5 years” from idea to operational. However, “if you are evolutionary and other people make revolutionary things – that changes a lot” (military). For example, “[o]nce, we actually procured and launched satellites in only 18 months” (military). This is strikingly unusual and revolutionary for the military order.

The military *social time* can be divided into peacetime, bureaucratic time and operational/sharp time. The sharp time can be categorized into strategic, operational and tactical time. Strategic time is long-term forecast, planning and acquisition, which extends about 30 years into the future. Operational time is here understood as the time horizon of combat planning, and tactical is the time *in* operation on a mission. The pacesetters are wars, missions, interventions and exercises. The tactical time is divided into 72 hours planning cycles. This time is fixed to the exact time on target (ToT). Forces are synchronised and there are no ‘stopwatches’. Contemporary ideas of high-tech war, in which space is a domain, are characterized by instantaneity. Satellites, just like in the ordinary world time, facilitate this synchronization of time. This ordinary world time extends to the GNSS constellations in the MEO, because so far there is no GNSS for deep space. In military operations, like in scientific experiments and financial transactions, time is refined into precise ‘nano units’.

The strategic time can either be used truly strategically or be characterized by habitually muddling through with ordinary

administrative “surface work”.¹⁶⁷ Typically, the latter bureaucratic time occupies also the military strategic time. Thus, cleaning ones’ table and keeping up with the procedural pace is more rewarding than scrutinizing the substance and impact of the decisions. Ripe decisions are key if you do not like to come out as a slow, inefficient, or ‘unproductive’ person. Thus, to belong and rise, it is important to keep up with the bureaucratic time and concentrate on the surface work.

However, there are sites where strategic work is expected to take place and where this real strategic thinking *is* the expertise. This was for example evident at ACT in Norfolk where the future of the armed forces was discussed. This unit has the slogan “Improving today, shaping tomorrow, bridging the two”. Moreover, the US Space Command’s “Space Futures Workshop”, was looking into the period of 2060, with the aim to characterize different possible futures to find ‘inflection points’. Namely, points when the possible development can be influenced in the desired strategic direction.¹⁶⁸ Thus, with this long-term perspective, even if the individual agency within the military order is limited due to conformity and powerful hierarchies, the collective outward agency to influence the direction of the emerging space order is substantial. Long-term plans with inflections points are developed to *shape the future*.

The *constitutive materiality* of the military suborder is plainly an isolated order, not open to everyone to visit for safety and security reasons. Just

¹⁶⁷ A term borrowed from Cal Newport, *Deep Work, Rules for Success in a Distracted World* (2016). Deep work requires very high cognitive focus and results in innovative results. Surface work requires only a low cognitive effort and does not have to be carried out in a quiet place. Surface work is an activity that does not create much new ideas and is easy to copy and reproduce. In the contemporary world, Newport argues that there is a shortage of deep work due to our constant availability for meetings and information. As we are always connected, this can be linked to Schweller’s attention span and is semantically and logically coherent with the present inquiry. In addition, the military community that fosters belonging and social skills, typically have few physical and temporal spaces for deep work, asking for more time, reflection or even more so isolation is deviating and uncomfortable. For example, a practitioner commented, “No matter how critical the issue is, it is just handled routinely according to the ordinary procedures and within the same tight timeframe” (about the military). “The issue got two days, the military professional could not get hold of the stakeholders nor handle the issue, the answer was no. So, we cannot do that right now, opportunities are lost”. Moreover, “When the exercise stalled, we suddenly had time, and everyone was there. We had nothing to do, but we had some really interesting discussion” (military).

¹⁶⁸ In the time perspective of 2060, the procurement of 16.5 years might be reasonable if it implies increased national power.

think of the buildings and security surrounding military bases, exercise areas, staffs and headquarters. Yet, one of my findings was that the community was more open than I expected, as the workshops hosted a rather mixed crowd of participants. It was a growing tendency to open up and to invite new ideas. There was a sense of acknowledgement that the world has changed, and that the military cannot remain isolated if it aims to cope with the changes and mitigate obsolescence. Within the military, there were calls for change after decades of “status quo” (military).

6.2.4. Form, robustness, authority, responsibility, politics and political reason

I will refer to the military suborder as massive suborder. The suborder is large and brings everything in its way into its long-term trajectory. This suborder is highly quantum-mind like as its professional identity is deeply socialized and coherent. Moreover, it operates in relatively similar forms and patterns in many countries. However, in some countries, the military profession has become more similar to other professions and the military real type is part of a rather civilian everyday life. In other countries, such as the US, the military profession brings a lifestyle and privileges that extend to your family. Hence, the military suborder is wider and more dominant as villages and cities depend on its existence and stability. In many countries, it implies strategically located large workplaces and standard conditions.

Nevertheless, the military is a powerful, stabilizing order that is reproducing Waltz’s theory and the security dilemma. The military order gives a robust impression and must give a robust impression as it is reproducing meaning and ultimately the will to sacrifice human life. The order shows high levels of voluntary compliance and self-identification with the military professional identity. In addition, recent investments and attention to the military contributes to a general sentiment of optimism and a reauthorization of the military knowledge. Somewhere below the administrative surface, there is a collective strong drive for taking action. There is a latent power of agency and perhaps a will of proving its importance and improving the status of the professional collective identity. Although the world is changing, the military deep frames seem strikingly persistent. Thus, the military suborder is a path-dependent and massive trajectory well into the future.

At the same time, after a reductive ‘reading’ of Clausewitz the military real typical person understands their community as an ‘instrument of politics’. With this hardwired understanding of being an ‘instrument’, agency outside of the military professional order dissolves. Together with the constitutional order, which in democratic countries states that the military is subordinated to the government, the idea of an instrument also creates clear predefined boundaries/limits for the military stock of knowledge and thereby formal responsibility as well as ‘thought responsibility’.¹⁶⁹ Political reason is outside the area of responsibility. It is located within the political suborder. However, the area of responsibility includes to inform the political real type about the military reality and the military has authority over this knowledge, including classified information and worst-case scenarios.

There are however deep tensions lurking, which potentially will unsettle the foothold of the professional identity. These tensions, in turn, conveys a small crack in the robustness of the military suborder. The military suborders’ robustness is challenged as a portion of military professionals is becoming unsatisfied and uncomfortable with the current simplicity and brevity of the suborder, but at the same time is unable to change the status quo. Members of the suborder holding these views are scattered across different locations. However, they are all experiencing a sense of frustration and anxiety over the puzzling task of calculating and safeguarding power in a world of complexity, uncertainty and unpredictable configurations of power and intentions. Yet, the human quest for a coherent and meaningful reality remains. Thus, alternative deep frames must embrace complexity. At the same time, the deep frames must be unifying in upholding perceptual order and motives. The tension between complexity and order represents a ‘deep frame dilemma’. In this

¹⁶⁹ This relates to the visual and conceptual frames from the battlefields in which ‘areas of responsibilities’ have organizing properties. You are responsible for one area, alongside the area of responsibility of another group, as a part of the platoon, as a part of a company, which is a part of a battalion, which is a part of the brigade. Taking responsibility for different areas is a basis for efficient commanding. It makes the system work and mitigates ‘blue on blue’ (friendly forces) casualties. Hence, you do not involve in other areas, other than in the coordination with them. The limit of the ‘thought responsibility’ in relation to politics is not to say that the military real type knows little, as the required stock of knowledge pertains to the general traditional, as well as the increasingly specialized and ‘updated’ skills. Besides, personal discipline and strength also require a type of conviction or tacit knowledge that cannot be taken for granted but is a significant characteristic of the military real type.

otherwise paralyzing situation, outer space provides an opportunity to carefully up-date the professional stocks of knowledge and organisation to better cope with the technically progressing world. In addition, outer space provides a way to renationalize and thereby revitalize the traditional military identity and induce spirit. Thus, space is becoming an increasingly attractive military domain.

6.3. The commercial – transformers in a hurry, long-term visions and short-term gains

6.3.1. Identity, motives, structure and agency and organizing principle

The commercial real typical persons like to describe themselves as pioneers, innovators, barrier breakers, ‘first movers’ and visionaries. The star of the outer space order’s commercial suborder is Elon Musk. Other well-known people are Richard Branson and Jeff Bezos. Common for these people are the company brands built around them as individuals. Compared to the more traditional space industry, these ‘new space’ companies have become known for disrupting the market and the companies are seen as revolutionary ‘game changers’. Musk will serve as the illustrative example of the commercial real type. Because in the contemporary world order he personifies status, agency and innovation. In addition, judging from the ‘new space’ discourse he is a role model for a new generation of young innovative shapers of the future.

In September 2019, outside the SpaceX build and launch facility, Musk, like a rock star in the dark evening, addressed an applauding crowd. Behind the small scene raised the tall and spotlighted rolled-out Starship (prototype), which is a spacecraft design to take humans to the Moon and Mars. Musk rhetorically asked:



Figure 14: Elon Musk Credit: AP

We are faced with a choice, which future do you want? Do you want the future when we become [a] spacefaring civilization, where we are in many worlds and out there among the stars, or one when we are forever confined to Earth? I say it is the first and I hope you agree with me [...]. I think we should really do our very best to become a multi-planetary species and to extend our conscious beyond Earth, and we should do that now (Musk, SpaceX, 2019).

The above statement and atmosphere created during the event, structures a situation in which Musk and the crowd, as if representing humanity, are communicating face-to-face, as the definers of the future. Thus, common for this real type are visionary goals but also the willingness to take action and risks. The statement above certainly has world order consequences but as the predictable or normalized order is not taken for granted, the real type does not seem to mind risks nor that it breaks with the conventional. On the contrary, this real type, compared to many who are ruled by structures, seems to be curious about changing structures and breaking routines. These entrepreneurs solve the problems and address the challenges themselves. They find solutions. A problem without a solution represents a potential business case.

These ‘new space’ companies typically have started from scratch as a ‘garage company’ and the founders are many times self-made. Taking risks, these individuals and role models have earned the money themselves and can afford to have long-term plans. Noteworthy, is that, for example, Bezos who is the founder of Amazon, has personal savings greater than many states Gross Domestic Product (GDP), the same goes for his company’s net worth. Obviously, the personal sense of, and the

actual, agency is exceptionally high. Visionary goals mean changing the global market. Apart from visionary leaders, there is a search for employees with the right attitude and passion. For the team, formal education is less important than a personal drive, willingness and abilities of creative thinking, “using the right side of the brain” (commercial). The companies aim for a heterogeneous team. The idea is to foster and use “team resourcefulness” (Bezos, 2018).¹⁷⁰ The teams have several young employees, in t-shirts and sweatshirts. The company, the brand and the unique company culture is almost resembling a religion, with adherent clothing. Even though this is specific to each company, the companies typically operate in similar quantum-like ways. You live your company and in Branson’s words, you “screw business as usual” (Branson, 2011).

Returning to the leadership, and the example of Musk, his autonomy starts at the individual level and shows an inclination to see and interpret the world anew. He does not fall for authorial truth claims but sees for himself. From this follows that he accepts a changing world and take the challenge to shape it, even as he *risks* deviating from the norm and being perceived as ‘crazy’. These ‘bold visions’ might be a show for the image and brand but also expose more genuine strivings. The results have been telling, surprised the world and even changed some mental constructs of the observers. One example is the electronic car produced by Musk’s company Tesla. This car quickly disrupted the well-established car market. At the beginning of 2020, Tesla passed Volkswagen and became the world’s second most valuable car company (BBC News, 2020). On the other hand, the idea of Musk’s Boring Company developing high-speed 3D tunnels, intended to cut car congestion and carbon emission in large cities by providing a fast underground alternative for transportation of cars, still seems to many ‘too unreal’ (MacFarland, 2018).¹⁷¹ However, despite the scepticism surrounding the development of reusable rockets, SpaceX has developed reusable first stages for their rockets and implemented them commercially as the cornerstone of the company, to “revolutionize access to space” (SpaceX, 2020).

Spectacular vision and personal style are of course beneficial for media attention, especially as Musk notes at an AI conference in Shanghai, “we

¹⁷⁰ In the interview with Business Insider, Jeff Bezos talks about Amazon, Blue Origin, Family, and Wealth. He also comments on his ownership of the *Washington Post*.

¹⁷¹ See for example the CNN video: “Elon Musk’s first tunnel is finished. Here’s what it’s like to ride in it” (MacFarland, 2018; TED Talks, 2017).

are everyone already cyborgs” (Yang, 2019). Thus, media is carefully used and different media platforms cover spectacular events, such as rocket launches. These launching events are like a mix of sports happenings and music videos transmitted in real-time, inviting spectators to digitally ‘participate’ and comment. Moreover, as numbers of videos are available and easy to access on the Internet, the events can effortlessly be re-experienced. Altogether, this creates public interest and *excitement*. Hence, the larger forerunner companies have a global reach and are spontaneously understood as successful, fascinating and recognized for their achievements, personalities and wealth. This might very well be interpreted as a sign of a commercialized world order but more fundamentally, I read it as a sign of a widespread desire for *agency*.

The above characteristics are primarily typical of what is called ‘the new space’. However, this new space mind-set has implications also for the ‘old’ or ‘traditional space’. The development that disrupts the traditional space industry is captured in the comment from one expert,

The chock to everyone was the third generation, which we are in now, which is not just companies but private individuals. Very rich billionaires have decided that they can go into space [...] and these are people that do not need money from anyone else. These are people that are not only building their own satellites, but they *have their own* launch vehicles (commercial).

Hence, traditional space companies have no choice but to face this development. Typically, they do so by pronouncing their traditional identity to signal stability, predictability, confidence, and emphasizing their long experience with governmental security. Hence, traditional space identity can be seen as a counter-reaction to ‘new space’ companies. It is not a counter-identity but a competitive identity. What is called ‘traditional space’ has had a less expansive development and, for example, Boeing has even been likened to a “zombie” in comparison with new space companies (Kennedy, 2020). Thus, the shapers of the suborder are primarily the new space actors. Therefore, this real type mainly builds on the new space companies that I also consider to be more informative for the time of becoming.

The new space actors are recognized for their entrepreneurship. Typical for entrepreneurs is the *drive* (through appetite) for status which is

achieved through personal income and the company's worth. Thus, spirit and self-esteem are satisfied by material wellbeing. In addition, for the space entrepreneurs, there is also a desire and thrill to break barriers. For true entrepreneurial status, as well as honor, you must 'be brave' by taking risks, working outside of your comfort zone and embracing unpredictability. Expression of emotions differentiates this community in relation to the other suborders and contributes to branding. For example, followers can watch the companies' failures and success as well as their frustrations and passions. Feelings are a part of the identity that is displayed, in a personal way, like movements of pride, thrill and epiphany. Above all, these companies deliver a sentiment of excitement and optimism about human technical achievements and the future. For example, Blue Origin has a club for the future and a multi-generation vision to inspire future generations and to "unleash their creativity".¹⁷²

All this contribute to agency, which is the hallmark of this real type. Structures, whether mental or bureaucratic, are the counter-image to the commercial suborder of the emerging outer space order, especially of course, to the new space elements. The ordering is played out within multiple global hierarchies depending on the market segment (such as sensors, launches or satellites). Nevertheless, the commercial suborder is also part of the larger global hierarchies of brands, budgets and status. One example of integration with global hierarchies is the perceived status acquired from being at the top of Forbes' list of the world's richest persons, the world's entrepreneurs or the persons of the year.

6.3.2. Outer space and critical issues

The commercial space order is turning space from 'empty' to personalized and commercialized. According to Lebow in a postmodern order, spirit, honor and recognition are not only met by material possessions but increasingly with self-expression and "post-materialist values" (2008:569). In October 2019, the first space tourist company, Virgin Galactic, was introduced to the New York Stock Exchange (NYSE). In conjunction with this, the company presented a list of 600 individuals waiting to go to space, including celebrities like Justin Bieber

¹⁷² After a priest-like walk through the classrooms where children are preparing their postcards to outer space, Bezos states that "if the kids I talk to are representative for future generations, we are in good shape" (Blue Origin, 2019b).

(Reuters, 2019; Wattles, 2019). Even though self-expression, private achievements and public service are prominent, the elites of this suborder principally embody appetite and materialist values. For example, SpaceX has connected to the younger generations. This makes space exciting again and contributes to general public attention, as well as establishes the foundation for future commercial developments in outer space.

Besides the more attention-grabbing space tourism, one of the major issues for satellite companies is to provide global coverage and connectivity including to rural areas, oceans and polar areas. This fast-speed coverage is enabled by different kinds of constellations of satellites primarily LEO mega-constellations. The idea, which for example was expressed during the new space conference in Luxembourg, is to enable global connectivity, to close the ‘digital divide’ and empower the ‘underserved’ population (commercial). This mission is typically framed as providing Internet-access to rural schools and poor children. This new phase of global connectivity will help the ‘underserved’ to integrate into the global *economy*. Mega-constellations of satellites and 5G generate another boom for the communication industry and a step-level change in connectivity. Essentially, but seldom mentioned, these mega-constellations facilitate the speedup of the increasingly autonomous stock market itself (cf. Placido, 2020). Extremely low latency and high-speed coverage will in addition be important for the commercial sectors transactions and the Internet-of-Things in the technically advances societies. Internet-of-things in turn will be the hub for numerous incipient market segments, self-driving cars are but one example.

Another emerging market segment is satellite imagery, which is advertised to improve the “efficiency of the civilization” (AxelGlobe, 2020). Commercial satellite constellations that are taking high-resolution satellite imagery can according to AxelGlobe’s website cover “virtually all areas” where the world is “economically active” (ibid.). These new satellites images together with the data based on past development form the basis for the prediction of future commercial patterns and activities (ibid.). By sensing the world, it is possible to change the future (Axelspace, 2020a). As everyone can buy satellite images information

that before was only possessed by states, is now accessible and for sale.¹⁷³ Thus, “[t]he day when we routinely use space data across a wide range of industries will come very soon” (Axelspace, 2020b).

To secure ‘business cases’ there is a hurry for the companies to launch satellites. The sense of urgency is due to the advantages of being the first company launching into a specific orbit. For instance, all other satellite companies will have the responsibility to coordinate communication and possible interference with the company that received an allotment from ITU, and thereby occupied that orbit first. Imagine, for example, the impact a mega-constellation of thousands of satellites, just as SpaceX’s planned with Starlink, would make as the satellites that would be launched first would cover a large electromagnetic area of outer space (these are authorized in one single request to the ITU). In addition, for the sake of the branding of the company, through media coverage of the event or grabbing market shares, it is beneficial to be the first or very close behind the first. In the latter case, the very first company might make mistakes or break barriers and boundaries for its close competitors. Hence, many times the challenges and critical issues are the slow policy and legislative processes.

Another critical issue is to convince less risk prone investment bankers and insurance companies to come on-board. For this, a minimal set of regulations is favourable. The regulations should be minimal, made by “a scalpel” (commercial). To develop suitable regulations, it is beneficial to work with private law and practices and through the states and the national legislations. In addition, for launching a space object a ‘launching state’ is needed. Regardless that the satellites might be manufactured multilaterally in terms of components, technology and payloads, one state is responsible as the launching state. While the launching state is an accepted ordering premise, the state can otherwise be bypassed. Because “who could possibly stop them from launching? The military?” (commercial).

¹⁷³ According to the Axelspace website, “[u]ntil now, high-resolution satellite imagery has been a costly and low frequency service”. Moreover, about the advantages of using satellite images, the website states: “some things only become apparent when looking from orbit” (Axelspace, 2020b).

6.3.3. Language set, visual frames, temporality and constitutive materiality

In the spaces of the commercial order, visual frames are frequently used in combination with short catchy messages that capture the essence of the company. Speaking to all our senses, these pitchy messages are often accompanied by music and videos with cinema sound. Generally, the messages are not humble but are about improving the world, doing good for poor children and the next generations. They make potential investors feel good about themselves. Hard technology is presented with soft values. Moreover, the cool presentations give you a sense of being part of the global population that is closely connected to the global elite. The communication to the public is pedagogical. Often, one picture tells everything, which fits with the digital interface of contemporary societies. Surely, there is a need for detailed documentation between commercial parties, but these are kept to a minimum and are not part of the constitutive frames.

Illustrations are often a merge between arts, images and videos showing the technology ‘as if’ the future is already here. For example, in visual frames from the Blue Moon, a projected lunar lander appears to already be flying to and repeatedly landing on the Moon with different payloads (Blue Origin, 2019a). Moreover, visual frames illustrate how satellites constellations in combination with the simultaneous 5G development will light up the ‘global transmission belt’ considerably. The frames show how only small satellites enable machine-to-machine communication (a vital component of Internet-of-things).

Generally, the scale of vision is also characteristic of the commercial suborder. Many times, the natural beauty of space serves as a majestic and peaceful background, a dark, silent and lifeless place with satellites displaying sharp technological edges. The space environment and nature are depicted as possible to control, improve, manipulate and cut through. This communicates that “[th]e less the customer has to think about space the better” (commercial). Consequently, the deep frames show that reality can be invented and the physical world overcome. Some ideas for this new space era are mining of water from near space which make sense in the future when, according to the picture below, millions of people are working and living in outer space. In addition, in this future some identify outer space as a suitable place to be used for waste disposal and for heavy

industries that we do not prefer to have on Earth (Figure 16). Other interrelated visions are illustrated in picture below (Figure 15) which has the message “open access to space means: give access to space to everyone” which in this context means, give access to small companies.



Figure 15: New Space Conference, Luxembourg 2018, “Open access to space means: give access to space to everyone”. Credit: the author.



Figure 16: Millions of people living and working in space. Credit: the author.

The language set is somewhat limited due to the wide use of visual frames. However, it concerns internal numbers and figures, business cases, production lines and competitors. Communication should be beneficial for sales. Transparency is allowed up to the point that

confidence is established. Internal discussions concern calculations and estimations of costs concerning for instance how much to pay for lunches, a week and golf fees, cleaning services, renovations, cars etc. The language set concerns frequent thinking about numbers and money, as well as calculating weekly, monthly, and annual costs and gains. Moreover, this real typical person is inclined to talk in a way that hints to their economic standing.¹⁷⁴

As for temporality, during my encounters with the suborder, there was a generally expressed view that the future will be better than the present and the past. There was a strong belief in progress as “[t]he future is going to be great” (commercial). For instance, SpaceX was founded in 2002, “to revolutionize technology and enabling people to live on other planets” (SpaceX, 2020). It is almost hard to grasp this temporality of possibilities and change. For the entrepreneurs, “there are no mature industries, change is happening everywhere [...] in every industry” (Bezos, 2018). The world is moving, always changing into new situations and business opportunities. Time is evolutionary and history is made by these transformers. This contributes to all-encompassing agency.

Chronos is dominated by the market time that is “accelerating” (commercial). This trajectory is influenced by ideas of ‘first come first serve’ and that segments are ‘up for grabs’. Consequently, things must happen fast to outpace competitors. The stereotype is in a hurry to come up with an idea and create a demand, a market. The brand is equally important as the product to create value. Profit and return to investors have short cycles. A few years is the expected timeframe before a return is expected and the market is consolidated. There is a hurry to secure markets shares, frequency allocations, funding and expertise, in order to launch first and to ultimately be established as *the* service provider, or one of the major service providers. For this, a small and efficient staff/bureaucracy is crucial. Moreover, for the new space billionaires, the own money sometimes opens the chance to override market time constraints to fulfill bold visions.

¹⁷⁴ Doing so, the commercial real typical person expects me to be interested; they do not expect me to be satisfied with my material standards. They like to help me to improve and provide advice on how I can become wealthy.

The constitutive materiality of this suborder is scattered to attractive locations where commercial and technological opportunities thrive. The real types meet in high-quality locations and for efficiency; they meet in airports, taxis and hotel lobbies. They visit high-end restaurants to make business deals. This pattern of interaction spans the globe. Thus, a characteristic of the commercial suborder that relates to the direction of the emerging outer space order is the strategic and flexible interaction with key persons, parties and communities. Rather than working through formal bureaucracies, people and events facilitating the visions to materialize are pinpointed. In interaction, salespersons are socially skilled and appeal to feelings. At times, they must create a sense of social bond within a few minutes and sell the message and product in a few seconds. They are a specialist in catching attention and establishing confidence. For establishing social bonds, the atmosphere of the attractive sites is beneficial as well as contributes to the agility of the commercial suborder.

6.3.4. Form, robustness, authority, politics and political reason

With the merge of new space with traditional space, the commercial suborder is now stronger than ever before, infused by the energy and public reach of the new space entrepreneurs. This contributes to the robustness and authority of the commercial suborder. Even though the complex, unpredictable and fast pace of the space market, this community possesses agency that reaches outside the community and well into the future. Authority is gained by agency and brand, rather than by reasoning. Still, the political suborder might be approached to enable breaking the barriers, and the legal suborder to establish a minimum set of rules to satisfy investors and customers. The general view is that decision-makers are “far too slow [...] *we know what is needed*” (commercial).

Concerning political reason, within the commercial suborder, philanthropic labels/tags were common on blogs and other personal accounts. On these platforms, the elites take a side on some topical issues. Most notably, Branson wrote on human dignity, racism and the death penalty under the tag “Just Mercy” (Branson, 2020). There were also signs of a self-proclaimed responsibility, due to the recognized personal power and capability to ‘make a difference’ vis-à-vis the incapacity of

political state power (Bezos, 2018).¹⁷⁵ In other words, the perceived influence and autonomy have created some sense of responsibility among the elite of this suborder, beyond the company and the invisible workings and promises of the free-market.

Nevertheless, generally, reason was instrumental and practical rather than characterized by self-restraint. For example, the use of space was never questioned, nor was the functioning and merits of a free market. However, also in the wider and huge commercial community, there were some indications of doubts as responsibility was at least discussed. For instance, the World Economic Forum Annual Meeting in Davos, 2020 addressed the “Stakeholders for a Cohesive and Sustainable Future” (World Economic Forum, 2020). It is certainly difficult to know the impact of this framing. However, it opened a small possibility for reflective political reason. Alternatively, the discourse may rather foreshadow an order of fairness and responsibility for the sake of branding rather than self-restrain, ontological equality and sustainability. Within the emerging outer space order, thinking about sustainability was nevertheless noticeable in the campaign of “Responsible Space” launched by OneWeb (OneWeb, 2020). Moreover, larger space conferences as the CyberSatCom in Los Angeles also has added the topic of sustainability to the otherwise securitized agenda. The sustainability concept seems to be spreading; the question is what it entails. While some are genuinely engaged in sustainability, a backstage comment is stuck in my memory. After a long, late hour conversation, in which I had tried, from different angles to ask for and to discern a higher aim of a commercial representative, he is finally started to get frustrated and liked to change the subject, explaining that “[w]e are just in it to make money [...]. It is as simple as that” (commercial).

As a final point, sustainable development in outer space, to more than one representative of the commercial suborder, means sustainable commercial development. Moreover, “[t]hinking or rhetoric of sustainability is often adopted by CEO’s and sales personnel. It is harder to reach out to the developers or consultants themselves” (commercial). Hence, so far sustainability has not become much more than a rhetorical frame within

¹⁷⁵ A derivate of Bezos interview about large institutions and transparency, as well his ownership of the Washington Post. The interview was conducted by Mathias Döpfner for Business Insider (Bezos, 2018).

the commercial space order. For example, space debris mitigation did need to make economic sense. “Debris? We have a plan for debris mitigation and deorbiting, but does it make sense from a business point of view? We will do anything if it makes sense from a business point of view” (commercial).

6.4. The legal – stuck in interpretation, strikingly text-bound and directionless

6.4.1. Identity, motives, structure and agency and organizing principle

The legal suborder is a rather diverse community that can be divided into two sections; the traditional lawyers and the space law experts. While the traditional lawyers are of different legal backgrounds, their identity is based on being professional lawyers. Hence, they are part of the larger, global but rather diverse legal community. The legal real type characteristics outlined here are mainly based on this traditional legal community (not the space law experts) and observations of the Legal Subcommittee of the UN COPUOS. In other words, the legal community foremost engaged with international space law. Being a lawyer is traditionally an elevated profession and the identity is narrowly formed to the telos of purely being a lawyer. Within the emerging outer space order, the identity leans towards the individualist not the collective side of the spectrum.

The most significant characteristic for this real type is the fundamental lack of rationale for reaching a consensus because this would diminish the need for their expert opinion and status.¹⁷⁶ For the legal real type, the work lays exactly in coming up with interpretations, not reaching agreements over legal formulations. Even though many of the persons probably like to formulate law, they still like to show off as skilled interpreters of legal concepts. The level of individualism was notably high. It is a heavily text-bound real type, and according to the scientific community, not always well informed about the very phenomenon of

¹⁷⁶ This can be associated with functional analysis; however, it is derived from pure observations of practices.

outer space. Legal formulations are familiar to this real type, not necessarily outer space. For example, the scientific real type does not consider the legal suborder to be part of *the* space community that knows space, but of the wider or broader space community.

Within the legal suborder, there was *no specific drive* at all. It seemed like most were waiting for others to point out the direction and to drive issues. At the same time, the suborder separates itself from politics, as well as from economics, and therefore appears to be rather distinct from the suborders that hypothetically should point out the direction. The legal suborder seemed to be detached from practices happening outside the specific text *at hand*. In contrast to the commercial suborder where time is money or the military suborder where well-defined goals are essential for progress, the legal suborder is stuck in interpretations. For this suborder, the mere existence, rather than result appears to be enough of a telos. It is sufficient to be present, hoping to contribute with interpretations and occasionally texts. However, creating possibilities seemed to be far outside the responsibility of the legal suborder.

One exception that proves this rule is the charismatic Alexander Soucek who in the legal suborder appears to have ‘pastoral powers’. In the UN COPUOS, Soucek speaks with energy, constructively and openly. His rhetorical skills stand out in the otherwise formal, monotonic legal mumble. With energy, passion and some uniting expressions, he offers advice but still carefully passes the responsibility to the political suborder. In our interview, he describes some of his work in the Legal Service Department of ESA and his role of, mostly, “being a mediator”. Remember, I use this interview as a reflection of, and contrast to, the traditional legal real type. I interpret his answers as an effort to inspire and to encourage the traditional legal suborder to look outside the text.

Every community has a different understanding... of things, naturally. Every community has its different background, its different environments, different borders, different expectations. It's normal. So, a politician, in the classical sense, sitting in the government, has a different approach than a lawyer, than an economist, than an engineer and a scientist. So, we all have very different approaches. The art is to make a network between them. [...]

The challenge is to translate things into the language of each other. That is what we try to do here and then the inter-country thing on top. [...] The most important skill in this situation, for me, is the interdisciplinary understanding. To think with the [sic] different mindset, to be able to speak with them. As a lawyer, naturally, you often are dealing with conflicts, and then it is important coming to solutions. For me, the most important [aspect] is to start with to understand [sic] the other side. It seems natural to do, but it is not. For me, especially in the space world, the most important thing is to understand what you are talking about. There are many different understandings of for example Space Traffic Management [...] I usually bring a chair and sit in the lab with the engineers and just have a conversation [...] Sometimes technical experts ask us for advice, we should do the same thing (Alexander Soucek, interview, April 2017).

Besides supporting the general theorizing of this thesis, about the differences between professional communities, these reflections underpin my observation that the legal real type is a lawyer working and occupied with text. Within the space community, there is a tangible counter-reaction to the directionless legal community – the space law experts, who in numbers is a rather small community.¹⁷⁷ It is also evident that critical issues that need to be addressed, and crucial negotiations to be conducted, do not become allotted to the Legal subcommittee in UN COPUOS, but to the Scientific and Technical Subcommittee. According to one space law expert “it is well known that the work of the Scientific and Technical subcommittee moves very slow, however, compared to the

¹⁷⁷ The International Institute for Space Law (IISL) has about 450 elected members from 50 countries (IISL, 2018:2). Out of these, about 100 people represent the more active and transformative community. Their professional background is not necessarily legal, but academic. “In fact, it is an advantage that the legal sub-community is not made up of traditional lawyers, that tend to have a narrow focus, but of academics with a sense of the political mechanism beyond international space law, in combination with knowledge about outer space” (legal expert). These legal experts typically have received their space law knowledge by participating in shorter courses, for example, the four-week space law course held by the International Space University (ISU) and by practice and devotion. In a constantly growing area of activity, these persons anyhow have a common stock of legal knowledge and are called space law experts. Gradually, the stock of knowledge about international law turned out to be limited, and not overly time consuming to grasp. However, private law and national law was increasingly important to manage or even master. There is tension between traditional lawyers and space law experts.

Legal Subcommittee, it is a dynamo”. This description of one of the subcommittees as a dynamo captures the observations I made about the Legal subcommittee. This situation may weaken the belief in rule of law as an ordering principle.

6.4.2. Outer space and critical issues

The fundamental issue for the legal real type is to reinvigorate the authority and meaning of the Outer Space Treaty (OST), as well as the other four international treaties governing outer space.¹⁷⁸ This effort includes wider ratification, knowledge about and adherence to the treaties. However, “the five outer space treaties were never complete because, at the time of formulation of the treaties like OST, the world could barely imagine the outer space. There was only a handful [of] potential space nations 60 years ago” (legal). In the contemporary situation of the emerging outer space order, there is no appetite for new or updated international treaties like OST, nor for legally binding guidelines. Instead, the principle of self-defense has surfaced in the discourse about the regulation of outer space, which is not at all in tune with the peaceful uses of outer space outlined in the OST. Therefore, the critical issues that unified the community were to expand the knowledge about the international space treaties and to reiterate their message.

In the book *Space Law and Treaties* (2009), which has been regarded as central to the suborder, Francis Lyall and Paul Larsen conclude that: “In the early days of the space age only states were the actors. Now we have the emerging commercial uses of space and their requirement of regulation, whether national or international [...]. Apart from being careful as to innovation, we must also ensure that international space law does not become something separate from general international law” (Lyall & Larson, 2009:559). One of the most critical issues is to ensure that national space legislation reflect international law. Yet, an even more fundamental aspect of outer space law can be discerned in the formulations in the same book: “Law is law. In space we seek the ‘rule of law’, not ‘rule by law’ where rules are simply adhered to when convenient to the powerful, and altered at their behest” (Lyall & Larson, 2009:560). I find that this comment of two established traditional space

¹⁷⁸ All major space powers, like Russia, China, the UK, France, Germany etc. are parties to the treaty (Tronchetti, 2013:8).

lawyers reflects that the very belief in rule of law might be challenged in outer space affairs. In addition, Fabio Tronchetti who regularly participates in the UN COPUOS sessions finds that international law is about settling disputes. However, in space law, there is no effective mechanism for dispute settlement, as space previously has been handle by a few states and bilateral discussions were sufficient (Tronchetti, 2013:47ff). Now, with increased space activities the demand for dispute settlement mechanisms has augmented (*ibid.*).

Moreover, Tronchetti observes that differing national legislation might lead to a situation of forum shopping when private companies apply for licenses in states with the most favourable legislative environment (2013:82). Katrin Nyman-Metcalf argues that in a fast-developing area as outer space, “instant customer law” emanating from the space treaties might be suitable for the legal framework of interstate relations and “self-regulating” for commercial activities. Self-regulation is understood as “regulation by those same subjects that are the ones being regulated or at least by their peers, by creating some form of a regulatory body, like an industry association or similar” (Nyman-Metcalf, 2017:268). Self-regulation can imply developing common rules like codes of conduct by states but is commonly associated with the growing private sector (Nyman-Metcalf, 2017:271ff). Nyman-Metcalf finds that in situations when the alternative to self-regulation “appears to be not official regulation but rather no regulation at all”, self-regulation becomes a necessity, just like in cyberspace (Nyman-Metcalf, 2017:275). Moreover, she argues that if imposed from the outside, regulation might not be suitable. Morally, when concerned actors are engaged in self-regulation, they might take on more responsibility (Nyman-Metcalf 2017:285f). Besides, if the companies manage to self-regulate, there is less need for state regulations, which can be a strong incentive for self-regulation (Nyman-Metcalf, 2017:280).

However, instant customer law is feared by many other space lawyers as it, again, risks being defined by the practice of the most powerful. In Article 1 of the OST, it is clearly stated that “Outer space, including the Moon and other celestial bodies shall be free for exploration and use by all States without discrimination of any kind, on the basis of equality and in accordance with international law, and there should be free access to all areas and celestial bodies” (UN, 2008:4). Thus, according to the treaty, the ordering principle of the traditional space community

demanded absolute equality. At the same time, the traditional legal real type was obliged and responsible for upholding close to absolute national interests, which hampered the formulation of international law. Moreover, as noted before, one persistent professional deep frame was that the law should follow the developments of activities, not regulate in advance. This common and normalized argument was that if a law is made in advance, it might not be adequate in the end. This slowed down the law-making process. Thus, for some activities, there is no international law to advance, and space is left open to be defined by first practice. Thus, international space lawyers were stuck in a catch-22-like situation. However, reiterating the fundamental principles of the outer space treaties contributed to the claim that something has been legally formulated in advance. Still, the formulation of codes of conduct to concretize the practical and contemporary meaning of the treaties happened outside the legal community.

During my encounter with the legal suborder, the most urgent and critical issue was to regulate the rapidly growing number of microsatellites and related space debris. This was a pressing issue especially as many companies were about to, or started to, launch mega-constellations of satellites. This issue concerns the exponential shift in numbers of satellites but also that “[t]hese satellites are very small, [and] the problem is that many do not have any control, so you just throw them up” (legal). The concerns were also expressed since “[o]nly 5 per cent of them are maneuverable” (legal). Hence, once launched it will not be possible to adjust their orbital paths. Moreover, “NGS-constellations cannot be stopped; they will find a way. Especially now as access to [the] Internet has been declared a human right by UN” (legal). On the positive side is the few years short lifespan of these satellites; however, they are then easily replaced by corporations in the commercial suborder. Moreover, as these satellites mainly are being launched into LEO they are non-stationary (compared to satellites in GEO) and there is “an indefinite number of ways of being non-stationary, but you cannot have an indefinite number of rules” (legal). However, “the attitude has shifted to a more responsible attitude to the environment and debris removal” (legal). Thus, actors are starting to adjust their techniques and procedures in accordance with debris mitigation. At the same time, there are still new actors entering outer space, and new activities are planned in, for instance, on orbit manufacturing and in orbit maintenance as well as an

increasing amount of transportation.¹⁷⁹ Thus, many new actors need to be socialized into the nomos of the orbits, so that space debris mitigation and reduction is ‘built in’, into hardware, and the mind of all different space actors. The legal suborder has an important role in formulating law for clear responsibility between the actors involved.

Increased and diversified activities in the orbital environment require education, outreach, and familiarization with the treaties, the LTS and other guidelines and standards. At the same time, the legal real type strives to remain in authority over this professional stock of knowledge. However, as the debris issue is becoming more of a technical concern, it will be handled within the scientific and commercial suborders and amongst operators. Solutions will be found as long as these are framed in an apolitical manner, such as the term ‘Space Traffic Management’ (STM) advocated by the more multidisciplinary space law experts.

The other major critical issue was the status of space resources and the possible rights to extraction of these. One move that crossed the ‘redline’ of the legal real type’s lifeworld, and swayed the status of international law was the enactment of the US Commercial Space Launch Competitiveness Act (US Congress, 2015). In the UN COPUOS sessions after this announcement, emotions of irritation were displayed and most discussions in the breaks concerned the national legislation of the US and Luxemburg (Luxembourg Space Agency, 2017). Interestingly, in 2020, all of these informal tensions and debates that had been ongoing in the global spaces, were officially, clearly and straightforwardly addressed in an Executive Order of the US President Donald Trump in which he made the US position very clear to the world. The purpose was to address uncertainties “regarding the right to recover and use space resources, including the extension of the right to commercial recovery and use of lunar resources”, that “has discouraged some commercial entities from participating in this enterprise” (The White House, 2020a:1).

The executive order underlined that the US has neither signed nor ratified the Moon Agreement (1979) and that only 18 states have done so (The White House, 2020a:2). At the same time, the US and 108 other countries

¹⁷⁹ On Orbit Manufacturing is assembling, and production of a specific technology, such as solar arrays in, or by a space station, “which will catalyze unprecedented space applications and new business opportunities” (Made in Space, 2019). In Orbit Maintenance includes the maintenance of orbital platforms.

have ratified the OST from 1967. It is argued that the difference between these texts as well as the level of ratification “contribute to uncertainty regarding the right to recover and use space resources” (ibid.). The conclusions and statements that followed from these observations were that “Americans should have the right to engage in commercial exploration, recover and use of resources in outer space, consistent with applicable law. Outer space is a legally and physically unique domain of human activity, and the United States does not view it as a ‘global commons’” (The White House, 2020b:1).

Thus, “it shall be the policy of the United States to encouraging international support for the public and private recovery and use of resources in outer space, consistent with applicable law” (The White House, 2020a:2). The executive order challenged the authority of the Moon Agreement and instructed the US to object to “any attempt by any other state or international organization to treat the Moon Agreement as reflecting or otherwise expressing customary law” (ibid.). In the brief comments to the short executive order, it said that “President Trump underscores our commitment to the 1967 Outer Space Treaty, which has provided a foundational set of rules of the successful use of outer space for more than fifty years” (The White House, 2020b:1). The comment also clarified that this order and policy were “important to the creation of a stable and predictable investment environment for commercial space innovators and entrepreneurs, and it is vital to the long-term sustainability of human exploration and development of the Moon, Mars, and other destinations” (ibid.).

An US space law expert comments on this executive order, giving his personal view and noting that: “We merely have subjective, academic interpretation of how those rules apply to space resource utilization – an activity not contemplated by the architects of space law whatsoever” (Johnson, 2020). He continues:

[o]ptimistically, likeminded States who are also eager to develop space resource activities and to assist their commercial space industry to develop will see the utility of clarifying the road ahead. Those States who wish to actually forge ahead might craft their own national space legislation, giving their nongovernmental (commercial) entities the explicit rights under Art. I [of the OST] to use space resources. Luxembourg is there already, and

apparently the UAE, and perhaps Brazil, or Japan, may be following soon (Johnson, 2020).

These comments by the independent space law expert contribute further to define the reality of space resources as an unregulated issue, which is now regulated by the capable space actors clarifying the road ahead. The expert further reflects, “There are fans of the Moon Agreement, who are often more fans of international law than of space activity and see it as their hobby to promote the Moon Agreement. Whether their capitals back home know they are promoting the Moon Agreement is a good question” (Johnson, 2020). He wishes to see a clarifying resolution about space resources from the UN COPUOS, rather than a treaty as he finds that “[i]f you open up discussions on a treaty, it will take at least a decade and, in the meantime, no space resource utilization missions will be launched. It will stunt progress in spaceflight, not because of any technological impediment, but purely because of political impediment” (ibid.).

Regardless of this view, in the widely ratified OST, outer space is termed a “province of all mankind” (UN, 2008:4) and the preamble expresses a belief that “the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development” (UN, 2008:3). Moreover, for many states, the Moon Agreement is viewed as international law and it applies not only to the Moon but also to “other celestial bodies within the solar system” (UN, 2008:27).¹⁸⁰ In Article 11, para 3, of the Moon Agreement it is stated that “[n]either the surface of the Moon nor the subsurface of the Moon, nor any part thereof or natural resources in place, shall become property of any State, international intergovernmental or non-governmental organization, national organization, or non-governmental entity or any natural person” (UN, 2008:31). Hence, this will continue to be one of the most critical issues for the legal community.

Another major critical issue for the legal suborder was to reiterate the message of *peaceful* uses of outer space. Since OST and the other space treaties are founded on the idea of peaceful use of outer space, there was no space law, nor international legal frameworks that could address

¹⁸⁰ As of 1 January 2020, 18 states have ratified and four, including France and India, have signed the Moon Agreement (1979) (UNOOSA, 2020b).

military activities in outer space, other than the UN Charter and the deadlocked traditional international arms control regime.¹⁸¹

6.4.3. Language set, visual frames, temporality and constitutive materiality

For the legal suborder, the language set revolved around the UN treaties, resolutions, articles and paragraphs, ‘paras’, but also on national legislation and corporate law. Less emphasis was on codes of conduct and guidelines. Besides, on a general note, the idea of facilitating expansion and growth was gradually underlying the legal literature and debates of space law. International lawyers were increasingly engaged in private law, which was reflected in the language set. Visual frames too were concentrated on text.

The real typical history of the legal suborder always starts with the launch of Sputnik (1957) and OST (1967). The focus is on the past and the heritage of the past. It is a history-oriented deep frame of time. Some relate the development of international law of space to the ‘masterpiece’ of the Law of the Seas/Convention, others are keener to compare the historical development of space law to cyber law. This creates a tension between those with patience and ambitions for a maturing regime and the cyber law advocates that seek more rapid lawmaking processes.

Chronos, the social time of the suborder is slow. Let me provide one example. During the space law symposium at the UN COPUOS, many diplomats were relaxing or working with something else, not attentive to the presentations in the front. At the end of the symposium, not many diplomats were still in the room. I had a sense that I am not in the right place and that I am not participating in anything particular. The ordering is taking place somewhere else. No suggestions, just new questions, only uncertainties, and new interpretations. Even though I had looked forward to this symposium, and the important topic, I had a strong impulse to leave the room. This was a wasted window of opportunity as so many key

¹⁸¹ More about this in section 7.2.4 about the UN COPUOS.

persons were there. Substantial ordering activity *could* have taken place here.¹⁸² Visions could have been articulated.

In the legal suborder, there were worries about the future developments in outer space and it was mentioned that it would only be regulated *after* an incident or accident. There was a hope that the incident would be of a suitable scale so that it would encourage regulations, but still not cause too severe damage to the orbital environment or space assets. Some believed the need for regulation would grow in conjunction with space tourism, as this activity would imply risks to human life. Academically, discussions had started about very interesting legal situations that would occur should an asteroid be incoming towards Earth. Thus, there were some sentiments of optimism, space activities are growing and so are the individual professional options. Despite its lack of sense of direction, the sole existence of this suborder crucially contributes to the normality and predictability of the emerging outer space order.

6.4.4. Form, robustness, authority, politics and political reason

The legal suborder is small but well represented in the global spaces, and some knowledgeable legal experts have authority within the space community. The suborder is not that robust as there is not an overly strong sense of community. The suborder is rather held together by self-interest and as a space for personal display. Yet, together with the tradition of international law, the legal suborder's existence and well-established presence in the global space of outer space ordering make it tenacious and uphold some sense of hope within the professional suborder and for political order. Generally, though there was not much optimism for international law. Progress would happen through non-legally binding procedures that would possibly become binding or practice. Therefore, some were engaged in promoting uniting concepts and developing responsible national and commercial law. Some individuals were strong and drove interest groups and particular issues. Yet, the legal real types were waiting for other communities to point out the direction and to drive issues. However, there were no political visions

¹⁸² This breaks with my expectations. An experienced expert has told me he never uses his time or project funding for taking part in the Legal Subcommittee. Instead, he regularly attends the Scientific and Technical Subcommittee. Unfortunately, I make the same observation.

for international space law and space law was outside the deep frame of the scientific real type. At the same time, there was a demand from the commercial suborder to do away with legal uncertainties as soon as possible due to the need of attracting customers, i.e., satisfying insurance companies and investors as well as being first into the specific market segment. Thus, commercial law represented an attractive opportunity for the legal real type.

6.5. The formal political – guardians, overloaded and stagnated

6.5.1. Identity, motives, structure and agency and organizing principle

The political real type is based on the diplomatic profession. Thus, although, ‘being a politician’ commonly is a lifelong career, in this inquiry, it is not regarded as a professional order, nor as a deep structure.¹⁸³ Instead, this formal political real type is based on observations of the diplomatic community and to a lesser extent on other governmental officers involved with outer space. The diplomatic profession is for social scientists and citizens viewed as a prestigious and elevated occupation. In many countries, the diplomatic career starts with a thorough selection process of applicants. Becoming a diplomat requires great language skills, and the right personal abilities and attitudes. It is rare for a diplomat to have a technical background. Professional training is entrenched in situations in which the state is at the center and it remains at the center throughout the diplomatic career. This political suborder is assumed to carry out the work following the will of the leadership of the state. It implies that sometimes the political real type is obliged to speak for a national position that runs counter to their own beliefs (political). Diplomats are never free but always representatives of the state. For example, “[i]f you are concerned with, for example, space debris regulation, you better work from another angle” (political). The *identity* is formed by being a representative of the state and the

¹⁸³ Hence, this real type is constructed to reflect the deep structures (persistent patterns) of the emerging space order. The quantum-mind entangled professional orders display the institutionalized professional order.

international order. The identity is imposed and trained from the outside rather than stemming from within. Compared to the scientific real type, identity is more mechanic for the political real type.

The *drive* is mostly based on spirit. Thus, the real type strives for individual, as well as national status and standing. The diplomatic organization is traditional and hierarchical with the strongest individuals in the most prestigious positions. The hierarchical professional structures are competitive. At the same time, although this is a traditional and highly symbolic suborder, it has become routinized to that degree that the telos has faded. Hence, classic diplomacy of dialogue has turned into procedures and imitation. Reason is characterized by instrumental rationality albeit with finesse. The political real type is a *guardian* of the familiar international order on which the professional privileges are based.

To this real type, the world is familiar, known and predictable. The stock of knowledge concerns different states, their characteristics, processes and positions. In the global setting of the emerging outer space order, the underlying organizing principle is the balance of power amongst states. For the diplomatic real type, this balance should be managed by state representation within the most important and prestigious parts of the diversified and intensified international institutional landscape or managed by lateral discussions and negotiations. The world consists of different diplomatic fora, agenda issues, working groups and procedures that should be navigated and prioritized. Symbolic gestures and priorities contributed to this real type's work of establishing an advantageous individual and national image. Structure is more pronounced than agency, especially since the world is rather predefined.

6.5.2. Outer space and critical issues

Outer space was initially a minor issue to the highly traditional political suborder. Generally, the political real type had not yet understood the increase in activities in outer space, nor the potential risks or the societies' dependence on outer space. This might also reflect the more widespread forgottenness about outer space.¹⁸⁴ When the political real

¹⁸⁴ Characteristic for the political real type is that this professional must be "accountable to multiple masters, to everyone in the chain, to the president, and then to the congress and committees, and then to media and the public" (political).

type did encounter outer space, it was perceived as an opportunity to project national symbolic power and for signalling.

The primary critical issue was to uphold the state interests that increasingly have come to equate economic standing. For some, it meant using the institutional landscape for national interests. For some, this implied working for the rule of law and an institutionalized international landscape. The political real type increasingly found themselves in a situation where they needed to handle a world resembling the great power game described under the military real type. Since many of the high-ranking diplomats (as well as political leaders) did have experience from the symbolism of outer space during the Cold War, they brought this worldview into the present. This made their stock of knowledge adequate again. Understanding the balance of power, national interests, arms reduction and signaling was yet again rewarding.

On a general note, I observed a reluctance to embrace the new and unfamiliar as well as an eager to hold on to the strong tradition of negotiating 'old questions'. For example, terrestrial weapon reduction agreements and regimes are given high priority. To take something new into account within this established traditional suborder risks imply that something old must give room for this novel issue. This involves the risk of disrupting established hierarchies and procedures. It also implies possible embarrassment, uncertainty and a less comfortable situation since outer space is initially time consuming to grasp.

On occasions, when outer space does receive attention, the political suborder views the development in outer space as firmly bound to the terrestrial international order. This might be due to that the diplomats are crossing in and out between issue areas, which risks making them appear more familiar than they are. In very general terms, this suborder reproduced the traditional modern order and renationalized outer space.¹⁸⁵ In this respect, the political suborder shows strong continuity from the first space age into the contemporary conditions. There was no energy,

¹⁸⁵ For example, already in 1999, Bill Clinton's administration for the first time in the US national security strategy declared that unimpeded access to and use of space was a vital national interest for the US (Sheehan, 2007:94ff). In 2002, the Bush-administration withdrew from the Anti-Ballistic Missile treaty (ABM-treaty) of 1972, which can be associated with military technology in outer space (Sheehan, 2007:102).

attempt or enthusiasm to see anew. Reluctantly, I am obliged to write that there was a sense of pessimism and concern.

The expressions of national interests in space have amplified over the last few years. Illustrating the symbolic value, internally and externally, of outer space, the US President Donald Trump has been outspoken and decisive about US space power ambitions.¹⁸⁶ The French President Emmanuel Macron has been vocal too about the need for the protection of the national satellites, the approved creation of the French Space Forces and the ‘staff up’ of ‘space high command’ in Toulouse (Posaner, 2019). The capabilities would include ‘active defense’ of the French array of space capabilities (Posaner, 2019).¹⁸⁷ As mentioned earlier, China (2008), the US (2008) and India (2019) have carried out anti-satellite tests.

Interestingly, space debris is not an overly critical issue within the political suborder. Space debris can be handled by experts and does not require diplomatic attention, other than a routinized and appropriate number of national statements about sustainability at the right moment. Typically, outer space is a remote and minor issue on the political agenda. There are more urgent and rewarding agenda issues to handle. Hence, outer space is an ‘agenda issue’ that needs to be addressed in the smoothest way possible to save time for more acute world order events and negotiations. There was no sign of this political real type contributing to innovations, visions or long-term goals for a sustainable outer space order beyond the mentioning of the UN Sustainability Development Goals (SDG). Occasionally statements mentioned capacity, transparency and confidence building measures (TCBM).

Another critical issue for the political suborder is how to cope with the commercial suborder. One expert explained that the “government is

¹⁸⁶ See for example the video from the reestablished US National Space Council held in front of the national flag and space shuttles (The White House, 2017).

¹⁸⁷ This French initiative did cause some worries within the EU and ESA because of the tradition and will of the member states to address space collectively within these organizations (Posaner, 2019). Macron then, underlined that these capabilities would strengthen the “national autonomy” but at the same time fit within the “European framework” (ibid). Relatedly, in 2019, the European Commission established a new Directorate-General for Defence Industry and Space to strengthen the space sector. This Department is responsible for the defence industry and space and for “improving the crucial link between space and defence and security” (European Commission, 2020).

going to be more and more dependent on the private actors. Much expertise is within the private sectors, but nowadays the expertise has expanded a lot in the industry, in academia. It is much broader. For the government it is harder to come up with [the] money, the private sector can apply more money” (political). A diplomat echoed this sentiment: “companies are capable, and they decide whether [something] is worthwhile and meet their goals” (political). Thus, the political suborder is under pressure of the commercial suborder, which can also move its production to another country. This in turn would not be beneficial in the political suborders view as building or maintaining a capable aerospace workforce is a general state interest. Therefore, the political suborder promotes outer space to inspire new generations of engineers, which in the end is understood as beneficial for the economy of the state. The EU’s outer space policy also shows how economic considerations are driving policy. For example, in the conclusion of the European Space Strategy, it is written: “The EU cannot afford to *fall behind* in this domain. It must remain in the first rank, building on Europe’s talents and expertise, capitalising on its investments and anticipating the opportunities of tomorrow” [my emphasis] (European Commission, 2016:13). To summarize, although there are political visions and attention to SDG and the sustainable development of outer space, for the political suborder the construction of outer space and critical issues are strongly influenced by the military and the commercial suborders.

6.5.3. Language set, visual frames, temporality and constitutive materiality

As evident from above, for the political real type, the *language set* and *visual frames* are increasingly reflecting those of the first space age. Only now, there was no indication of the creation of new treaties. Substantial negotiations, formulations or shared understandings of the first space age were strikingly lacking. Still, this language set, with associated critical issues, was to be passed from the first generation of space nations to the newcomers. The newcomers should be socialized into a reality and order that were not characterized by their massivity but by uncertainty and loss of leadership. The latter can be explained by the situation in which most political real types are keen to imitate and fit in, making few apt to take the lead as it might imply risks.

The language set and visual frames are written text. UN texts are defined by abstract principles about humanity, equality and future generations. Visual frames also consist of organizational schemes and agendas illustrating the procedures of the institutional landscape this suborder had to navigate. Diplomats are very attentive to signals such as body language. The diplomatic real type should look and act safe and predictable. This real type is also skilled in perceiving nuances and signals from peer diplomats and in the diplomatic room. Despite this skill, the formal political awareness of what was going on in the room and the perception of the other participants' roles and goals indicated a deductive perspective on world politics. Notably, prescriptive role-descriptions were widely imposed on different nationalities and their agendas. Before a delegate even started to speak, the outcome/message was known/given. As some nationalities "are always", for example, "obstructive" (political). It was presumed that behind the role expression was a unitary state actor. In other words, the quantum-tangled diplomats have very rigid expectations of each other, as the roles are set no matter what information is transmitted. Hence, there was a tangible tendency to simplify and reproduce the roles no matter how much the actor in question tried to break out from an old or prescribed role. Besides the deep socialized professional worldview, this can primarily be explained by *temporality*.

Except for the motive of spirit, there was a strong sense of stress. Hence, the political real type, more than the other suborders was characterized by filled agendas, deadlines and pressure. Thus, the chronos of this suborder induced a widespread sense of work overload. For an observer, it was evident that this narrows the cognitive possibilities, which consequently leads to stereotyping. This is caused by a social time defined by deadlines and procedures but also due to the complexity of the issue and the political real type always being accountable to different masters. Diplomats "work hard and are really dedicated. They just have a lot of requirements [...] and sometimes, conflicting goals as well. It is more difficult than goals that are easily defined, like make [a] profit or stock evaluation [...] for the governmental official it is 'hard to show that you are productive'" (political).

Although the diplomatic profession is still perceived as a privileged profession to outsiders, it is characterized by hard work and long working days. Rather than reflective reasoning and dialogue, the political real type

is literally running on routine adhering to political processes that uphold perceptual order. The level of innovation and agency was low. When representatives from outer suborders were communicating with the political suborder, simple messages were chosen. As a space expert notes about his recent PowerPoint presentation prepared for representatives of the political suborder “[w]ell, look here! This is very, very pedagogical” (engineer). Concerning temporality and the view of history, they are heavily contextualized by state history and judgements are based on previous experiences. The world and its representatives were viewed as static or cyclic. History is possibly altering from more violent to less violent times. Altogether, this made the political real type less inclined to see anew. The political suborder is suffering from ‘deep frame capture’ and stagnation. This observation might not have been so apparent if it was not for that this real type was contrasted to the other real types.

Another important observation about the political real type concerns the *constitutive materiality*. After a period of participant observations, it became evident that the political real type commonly showed up at symbolic moments, made a national statement and then left. Hence, the national statements formulated in the capitals were rather free-floating from the ongoing negotiations amongst the experts. There was a general absence of the political real type in the physical (political) sites where ordering of outer space took place. When the diplomatic real type showed up, they were already in mental preparations for the next event. Besides temporal constraints, this real type (on a world order level) is also limited due to economic reasons. For example, at the very beginning of the sessions formulating resolutions to the UN General Assembly (GA), a representative from the GA presents the budgetary situation. This aptly set the boundaries for the discussion and what was considered possible.

6.5.4. Form, robustness, authority, politics and political reason

The political suborder of the emerging outer space order is medium-sized but not strongly involved in ordering. It works in a familiar and predictable way. It is robust and persistent with its wide validity across the globe. However, in relation to the world order transformation, it is a stagnated order. Hence, this suborder did not cope with changing world order constitutive materiality, diffusion of power, technical innovations and fluidity. Instead, the suborder continued discussing familiar

questions. Political solutions and visions beyond minor steps of diplomatic progress were possibly introduced from the outside, but the solutions did not originate from within the political suborder. While the standing of the political suborder might be high to social scientists and citizen, to *the* space community, authority requires some knowledge about outer space. The political real type has knowledge about the states in the system but not that much about outer space. Clearly, there are exceptions to this generalization, but in general, the diplomatic suborder has a low level of authority. While familiarity, routines and procedures uphold a sense of authority, compared to the other suborders this real type inhabits foremost formal authority.

Therefore, other suborders needed to inform the real typical political suborder about outer space and the nature and character of the ongoing outer space ordering:

A lot of times you find, that in the government offices, people in there are so busy. They have so many things in their inbox that they do not have time to really think through the long-time strategic planning of things. So, those of us who are outside of the government, or contractors, we often get the opportunity to do that long-term strategic thinking for them. Hopefully, it will be useful (commercial).

Moreover, as one member of the commercial suborder highlighted “the important thing is to show [diplomats] what the options are and the pros and cons of these options. Because they do not have the time or the background to do that” (commercial). The sentiment of obligation to inform the political suborder was held among all the other suborders.

As mentioned, the political suborder is characterized by stagnation in relation to the changing world. While, stagnation relates to the concepts of stability, predictability and order, in the modern understanding of progress it is a concept to dislike. As there is a need for the political suborder to adapt to the exogenous forces and pace of the contemporary world, the concept of stagnations was thus deliberately chosen. The stagnation of this suborder has, however, become less apparent in recent years. Rather the professional stock of knowledge and familiar procedures of the diplomatic suborder have been reinvigorated by a horizontal renationalization of outer space. However, although a

seemingly robust order, it is far from defining the emerging space order. Although under hard pressure and burden with internal deadlines, it has also not much influence on the direction of the emerging outer space order. Altogether, the strong commercial suborder, as well as thinking in terms of state interests equating economic growth, narrowed the room for reflective reason within the diplomatic suborder.

6.6. Summary

In this section, I outline some of the discoveries based on a comparison of the suborders' characteristics, especially the level of overlap, divergence and convergence between deep frames. Finally, the characters of the suborders are summarized in a matrix provided at the end of this section. However, the model in Chapter 8 illustrates better the focal points in the matrix that relate constitutive materiality and interplay.

The first significant general observation is that the professionals were more stereotypical than I expected. The habitual and unnoticed practice of categorizing on basis of profession was normal among practitioners as well as experts. These routine behaviours highlights the constitutive importance of these units as well as their ontological status. Moreover, on some occasions, especially in regards to the military and scientific professionals, the entire *identity* was coloured by the profession, i.e., some people appeared to personify the real types. Although this idea was derived from my initial observations, it was frankly an unexpected finding. Before I had not been that sensitive to the strength of professional identities. Regardless that I challenge my preconceptions to 'cast a fresh and unobscured look', I was surprised that the real types were so stereotypical and how much the professions were embodied, as well as communicated by the people I met.¹⁸⁸

Another general finding mentioned at the beginning of this chapter was that the scientific real type did not give justice to *the distinct category of*

¹⁸⁸ In social encounters, first, you introduce yourself by name but it does not take long before you also like to add your profession (typically within a few minutes). Even in conversations when I knew the person's profession in advance, they routinely, for the sake of standing or for the sake of understanding and finding a mutual language, mentioned their professional background.

engineers. Therefore, I decided to distinguish between the scientific and the engineer when referencing them as well as to be sensitive to their differences in the further discussion about the emerging outer space order. However, in my analytical framework, the professions will remain one real type, the scientific. This might not be the optimal and most stringent solution but was deemed a feasible solution as, within the scope of this inquiry of the emerging outer space order, the professions are close and together make up *the* space community. The two professions are also from a natural science background.

Theoretically, the likelihood for communication between the suborders should be symmetric in the respect that each professional suborder has similar chances for establishing communication and reaching shared agreements. However, symmetric communication was absent, due to an implicit but normalized hierarchy between the suborders and due to the constitutive materiality (elaborated in the next chapter about interplay). The lack of symmetric communication was also due to the varying degrees of overlap between the different suborders' deep frames. In the remainder of this section, some of the most essential findings of overlaps and divergence of the deep frames will be outlined. Commensurability, i.e. to what degree the suborders were inclined to understand each other's perspective, as well as their divergence and tensions, is at the centre of this short analysis, which also is summarized in the concluding matrix.

To begin with, the *visual frames* and *language set* of numbers are a common nominator for the scientific and the commercial suborder. This facilitated interaction. Numbers and calculations also contribute to truth proximity, as it is hard to question equations if not all the data and steps are available in a discussion. It is time-consuming and sometimes overly complicated to question calculations. Numbers and estimates contribute to authority. The commercial suborder, however, is more relaxed about the accuracy of numbers.

The military suborder is also familiar with estimates and numbers but to a lesser extent dominated by numbers. However, like the commercial suborder, visual frames, maps and pictures are constitutive of the military suborder. By this, I mean that military and commercial professionals do not need much more than a map, a short mission statement or a vision to start acting. This preparedness unites the commercial and the military suborder and contributes to agency. Thus, common for the military and

commercial suborders is the will to act and to make the move before others do. Hence, the commercial motto of ‘first come first serve’ applies to the military thinking of ‘taking the initiative’ in reaching the high ground and establishing space superiority. These suborders are united in their vision to establish themselves in outer space.

However, whereas the military agency is predictable within given structures, the commercial agency is disruptive and breaks barriers. In this regards, the commercial suborder is more like the scientific suborder. Hence, the innovation potential is within the deep frames of the commercial and scientific suborder. Seeking cutting-edge technology to establish space superiority, nevertheless, makes the military suborder a supportive and predictable customer. In addition, the military suborder has in common with the scientific suborder to work with the invisible such as radio and radars.¹⁸⁹

The scientific and commercial real types’ deep frames are overlapping in non-linearity, which imply breaking with the expected and question the familiar and intuitive, as well as thinking disruptively.¹⁹⁰ Where the scientists see one world made up of the same matter or material, the commercial sees one world united by the global market. Moreover, the temporality of these suborders extends beyond the next election, Earth and this generation. The commercial and scientific real types are both driven by curiosity and excitement. The transformer of the emerging outer space order is the commercial real type with its bold visions. Still, the commercial suborder is increasingly dependent on the scientific as the complexity of fulfilling its visions rises. For example, the launching of micro-satellites collaboration with engineers has progressed technology, but voyages to Mars requires significant technological advancement. The scientific real type with a genuine drive and passion for outer space aims foremost for knowledge, and then for scientific status. All of this makes the scientific real type a neglecter of the modern order.

¹⁸⁹ This observation of commensurability of deep frames is also observed by Neil DeGrasse and Avis Lang who argue that cooperation or “the alliance” between scientists and militaries are facilitated by for example the experience of imagining and operating in the invisible (2018:165ff).

¹⁹⁰ Interestingly for this inquiry is that Lebow finds that the non-linear visual transformation still only has dormant effects on identity formation (2015:7 & 133).

Concerning the commensurability of the real typical deep frames, the *organizing principle* of balance of powers in a system of states was a familiar presumption of the military and political real types. These suborders' deep frames also overlapped in the cyclic view of history from peaceful to violent times. As guardians of the modern order, their thinking was predictable. Thus, the political suborder shared organizing principle and worldview with the military but like the legal community, the political suborder hoped for the rule of law, international space law and uniting concepts. Hence, the political and legal real types also conveyed in the language set and visual frames that focused on text. Moreover, the political suborder distinguished itself from the other suborders by routinely keeping in mind to mention the public.

The commensurability between the political and military real type's deep frames as guardians of the state facilitated communication. Communication was also facilitated as the military suborder knows its history. Historical knowledge contributed to the massivity of the military reality. Moreover, the military real type is trained to make themselves heard in a noisy environment and to make sure that their message reaches through. Typically, senior militaries are skilled leaders and experienced public speakers. Their propensity to inform the political suborder about the balance of power interplay hampers the political suborder from envisioning alternatives and from establishing an overarching outer space order. This is for example reflected in the expression that there 'is not appetite for treaties', but also due to that no other alternatives are articulated within the political suborder.

Concerning the quality of political reason, the suborders of the emerging space order were generally characterized by instrumental reasoning. The UN discourse about SDGs was an important exception, as were the encounter with some individuals of the political and legal suborder. The scientific suborder was also more inclined to think in terms of humanity in the sweep of universal history and did think about sustainability linked to nature and not in accordance with the commercial real type who associated it with a sustainable market. Still, the responsibility for sustainability and climate change firmly rested on the political suborder and other scientific disciplines, for the latter commonly in regards to meteorology. However, not even within the political suborder, the substance of sustainable development in outer space or of the rule-based order was much discussed outside official statements and resolutions. The

commercial suborder articulated the visions for the future that were transmitted throughout the world order. Within the military suborder, there were internally transmitted military strategies that aimed to shape the future. Within the scientific suborder, planned missions paved the way into the future. In comparison, the political future held together by the SDGs is not, at least not for the moment, endowed with agency infusing passion, excitement, innovation or optimism (more about this in the next chapter).

There are also some tensions between the suborders. As we will see in the next chapter, small un-maneuvrable satellites launched by the commercial suborder clutter the scientific instruments. Moreover, the political and military suborders were concerned with the ‘real world’ challenges whereas the scientific appeared to be idealistic, naïve and aloft from, for example, security concerns. On the other hand, the scientific real type perceived the political, as well as the military real types, as ignorant. For example, it was perceived that big science, which includes space exploration, was ‘way above their heads’. Though, in relation to these tensions and divergence between the suborders, the commercial suborder displays a rather flexible attitude towards all the other suborders. On the other hand, the legal suborder was rather fixed and typically waiting to be directed by the other suborders due to weak inherent agency. All these observations are summarised in the table 17, below. Notably, the characteristics of key spaces and interplay within the table are tied to the observations presented in the next chapter.

| Focal point | Scientific | Military | Commercial | Legal | Political |
|--------------------------|---------------------------------|--|------------------------------|--------------------------|-----------------------------|
| Identity | neglector | guardian | transformer | interpreter | guardian |
| Motives, emotions | curiosity, spirit excitement | spirit, anxiety | appetite, excitement | spirit | spirit, appetite |
| Agency (Innovation) | high high | collective medium | pure agency high | no agency low | low low |
| Organizing principle | one global scientific hierarchy | system of states, market | market, business cases | rule of law, text | system of states, market |
| Outer Space | passion, big science | force- multiplier and superiority | business case, up for grab | global commons, equality | symbolic, SDG |
| Language set | not outreaching, no why | limited but loud and familiar | wide reaching, tailored | text | cyclic, set |
| Visual frames | number and models, complex | simplified, spatial, maps, arrows | catchy, outreaching | text | symbolic, cyclic, text |
| Temporality Chronos | missions, break troughs | plans, procedures, surface work | dynamic | slow, directionless | procedures, stress |
| Future | progress | historically contextualized | empty and open | text | historically contextualized |
| Constitutive materiality | spread, global, far away | bureaucratized, isolated, heavy trajectory | agile, top spaces, scattered | capitals | bureaucratized capitals |
| Robustness Sentiment | strong optimism | strong optimism | apt optimism | thin pessimism | stagnating pessimism |
| Authority | high | high | high | medium | medium |
| Responsibility | medium, concern | low, outside professional responsibility | low, some rhetoric | high, concern | medium |
| Politics | rigid, ignorant thinking | to be an instrument of | to influence | to tame | to master, interests |
| Political reason | reflective | instrumental | instrumental | reflective | instrumental |

Figure 17: Matrix - summary of the real typical suborders' characters

7. Observations from formal and informal sites of interplay

In this chapter, I describe and analyze the political space of the ITU's World Radio Conference (WRC) – the engine of the emerging outer space order. Then, the UN COPUOS – the normalizer of the emerging outer space order– is portrayed. Finally, the last section describes my observations from other conferences, seminars and everyday workplaces that I have visited. Just like the real types, these sites and the *interplay* are mainly explored by participant observations and interviews. However, when describing additional sites for ordering the analysis is occasionally based on secondary sources in form of the experts' experiences and observations. The experts' accounts indicate that the interplay defining these other places have a high degree of resemblance to the character of interplay at the formal key sites that I have visited.

In this chapter, one general observation is that the widely scattered commercial discourse serves as a catalyst for speeding up the temporality of the emerging outer space order. A fundamental example of this was the unnoticed expiration of the discourse about the inherent value of a beautiful dark sky. The most striking finding, though, is the absence of the political suborder and other professionals with a social science background. This however is only evident after a closer observation; initially, the sites seemed to be as expected, with national delegations and procedures.

7.1. The ITU – the engine of the emerging outer space order (and global connectivity)

The ITU was established in 1865 to standardize and facilitate telegraph technology.¹⁹¹ Since then, the body has come to coordinate and allocate radio services and assignments, to recommend international technical standards for telecommunication and regulate “new telecommunications” (Savage, 1998:10, Stuart, 2014:55).¹⁹² The ITU was built on the idea that the radio-frequency spectrum should be used efficiently “and should allow capable users unfettered (though coordinated) usage in order to maximize that efficiency” (Stuart, 2014:56). In 1947, the ITU was incorporated within the UN structure (Stuart, 2014:58). Thus, ITU originated within the commercial and scientific order, and ‘maximizing efficiency’ seems to be its underlying tenet.

Before the launch of the first satellites, the organization had become involved in improving the technical assistance to developing countries. However, in this regards the ITU was portrayed as a technical and not as a political organization (Stuart, 2014:56). Jill Stuart finds that from the start of the first space age, the actors volunteered to register their satellites’ frequency usage as uncoordinated signal usage could result in mutual interference where no one could efficiently use the radio-frequency spectrum (ibid.).

Nevertheless, it was not primarily the mentioning of the ITU within previous research that drew my attention to this (to social scientist and the general public) little-known international organization (cf. Savage, 1989; Vogler, 2004; Peterson, 2004; Sheehan 2007; Stuart, 2014). Instead, the explorative process pointed out the ITU as one, if not *the* place for outer space ordering. For example, “[y]ou know, well not everyone understands that first of all, a satellite needs a frequency. You should go to [the] ITU. There, people do more than occupy the national seat [...]. There people loosen their ties. They do not have time for this”

¹⁹¹ The International Telegraph Union (ITU) was created in 1865 and in 1932 it merged with the International Radio Conference to become the International Radio Communications Union (Stuart, 2014:58). Today, ITU is a public-private partnership, with current membership including 193 countries and over 800 private sectors and academic institutions (ITU, 2019g).

¹⁹² Telecommunication generally refers to all aspects of voice and data transmission by radio, television, wire, microwave and satellite (Savage, in Stuart, 2014:55).

nodding towards the room for the COPOUS plenary (commercial). Moreover, “in [the] ITU, they solve problems in an ‘engineer manner’”, “[t]hey make things work” (scientific). Furthermore, today, the ITU describe itself as “committed to connecting all the world’s people [...] and strategic cooperation and understanding between all stakeholders are vital when decisions can have *huge political, social and economic consequences*” [my emphasis] (ITU, 2019f). Hence, even though the ITU has been and is described as a technical organization, the organization appeared to be the formal, as well as informal, political space defining the direction of the emerging outer space order. In the following sections, my key observations of this space and site will be outlined.

7.1.1. The engine of the outer space order

Satellite communications are everywhere but all too often [they] remain invisible to the general public, which is both an indication of their successful integration into the overall telecommunication *market*, and sometimes an obstacle to a proper understanding of their vital importance to an interconnected world [my emphasis] (Mario Maniewicz, 2019).¹⁹³

Silently satellites contribute to upholding the structure of advanced societies and the unknown political space or ‘engine’ of the satellite order is the ITU. Within the ITU, one of the delegates described the WRC as “a machinery with different gears.”¹⁹⁴ Indeed, it is a large piece of machinery with many parallel working groups. The groups are parallel, as one person following one agenda item does not, and cannot easily switch to another, or between items. In addition, as each agenda item is specialized, it requires a large stock of knowledge about the technical studies and parameters involved. One engineer explained that “it is not professional to follow more than one item. I would never go to an item that I do not know” (engineer). Moreover, concerning the discussion in

¹⁹³ The extract above is by the Director of the Radio Communications Bureau of the ITU from an issue of the ITU magazine, which is produced before the WRC to make the work of the little-known UN organization ITU better known. The relevant issue is titled “Evolving telecommunications, ITU’s role in a brave new world” (ITU, 2019b).

¹⁹⁴ Amr Badawi, Chairman of WRC 2019, also used this expression in an interview published at the ITU’s website. He too reflected that the technology “would change the way the world thinks” (ITU, 2019c).

the huge plenary, in that room, there are about five per cent [of the attendees] that really understand the scientific studies behind the issue” (engineer). In addition, to have some influence there is a need to attend every session and the full meetings of a specific agenda item to cover the evolving negotiations shifting back and forth. ITU decision-making is based on consensus among the 193 member states (ITU, 2020a). Hence, there is also a quest for knowledge about the other delegations’ current positions. Concerning more complicated questions this knowledge also includes keeping track of the ad hoc working groups. This implies long nights at the conference center and that delegates must be alert and recognize new substantial proposals when least expected. Therefore, the delegates work in parallel to adequately follow and possibly influence one agenda item.¹⁹⁵

Every space activity (and hence the trajectories of the suborders) have to pass/squeeze through the converging space-time frame and eye of the WRC.¹⁹⁶ As every space object, operational and future will need to have a frequency, the parallel professional orders are forced together by the radio frequency spectrum. In the ITU, professionals meet face-to-face to decide on procedures for frequency standardizations and allocations. The WRCs are the pacesetters of ordering world connectivity. Each WRC provides the direction for the ITU’s future work and priorities, as they review, update and authorize the international treaty - the Radio Regulations (RR) - governing the radio-frequency spectrum, the Geostationary Orbit (GSO) and non-GSO orbits (ITU, 2019h).

The WRC is held every three to four year. For most delegates, it is a four-week meeting. However, for some of the delegates, the WRC is running for six weeks, including a pre-meeting, and a meeting after the

¹⁹⁵ My first week, I told some other delegates that I was not up to follow a specific agenda item, but I aimed for an overview. The next week I laughed at this idea. It was not possible to acquire an overview even though I had prepared for weeks in advance, familiarized myself with items, agendas, etc. at the ITU homepage. Instead, I selected a few items and asked the experts about the overview. In addition, I tried to catch decisive movements.

¹⁹⁶ The ITU’s role, and in particular the WRC’s, as “the waste of the sandglass” (Hägerstrand, 2009:165ff) will not diminish, as the body will become vital for the further exploration of outer space beyond the earth orbits, as every satellite, spacecraft, gateway, asteroid mining company and settlement will need to communicate back to Earth. By ‘eye’, in a world order perspective, this is the body where the invisible workings of the world order become less invisible and ordered.

conference. During the latter, the study items agreed on during the WRC are distributed. Moreover, the arrangement of the different study groups is planned as soon as possible. Shortly after the WRC, a new four-year study cycle starts, and delegates are receiving their roles and assignments to prepare the agenda items for the next WRC. As the study groups work in parallel during the study cycle, this arrangement contributes to the impression of the ITU as a ‘gearbox’ of the global connected world. Observing this workflow and agenda issues, it becomes clear that the WRC negotiations and especially the agreed RR would not have been possible to accomplish if it were not for the ongoing work within the study groups. Although a large piece of machinery, this work resulted in not only establishing a common stock of knowledge but in socialization of the engineer and commercial suborders of the emerging outer space order.



Figure 18: WRC 2019. Credit: ITU Pictures

During the 2019 WRC, two critical issues were identified: the allocations of frequencies for terrestrial services i.e. 5G versus satellite services, and the possible interference between the increased transmission/noise of 5G and other services including as well as astronomy, science and meteorology. The WRC final decision about this agenda item resulted in that the delegates representing the World Meteorological Organization (WMO) walked out from the conference with heavy steps. In an open letter to the Secretary General of ITU, the Secretary-General of WMO wrote:

The WRC-19 decision has the potential to significantly degrade the accuracy of data collected in this frequency band, which would jeopardize the operation of existing earth observation satellite systems, essential for all weather forecasting and warning activities of the national weather services. The potential effects of this could be felt across multiple impact areas including aviation, shipping, agriculture, meteorology and warning of extreme events, as well as our common ability to monitor climate change in the future (Taalas, 2019).¹⁹⁷

Thus, the 5G upgrade of communication would risk interfering with the radio astronomers' scientific instruments. Besides, a few weeks later, the astronomers' instruments were cluttered by light streaks from SpaceX (the newly launched Starlink- constellation) (Morelle, 2019). This first launch of a mega-constellation marked the end of the idea of the inherent value of a dark sky.¹⁹⁸ However, after the SpaceX launch, as the US astronomers could now show real pictures to the mass media that clearly exposed the satellites as lines all over their pictures, some discursive elements of the dark sky might still be left. Since, even if a dark sky was no longer a value in its own right or for humanity, it was so for the scientific community. However, during WRC 2019, the frequencies were allocated. This resulted in hundreds of satellites launched and thousands more planned by private companies. *How could this be?*

7.1.2. 'The inner and outer circle'

One evening, outside the exhibition area, the workings of WRC was explained to me as the "inner and outer circle" (commercial). The 2019 WRC had the largest number of participants ever, 3,400 and apparently, not everyone was actively involved in the core of the ITU workings. Instead, the inner circle consisted of the ITU community, i.e., typically the radio engineers who were part of the regional study groups. This community and its elites were leading the formal negotiations. They were placed at the national microphones. The outer circle consisted of the

¹⁹⁷ The statement can be found at WMO homepage (2019).

¹⁹⁸ I had been sensitized to the idea of a 'dark sky' since UN COPUOS 2017. Because in a formal statement, from one of the African countries, called attention to need to preserve the sky dark for the beauty of further generations stuck in my mind. However, that might have been one of the last occasions when this idea was still possible to articulate, in a global space. Since then, the idea was suppressed.

sector members. The sector members had no formal vote but could be part of the delegations and did have a say in the delegations. The major share of the outer circle was the commercial community. This arrangement was in place already during the study period in which the 900 sector members; private companies, universities, international and regional organizations had the right to participate. Hence, it was normal that the private entities carried out some of the studies within the study groups.

During the WRCs, the outer circle attentively follows the discussions. It represents the larger space and international telecommunications companies. If not part of the delegations, they are situated in the back rows of the meeting rooms. They meet over a sponsored coffee, in the ‘back stages’ at the conference center and ‘back spaces’ in the hotels or at the golf course. Some of the delegates complained that the decision-making process and the heads of group discussions had become less transparent in recent years. On the other hand, as every concerned stakeholder seemed to make sure to be present or genuinely represented during these weeks, issues could be solved in the global spaces associated with the WRC. Since most know who the real stakeholders are, agenda items can be addressed and solved directly. The WRC, including the outer circle, makes governance possible and contributes to the legitimacy and authority of the ITU and the RR. The inner and outer circles also channel funding into the work of the ITU.¹⁹⁹ The contours of the commercial outer circle only became apparent after a while. There was also a diffuse military circle. According to the agenda, the military suborder often worked in different rooms and separate spaces.

¹⁹⁹ Member State contributions accounted for 61 per cent of the ITU’s total revenue in 2016. The top ten Member State donors were Japan, the US, Germany, France, Italy, the Russian Federation, China, Australia, Canada and Saudi Arabia. Together, they account for 34 per cent of ITU’s total funding. The remaining 183 countries, including 44 of the least developed countries in the world, provided 26 per cent. Sector Members and Associates contributed 9 per cent of the ITU’s total budget in 2016. Sector membership in the ITU “allows businesses to network with Information and Communication Technology (ICT) regulators and policy-makers, contribute to global standards and best practices, and advise governments on ICT strategies and technologies” (ITU, 2020b).

7.1.3. ‘Sharing is caring’ and the ITU family

Some delegates repeatedly and smilingly, had the motto, ‘sharing is caring’. For instance, during rare hours of recess from the conference, the delegates participated in leisure activities such as snorkeling and happily shared equipment. The point here is that delegations and delegates knew each other well. They all shared the experience of participation in a WRC and many of them had attended several times as well as participated in the lengthy preparation prior to the conference. This sense of community was expressed also in the speeches at the closing ceremony, as the Director of the Radiocommunications Bureau (BR) Mario Maniewitz celebrated the “union culture”. Similarly, the Chairman of the WRC-19, Amr Badawi mentioned the “family spirit”. Finally, the Secretary-General of the ITU Houlin Zhao emphasized how well this family had succeeded, despite complicated issues and that “the conference would have an important impact on business for decades to come. Providing a major contribution to making the world a better and a safer place for all” and encouraging remarked that the ITU is a “good family in good health”. However, when I looked around in the large plenary of the WRC, the delegates looked like a tiered family.

In this ITU family, status and standing commonly seemed to overlap. One illustrative example is Veena Rawat who was given the responsibility to chair one of the more difficult working groups where the chances for an agreement were uncertain until the very last days. Yet, she finally managed, and after following some of the work, I asked how? She responded:



Figure 19: Veena Rawat. Credit: Wikimedia Commons

I firmly believe you need experience. This is not something you learn overnight. You need knowledge of the subject matter, knowledge and credibility, as well as integrity to rely on fact, to not fall for pressure. Neutrality is absolutely central, to be fair and square. In-depth knowledge of the subject matter. Leadership, trust to lead a small group and understanding a difficult item. Trust, the first days I had to show that they could trust in *me* and my neutrality. I made very clear that I did not drive any of the interests. *I find you made a tremendous job as a chair; do you have some diplomatic training?* No, but you should be calm, collect and correct [...] and you need the time, you cannot go too fast, everybody needs a common understanding (Veena Rawat, interview, November 2019).

Rawat was the Chairman for the full WRC-03, and at the time of our interview at the WRC-19, she was a consultant for a large company. She was not the only one. Slowly the ITU turns out to be a consultant-filled space with high demands for specialization. Some consultants were even hired to represent a country. There were examples from previous WRCs of consultants contracted by different countries who had jokingly stated that “I am the world. I can be any county. I can be your country” (commercial). Rawat was not the only consultant to chair a working group. For instance, based on authority, including personal expertise and status, another consultant was chairing one of the more critical working groups. Hence, in the formal negotiations, the people that were allowed to fill the time and screens in the front were people that knew the ITU and the subject matters. In this respect, nationality seemed insignificant. Instead, these delegates had in common the experience of the ITU and several WRCs. Noteworthy, the most inner circle of the ITU consisted of professionals who had a combined engineer and commercial professional background. There seemed to be little demand for diplomats.

Typical for the ITU family was a strong drive to move forward and achieve concrete results. Important people such as company Chief Executive Officers (CEO) were waiting for results. Decisions had to be made and agreements reached, as the market time was continuously pressing on. In addition, the ITU machinery with all the study groups had to continue operating according to the cyclic time of the ITU organization. Overall, the ITU-R study working groups consist of 5,000 specialists from the ITU bureaucracy, the telecommunication industry

and universities. Together they develop the technical bases for decisions taken at the WRCs and they set global standards and recommendations (ITU, 2020f). Thus, synchronization was crucial for global coordination and progress was linear. The reference points were the earlier WRCs and the agenda for the 2023 and 2027 WRCs. Tellingly, for the 2023 WRC, an agenda item will consider the issue of placing International Mobile Telecommunications (IMT) base stations into the orbits (ITU, 2019d). Hence, satellite communication and terrestrial 5G become increasingly meshed and powerful.

In terms of time and direction, there was no sense of a slow down or reverse. Once standards were set and allocations made, technical equipment was manufactured and distributed. It was essential to know the very precise schedule of the BR and to chart to launch ahead of the competitors. The principle of ‘first come first serve’ was still valid as pioneers became responsible for the coordination of frequencies with the first satellite operator in an area of an orbital slot. Hence, the first launched satellite would have advantages in defining the parameters of an orbit. Therefore, the BR informed about their meeting schedule to make sure that all the stakeholders could adjust their temporalities to the ITU, and especially the BR time. Even though, not having formal decision-making authority, the ITU staff of the BR, had to intervene repeatedly in the discussions to clarify issues and, judging from the attention of the room, this they were very much *in* authority. Besides, outside of the negotiations, as well, Alexandre Vallet sees an intensified workload for the bureaucratic staff of the BR. Nevertheless, he thinks that this will be managed with streamlined processes thanks to the member states’ agreements on different milestones for satellite filings, as well as the increased use of computer software (interview, November 2019).²⁰⁰ Thus, there was no sign that the increasing utilization of the orbital environment would slow down.

Of course, at the 2019 WRC, there are traditional state-centric spaces as well. Firstly, all frequency allocations are assigned to states and in the much-discussed footnotes of the RR, each state can express its position on the related item or sub-item. However, the most explicit statements are

²⁰⁰ Interview at the BR temporary office in the Sharm El Sheikh International Conference Centre during the last day of the WRC-19, when the agreements had been reached and agenda items closed.

the national statements in the final act of the conference. These statements seemed directed to an audience outside of the conference. To the ITU family, the declarations in the last hours of the conference were less relevant than to travel back home after weeks of negotiations or to take some time off the conference center. However, to some diplomats and states this global space provided a window for state recognition. In the final acts, the typical national statements between North Korea and South Korea, as well as the status of Palestine and the Crimean Peninsula, were added (ITU, 2020c). The WRC also provides space for national branding, for example, Egypt organized very impressive opening and closing ceremonies and launched a satellite in conjunction with the conference.

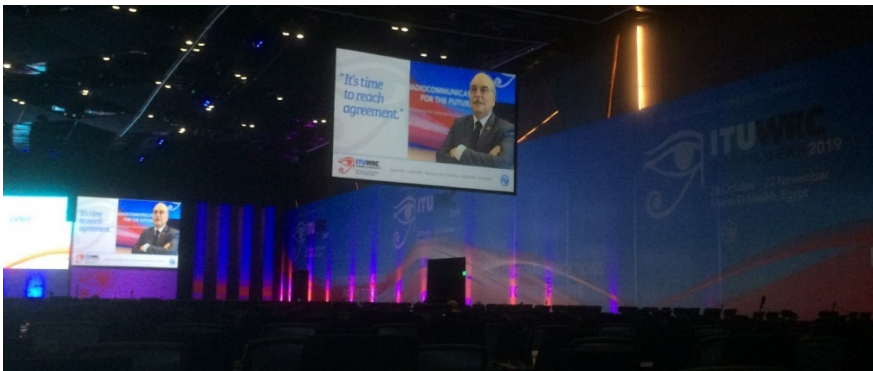


Figure 20: “It’s time to reach agreement” is the message shown on the screen in the huge plenary. The Director of the Telecommunication Bureau is signaling confidence and decisiveness. Credit: ITU pictures, 2020.

7.1.4. High-tech diplomacy, making things work

Another observation of ordering concerns the high-tech diplomacy and the site. Sharm El Sheikh’s International Conference Centre is a modern and high-tech conference center with numerous video screens. The center was filled with WRC and ITU symbols. For example, every screen in the conference center showed the ITU and WRC logos. These visual frames gave a sense of identity and orientation to the meeting. In the final week, the messages on display were shifted. Everywhere in the center, you could now read the words “compromise”, “consensus”, and “cooperation”. The ITU community is very technologically connected.

For instance, a chat group facilitated the coordination of spare time activities and lunches. Likewise, during the negotiations, chat programs were continuously used. At first, it seemed like the delegates were not paying attention to the negotiations when they were looking down at their mobile phones. Then, it was evident that much interaction was taking place on the chat platforms. It was a fast exchange of ideas and a highly active way of following and facilitating the discussions.

Together these chat groups assisted the delegates' to follow, reflect and respond to the discussions, which contributed to efficiency. For example, not everyone had to intervene in the formal discussion for clarifications but could make sure that one of the informal group members made a statement, which then if needed could be supported. In the room, there were some different chat groups of fast interaction, forming communities in which people became increasingly known to each other. Besides the increased speed of exchange, this shaped community simultaneities and downplayed the spatiality of the room. In a plenary with 3,400 participants, the negotiations would have considerably slowed down if there had been a need for physical interaction, for example by waiting until the break.

Occasionally, this flow of high-tech diplomacy was interrupted when some of the delegations had to, as expressed "turn back to the capital". This slow down caused frustration. However, it was also interesting that many delegations did seldom consider of consulting their capitals. This was partly due to that the experts within the regions, well in advance of the conference, had worked out common positions on the different agenda items. Besides, sometimes it was no less difficult to judge the issues, from home, because just as one delegate reflected on his own after weeks of long working days, looking out through the window of the Egyptian small bus, tired, with the gaze somewhere above the Sinai desert into nothing "common good, how could you know what is common good? [long silence]" (engineer).

7.1.5. The unexpected absence of the political suborder

Concerning the common good, the diplomats, the formal political suborder was maybe considering this? Strikingly, however, the absence of this suborder successively became evident. The absence of this order could have some different explanations, but most relate to the

professional stocks of knowledge. First, the political implications of the WRC were hard to discern for the political suborder. Alternatively, if these implications were well understood, they might argue that the relevant stakeholders were already represented such as the scientific and commercial suborder. After all, signals and the communication market did not represent traditional issues for the Ministry of Foreign Affairs but were often handled by other Ministries with less experience of, and engagement with UN bodies. A more concrete explanation might be the level of fear in the world, including the threat of terrorism, which also applies to large events like this. Another reason is the perceived shortage of time in the political suborder combined with more tangible and urgent tasks, at that time, for example, the Turkish military operations in Syria.

Furthermore, it is not even conceivable for regular diplomats to impact the WRCs. Merely following the discussions requires considerable knowledge and advanced terminology. In addition, to have some authority you should preferably know the RR and the agenda.²⁰¹ On some occasions, this was confusing even for the chair of a working group. Generally, though the work ticked on in accordance with the procedures and schemes. Thus, the negotiations and formulations of standards went on in a language of power-flux density (pfd), (mostly about pfd masks), inclinations and bands, which was only possible to follow genuinely for those who had taken part in the preceding studies. One estimate of the time of experience required to manage this stock of knowledge to make a substantial contribution is “15 years” of participating in the WRC and the study groups (engineer).²⁰²

In addition, some working groups were discussing multistep equations for days, which mathematical notations I cannot even copy into a word document for an illustration. Interestingly, these types of discussions continued to the very last days of the conference. Hence, the language did never become politically governable and never allowed the agenda issues

²⁰¹“The RR “encompass over 2,300 pages of texts and charts that prescribe how equipment and systems must operate to ensure peaceful cohabitation in today's increasingly crowded airwaves” (ITU, 2020d).

²⁰² It struck me that numbers were commonly used to describe things, and estimations of numbers, like 1/3, 70 per cent of the people participating in this meeting etc. Therefore, when asking about what was typical, it was very suitable to get the more exact estimations than I was used to, it gave a more factual and actual impression to the situations and conditions.

to become tangible governance objects. To the radio engineers involved this was the professional vocabulary.²⁰³ Still, sometimes it was difficult for even themselves to know what study ‘to go for’, to understand the calculations. Here is an example of one *clarifying title* of an agenda item under modification:

Limits to the change in the power flux-density of assignments in the Regions 1 and 3 Plan or List to protect the fixed-satellite service (space-to-Earth) in the frequency band 11.7-12.2 GHz in Region 2 or in the frequency band 12.2-12.5 GHz in Region 3, and of assignments in the Region 2 Plan to protect the fixed-satellite service (space-to-Earth) in the frequency band 12.5-12.7 GHz in Region 1 and in the frequency band 12.2-12.7 GHz in Region 3 (Provisional Final Acts, WRC 2019, ITU).

There are, however, some signs that there will be an increased political and diplomatic involvement in the work of the ITU. In the concluding remarks, the Secretary-General, Houlin Zhao mentioned that US President Donald Trump had sent him a letter prior to the WRC with his best wishes for a successful conference. So far, however the WRC is better characterized as a depoliticized but highly political, ‘industry political’ space. Many world order definers are involved or follow the negotiations closely and many industries await their outcome. Once the standards are set, the commercial production starts. Thus, the WRC can be described as the impressive engine of the emerging outer space order (and global connectivity).

7.1.6. Distribution of global connectivity

The ITU is based in Switzerland is the place where the most work is done and the study groups regularly convene. Except for the RR, the ITU is responsible for the Master International Frequency Register (MIFR). Like most of the other activities of the ITU, including the allotment of slots for the GEO, the MIFR “while on the surface a purely administrative exercise, is in effect distributive” (Sheehan, 2007:137; cf. Laver,

²⁰³ During the conference, practically every conversation had the word “band” in it, Ka-band, Ku-band, and adjacent bands. There were also jokes, which I, as a newcomer, also found entertaining, like “its only bats working on those high frequencies” (engineer).

1984:62). Concerning the MIFR, for space services, “more than 1.1 million of assigned frequencies are contained in this database. In addition, about 350,000 assigned frequencies for the broadcasting-satellite service and 25,000 allotted frequencies for the fixed-satellite service are planned for future uses” (ITU, 2020e).

There are however concerns about the principle of distribution of all these frequencies. This concern was discernable during my very first day at the conference (2019). At the conference center, Anglo-Saxons were not the majority and the formal time for interventions was not used by the western world. Clothing was not overly western, and this time, the Swedish national seat was next to the seat of South Sudan. There, I received a message from a delegate, representing another African country, who deliberately came up to me, knowing that I was researching the ITU. The delegate whispered to me, “greed, this” looking out over the huge plenary, “this is greed”. The message stands for itself, and I would not call it an observation. Yet it might be illustrative of the world order under creation. In addition, there were formal emotional statements from the African delegates about the interpretation of the principle of ‘equitable’ allocations of frequencies and orbital planes, as well as about some formulations that these delegates found did not reflect their concerns.

The ITU works to connect “the underserved” (ITU, 2019a). Moreover, expressions concerning the SDG were frequently made, especially in the communication towards the outside.²⁰⁴ Although, mostly the SDGs figured like free-floating discursive elements, tagged in here and there. Despite the persistent efforts and achievements of capacity building by the ITU (and the UN COPUOS), the space knowledge, technology and financial means to define the emerging outer space order remain in the already connected world.²⁰⁵ Relatedly, table 21 below summarizes the ITU’s estimate about the world order connectivity in 2019.

²⁰⁴ See for example, ITU (2020).

²⁰⁵ For a more detailed and historical review of what has been called the “North-south division” in space justice and international development see Sheehan (2007:128-141).

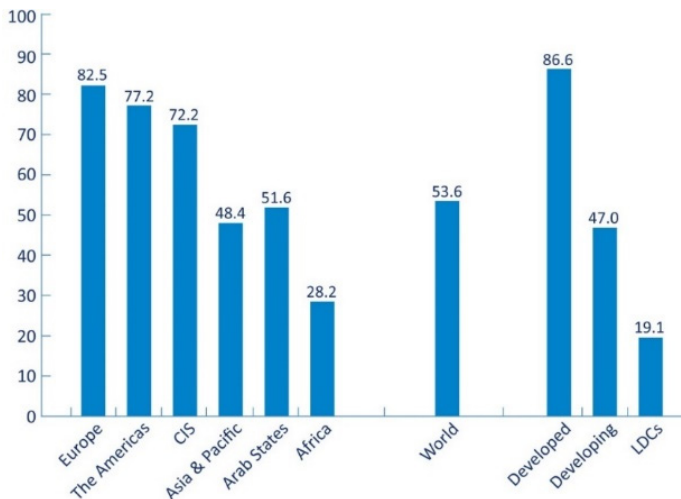


Figure 21: Percentage of individual using the Internet, by region and development status, Credit: the ITU.

It is evident from the table that, in a world order perspective, in many parts of the world there will be a huge leap in connectivity the coming years (ITU, 2019e). Connectivity is arriving by cable, but cheaper and faster via satellites and this shift is coming now, impacting the broader world order.

7.2. The UN COPUOS – the normalizer of the emerging outer space order

The UN COPUOS was established as a permanent body by GA in 1959 and moved from New York to Vienna in 1993 (Lyall & Larsen, 2009:17). Although anonymous even within the UN system, the UN COPUOS is normally identified as the committee that formulated the five outer space treaties.²⁰⁶ While much has been written about these treaties and formulations, the UN COPUOS is unexplored as a site for contemporary

²⁰⁶ These are the Outer Space Treaty (1967), Agreement on the Rescue of Astronauts, Return of Astronauts and Objects Launched into Outer Space (1967), The Liability Convention (1971), The Registration Convention (1975) and The Moon Agreement (1979).

global ordering. In the following, I will account for my main observations in this regard.

The UN COPUOS meetings take place at the Vienna International Centre. At the Centre, the UN Office for Outer Space Affairs (UNOOSA) serves as the Secretariat for the UN COPUOS meetings. Besides, the UNOOSA handles the Register of Objects Launched into Outer Space (UNOOSA, 2020f).²⁰⁷ In addition, the UNOOSA is responsible for the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER).²⁰⁸ The UNOOSA also has a permanent Space Application Section working worldwide with a range of capacity building activities. However, although the demand for capacity building is high, the funding is limited.

With 95 member states, the UN COPUOS meetings have a smaller number of participants than the WRC. In June 2019, approximately 500 people participated in the full COPUOS meeting and the number of member states amounted to 95 (UNOOSA, 2019).²⁰⁹ The room of the plenary is limited to *approximately* 450 persons and almost every seat at plenary sessions is occupied, except for some seats reserved for the diplomats. Even though there are a few commercial representatives in the back rows, these rows primarily belong to the rising number of newly established international organizations (IOs) and particularly to NGOs. Hence, there is no outer circle of the commercial suborder and the private sector is not allowed status as a permanent observer. Instead, there is an outer circle of a wide range of different space-related NGOs. The different space agencies are represented as well. Some of the NGOs and

²⁰⁷ The register is accessible on the website including the recorded information about the objects. From the website, it is evident that the amount of information provided to the register by the launching states differs. The register is a treaty-based transparency and confidence-building measure in outer space (UNOOSA, 2020c:2). The UNOOSA staff numbers to approximately 35 people (UNOOSA, 2020c:75).

²⁰⁸ UN-SPIDER help countries with limited access to space data to prevent and manage disasters. The offices for UN-SPIDER are located in Beijing, Vienna and Bonn (UNOOSA, 2020c:2).

²⁰⁹ According to the World Bank income level standards as of January 2020, 36 out of the 95 member states are high-income countries, 32 are upper-middle level countries, 19 are lower-level income countries and eight are low-income countries (UNOOSA, 2020c:59f). Together the 95 member states represent 87 per cent of the world population (UNOOSA, 2020c:59). In 2019, the GA admitted the Dominican Republic, Rwanda and Singapore as new member states and the Moon Village Association as a permanent observer (ibid.).

other observers participate in the ITU WRC but there they disappear in the crowd, in contrast to in the UN COPUOS plenary. In the UN COPUOS, the representatives are seated in the back but still visible and present. However, as the regular budget for the UNOOSA's work has been declining while the space activities are increasing, there have been calls for involving the private sector.²¹⁰



Figure 22: 55th Session of the Scientific and Technical Subcommittee. Credit: UNOOSA.

The work of the UN COPUOS is organized into two subcommittees, the Scientific and Technical Subcommittee and the Legal Subcommittee, both were established in 1961 (UNOOSA, 2019:5).²¹¹ Despite reoccurring ideas of merging the two committees, there has been no real effort to do so. The Scientific and Technical Subcommittee continues to convene at the beginning of the year and the Legal Subcommittee a few months later. In between the annual two-week subcommittee sessions, there are some ad hoc working group meetings to make sure that the work of the groups is proceeding. The delegates that participate in these intersessional meetings are the ones that have the resources and interest to do so. Most often, the great powers are among them. The level of

²¹⁰ For an overview of the UNOOSA budget see the Annual Reports (cf. UNOOSA, 2019). In 2018, China was the largest donor providing 44 per cent of the UNOOSA budget (UNOOSA, 2019:69).

²¹¹ COPUOS reports to the Fourth Committee of the GA, which adopts an annual resolution on international cooperation in the peaceful uses of outer space.

participation is a mix of individual professional initiatives (and vocation) as well as instruction from the capitals. The key players give the work of the intersessional more weight. Still, during the full COPUOS meetings, a few months later, the outcome of the working groups must be presented and accepted by all the member states. This includes the states that did not participate in the intersessional meetings or in the working groups.

In the COPUOS consensus is the decision-making principle. Hence, the very last afternoon of the sessions, when some of the experts have already left Vienna, is the time when the annual resolution is agreed upon. The GA then reviews and adopts the resolution. For the larger states, the end of the COPUOS full meeting is typically when the high-ranking diplomats show up. In addition, these diplomats commonly participate when the national statement is made and possibly at the opening of the UN COPUOS meeting. Thus, the diplomats are not typically socialized into the space community and appear to be detached from the work and knowledge exchange taking place during the full two weeks meeting, including, lunches, evening- and side events. Still, the fact that they show up at some decisive movements, signals that they like to control the outcome of the work and hence, find it important. The symbolic presence can also point to that the diplomats feel a professional obligation to attend.

In the political space of the UN COPUOS, a deep frame tension surfaces between the pragmatic/universal scientific suborder and the traditionalist political suborder. This tension occurs as some of the hardest working scientific experts find themselves in a situation where their achievements and progress made after long discussions will ultimately be judged according to states' interests. Hence, even fruitful discussions must be squeezed into the state template, the rigid state spatiality and the mental heritage of the UN. Demonstrative of this is that while much time is devoted to national statements in the COPUOS, this is more of an expected mandatory role-play. Only on a few occasions do these statements catch any real attention to potentially have some influence on the direction of the emerging outer space order.

In addition, as Vienna is associated with the arms control regime, some of the diplomats were inclined to reproduce the underlying thinking associated with this regime into the emerging outer space order. This is understandable, as discussed before, there is a connection between

nuclear weapons and outer space. The thinking associated with the arms control regime is also what gives the formal authority to the diplomatic reality, rather than the knowledge about the subject matter – outer space. Even though the UN and its staff work for the common good and for humanity, the working procedures of the sessions are foremost categorized in accordance with the national ordering principle. After some sessions, the different delegations' positions and statements become very predictable. It was for example possible to leave the room and come back without any significant loss of understanding for the interplay going on within the political suborder. There are few, if any, openings for change. The diplomatic present is densely contextualized, formalized and slow, as we will see in the next section.

7.2.1. Would, should or could...and historical change

The UN COPUOS is not the converging space-time frame as the WRSs. There are no frequencies that call for decisions, thus the UN COPUOS is not compressed by time but better characterized as an ongoing open process. The work of the UN COPUOS resembles an equalizer, or normalizer of a flow of formulations. Not much moves the work or critical issues forward and simultaneously forcing the suborders together. For example, a unanimous COPUOS can extend the time limits for the working groups. Typically, considerable time was used to discuss the use of 'would, should or could'.

Well, I have thought about your thesis and political order [...]. Our work here consists of many long days of formulations of resolutions and extensive discussions about whether to use 'would, should or could'. I have been working here for years. Concerning order, it takes very long to build an order, and it takes just seconds to ruin it and *all* the work behind [it] (political).

During the characteristic 'would, could or should work' the delegates are working at the same sentence in a word document, 'track-changes' is activated and the document shifts from more or less red color due to interventions from the floor. Sometimes, almost all sentences are marked with red and delegates must figure out and come up with formulations that are acceptable to all. Despite the slow pace of formulating the text, it is valuable to be there, listen to messages in their original form and

observe the true sender of the message. After a while, there is a sense of community as we are all stuck in the text together. In the UN COPUOS Plenary, attention is devoted to one voice at the time, and that one voice is given the right to talk without interruption. In this respect, this political space can be seen as a stabilizer where tensions and positions are allowed to appear in the form of brackets and red marked text. At times, the intervening delegations elaborated their concerns and positions resulting in an increased understanding, at other times interventions caused confusion. This time-consuming work can be frustrating and challenging.²¹²

In this perspective, the UNISPACE+50 in 2018 served as an event to celebrate the role and achievements of the UN COPUOS. UNISPACE+50 was held to mark the 50th anniversary of the Outer Space Treaty (OST) and to reiterate the value and substance of the space treaties.²¹³ The preparations for the UNISPACE+50 event put some time pressure on the UN COPUOS. For example, before the event, the Long-Term Sustainability Guidelines (LTS) should preferably have been agreed upon and incorporated into the UN COPUOS UNISPACE+50 resolution.

There were also hopes that the UNISPACE+50 two-day high-level forum, would reach out and lift the space issues, as well as strengthen the political engagement. The idea was to promote an opportunity for the international community to convene and “consider the future course of global space cooperation for the benefit of humankind” (UNOOSA, 2018:17). The Chair of the UN COPUOS (2016 – 2018), David Kendall reflected on how sustainability was approached during the UNISPACE III in 1999:

UNISPACE III was held in a tremendous period of brainstorming by lots of people. It was a very successful and often quoted conference. One reason was that a lot of young people were brought in, these were the ones who looked at things, and people

²¹² During the UN COPUOS ‘would, could or should work’, participants typically remain in the national seat from 10 AM to 6 PM. The working hours of the interpretation service sat the pace. The political suborder furthermore had to adjust to the annual resolution that the UN COPUOS sends to the GA.

²¹³ Four UN COPUOS UNISPACE conferences have been held; 1968, 1982, 1999 and 2018 (UNOOSA, 2020e).

that could think about it. We still need to do better here, it is too much grey hair (including my own) [laughter]. We need fresh inputs [...]. We need passion (David Kendall, interview, January 2018).

In 1999, the perception that space was becoming dangerous led to the ideas about long-term sustainability, which translated into concrete policy implementations. In 2010, a working group was set up for the LTS. In light of the development of suitability, Kendall admitted that it would be “a challenge” to develop a successful UNISPACE +50 resolution as the delegates have a wide range of (competing) opinions. However:

Once the air is cleared, delegates are coming back together to consider what the crucial aspects are. It is remarkable, diplomats are screaming at each other, but come back and focus. Not one person in the room refuses that the world would be much, much worse if there was not a forum as this COPUOS. No resolution, no COPUOS-mandate. Think of the alternatives, no mandate, no blueprint. Therefore, everyone knows you simply have to ‘get it agreeable’ (David Kendall, interview, January 2018).

Eventually, the 2018 UNISPACE+50 high-level forum took place in Bonn. The event attracted 300 participants from 58 countries, including 30 heads of space agencies from around the world (UNOOSA, 2019:8). Surprisingly to me, the political level of the participants was not as high as expected for a high-level forum. The lack of attendance was simply because no other state sent their higher political leadership (informal conversation). Rather than innovation, imitation, tradition and predictability seemed to be important aspects of the political suborder.

At the time of UNISPACE+50 however, it might have been beneficial for the emerging outer space order to keep outer space as stable as possible. Despite changes in the world order, including outer space, the UN COPUOS continues its work as usual and thereby becomes a normalizer in a time of transition and uncertainty. Regardless that some delegates seemed very exhausted after years of negotiations, and that some formulations tend to become watered down and vague, the ‘would, could or should’- work contributed to keeping the dialogue open. At the same time, the traditional work procedures effectively concealed the world order transformation.

Still, in the highly politicized global context of the UN COPUOS, transformation (in the state-layer) is increasingly perceptible. Therefore, when the great powers turned on the microphone, the floor paid attention and listened for something that might contribute to setting the direction. This was rarely the case. If a delegation did make an effort and presented an initiative, it was suppressed since the genuine long-term aim of that initiative was uncertain to the other states or simply because no one had the right to tell the other delegations what to do. There was no legitimate leadership among the states and although this was *the* global political space, it was crammed with state power leaving little room for new ideas. Therefore, the member states considered every single word of the resolutions from a state perspective. Fortunately, the secretariat of UN COPUOS had the authority to lead the work forward in accordance with the procedures best known by the UNOOSA staff.

7.2.2. A global space for sharing knowledge, not just information

During the COPUOS sessions, there was time and space for information and knowledge sharing. Together with various technical presentations and seminars held in conjunction with the COPUOS meeting, this contributed to accessible knowledge. The technical presentations were fruitful in building general knowledge about the technical developments throughout the world. The presentations were held in boardroom D and exemplified the accessible knowledge produced and represented a global space; all the participants had the equal right to use the room. However, the size of the audience varied due to the importance of the topic and the actor behind it. Topics ranged from an Indian training program for nanosatellite building to a study about how space could be used to improve indigenous peoples' living conditions (UNOOSA, 2020c).²¹⁴ During these sessions, there were also typically more than one technical presentation about estimates of the current and future amounts of space debris. Although the time constraints of the two weeks sessions limited

²¹⁴ For example, on one afternoon, in 2020, Polish representatives presented “Space Debris Mitigation using dedicated Solid Rocket Propulsion” and French representatives talked about “ActInSpace 2020 edition: contribution to Access to Space for All”. Moreover, there were presentations about “UNNATI - India's Training programme on Nanosatellite building”, and about the development of the Chinese BeiDou Navigation Satellite System (UNOOSA, 2020d:3). The fifth topic of the afternoon was, “A global Initiative to Improve Living Conditions for Indigenous Populations Using Space”, by a representative from CANEUS (ibid.).

the time for technical presentations, they served an important function as an equalizer of knowledge about the emerging outer space order, and some delegates could take a break from the text and ‘would, could or should’ formulations.

The European Institute for Space Policy (EISP) in Vienna city center is also a global space linked to the UN COPUOS sessions but outside the UN-building and setting. At the institute, the discussion could flow more freely. This was the place to visit to enhance your knowledge and network. As the participants valued this space and its global reach, the presentations were very well prepared and informative. Concerning networking opportunities, many of the participants worked with the UN COPUOS issues and attended the sessions for several years in a row. The vast majority was either part of the Technical and Scientific Subcommittee or the Legal Subcommittee. A few dedicated people participated in the Technical and Scientific-, the Legal as well as the full COPUOS Committee. These delegates master the stock of knowledge about space development, documents, items, working groups and procedures to the level that they could be definers. As delegations were provided rather equal access to space and place once in Vienna, there was an equalizing effect concerning the access to the stock of knowledge. Hence, the site allowed social bonds and convergence in knowledge, which to some extent also formed between the suborders.

7.2.3. LTS, STM, SSA and the remedy of SDGs

The patterns that then surface, help us to discern big and small, persistent, and temporary [...]. The picture will, however, not be complete before we also note what alternatives that are filtered away [my translation] (Hägerstrand, 2009:129).

While there was no appetite for treaties or for legally binding guidelines within the UN COPUOS, the Long-Term Sustainability Guidelines (LTS) had come to be the most important way forward to establish international norms about behavior in outer space. In 2010, a working group for developing the LTS was established under the Scientific and Technical Subcommittee. The working group consisted of 30-40 people representing the larger space nations. The key negotiators were satellite operators from some of the great powers and capable space powers. Due

to many long hours of negotiation and formulation, the negotiators knew each other on a first-name basis and referred to each other as colleagues. It seemed that the delegates joined efforts, not only to mitigate risks in outer space but also to mitigate the risk of handing over too many LTS guideline formulations to the Legal Subcommittee or the full COPUOS meeting, i.e., to the political suborder. The delegates wanted to make sure that the LTSs would become part of the emerging outer space order instead of remaining the subject for years of political negotiations.

In the micro diorama of the LTS working group, the informal meetings were held in a small meeting room that forced everyone together. The most initiated delegates were seated face-to-face and close to the Chair and Secretary of the working group. Through objections and clarifications, the discussions moved back and forth.²¹⁵ At times, diplomats felt the need to intervene in the discussion. Some diplomats did so erroneously, as they did not understand the issue at hand. Others intervened with the intention to slow down the discussions. In the first case, the operators politely in basic language clarified the orbital mechanics and already existing operational procedures. In the second case, the Chair of the working group enlightened the diplomats by orienting them about the process and progress of the working group. In this case, the intervening diplomats were asked to provide the concrete details of their objections to a specific formulation or to explain exactly why some concerns suddenly were raised about a text that had already been agreed upon in the working group. This was typically an efficient way of moving forward. Sometimes a delegate with long working group experience steered the intervening diplomats on the right track.

Observing facial expressions, body language and eye exchange in the room, captured the interplay of the negotiations. As the delegates perceived the working group to be “the only fora in the entire world” (engineer) for space order progress, frustration sometimes scored high. It happened that some of the core negotiators left the room. This face-to-face interplay is both time and emotion consuming. In the words of David Kendall, “the working group had its ups and downs. Meetings that exhibited strong collaboration were inevitably followed by periods of complete deadlock”. He continued, “[e]lation on rapid progress was

²¹⁵ Brackets in the LTS formulations are the political and ‘political’ is naturally understood as conflicting state interests, similar to the footnotes in ITU documents.

inexorably followed by despondency and frustration when a stalemate occurred” (quoted in Space News 15 February, Foust, 2018).

Generally, some states and great powers strived to make the text more concrete and thereby regulative while other states preferred general formulations. Bracketed and red marked text signaled political content and exemplified the interplay between the larger space nations. In the end, some delegates expressed disappointment with the progress. Especially since the LTS were not agreed upon in the full UN COPUOS meeting in conjunction with UNISPACE + 50 as planned (UN COPUOS, 2018:27). Instead, the LTS report, including the customary preamble and the 21 agreed guidelines, was finally published in Annex 2 of the 2019 UN COPUOS annual report (UN COPUOS, 2019:50ff).

However, already in 2015, space debris mitigation guidelines had been implemented on a voluntary basis by some member states (UN COPUOS, 2015:17). Moreover, major space powers have implemented some of the guidelines well before they were agreed upon in the UN COPUOS. Besides, space debris mitigation was increasingly understood to be a technical problem, and much was done by the industry at the design phase of the satellites. For example, within the ESA this work has been ongoing for years. However, in 2010 the ESA proposed that the UN COPUOS should adopt their code of conduct in outer space. The ESA’s proposal was not accepted, as some delegations understood this as an effort to sidestep the work of the UN COPUOS and impose the view of the EU on the international community (cf. UN COPUOS, 2015:38).

The limited influence of the ESA is informative for the role of the UN COPUOS as a unique site, a sufficiently global space to create legitimate formulations like the LTS that while perhaps watered down, were not filtered away. Indeed, in the broader world order situation, these non-legally binding guidelines were an achievement. The guidelines point to that the emerging outer space order works according to a distinctive pattern in which no other fora can replace the UN COPUOS.²¹⁶ Still, the 2019 UN COPUOS report, as well as statements and observations,

²¹⁶ One of the guidelines concerns the importance of improving the general awareness about the LTS. This coupled with the upcoming implementation process of the LTS 2.0 within the UN COPUOS will be critical. Moreover, the LTS will have to be verified and updated. As outer space is “a changing environment with an explosion of space activity” (legal).

reflects a general situation which was expressed as that there was ‘no appetite for treaties’, nor for legally binding guidelines. As a result, the road ahead for the further work of the LTS working group was unclear. However, non-binding guidelines, annual resolutions and formal traditional procedures within the COPUOS were complemented with a reinforced ordering by concepts.²¹⁷

In this regard, Space Traffic Management (STM) is an important and depoliticized ordering concept. The general message is that STM is *not* regulatory but *purely* technical (legal). One legal practitioner explained: “[t]hink of the regulation of road traffic, it is already decided what standards cars should have, driving license, certain colors, etc. We go from, the main example, of road-traffic and air-traffic and the role of ICAO, our other UN branch agency. However, we do not superimpose air-traffic into outer space, because it is a different physicality” (legal). Yet, most space issues could be addressed by means of the STM concept, like the need for enhanced Space Situation Awareness (SSA), coordination and avoidance of collisions, interference and debris. Under the STM umbrella, it might also be possible to consider the need for a system of coordination by a UN space agency or a national system (legal).²¹⁸ However, the political acceptance and implementation of STM are estimated to take about “15 years”, despite that, future space traffic is predicted to increase (legal). The hopes and expectations are that the work will evolve, as with other concepts, “first, it is not possible, not possible. Then suddenly it *is* possible, and people say, I always said it is possible. We need a vision like this to change things” (legal).

Moreover, the idea of STM as well as the LTS have gained acknowledgment and are spreading within the emerging outer space order. Hence, STM and the LTS worked across suborders. Even though the UN COPUOS naturally sees its role as an inter-state organisation, and little attention is paid to how the division between the Technical and Scientific- and the Legal Subcommittee hampers outer space ordering, these concepts also apply inter-professionally. However, there are

²¹⁷ The thematic priorities ‘On the legal regime’, gaps, ‘information exchange’ and other thematic priorities were ongoing in parallel to the UNISPACE +50 conference and the LTS working group.

²¹⁸ The study that leads up to the concept was carried out by an international team “in a personal capacity” within the International Academy of Astronautics (IAA) (IAA, 2017).

exceptions as some engineers remarked to each other during a seminar on STM, “there are ‘some’” differences between a car and a satellite”. They did not find the comparison convincing as if the analogy of space management as traffic management was true then “[t]ake refuelling, for example, you just have to cut off the roof of the ‘car’ and rip out the seats” (engineer). Thus, the analogy works almost inter-professionally.

Nevertheless, most of these conceptualizations and discursive elements point towards normalization and familiarization with outer space as a ‘real’ but still a technical issue (cf. Brünner & Soucek, 2011). Within the UN COPUOS’ discursive space, even the risk of Near-Earth Objects (NEO) and the idea of ‘planetary defence’ are becoming real issues to consider and subsequently to manage (importantly not to govern).²¹⁹ Hence, typically, the language was technical, and the discursive elements of treaties and international law were avoided. Therefore, the traditional legal suborder has come to be close to redundant as it was often circumvented. The slow trajectory of the UN COPUOS was in practice defined by a few high-status actors who could make authoritative claims and serve as mediators, translating the scientific into non-technical, familiar and de-politicized concepts.

Concerning, ordering by concepts, the importance of the SDG for the UN COPUOS cannot be overestimated.²²⁰ The SDGs facilitated to make outer space part of the UN system and discourse. This was exactly what the UN COPUOS needed, to tie outer space to global and societal benefits. The SDGs contributed to the creation of a coherent and meaningful reality that infused the spirit of the work. From being a little-known technical body within the UN system, once the work came to concentrate on how outer space can support the SDGs, the UN COPUOS could connect outer

²¹⁹ The thinking about managing planetary defence was presented firstly at an evening event and then gradually became incorporated. It is now dealt with within a working group of the COUPOS and is entering the stage of becoming normalized as a global governance object. In 2019, when I visited the US AF Space Command, I was informed that from now on there is a person who has the title of “responsible for planetary defence” working at the US Department of Defense. Moreover, at the International Space University, the legal aspects of planetary defence have become a research subject.

²²⁰ On 25 September 2015, UN member states agreed on a set of goals to end poverty, protect the planet and ensure prosperity for all as part of the 2030 Agenda for Sustainable Development. On 1 January 2016, the 17 SDGs of the Agenda officially entered into force (UNOOSA, 2018b:9).

space to the core of UN processes. Interestingly, the SDGs have been discussed since 2013 and were adopted by all UN member states in 2015 but did not more substantially start to alter the UN COPUOS character until 2018, in conjunction with the UNISPACE+50.



Figure 23: Space4SDGS. Credit: UNOOSA

Now, just look at the picture of “Space4SDGS” it reflects the optimistic sides of outer space and is more in line and up-to-date with the commercial suborder’s visual frames than the traditional UN COPUOS beige environment of the 1960s. The picture represents a discursive shift and an opportunity as it visualizes how the different SDGs are covered by space assets. During one session, I could not refrain from informally noting that the SDGs and the sustainability discourse might to a higher degree also embrace the sustainability of outer space, in particular the orbital environment itself. Still, the SDGs are about how to protect the people and the planet (cf. UN, 2021). Outer space is not included, although, a few delegates to the UN COPUOS in informal conversations mentions that one additional goal to the 17 would be assigned to outer space. The idea of sustainability extending into outer space was also evident during the Scientific and Technical subcommittee, as the International Space University (ISU) held a “technical presentation” about the team project entitled “Sustainable Moon” (UNOOSA,

2020a).²²¹ Thus, in the COPUOS the sustainability discourse started to include the Moon.²²² Hence, the UN COPUOS is a key constructive political space for outer space ordering in accordance with the classical view of order. Still, also within this international space, the professional orders were clearly discernable. Interestingly, the sustainability efforts are not primarily driven by the political suborder. Rather it is the NGOs, the UN COPUOS Secretariat and Chairs that continue the work for the peaceful and sustainable uses of outer space. While these three entities had a notable presence and strong voice in the UN COPUOS, the military suborder was silent.

7.2.4. The muted military discourse but the expressed concerns

As the COPUOS by name and by mandate is the committee on the *peaceful* uses of outer space, military issues should not be handled within the committee.²²³ Therefore, topics that could be associated with the military suborder, do not explicitly figure in the discussions. Nevertheless, the annual 2019 UN COPUOS report stated that:

²²¹ Hence, sustainability with adherent responsibility travels beyond Earth and by a cross global professional team it becomes ‘lunar sustainability’ (ibid.).

²²² In 2030 a lunar habitat is expected and by 2060 a larger settlement. Now, the committee concentrates on a *Space-2030 Resolution* in line with the general UN temporality and structure. This resolution is developed in relation to how space can contribute to the SDGs, the Sendai Framework for Disaster Risk Reduction 2015–2030 and the Paris Agreement.

²²³ From the start, the COPUOS was given the mandate to handle the peaceful uses of outer space whereas military issues were referred to the Conference of Disarmament (CD) (cf. Tronchetti, 2013; Froehlich & Seffinga, 2019). Despite that the CD is not formally a UN organization, resolutions adopted by the GA are often sent to the CD for considerations, and the CD in turn annually reports its activities to the GA (Johnson-Freese, 2017:150). However, over the years, the CD has been more or less deadlocked (Froehlich & Seffinga, 2019:99ff). In short, whereas Russia and China have been in favor of a legally binding treaty banning weapons in outer space, the US has been opposed to the proposed formulations (Johnson-Freese, 2017:150-159). Moreover, the collaboration between the UN COPUOS and the CD is “far from the required” (Froehlich & Seffinga, 2019:206). Thus, although some TCBMs have been discussed within the small Group of Governmental Experts (GGE), the second way towards maintaining stability in outer space is the LTS-guidelines negotiated in one of the UN COPUOS working groups, which is accounted for here (UNOOSA, 2020h).

62. The view was expressed that the threat of an arms race in outer space was emerging primarily as a result of the position of some States that contrived to dominate and attain complete freedom of action in outer space.

63. Some delegations reaffirmed the importance of preventing an arms race in outer space and the placement of weapons of any kind in outer space, and called upon all States, in particular those with major space capabilities, to contribute actively to the peaceful use of outer space to prevent an arms race there and to refrain from placing weapons of any kind in outer space or any other action contrary to that objective [...] (UN COPUOS, 2019:11).²²⁴

In addition to the above statements that are clearly addressing the military suborder, there is also an indication that the term ‘space debris remediation’ will open for discussions about Active Debris Removal (ADR) within the COPUOS. In 2017, in the Legal subcommittee, the term ‘remediation’ was introduced. Traditionally, ADR has been a loaded term in the UN and the general space order. Satellites with ADR capabilities can either be seen as a cleaning device critical for the sustainable use of the orbits or as an anti-satellite weapon. As such, ADR laid bare a clash of deep frames with paralyzing effects. The mentioning of ‘space debris remediation’ has great implications for the future of the orbital environment, as space debris mitigation will not be enough to handle the growing amount of space debris. Debris must be actively removed and already much research at the different space agencies is devoted to ADR technology (engineer). Now, ADR has gone from being a taboo to an issue that can be discussed at the global level. All this can be linked to technological development, as well as to the sustainability of the orbital environment and the broader sustainability discourse. However, a recent backlash is that states are yet again less willing to discuss these techniques within the UN COPUOS. Moreover, in common for ADR and STM (which fosters space mitigation efforts) is the need for

²²⁴ Similar formulations are found in the GA resolution: “The Fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space: space as a driver of sustainable development” (UNOOSA, 2018a:3). Sheehan points to that some states do find that ‘peaceful’ use of outer space means ‘non-aggressive’ which incorporates the legitimate right to self-defense, referring to the (Art. 51 of the UN Charter and Art. III of the OST (2007:116). Others have a stricter view of the meaning ‘peaceful’ uses of outer space (cf. Mutschler, 2015:43).

enhanced SSA and information sharing. Thus, although increasingly part of the emerging outer space order, the military discourse is still largely muted within the UN COPUOS or outside of this diorama.²²⁵

7.2.5. Progress, the peaceful *use* of outer space and the dissipation of dark skies

A discursive element of outer space that rather was filtered away was the idea of the inherent value of a ‘dark sky’. The peaceful *use* of outer space has been a basic principle since the US, the USSR and the UK ratifications of the OST and literary all UN documents about outer space depart from this basic principle. I have never seen this principle questioned. However, is it a given that we should *use* outer space? The inherent value of the dark sky only figured in one African national statement and could of course be interpreted as an effort made by developing states to slow down the pace of the advanced space actors and new space economy. Nevertheless, what was this narrative and why did it cease to exist? In 2019, at the WRC in Egypt, the discourse seemed forgotten. Not even at the margins did it seem appropriate to raise the voice for the value of dark skies (one exception is when the scientific instruments are cluttered see section 7.1.1). The preservation of the darks skies is a typical anti-progress in technical and modern terms. The idea to at least *limit the use of outer space* is sensitive too. “I heard about this. Ah! *That* is political!” (legal).

²²⁵ Implicitly though the LTS working group absorbs some of the security related issues by establishing concrete standards and procedures for the sustainable and peaceful use of outer space. Moreover, the intense discussions about the LTS signal that the work is of high importance. Besides, outside the diorama of UN COPUOS, the UN Institute for Disarmament (UNIDIR) a voluntary funded and autonomous institute for security issues has increasingly emerged as the preferential forum to at least discuss military issues (Tronchetti, 2013:41).

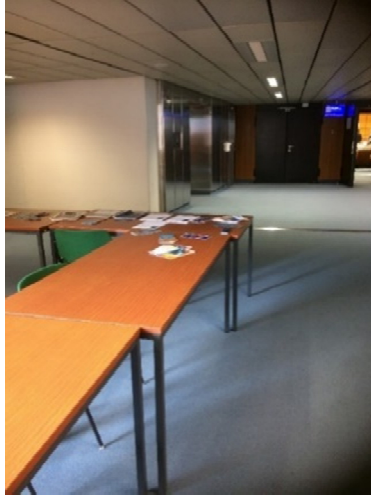


Figure 24: “The table of UN COPUOS”. Credit: the author.



Figure 25: The brochure in the middle saying about the Moon: “That’s one small step for man. And a giant mistake if we do not protect it”. Credit: the author.

The information on the table in the photos gives important insights about what is going on in outer space ordering and displays a rather diverse and global picture. Are some of these diverse voices defining the evolution of the outer space order? Notwithstanding that the commercial suborder did not devote time to the UN COPUOS meetings, the idea of progress as expansion of the outer space order was present. For example, attending a side event of the 2018 UN COPUOS I understood that building satellites in space could be the next step into space commercialization. Thus, right now, many actors are developing techniques for building things in orbit, i.e., lines of assembly and manufacturing in orbit. These initiatives only wait for a 'go sign', presumably from the political suborder. The real big commercial potentials, however, lay in the extraction of natural resources on the Moon and other celestial bodies. As the dark sky discourse, there are voices for the preservation of the Moon. At the same time, most do not like to be accused of anti-progress ideals.

In addition, within the UN COPUOS, the involvement of the private sector has been increasingly normalized, especially since some states are reluctant to devote money to the UN. Thus, the *use* of space is naturalized and private sector involvement is starting to become normalized, although there is still resistance to expand the influence of the private sector in the UN COPUOS. Moreover, the spatial frame of the plenary, the limited room together with 'established procedures' and the slow and dull setting, repels the commercial suborder.²²⁶

7.2.6. Progress, encountering nomos, Mother Earth and ontological equality

The use of outer space and progress in terms of material possessions and expansion can be contrasted with the classical view of order, in which progress is understood as political reason and moral wisdom. Therefore, I have deliberately chosen to end this section about the UN COPUOS with an illustrative example of the Platonic nomos and ontological equality. This example, I find, inspires and opens for progress, as well as trust and confidence, beyond state interests. The example is illustrated with

²²⁶An exception was the exhibition at the UNISPACE + 50, and the high-level forum of COPUOS in 2018 in which 43 companies participated (UNOOSA, 2019:8).

extracts from the interview I conducted with Ms. Chiaki Mukai in 2017 at the UN in Vienna.²²⁷



Figure 26: Chiaki Mukai. Credit: NASA.

Many people ask what the most interesting part of my space flight was. People expect me to answer [...] - Oh, there are no borders. Or - Oh no gravity, but the matter of fact, I had already expected to see the beautiful unique Earth from space. So, my expectation is very high to see Earth from above. I also had high expectations to experience interesting microgravity. And of course beautiful Earth, of course interesting microgravity, but most interesting was noticing: When I came back. I just realized, Oh Earth! It is so unique. When I came back, experiencing air, water, and the nice comfortable weather... I was born in this environment; I never thought that this environment was so very, very unique. After coming back from space (I was in space for two weeks), everything was so fresh and new. My bodyweight and if I threw something it flew in a beautiful parable. That were the more unexpected and pleasant findings. Thanks to my space flights I realize that we have to promote a sustainable plan for Earth. Because Earth is the only planet, so far, that we can live on. We have to protect the beautiful diversity that this Mother Earth is holding. I have become more appreciating of this miraculous environment that Earth is giving us. Because the distance from the Sun to the Earth is perfect, the

²²⁷ At the time of the interview, Chiaki Mukai was the chair of the Scientific and Technical Subcommittee of UN COPUOS, (2017-2018). At that time, she was also, for example, vice president of Tokyo University of Science. She was selected as a JAXA-astronaut in 1985 and in 1994 she became the first Asian woman in space. Her professional background prior to her career as an astronaut was as an assistant professor at the Department of Cardiovascular Surgery, Keio University.

molecules of the air, that is why we can breathe, and also the range of the temperature that is comfortable enough to [sic] us.

What is the space community?

To me, space is only space, which gives us no borders, no territories. I think air, ocean, and land, that kind of natural resources [...] Still, nationality territorial issues are involved. You know, you have worked for the Air Force. But space is everybody's asset. If we think about outer space, it belongs to everybody. It is everybody's asset. That I think is only apply to space so far. We should not bring any arms or those kinds of territorial issues into space. But in space we can unite, not to think about the national past, but humans first. Then, we need to think about how it can bring benefits to nations. I hope that space remains as the spirit for this community. I think COPUOS and this community is very, very unique. And that we have to work very, very hard for messages, we have to accept diversities. Thanks to Mother Nature, our expressions are different. So, we have to accept diversities, and then we have to think how we can unite to diversities, to that everybody can have [sic]. The best part of diversity; if someone does not have some other have, thanks to the sharing [sic]. We are able to expand, thanks to sharing [...].

Would you like to add something?

The SDGs, I think is a very good way for us to engage with this. I think the higher conditions, our main job is to try to understand, things we have never seen, things we have never thought about and discovering the unknown. But not go too far away from where we come. If we behave good in space, space gives back for the home [sic]. We always have to think back, to our origins, to the people, who give the "go sign" for us to explore. - Do you feel a high level of responsibility? "That is what we have to do, everybody, responsibility to think".

This interview neatly illustrates the classical view of order and elevated level of reasoning, for example about diversity. Moreover, Ms. Chiaki Mukai shows that everything we are (our bodyweight), including what we do even breathing, is conditioned by that humans and nature are perfectly at one. What is more, Chiaki Mukai expressed all this with passion and in an air of ontological equality towards the other - me as an individual person. I felt personally welcomed into the emerging outer space order.

7.3. Every-day patterns of interplay and other key sites defining the future

The fundamental question that the concept of fabric brings fore is thus, how the front of the fabric– ‘the edge’ towards the future– evolves, not just trajectory by trajectory [...] but in its full situational breadth. How do the spatial processes and the temporal flow of ‘nows’ affect each other? [my translation] (Hägerstrand, 2009:129).

This final section aims to capture the broader diorama of the emerging outer space order. The observations from the formal sites of the ITU and the UN COPUOS are related to my experiences from visiting everyday working environments as well as to observations and data from and about other key sites for interplay.²²⁸ A more complete illustration of the findings and the emerging outer space order is provided in the model in the next chapter, in which all the observations are further generalized and conceptualized. In this section, I will merely elaborate on findings that also go outside of ITU and UN COPUOS and further builds up to the illustration of the diorama presented in the next chapter.

Theoretically, the interplay could be similar between all the professional suborders. That is, each suborder would have a similar amount of interaction and exchange with each suborder. If visualized as a pentagon each of the four lines from one suborder to the other suborders would be equally intense, thick and long. Moreover, theoretically, each suborder would also have the same authority in each situation. In the following discussion, I will not go into every possible theoretical configuration but focus on the empirical observations of patterns of interplay that the interviews, as well as site and participant observations, indicate to be the most expressive for the emerging outer space order and its direction.

²²⁸ Key sites were for instance the NATO seminars. The everyday spaces were of the military (NATO staff in Norfolk, US Space Command in Colorado, Swedish National Defense University in Stockholm), commercial (“Breaking the Barriers” conference in Luxembourg, Spaceport Sweden in Kiruna) and scientific suborders (cf. Swedish Institute of Space Physics in Kiruna, Ångström laboratory in Uppsala and the Royal Institute of Technology, in Stockholm). In addition to my observations from these sites, the interviews contributed to deepened knowledge (secondary accounts) about the nature of sites and the relations between them.

The most important general finding from my research is that it does not appear to exist a fundamental drive for interaction between suborders. Rather, it is often like if the professionals of the suborders are satisfied by establishing and upholding internal interaction. Hence, there is not much motive or time to step outside the unique professional suborder more than necessary. Due to its time constraints, this primarily applies to the political suborder, but less to the commercial suborder looking for customers and business opportunities. Yet, for the sake of establishing a sustainable outer space order, interaction between the suborders is required.

Spatially, the key spaces where the suborders are supposed to interplay display a rather high level of suborder parallelism. Hence, even in the UN COPUOS, as well as in the ITU, the suborders work in parallel, according to separate agenda items and schedules. Besides, the UN COPUOS and the ITU are also very different UN bodies with different individual participants who are not necessarily informed (or showed the interest of being so) by the work of the other body. Each site, or item, requires its own focus and effort. Moreover, the suborders themselves are made up of parallel processes. A statement that captures this situation is “[w]ell, we could not take that question under consideration. It is not within this project. It is not my money” (scientific).

Besides, from the empirical observations, it is striking how the temporality of the commercial suborder compatible with the accelerating market time, differs from the political suborder of the yearlong formulations of UN documents and appendixes. The diorama of the ITU is moved forward by the trajectories of the commercial and scientific (engineer) suborders. This is facilitated by the overlapping commercial and engineer identity of being transformers. Efficiency is the principle of these suborders. The military suborder is not excluded but works on parallel agendas. Moreover, in the ITU, the representation of the political suborder is limited. The UN COPUOS, the normalizer and equalizer of the emerging outer space order is in contrast to ITU a stagnated political space, formally defined by the political suborder. The presence of the legal suborder contributes to stability and predictability, as does the political order. However, the scientific suborder works in parallel (in a separate committee) and is the suborder that enables the slow trajectory of the UN COPUOS diorama. The military suborder has been excluded from the start. Consequently, regardless that these are the formal global

sites where the different suborders' paths could cross, the suborders still do not necessarily interact. This I find reflects that the contemporary, yet, still modern governance structure is built around the proposition that states are the primary units that set the direction of the world order, and that this kind of interaction and relations should be sufficient for ordering. However, there is a need for interaction between the defining professional orders to establish deep structure convergence and order. Theoretically, this kind of convergence could grow 'from below'. However, this was not what my observations pointed to, as we will see in the next section.

7.3.1. Observations from every-day working environments

My generalized observations of interplay and the everyday dioramas show that the professional suborders are geographically separated and the routinized trajectories are parallel. For example, the political suborder is situated in the capitals that open for a variety of impulses from the public and the broader world order. Thus, the political suborder is tied to a multitude of foreseen and unforeseen processes and events. World order situations are continuously calling for attention and judgment. In addition, traveling contributes to more impressions and procedures to keep track of. Much more isolated, but still positioned in the capitals or larger cities is the legal suborder. However, the small legal suborder is scattered to universities, companies and government. This suborder has temporal possibilities to concentrate on one legal issue at a time, sometimes for many years. The legal suborder is spatially located closest to the political and commercial suborders.

The educational or theoretical parts of the scientific suborder are also located in the capitals. Still, the scientific suborder of the emerging outer space order is rather isolated in its everyday patterns, absorbed by the fascination of outer space. Even more isolated are the members of this community working at space observatories typically located in dark areas, far from cities. The same goes for launching sites due to noise and security restrictions. This implies that many of these professionals seldom encounter the other communities. The large military suborder is also an isolated order. However, the geography of locating military headquarters in capitals facilitates that military views are transmitted into the political suborder.

In the emerging outer space order, the political suborder should presumably be defining outer space developments and have formal authority representing the public and deliberating the common good. However, the political suborder is strikingly absent from the key sites where this could be done. This observation holds also for the everyday spaces of outer space ordering. Theoretically, the political suborder could direct the emerging outer space order from a distance. However, the level of knowledge required to handle outer space with authority is high. Thus, outer space is a time-consuming issue on the political agenda already filled with many other issues and crises more urgent, so outer space tend to be a minor or forgotten topic. There is not much room for outer space within the political suborder, which is accustomed to handling familiar issues. Still, as some great powers with internal challenges are infusing the political symbolism of outer space and the great power game, towards the end of this inquiry, outer space was gaining attention also within the political suborder.

7.3.2. Observations from additional sites of interplay

Concerning the spatiality of the emerging outer space order, the ITU and the UN clearly expose a diminishing Western order, more diverge funding and active global engagement. Still, the US is shaping many of the development in outer space. The political space for this is the annual *Space Symposium*, in Colorado Springs. This is the event, that according to its website, “year after year keeps up with the reputation as the ‘must attend industry event’”. The symposium brings all different groups and sectors of the space community together “in one place” which “provides a unique opportunity to examine space issues from multiple perspectives, to promote dialogue and to focus attention to critical space issues” (The Space Foundation, 2019) Moreover, this is the *one* event with all the “customers and new prospects in one place” [my emphasis] (ibid.). Still, the participants can choose different tracks, like the “tech track” or “space law workshop”. Despite its high entrance fees, the event continues to gather 14,000 participants annually (ibid.).

Some other popular conferences are the Advance Maui Optical and Space Surveillance Technologies Conference (AMOS) in Maui, Hawaii, and the *ASCEND* conference “powered by AIAA, the world’s largest and most influential community of astronautical experts [...] committed to

empowering the future space economy” held in Las Vegas (AIAA, 2019). The latter, however, is in 2020 rebranding its conference with the message “It’s not just an engineering forum. It is not just a business conference. It is the event defining the future in space” (ibid.). This quote, together with other observations, shows that these conferences are branded as being a place where the suborders can come together and, hence, that coming together is not according to the normalized patterns, but a selling point. The framing of the conferences also shows that outer space is strongly associated with the future and the time of becoming.

Europe is still a region in which many space institutions are located and still more under establishment. The annual New Space arrangements conference, “Breaking the Barriers”, in Luxemburg is held in an impressive business center (NewSpace Europe, 2018). Similarly, to the Space Symposium in the US, the conference fee is high. Luxemburg “is the first European country, and the second worldwide, to offer a legal framework on the exploration and use of space resources, ensuring that private operators can be confident about their rights on resources they extract in space” (Luxembourg Space Agency, 2020). The country provides “a unique legal, regulatory and business environment enabling private investors and companies to explore and use space resources” (ibid.). This initiative and conference is motivated by a shortage of certain resources on Earth and a technological revolution, making asteroid mining possible. Luxemburg aims to develop a center of excellence in the field and to make sure that these activities are done in a sustainable way and for the “benefit of humankind” (ibid.).²²⁹

In Toulouse, “in the heart of the European Space Ecosystem”, NATO is establishing a Center of Excellence about space to benefit from the expertise of the France Space Command that was established in 2019 (NATO, 2020). The location is also a consequence of the NATO policy of burden sharing and ‘geographically balancing’ of centers of excellence within the territories of its allied states (ibid.). While London is the host for some conferences, for example, a conference concerning small

²²⁹ Attending this event the Director of UNOOSA, Simonetta di Pippo also showed her support for the initiative and welcomed Luxemburg’s support to the UN COPUOS in its capacity building efforts. At the signing ceremony, she called Luxemburg a “champion” that has made a substantial contribution to the field and large impact partners and catalytic projects were mentioned in the video (Luxembourg Space Agency, 2019).

satellites and security, Bremen hosts the annual Space Expo. The more traditional arena for outer space ordering is the ESA headquarters located in Paris. In addition to the ESA, the EU is more actively engaging in outer space and speaks for several technically advanced member states. Nevertheless, as stated above, non-western top spaces are emerging. But one example is the 2021 IAC to be held at the Dubai World Trade Centre (IAC, 2020). There is also an Asian-Pacific Regional Space Forum (APRSAF) with annual sessions (APRSAF, 2020) and a Chinese space forum. In addition, Shanghai hosts the World Artificial Intelligence Conference, which in 2019 was visited by Elon Musk who held a talk with Alibaba founder Jack Ma (Yang, 2019).

A general observation is that most of the conferences belong to, and empower, the scientific (or more precisely the engineer) and commercial suborders, and that military conferences tend to be separated. Moreover, outer space is ordered in global top spaces far from the public and the underserved. Besides, these sweeping observations of additional sites also illustrate an exponential shift in types and intensity of space activities. Discerning a general pattern of interplay, the observations of additional sites were here briefly related to the observations of everyday spaces, patterns of constitutive materiality as well as to other sites for outer space ordering. However, to substantiate further the findings and observations, the next chapter will elaborate on them through the model of the diorama.

8. Conceptualization of observations

The previous chapters have characterized the emerging outer space order. This chapter further addresses the first research question guiding this thesis; *What kind of order emerges in outer space and how might it be conceptualized?* The conceptualization and discussion presented here are based on my observations from official key sites like the ITU, UN COPUOS and NATO and from four years of studying the phenomenon of the outer space order, visiting everyday professional environments and having conversations with practitioners. These various observations of the multi-sited phenomenon add up to the conceptualization and analysis in this chapter.

In the first section, the trajectories of the professional suborders and the interplay between them are conceptualized through the diorama model. The analysis shows that there is a high level of deep frame-, spatial- and temporal distance between the suborders, even at locations where the suborders are supposed to converge and interaction take place. Hence, the emerging space order is best characterized as a heterarchical order in which the horizontal power-sharing and internal hierarchies are strong. In other words, the professional suborders exhibit solid identity formation and represent multiple ranked distinctive realities. Moreover, during the period of this inquiry, 2017-2020, the political suborder was not in authority, as well as risked becoming outpaced. In addition, deep agency was situated outside of the political suborder. Thus, the emerging space order is conceptualized as a tilted order. These observations also indicate that the suborders, including the political, display a weak sense of *nomos* and reflective reason.

Consequently, in this chapter, I start to address the second research question guiding this thesis; *What does the emerging outer space order convey and illustrate about the deep structures of the world order? What are the possibilities for political order and political reason?* In the second section, I investigate how the findings of the emerging outer space order relate to what Donnelly call the state-layer in the heterarchical world. The third section shows that this is a fruitful approach, as changes

in the state-layer illuminate a different face of political decay. However, the third section mainly captures changes in the traditional world order surface. Therefore, in the next chapter, the impacts of the emerging outer space order on the deep structures of contemporary world order fabric and political reason are further theorized and discussed.

8.1. A tilted order

The model presented in Figure 27 below, illustrates the evolving diorama of the emerging outer space order. It shows that that the commercial, scientific and military suborders are defining its direction. Thus, even though the political suborder is given authority and hence has formal authority to define the order from 'above' the model illustrates that it is not in authority. Due to the complex stock of knowledge and remote character of outer space, the political suborder needs to be informed by the other suborders that do define the reality of outer space. Hence, the emerging outer space order turns out to be a tilted order in the respect that the political and legal suborders are situated lowest on the authority axis. In addition, deep agency is located outside of the political suborder (deep agency is not visible in the model but has to do with the speed and force/thrust of the trajectory). In the middle runs the cross-temporal massive trajectory of the military suborder. Noteworthy is the recent upward sweep of this military suborder, marked by the explicit renationalization of outer space. Moreover, the commercial suborder is increasingly intertwined with the scientific and military suborders (spatially and in deep frames).

manufacturing of space technology, including own launchers. This accelerating temporality is also facilitated by a comparably high level of flexibility and agility, as the commercial suborder is less bureaucratic than the other suborders. The commercial suborder is not accountable to multiple masters, unlike the political. Moreover, the commercial suborder has a rather straightforward and uncomplicated telos of growth and is ingrained with instrumental reasoning, which contribute to the massivity of the internal reality.

8.1.1. The characters of the units and their trajectories

The commercial suborder is in addition appealing, inspiring and reaching out to the broader population. With optimism, excitement and visions for the future, it fills a meaning-making gap in the political space, as this is becoming the scarcest resources of the contemporary world. The individual business leaders of the commercial suborder, with their personal brand and short catchy messages get through the noise of information entropy. They gain widespread respect and authority among millions of global cyborgs. Not only do they represent the financial elite, but *the* elite. This is linked to the other major reason for the authority as well as agency of the commercial suborder, which is the acceptance and normalization of the familiar commercial discursive configurations in the vast majority of global political spaces. This together with the financial strength gives the commercial suborder considerable autonomy in relation to other suborders. Hence, these elite launch satellites and other spacecraft that come to define outer space, as do exciting space visions. The commercial suborder's disruptive ideas and bold visions for the future generates deep agency. Tellingly, being transformers is the core of the identity formation of this suborder.

Concerning the global sites and spaces of ordering, the commercial suborder is not fixed in any particular template directing it to certain traditional patterns of interactions, as the military and political, but works calculated (cost and benefit in time and money) through various and strategic spaces, i.e., conferences, platforms and individuals, with flexible personal relations, business deals and contracts. It is a rather self-propelling and all-encompassing order, flowing through. Increasingly, the commercial suborder is surfacing in the traditional international contexts, even in the form of independent consultants. At the same time, the

commercial suborder's locations for outer space ordering are also attractive to the other suborders, as being at these locations with everyone else signals status and standing. Not being there poses a risk of being left behind, underserved and isolated. There are also some key global commercial sites, as the annual Space Symposium in the US, that dictates the form of interaction and messages spreading across the emerging outer space order. In the everyday environment, the commercial suborder with its ideals, excitement, potentials and wages is increasingly attracting professionals from the other outer space professional orders. Due to the normalized understanding that the individual status is associated with material wellbeing, this is a rather unnoticed phenomenon. Except for self-restraint, little can slow down the demand and appetite of the commercial suborder. Thus, the other suborders were, to different degrees, outpaced.

Making up the silent backbone of the emerging outer space order, the engineers and scientists of the scientific suborder possess deep agency. In terms of defining power, the scientific suborder is limited by weak communication to the outside of the community but enhanced by technological agency and the truth proximity of science. Nonetheless, the engineers, like the commercial suborder, harbours the potential of innovation but agency is mainly materialized in hard- as well as software, facilitated by new refined materials and process technologies. The real typical engineer serves the other defining suborders (i.e., the commercial and military) of the emerging outer space order and is critical for its very existence. It is a large suborder comprising numerous engineers around the world and the profession remains popular. Despite being a large suborder, it has a remarkably narrow material focus and education, constituting a telos of innovation, construction and improvements of technical solutions to every possible problem. Still, although undeliberated and silent, this suborder has considerable political impact. Often its impact is difficult to conceive. Still, once satellites are in production and the standards are *set*, these must be handled within the legal and political suborder.²³⁰ However, by then the technology is already defining the trajectory of the emerging outer space order.

The scientists are occupied with the counter-intuitive and multi-dimensional cosmos. The linear line between space exploration, the

²³⁰ In this illustrative and crucial case, for example, the standards of the cub-satellites.

public and the (taken for granted) common good is too basic for real typical scientist to engage with and is perceived as a waste of intellectual capital. There is no developed and outreaching language set for *why* we go to space. In addition, the scientific suborder has traditionally high truth claim authority but more recently strives to make itself relevant to avoid being overrun by the commercial suborder. Thus, science is challenged by simplified information and messages. At the same time, it is an isolated suborder by complexity in stock of language, deep frames and language set. In contrast, the engineers who are spread across the emerging outer space order, as well as generally more actively involved in outer space ordering, although unconsciously so. The scientific real type nevertheless dictates the missions according to the scientific relevance of them. Space exploration and the questions related to 'big science' however require worldwide cooperation. Thus, within the scientific suborder, there is an ambivalence between distancing itself further from the Earthly and obsolete politics as well as a responsibility to educate and inform the political suborder. Although, challenged from the commercial suborder the level of authority vis-à-vis the other suborders nevertheless remains high.

The military suborder runs straight across the political space of the emerging outer space order. It is a compact and massive trajectory with a familiar solidifying reality. In other words, to the outside, its description of the state system and a cyclic historical create a coherent reality and provides meaning. Thus, this familiar contextualized past and future is not only crucial for the military identity, based on serving the state but attracts some of the other suborders as well. Similar to the commercial and the scientific suborders, it is hard to question and challenge the military suborder. As the military suborder focuses on threat evaluations and scenario descriptions for worst-case scenarios, the stock of knowledge for its justifications is produced within the closed military suborder itself. Due to the drive for belonging among the practitioners in the suborder, it is also hard to question and change the suborder from within. During the period of this inquiry, (2017-2020) there has clearly been an upward sweep of the military suborder within the emerging outer

space order.²³¹ Importantly, the discursive configurations have changed from being concentrated on outer space as a military force enabler or multiplier to outer space as a warfighting domain. In sum, as a defining suborder of the outer space order, the military suborder provides order and meaning and has gained momentum. The military suborder is a large and massive trajectory generated by long-term plans that through its threat assessments structure the reality well into the future in an all-encompassing mode.²³²

In the emerging outer space order, the political suborder should presumably be defining the developments as it has formal authority representing the public and deliberating the common good. However, the political suborder is strikingly absent from the key sites, as well as everyday spaces of outer space ordering. Obviously, the political suborder could direct the emerging outer space order from a distance. However, due to the level of knowledge required to handle outer space with authority, outer space is a too time-consuming issue on the political agenda already filled with many other and more urgent tasks. The political suborder is under high pressure with expectations and accountability to multiple masters. The pressure primarily stems from the peer professionals in the bureaucracy as well as different governmental departments, branches and types of media. During the inquiry, there has also been an unneglectable level of general concern and anxiety in the world roaming into the realities - frames, and patterns of the political suborder.

The political suborder was foremost squeezed by its perceived tight temporality and lack of time. The procedural workload together with the

²³¹ Previous research shows that the upward sweep of the military suborder started already at the beginning of the century, for example, expressed in the wordings of the US official documents (cf. Bormann, et al, 2009:113, 117ff). However, official rhetoric about outer space as a *military domain* has only been possible to express at the end of this period of research.

²³² What unites the commercial, military and scientific suborders that have been described so far, is the belief in technological rationality and progress, faster, further, and smaller as well as *the sentiment of optimism*. Moreover, the scientific suborder has in common with the military suborder the experience of working with the electromagnetic spectrum. This corresponds to the findings of Neil DeGrasse Tyson and Avis Lang, who through the example of the US, argue that the military and the astrophysical communities have in common to work with the invisible. Despite their different backgrounds, ideologies and aims, these suborders form an “unspoken alliance” (2018).

rising level of concern about world order problems and crisis created a stressful situation. As cognitive frames narrow with stress, to uphold cognitive order there was a tendency to cling to the familiar. Thus, traditional processes and constructions shaped everything from body language to mandatory formulations and declarations. As a result, the suborder was characterized by imitation and reproduction, stereotypic thinking and predictable behaviour. The political suborder was stagnating, as its focus was on the present and various procedures. Therefore, there was no room, nor sign of reflective political reason or political vision. As a result, the political space of the future was open to other suborders to define. The UN COPUOS as a site is an important exception, exhibiting visions and reflective political reason. Still, the UN COPUOS suffered from a shortage of funding. Besides, in this space, there was also little room for changes, novelties and innovation due to the cemented state-template procedures and thinking. Moreover, in the specialized emerging space order, the political suborder naturally turned to different kinds of experts. Hence, the political suborder needed to be informed and once more, the emerging outer space order was open for other professional suborders to define. From a normative standpoint, this was sometimes beneficial for the sake of sustainable development in outer space. However, at times political responsibility was delegated seemingly without reflection.

Compared to the defining professional suborders, the legal suborder of the emerging outer space order is tiny and was during the period of this inquiry rather silent and weak. In addition, the legal suborder is typically an isolated suborder occupied with continuously reinterpreting and renegotiating its own questions in separate spaces, for example in the UN COPUOS's Legal subcommittee, academia and specialized journals. In a general situation of 'no appetite for treaties' defining the legal suborder, the development of international space law is slow or absent. This suborder would have been marginalized if it were not for the traditional access to the global spaces defining outer space and the possibility to through global knowledge production work with non-binding concepts, sustainability, guidelines, standards and transparency. However, its authority was foremost tied to the few international treaties relevant to outer space ordering. Thus, the legal suborder would have been even more bypassed if it were not for its relevance for the commercial suborder, as space and insurance companies like to (selectively) create

and push the development of law for the sake of market certainty. The legal suborder turned out to be more instrumental in its character and endowed with much less agency than the military suborder (which traditionally has a deep frame of being an instrument of politics). At the same time, the legal suborder's pure existence and presence uphold critical stability and normality in the emerging outer space order. In the model, the legal suborder is illustrated as thin and with a downwards inclination.

8.1.2. Heterarchy – identity formations and a weak sense of nomos

The diorama concept not only assists in highlighting the positions of the various suborders but also their interplay. In the case of the emerging outer space order, this interplay is characterized by a scattered spatiality. For example, the ITU delegates did not necessarily know or care very much about the military developments in outer space. Simultaneously, the military suborder was not very initiated about the ongoing work of the UN. Besides, even within the UN, the different specialized subcommittees, working groups and bodies were separated in time and space. In the ITU, the experts made the professional and necessary choice to concentrate on one study and agenda item. Consequently, the level of parallelism and specialization is high, especially when taking the deep frames, everyday temporal as well as material patterns and spaces into consideration. Even on occasions when their material patterns did converge (such as space seminars), the professionals were still choosing to attend their specialized “tracks”. Thus, the suborders were hardwired by their professional identities and surprisingly stereotypical. Consequently, the pace and direction of the emerging outer space order are largely defined within the separate suborders. Therefore, the emerging order can be characterized as a heterarchical order with multiple centers, hierarchies and organizing principles.²³³

²³³ In relation to Kaplan's categorization, I find that the emerging outer space order is subsystem dominant, and directive. This finding points to that the emerging outer space order is very thin, and some suborders are more defining for its direction, these are the commercial, scientific, and military. A suborder becomes dominant when its essential rules act as parameters given for the other suborders (Kaplan, 1979:30). In this analysis, the parameters of the commercial suborder appear to be rather given for the other suborders and the wider social whole.

Moreover, infused by market time, the chronos of the ITU runs much faster than that of the UN COPUOS and the political suborder. Satellites are filed and launched defining the material structures of the emerging space order, then the UN COPUOS is informed. This is an example of how the political and legal suborders are reactive and must cope with the materiality and reality that is already defined by the commercial suborder and the standards set by engineers in the scientific suborder.

The diorama shows that some of them suborders are closer to each other. On a deep frame level, the military and political suborders converge around the familiar idea of great power games and are the *guardians* of the modern order. These suborders display few new ideas or initiatives. In addition, the drive of spirit and hierarchies are strong for both these suborders. The innovation potential is low and the traditional discourses are reproduced. This becomes evident in the light of the increased complexity of the contemporary world and many of the challenges raised by planetary (in)security, which are outside the stock of knowledge, language set and the constitutive materiality (including firm hierarchies and bureaucracies) of the military and political suborders. Together this points to the stagnation or obsolescence of these professional identity formations. To counter the sense of lag, lost control and relevance, the political suborder is inclined to a (re)nationalization of outer space. As a result and as professional hierarchies and governance structures are designed for a modern order, surface work has continued unimpeded in familiar patterns. Thus, the emerging outer space order falls into the reductive reading of a great power game, which during the inquiry increasingly became normalized across the other suborders. Almost across, as the question is if the scientific suborder will accept this simplicity and involve or distance itself. Thus, for the moment the scientific real type can best be characterized as *neglectors* of the modern state-centric order.

The commercial suborder with its speed, flexibility as well as growing financial and innovation influence, better manages the fabric of specialized parallel orders. Moreover, since the political suborder lack visions about the substance of the rule-based order and future, which the military space order is to protect and the other suborders are to support, a void opens. In concert, the *transformers* and *innovators* of the commercial and the scientific suborders define the direction of the emerging space order in which the use of outer space is already given and

the discourse about the value of dark skies is marginalized. It is a concert accelerating the rate of change.

The future of the space enterprise and viable business cases, including mega-constellations, space-based Internet, in orbit manufacturing and asteroid mining as well as space tourism and settlements, are materializing as techniques and standards will be developed outside and independent of the other suborders. The commercial and scientific suborders' visual frames of future projects make them appear as if already operational. Many problems and issues will solve themselves 'organically' but new will be created. As the solutions, equipment and data will be controlled and for sale by individuals of the commercial suborder, there are reasons to believe that the most lucrative services will be prioritized over, for example, debris removal. Besides, the commercial suborder is rather independent and flexible in adapting to the military market under the frames of 'government security', and to the SGDs with the potential of connecting billions of underserved users around the entire world. There are also some tensions between the suborders. As we have learned, the scientific instruments are cluttered by small un-maneuvrable satellites launched by the commercial suborder. Moreover, tension was present as the political and military suborders were concerned with what they perceived as 'real world' challenges whereas the scientific appeared to be idealistic, naïve and aloft from security concerns. There are also tensions between the commercial and military suborder as to whether the state interest of economic growth or of security should be prioritized in different ordering situations.

The analysis shows that there is an overarching order, although, thin and with a very weak sense of nomos. For example, the UN procedures continue and the Outer Space Treaty is discussed. However, the observations also point to political stagnation or even decay as the idea of political order and political reason appear to be forgotten. Yet, within the commercial and scientific suborders, there was some awareness of their increased influence and independence. The awareness created a sense of responsibility for the future of outer space and some indications of political reasons, ethics and a few loose elements of ideas about the common good. Concerns about the fragility of the orbital environment were most prevalent among elite diplomats and top scientists, however, as we have seen their agency was restricted. Altogether, the suborders, including the political, display a weak sense of nomos and reflective

reason. Thus, there were few indications of higher levels of reasoning that would move the suborder towards ontological equality.

Consequently, in very general terms the emerging outer space order requires to be characterized as an order based on instrumental reasoning. Therefore, the work in the UN with the SDGs and LTSs is critical, as the standards and visions will be the very core of a sustainable outer space order. Similarly, the indication that the commercial suborder takes on some of the responsibilities because of the perceived significant influence on the direction of the outer space, as well as world order, holds potential for higher levels of political reason. Finally, the findings of the main study strengthen my initial observations that the public is outside the political space of the emerging outer space order and about its general depoliticized character. Even the ongoing process of renationalization is done far above the heads of the public and outside the public realm.

8.2. Heterarchy and the modern order

To make sense of what the emerging outer space order conveys and illustrates about the world order, a huge comparison is needed (cf. Tilly, 1984:144ff). For the reason of illustrating variation in deep structures and processes, the heterarchical emerging outer space order is here briefly contrasted to the old order of the first space age. During the older order, power was concentrated with the superpowers. The governance structures, the states, the diplomats and regulators were perceived as above and in control of the developments as they were in authority. International treaties were negotiated by the few space nations and there was a common stock of knowledge among experts including the diplomats. Even in the most antagonistic years of the space race, actors practiced restraint due to the fragility of the orbital environment (Moltz, 2014:2). The space order was predictable. It was a *modern order* and, hence, its development was within the reach of traditional governance structures. Moreover, at that time (in democratic states), it was common to discern a link from public will-formation to political decision making, as well as to understand political choices and their consequences (cf. Rosa, 2005). The policymaking process made political order meaningful and timely. Most citizens and practitioners had a sense of the substance of

the rule-based-order, as they were contextualizing the future and had vaccinating memories of a violent past. There was a modern nomos.

Since then, there has been a time of space exploration, commerce, progress, material wellbeing and innovation. In addition, globalization has increasingly tied people together including in the shape of quantum-mind professional orders. Power has been diffused as the number and types of actors influencing the direction of the world order rapidly increased. Donnelly argues that in the world order of the twenty-first century, “*modern* state-centric governance is being overlaid with (and perhaps giving way to) heterarchic multi-level, multi-actor, and non-territorial governance” [my emphasis], leading to a heavy state-system residue (Donnelly, 2016:1). Thus, he finds that “contemporary international society can best be modeled as a state-system with a heavy heterarchic overlay” (ibid.).²³⁴ Moreover, Donnelly suggests that “[a]s heterarchies become more complex and diverse, functional differentiation becomes more illuminating than centralization – especially when, as in the contemporary world, there is no clear normative center and no deeply shared common identity” (Donnelly, 2016:14). This functional differentiation is, in the present inductive inquiry, apparent in the central role of the defining professional orders.

²³⁴ Donnelly defines heterarchies as “systems of multiple functionally differentiated non-territorial centers arrange in divided or tangled hierarchies” (2016:1). Both our conceptualizations of heterarchy are intended as ideal types. In addition, both conceptualizations have in common that they are at that the core of formal and informal authority and using the term direction rather than governance. In my conceptualization of heterarchy, identity formations and horizontal power sharing make more sense than levels and states. Nevertheless, I find that it makes sense to relate my findings to Donnelly’s conceptualization to further explore the empirical findings as well as the concept of heterarchy. Donnelly’s conceptualization of heterarchy is not logically compatible with my conceptualization as it is concentrated at the state and mine with identity formation and community. As a result, I use his conceptualization of heterarchy in an ideal typical manner. In the present study, as they could be conceptualized as part of the state-layer, the professional orders are given ontological status and therefore theoretically could also be said to belong to the state-layer in particular the formal political and the military. However, if the political and military suborders were not given ontological status much less insight would have been gained, as these would disappear subsumed to the state or to the notion of an empty static sector. In addition, this problem might be mitigated when recalling that the real types are real types whereas Donnelly’s model of fluctuating orders is intended as an ideal type and in the latter case the ontological status is downplayed. Moreover, as this inquiry aimed to see anew, we might shift between the layers conceptualized by Donnelly and thereby receive an additional ideal typical perspective.

Donnelly contends that the state remains the most powerful political unit and an important source for governance (2016:10). For example, he notes that twenty-first-century states do much more than their pre-twentieth-century predecessors (2016:11). At the same time, in some areas, the states have lost final authority all together, for example in high-tech areas (Donnelly, 2016:14 & 20). Likewise, when analyzing the ongoing global order re-spatialization by Information and Communication Technology (ITC), P J Blount (2019) finds that there is a growing dissonance between traditional governance structures and the emerging global spaces. Like cyberspace, outer space serves as an illustrative example of this governance structure dissonance, especially when taking into consideration informal as well as formal authority. Hence, outer space exposes the lack of state authority as well as of state residue. These characteristics of the state in the outer space order corresponds with the finding of the stagnated political order, which can be seen as a face of political decay.

While Donnelly has a broad view of the heterogeneous actors in the overlay, I argue that the principal units of the heterarchic overlay are the quantum-entangled professional communities. Moreover, I find that authority alters between the state-layer and the heterarchic overlay of quantum-entangled professional communities. Thus, the heterarchic-layer and the state-layer alter and fluctuate in conjunction with more relaxed and more tensed historical conditions. In times of perceived uncertainty or crisis, the familiar state-layer kicks in. Thus, the alteration is context dependent.²³⁵ Nevertheless, I argue that direction, innovation and deep structure change are happening in the layer of professional orders. In Donnelly's terms, the state-system *is* giving way to the heterarchic overlay. This shift can also be expressed in contrast to modernity. The process of modernization was “predominantly [a] *political project* [...] propelled by the idea that human beings as citizens should themselves and collectively determine their own fate [emphasis in original] (Rosa 2006:449).

²³⁵ For example, during the corona-crisis 2020, in Sweden, the professional communities largely remained in authority even during the peak of the crisis and individual responsibility from the public was requested in direct communication between experts and the public. In many other parts of the world, the state stepped in and via formal authority and coercive measures aimed to control the situation, science was at times politicized. It could be seen as an alteration between modern and post-modern contexts.

Compared to modernization, the findings in the previous section show that the emerging outer space order illustrates how the order has tilted, and the political suborder is no longer in authority and has been outpaced. Thus, the political suborder does not define its historical direction. Instead, the outer space order reflects a general tendency of a world emerging into a commercial, scientific - engineering (and military) project. In the next chapter, I will argue that many political spaces of the contemporary world are now better captured by the concept of *hypermodernity*. This is not only due to that many spaces are increasingly heterarchical and less defined and controlled by the political suborder, but also due to deeper structural shifts, material as well as deep frame (i.e., cosmological) shifts. However first, in the next section, I will draw on Donnelly's heterarchy and present my general observations about the state-layer of the emerging outer space order. This state-layer is associated with the challenged liberal world order, which represents yet another face of political decay.

8.3. Changes in the state-layer and the liberal order

This section will illustrate the state-layer of the world order through my observations of the greater power game at the various outer space ordering sites. The empirical observations of the emerging outer space order reveal and illustrate changes as well as continuity in the state-layer. As a result, the deep frame of the great power game is misleading unless updated with the contemporary actors, technology and dynamics. Essentially the fragility of outer space and its overlap with cyberspace means that not only the great powers but also small actors can rock the balance of power in every intertwined world order domain. Despite these dynamics, my observation is that the great power game in the emerging outer space order is fundamentally between China and the US seeking to

expand their influence and project power through commercial, digital and military alliances.²³⁶

While there are changing dynamics in the state layer, the emerging outer space order is not reflecting a world order fully in absence of a given normative center. For example, in the UN, the work continued regardless of the weak US engagement. Thus, the UN is continuously ‘muddling through’ in accordance with the surface procedural but persistent liberal practices, and in the end, the US is probably disadvantaged if not more actively involved. As a result, there was no explicitly recognized leadership.

Nevertheless, changes are evident in the state layer as China’s influence is increasing. One of my first observations in UN COPUOS was the tension rising and silence spreading in the room once the Chinese delegation was given the word. In UN COPUOS China, as well as ‘the group of 77 plus China’ have a strong voice. Moreover, at an evening event held during the UN COPUOS in Vienna, 2018, the theme was “Belt and Road Initiative Space Information Corridor”, and the room was overcrowded by national space representatives from across the world. Besides, due to the digital nature of the contemporary world order and to various states’ efforts to become connected as well as reciprocal efforts to connect the underserved advantage for large space powers arise.

Changing dynamics in the state-layer were also evident through state identities and frames. In the UN, neither the US and the EU standings, nor statuses could be taken for granted but need to be continuously upheld. Besides, with a more uncertain world order and weak legal regime, it is also less obvious what constitutes a deviating behavior. It is no longer unthinkable to term outer space as a military domain, nor to carry out anti-satellite tests if they are within appropriate altitude for

²³⁶ One of the sides’ perspective is expressed by US Secretary of State, Michael Pompeo who remarks “[t]his is not a Cold War 2.0 but something worse and more complicated. The reason is that the Chinese communist party is now so deeply involved in our economies, political systems, and societies than the Soviet ever was” in Prague, to advice the leadership of the Czech Republic to choose American hardware (Lundin, 30 August 2020). These two digital alliances involve the instruments of export control and of influencing allies to develop suitable niche capabilities (Huntley, 2007:250ff). This development in the state-layers can be related to structural order as hierarchies (Lake, 1996; 2009). In addition, from the broader discourse of this development, it is clear that it takes place in a perceived anarchic world.

mitigating the risk of causing long term space debris. There is a sense of nomos, albeit very thin. Theoretically, the state-layer could have been cosmopolitanism, environmentalist or humanist, defined by reflective reason. However, the layer was surprisingly state-centric in deep frames as well as in the constitutive materiality. Thus, the persistent work with the SDGs and the LTS-guidelines of outer space activities is crucial for upholding the liberal order in times of renationalization of outer space.

Moreover, in the new great power game, partnership and allies now include private companies, such as SpaceX and Amazon. As a result, the state-layer is defined by states dominated by the heterarchic-layer, in which the commercial suborder will shape the order before the political suborder reacts. At the same time, there are also states in which the state-layer will be in control of every suborder and company. Hence, for some actors, the transforming world order has a politically induced long-term vision with a clear direction and content. For other states, the political long-term visions are vague and the heterarchic-layer is gaining power, as the attention is focused on political quarrels and surface work. Moreover, my observations revealed a shift in what is to be achieved and protected in outer space. Now, the potential space market is increasingly the center, as well as the functionality of technical systems. The notions of the market and functionality of society are tied to the state, but the population is not in the foreground. Moreover, many of the sites where the emerging outer space order is defined are separated and closed to the public due to conference fees and travel costs.

Concerning equality in the emerging space order, the message from an African delegate about 'greed' deserves attention. The digitalized and connected world will be defined by the technically advanced societies to which the "underserved" are forced to connect or face isolation. The underserved will not define the emerging outer space order, nor the story about its disadvantages and benefits. Nevertheless, the idea is to enable global connectivity, to close the 'digital divide' and empower the 'underserved' populations. This mission is typically framed as providing Internet-access to rural schools and poor children. Thus, schoolchildren will probably benefit and possibilities like telemedicine could evidently help the 'underserved'. However, there were also observations made that the global connectivity will firstly be focused on the rich individuals traveling the world on cruise ships and aircraft, as the satellites initially are covering the equatorial tourist areas, rather than the rural areas.

Besides, to connect you need a receiver (most commonly your mobile phone), which creates a financial threshold for the underserved. Together, this suggests that the world order is becoming more hierarchical as well as heterarchical.

From the illustrative example of outer space, it was also evident that the principles of liberal order are challenged. For instance, I realized that I was intuitively turning my bag inside out in Sharm-el Sheikh to make sure that the logo of Academic Free Press was not shown in case I would encounter some of the other participants of the ITU. This reaction can be nothing else than a sign that freedom of speech is not a given within this emerging outer space order. Another illustrative example at the same conference was when I was talking with the BBC about when and how their broadcasting from different states and regions is jammed, the gazes from other delegates suggested that a researcher speaking with the media was not an appropriate feature of the politically charged, albeit depoliticized ITU diorama.

Furthermore, the still limited distribution of information about the emerging outer space order does affect the possibilities for social control, which in turn have implication for the establishment of a sustainable order. SSA would contribute to a situation in which more actors, states and professional orders will be able to track objects in space and judge what is happening, which would bring transparency and responsibility into the complex dimension. Likewise, the concept of Space Traffic Management (STM) shows that there are possibilities for order, despite the stagnated state-layer. Moreover, in the paralysis and void of political engagement and visions, additional possibilities for order mentioned were instead:

Perhaps, some retired military leaders will meet and come to an agreement about appropriated behavior in outer space (scientific).

Let us hope that the first incident will not be that bad, but that we could learn something (legal).

Well, probably the US will just go on with their own race. They might set their own standards and others must adopt (scientific).

Many of the observations during this inquiry, I wish I had not made, and even unintentionally and intentionally ignored their significance as they painted a dull picture of the emerging outer space order. One example of this was the expressed patriotism within the military suborder in relation to outer space as a domain for war fighting. This was particularly troubling, in a time of thin order and weak *nomos*. Moreover, in a seminar about the world order, a national representative felt forced to inform the audience that Greenland is not *for sale*. Things that we took for granted and did not question a few years ago must now be defended. In these global spaces, discursive elements of an ‘arms control free environment’ are surfacing.²³⁷ These are observations of transformation from the predictable world order as we knew it. It points to a dangerous path, including utterances about a ‘renegotiated international order’, which surely hold some promises but risk becoming emptied of historical insights. Forgotten liberal ideals and the rise of non-liberal states are weakening the sense of overarching order and hence of the *nomos* of the liberal order, a *nomos* that has not been replaced, nor modified but rather dissolved.²³⁸ While the overall situation within the state-layer can be associated with the concepts of anarchy and hierarchy, the liberal state order of modernity is fading.

²³⁷ The Intermediate-Range Nuclear Forces Treaty (INF) ceased in August 2019, and in February 2021, the New Start *was* going to expire (Hallenberg, 2020:149f).

²³⁸ Empirically, studying the phenomenon of political decay (2017-2020) coincided with the US Trump administration 2017-2021. Nevertheless, the faces of political decay also concern the deeper structures of the world order.

9. Outer space, hypermodernity and world order deep structures

Once the main study has been executed and the findings presented, Swedberg encourages us to theorize again (2014:28). Therefore, in this chapter, the findings will be further elaborated. Even if this chapter is more abstract, it is based on the empirical main study and the diorama of the emerging outer space order. This evolutionary tree of trajectories allows for informed discussions about its possible directions and the political time of becoming.²³⁹ Although addressed in the previous chapter, this chapter further delves into the research question: *What does the emerging outer space order imply for and convey about the deep structures of contemporary world order?* I argue that ongoing launches of satellite mega-constellations create an embostment of the gigantic transmission belt. This belt is becoming a critical material structure of hypermodernity. Moreover, drawing on my empirical observations, I picture a process of, yet again, an extended world order, as well as a more permanent and efficient use of outer space, which I also relate to hypermodernity. Throughout the chapter, I theorize about what hypermodernity implies for *the possibilities for political order and political reason*. Concluding this explorative journey, I highlight that there are glimmers of hope.

²³⁹ Hence, the main study serves as a stepping-stone for informed discussions about the trajectory of the emerging outer space order (cf. Lebow, 2015:153). I align to the epistemology that value knowledge in form of emerging properties and enabling conditions (Lebow, 2015:155ff). Predictions are never possible but forecast “uses theories, propositions or correlations as starting points for open-ended, multiple narratives that build context” (Lebow, 2015:48). From the main study, I have chosen the processes and trajectories that I find of historical significance and tendencies that have not been much discussed in previous research, namely the embostment of the transmission belt and the again extended world order.

9.1. The emboostment of the gigantic transmission belt and the world order

The concept of hypermodernity has capacity to become meaningful and sense making if explored and theorized anew and further.²⁴⁰ Despite being a monolithic and heavy concept, the observations in this inquiry depicts a change substantial enough to require a concept in pair with modernity and post-modernity although distinct from these, as the condition of hypermodernity holds elements of modernity (although massively accelerated) and post-modernity (Hutchings, 2008:132). The concept is linked to globalization and an accelerated global chronos, which changes in accordance with technical developments (ibid.). Hypermodernity has been theorized as a shift from mechanical to electromagnetic chronos with substantial consequences for social and political life (Hutchings, 2008:133).²⁴¹ I find that this shift of acceleration is now infused by the ongoing emboostment of the gigantic transmission belt. This is an expression borrowed from, Ronen Palan who sees the international sphere not a system constituted on its own right but tending towards “a gigantic area, or a transmission belt, a huge communication device” (Palan, 2007:68).

²⁴⁰ If released from its connotations of a world of structures of speed, and destruction solely which is commonly associated with Paul Virilio (Virilio, 1986; cf. Armitage, 2000; Hill, 2019). Virilio defined himself as a child of war and a critic of technology (Armitage, 1999; 2013). For Virilio, the “most important tendency of the modern world is acceleration of its social processes (production, consumption, communication) to the point where further acceleration is no longer possible: the instant” (Noonan, 2017:769).

²⁴¹ Chronos is by Virilio categorized into two forms, as the bodies’ mechanical traversing of space, and as electromagnetic “constituted by the rate at which electronic transmissions traverse space (Hutching, 2008:333). According to Virilio, war pushed the rate of chronos into next eras (ibid.). In this inquiry, it is rather the accelerating market time leading to the construction of the gigantic transmission belt. According to Danny Adams and Guy Balfour, hypermodernity is the acceptance and acceleration of technological rationality (2014:137).

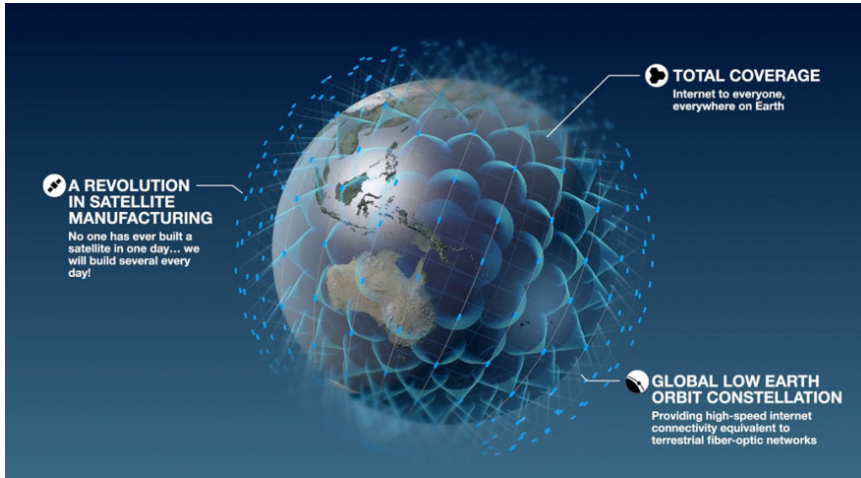


Figure 28: OneWeb's system design. Credit: OneWeb, 2016.

Hägerstrand noted that “[a]lready in the 1830’s the English mathematician Charles Babbage developed the principal construction of a computer. However, at that time the material and technical innovations were not in place to materialize the idea” (1991:157). The situation has been similar for much of the technology of the gigantic transmission belt. Now, however, there *is* an exponential shift of linked innovations and technology available, which are emboosting the gigantic transmission belt. Currently, mega-constellations of satellites are being launched, which are estimated to amount to *about* 50, 000. These satellites are forming the next generation Internet.²⁴²

With these mega-constellations of satellites, laser communication in the vacuum of outer space is facilitated. As a result, a global chronos is now approaching ‘the immediate’ as the satellite-based element of the

²⁴² In 2020, OneWeb which has the slogan “OneWeb – OneWorld” requested permission from the US Federal Communication Commission to launch 48,000 satellites into the LEO. Another mega-constellation is SpaceX’s Starlink, which is estimated to consist of 12, 000 satellites. In addition, there is an Amazon’s project in which the Kupier satellites are planned to become the backhaul for Internet and 5G amounts. The Amazon project is anticipated to include 4,236 satellites (Amazon, 2020). Besides, globally various types of satellite constellations are estimated to increase in the coming decade (Crisp, 2020). For constellations for the IoT, for example, Fleet Space Technologies “is an Australian nanosatellite company building a global nervous system to power the next industrial revolution” (Fleet Space, 2021).

transmission belt outpaces all earlier forms of global connectivity. Tellingly, in one of OneWeb's commercial videos, it is noted that not until now, the World Wide Web will become *truly* worldwide, and from 2021, the globe will be connected (OneWeb, 2020). This creates a 5G transmission belt crucial for, for example, the further acceleration of market time and the realization of the Internet of Things (IoT).²⁴³ This transmission belt will be vital for self-driving cars, drones and smart households to name a few of the coming functionalities. What really generates this historical shift in global connectivity is the merge between outer space and cyberspace resulting in the emboostment of the gigantic transmission belt. A transmission belt and flow of big data that sets the pace of the hypermodern world order.²⁴⁴ This will have historical consequences, especially as the rate of change is accelerating too. Thus, the world is becoming one digital space to which societies must connect or risk facing isolation. Therefore, the mega-constellations of satellites are a critical element of the global chronos and of hypermodernity.²⁴⁵

From the empirical main study, it was evident that the ITU remains the engine and centre that sets the planetary time and timetable for the upgraded and expanded connectivity. Hence, the direction of the world order is defined by advanced technical standards set in highly functional

²⁴³ As explained by the Northern Sky Research (NSR) analyst Carolyn Belle, “[a] central vision behind these [mega-constellation] investments, is the anticipated boost in the global economy once the entire world – both people and things- are connected” (Torrieri, 2018). According to Richard Franklin, it is a “huge leap forward in the infrastructure needed to roll-out truly autonomous vehicles – land, air and sea” (Amos, 2020). Moreover, Iridium's Bryan Hartin elaborates “[...] it is about empowering companies like Caterpillar, which makes this equipment that operates in remote parts of the world, like mines in Africa. If you have a multimillion-dollar piece of equipment out there, you want to know how it is working” (Torrieri, 2018).

²⁴⁴ Terrestrial fiber optic is also a part of this transmission belt, as are terrestrial 5G stations. Blount finds that in contemporary digitalization, the state is helpless in the face of technology (2019:3). He finds that digitalization opens up global spaces outside the traditional governance structures tied to the conceptualisation and division of space (ibid.). Historically, governance has been structured on division and compartmentation of space. Now, cyberspace creates an alternative geography that is facilitating a *re-spatialization* of the world (ibid.). In other words, global digital information space exists external to international space (ibid.).

²⁴⁵ High-speed broadband Internet, “5G is not one step from 4G – it is something else, something different, new. -Do you get it?” (Interview with an expert on global time and atomic clocks).

and differentiated top spaces. The direction is set by standards, processes of manufactured technology and even by signals. In an ‘engineer manner’, incremental but decisive decisions are made without any further elaboration. Hence, the future is built around a transmission belt that has been constructed by the scientific suborder, infused by the commercial suborder and supported as well as used by the military suborder. Below, I will tentatively discuss some of the consequences of the emboosted transmission belt.

9.1.1. De-synchronization of politics

Hartmut Rosa argues that, initially, social acceleration served the democratic processes and principles. However, at a certain critical point of social acceleration, the proper functioning of democracy was undermined, as democracy is only functioning in a certain “speed-frame” of social change (Rosa, 2005:446).²⁴⁶ Rosa points to that the modern idea of democratic self-determination presupposes a “synchronization between the democratic will-formation and decision-making, as well as the speed of social evolution and change, and *between* the subsystems of the society” [my emphasis] (Rosa, 2005:446). In addition to the de-synchronization of politics, Rosa argues that the temporality of modernity as a “strong sense of direction (perceived as progress), is replaced by a sense of directionless, fanatic motion that in fact is a form of inertia” (2003:20).

As we have seen in the main study of the emerging outer space order, global key, as well as everyday spaces, were defined (independently or in conjunction) by the commercial, scientific or military suborder, and sometimes in concert. The study further shows that the chronos of the professional orders differed, as did their relations to the future. Hence, the temporality of the illustrative case of outer space illustrates that the defining professional orders were not in temporal synchronization in the respect that the political suborder was outpaced. The findings suggest that the critical point of acceleration in the key sites has passed and the modern form of governance is outpaced due to the *de-synchronization of politics* (cf. Rosa, 2005). This change might be most comprehensible

²⁴⁶ In modernity, democratic self-determination has been a fundamental idea (Rosa, 2005:446). The idea is that the public should at least, via a contract or alike, be represented by the political suborder.

locally in traditional democratic and state administrations but throughout the quantum-entangled defining professional orders and global spaces, the de-synchronization of politics has an accumulative world order impact. Moreover, the ongoing emboostment of the transmission belt risks further increasing the de-synchronization of democratic politics, which I find is another face of political decay.

Relatedly, Matthew Flinders and Matt Wood (2015) have started to discuss hyper-democratization and hyper-depoliticization. They argue that the process of hyper-democratization (a growing political pressure on national governments) and the process of de-politicization (to increasingly delegate decisions) are reinforcing each other (Flinders & Wood, 2015:364). This situation was also reflected in my empirical observations of the emerging outer space order. I found that this time pressure was expressed as a stressful situation due to accountability to multiple masters, filled agendas and urgent and time-consuming decision-making processes. This can be associated with what Flinders and Wood describe as central governance overload (*ibid.*). It can also be related to heterarchy, as this form of multiple-rule historically has been instituted for the purpose of preserving hierarchy (Brumfiel, 1995:29). Thus, when the pressure on the political hierarchy increases, delegation serves to maintain and guard the modern form of the political suborder. However, the consequence is that additional authority is placed within the defining professional orders.

9.1.2. Grasping the political and consequences for political reason

Hypermodernity's speed of evolution also contributes to epistemological challenges for upholding cognitive order and meaning, and for political reason. In hypermodernity, world order issues flicker in the digital flow. At an individual level, we are connected to the transmission belt through our TV-screens in our kitchens, living rooms, in the metro, offices and our smartphones. The interactions with people you do not like to speak to or be informed and influenced by are few. Likewise, what news and information you pay attention to, you can choose, or they will even pop-up in your browser in accordance with your already established preferences. Hence, your thoughts are not challenged from the outside as before. We find ourselves in comfortable echo chambers upholding perceptual order. Additionally, since information easily can be

manipulated you can always argue that information you do not like is made up. This trend has been framed as ‘fact resistance’ or a world order of ‘post-truth’. This corresponds with hypermodernity and that its attributes are destabilizing objects, functions and forms. Thus, digital visual frames and catchy messages constitute everyday realities.²⁴⁷ Compared to the iron cage of modernity, hypermodernity according to Yiannis Gabriel creates a “glass cage”, which subtly entraps the ones enchanted with the wonder of hypermodernity, (Gabriel, 2005:314). This inquiry has rather shown that for some of the suborders, the epistemological glass cage of hypermodernity risks reinforcing the iron cage of modernity, despite available big data and technical progress produced and spread by the transmission belt. In this regards, Charles Wright Mills theorized that post-modernity is characterized by an inability to analyze and handle what modernity had produced (Månson, 2015:273). The inability also concerns the limits to accessible knowledge about the political dimensions of the future trajectories constantly produced by the transmission belt. There is a constant risk that political issues become inconceivable, including their possible solutions and consequences. Not even the most well-educated quantum computer researcher can foretell the technical implications of his own innovations. In hypermodernity, the capacity to produce the future grows whereas the possibilities to predict its future consequences of the actions in the present does not (Deudney, 2018:226) In Adam and Groves words, “actions extend over even longer time spans into the future whilst the sphere of knowledge is reduced to the past and extended present. Since ethics is tied to knowledge of outcomes, responsibility too is restricted to the extended present” (Adam & Groves, 2007:165). This explains why highly political issues in the outer space order might not even be recognized as such and why reflective political reason is challenged.

9.1.3. Reinforced quantum-mind entanglement, heterarchy and political reason

In the acceleration of hypermodernity, a well-crafted professional identity and the concrete professional contract uphold the self as a whole and continuous person in times of vast acceleration and change. For many of

²⁴⁷ I read Schweller’s conceptualization of (information) entropy, in many parts, as an expression and description of hypermodernity. Entropy as a concept, however, does not capture the magnitude of the shift.

the defining professional order, this situation of structural predictability lasts for the lifespan, which is about the only thing that lasts compared to earlier generations.²⁴⁸ Spatially, the digital transmission belt will further replace many of the close situated professional areas, with digital platforms of global reach. The workplace is moving into the transmission belt as the data, meetings and even coffee breaks become digital. The transmission belt will facilitate horizontal power-sharing and heterarchy will be reinforced as a deep structure of the hypermodern. For example, through the transmission belt, an expert surgeon can conduct advanced surgery remotely. Another example is that experts' meetings can be held digitally and work carried out in the same digital document. Regardless of nationality, the transmission belt also spread professional practices and innovation horizontally, even between physically separated and former isolated spaces (such as military training centers). As a result, imitation and quantum-mind entanglement increase. Altogether, the transmission belt supports the social structure of horizontal community quantum-mind entanglement.

The increased quantum professionalization and specialization is beneficial for humanity but also contribute to its weaknesses. In a hypermodern world of growing complexity and speed, increasingly everyone contributes by a narrow focus of a specialized area. Suborders and knowledge are specialized to the level of *overspecialization*. In times of acceleration, we are stuck in professional social and material patterns and there is no uniting political vision. There is no time or agency outside of the professional order. Given also that reflective political reason emphasizes the holistic nature of the world, weighting different goals against each other is at risk of being obscured by the specialized and differentiated order and the engrained idea of growth.²⁴⁹ Therefore, the balancing act of political decision-making and reflective political reason

²⁴⁸ Rosa finds that acceleration and the increased pace of (social) life, are representing an overriding tendency that runs across contemporary societies, (although some things are stable or are slowing down) (2003:3ff). He finds that, compared to earlier generations, at present acceleration also applies to the work-life balance (Rosa, 2003:8). However, in this era of acceleration, for the *defining* professional orders studied in this inquiry, the profession is often a life-long commitment creating stability and meaning.

²⁴⁹ Lebow argues that Enlightenment streamlined our thinking to understand appetite as the source of economic growth and political order (2008:306). Expressed by Richard Münch, "Investments are made in education, partnerships, love, research, art, sports, entertainment or welfare so as to achieve" as high a return as possible (2013:85).

tends to be narrowed down to one issue at a time and to issues predefined in the heterarchic layer.

There is also a risk that fragmentation and polarization speed up between the professional orders, and between the public and the defining professional orders, partly as temporality is increasingly differentiating between spaces, even in the same landscape (cf. Rosa, 2003). Fragmentation and polarization also create identities of the connected and underserved, and there will be makers and takers of standards. In underserved areas, the political suborder will be even more a taker of a world order rapidly connecting to the transmission belt. Thus, the transmission belt might have temporal wide-ranging stratifying effects on the world order.²⁵⁰ Besides, the distance between the unemployed (who are perceived as less prestigious) and the world order defining professional orders is not diminishing. The fragmentation and polarization, like the main study of the emerging outer space order, show that the transmission belt contributes to a technically advanced albeit unequal world order. How does this resonate with political order as common good and ontological equality? Will the advantages of the transmission belt smoothen the disadvantages? Or how can disadvantages otherwise be mitigated?

9.1.4. Amplified trajectories of defining professional orders and alternative visions

Theoretically, all the five suborders' trajectories have the probability to be amplified by the transmission belt. However, the main study suggested that the commercial and military suborders were the most persistent and massive paths into the political time of becoming. Due to their characteristics, temporalities, technological predisposition and clear visions, I find that the military and commercial suborders are better disposed to gain thrust from the transmission belt. Because as Sheldon Wolin notes about fragmentation, "some fragments are less fragmented than others" (1996:41). As this inquiry has shown, the commercial and military suborders are robust and solid orders legitimized by their own

²⁵⁰ Lora Viola finds that the processes of functional differentiation and stratification might reinforce each other (Albert et al. 2013:232 & 234). Thus, in this case, the commercial suborder spanning the globe risks becoming even stronger due to the process of functional differentiation. She also finds that powerful states might resist implementation pressure much more easily than smaller states (Albert et al. 2013:232).

familiar discourses. This makes it appealing to adhere to these trajectories despite the deep frame discord and dilemmas they create. Especially so since the language set and visual frames are suitable to travel through the noise of hypermodernity and information entropy. The commercial suborders agility make it more apt to adapt to rapid change. In a way, as the commercial and the military orders define the world, they are also better situated to cope with it.

The findings concerning the strength of the commercial suborder correspond to the larger historical and cosmological shifts traced by Bentley Allan and, hence, reflect the contemporary world order, in which economic growth has become the telos (2018). Yet, the political suborder will still be endowed with democratic responsibilities representing the will of the people and with responsibility for safeguarding the common good. Nevertheless, the example of outer space points to that the state for this mission is guided by safeguarding the market in accordance with the principle of growth. This cosmological shifts into the general acceptance of growth in terms of material wellbeing across the defining suborders becomes problematic if no other alternatives could still be envisioned. Moreover, this telos concentrates power into the hands of a few individuals with remarkable autonomy. Even some of the politically elected world leaders are now literally part of the commercial suborder.

The massivity of the reality centered on growth, creates a need for technical progress and the quest for more. Consequently, when all other alternatives are filtered away, it seems like if the state is being modified into a competitive state (cf. Münch, 2013:84f).²⁵¹ Thus, there is a risk that this situation leaves out the plurality of voice such as difference visions of state purpose, non-instrumental community, mutual respect as well as

²⁵¹ Something that leads to what Melissa Aronczyk calls “national branding” (2009:116ff).

self-restraint (cf. Aronczyk, 2009:138).²⁵² There are some voices against this, like Greta Thunberg's and the Union of Concerned Scientists (UCS). However, the risk, as Fredric Jameson's observes, is that "it is easier to imagining the end of the world than the end of capitalism" (quoted in (Paulsen, 2014:176) Moreover, in the present world order, the 'scarce resource' of excitement and vision is now concentrated within the commercial suborder. Therefore, as Mark Fisher argues, "even glimmers of alternative political and economic possibilities can have a disproportionately great effect" (2009:80).

Judging from the illustrative case of outer space, we are left in a situation in which the greatest alternative to growth is the familiar great power game. While the general tendency towards great power games at a first sight mitigates the uncertainties of hypermodernity, it also infuses anxiety and fear. When a fear-based world is entered, it is hard to leave due to the escalatory nature of measures predicted by the security dilemma and neither the means nor the ends of the conflicts are constrained by norms (Lebow 2008:516; 2010:87). A hypermodern order defined by the military suborder would be characterized by an order with the imperative

²⁵² Moreover, concerning the state-layer, Lebow draws our attention to how the fundamentals of robust democratic orders are now at sway, as paying taxes is no longer (not even by the elite) taken for granted as an obligation (2018:311ff). Orders tend to fall when the premises on which it is built are violated by the elites. Still however, Lebow notes that not paying taxes is by some even seen as a sign of the "genius" of a president rather than a deviation (Lebow, 2018:313). This instrumental reasoning feeds the sense of political decay and disillusion, by the ones who do pay taxes and create a loss of economic state capacity. These perceptions also weaken some states and open space for the heterarchic layer of defining professional orders; the commercial, scientific, and military.

of holding the high ground and humanity holding its breath.²⁵³ This relates to hypermodernity and to Paul Scharre, who provide numerous empirical evidence of an AI world and the risks of the dissipation of the human subject. In the hypermodern era, Scharre foresees “flash wars” in which humans will receive no notification at all (Scharre, 2018:199ff).

This relates to that, in the hypermodern era, the modern idea of a reality that is controllable or manageable is challenged. In hypermodernity, the new attribute-driven world is propelled by the rise of technology and aspires to a convergence between technology and biology as well as (more importantly) information and matter. Face scanning, big data, consumption habits, etc., are all functionalities that are becoming part of the transmission belt. Hypermodernity causes exponential multidimensional shifts hard to predict or to fit in with the reductive language set, maps, procedures and visual frames of the military suborder. The acceleration and lack of time is also a threat to philosophy and the deliberative function of human thought. In addition, algorithms and speed are risking to eliminate human decision making as pre-programmed systems “can trade a stock or fire a missile in immediate response” to a predetermined set of circumstances (Noonan, 2019:763).

Thus, this reinforced military trajectory reinvigorates warnings that underline the need for diplomacy and arms reduction to mitigate the risks of, “mishaps, misperceptions and miscalculations” i.e., the risk of

²⁵³ As examples of this amplified military trajectory, Havercroft and Duvall argue “...space-weaponization is a material manifestation of Hardt’s and Negri’s idea of imperial sovereignty as de-territorialized and boundary erasing” as the “space-based empire would possess sovereignty over the entire globe” (2012:55 & 56). In relation to bare security, control and war, Antoine Bousquet pictures a global imperium of targeting by investigating the historical development of a global martial gaze. The gaze “roams our planet, from the watchful silent satellites peering down from their silent orbits to the infrasonic sensors probing its subterranean and subaquatic depths” (Bousquet, 2018:191). With this martial gaze, perception and action increasingly merge as “laser’s ultimate promise is to weaponize light itself [...] the line of sight will then truly have become continuous with pure cold line of abolition” (Bousquet, 2018:79). A similar development, albeit less deterministic, is expressed by DeGrasse Tyson and Lang as “arming the eye” (2018:100ff). Natalie Bormann who, like Bousquet, applies Virilio’s thoughts to outer space finds that “[the] perpetuation of outer space of permanent war and its claims to weaponisation will soon make no intervention possible” (Bormann & Sheehan, 2012:89). Although, Bleddyn Bowen questions and scrutinizes the idea that the domination of space would lead to the domination of Earth, he maintains that this is a common notion (2020:272).

escalation and war (Johnson-Freese, 2017: xii). As the astrophysicist DeGrasse Tyson and Lang remark, “nobody can certainly win a space war just as nobody can certainly win a war fought with nuclear weapons” (2018:396; cf. Johnson-Freese, 2017:98f). Normatively, this also aligns with Deudney’s argument that space should wait until humanity has “figured out how to order its political affairs by effectively regulating nuclear weapons, and not wrecking the planetary life support system [...] and has ridden through the daunting choices posed by the unfolding biotechnology and cybernetic revolutions” (2020:377). Moreover, if security becomes the primary goal, the emotion of fear imposes a cognitive decline and stereotypic thinking (Lebow, 2008:502f; 2010:86). Notably, Lebow does not attribute fear-based worlds to anarchy but to “a breakdown of *nomos* due to the lack of restraint by elite actors” (2008:89). I would like to add that this also applies to the elites of the professional orders. Thus, the transmission belt risks amplifying the trajectories of some professional orders, and these orders extend beyond Earth.

9.2. The again extended world order and the sense of responsibility

Hypermodernity could also be applied to make sense of how the world extends further and more permanently into outer space. The cosmological shift with the Copernican revolution of the early 1600s successively transformed the Earth from being *the* center to becoming only a microscopic part of an indefinite universe (cf. Bartelson, 2009:71). Lately, we are instead returning from the end-less universe back to our finite planet (cf. Allan, 2018:278ff). As a result, “[t]he Earth is no longer a rock like any other, but an active dynamic planet with ‘tipping points’ and ‘planetary boundaries’” (Latour 2014:4, cited in Allan, 2018:278). Thus, we live on a fragile planet, and we all recall satellite pictures of the green and blue Earth. Increasingly, the planet has been conceptualized as a closed system, and eventually, the conceptualization of the global village had to be treated as a “political fact” (Deudney, 2007:22ff & 274). In the words of Deudney, “[w]e cannot alter the fact that the neighbourhood of all humans now encompasses the entire planet” (Deudney, 2007:274). Our planet is so unique, for instance, recall the interview in this main study with the Japanese astronaut Chiaki Mukai

who, returning from outer space, experience our planet anew, “Ah Mother Earth!”. These experiences spurred ideas of global stewardship of Earth (cf. Buzan, 2004; Stuart, 2014). These visual frames and conceptualization induced a sense of responsibility, of world community, and the UN work with sustainability thrived. This we might call an enlightened phase of late modernity.



Figure 29 : Space resources week. Credit: Luxembourg Space Agency

Yet, in hypermodernity, with a tilted emerging outer space order defined by the commercial suborder, we are planned to become a multi-planetary species. Thus, *in hypermodernity, the world is again extended*. The political space is stretching beyond Earth. The commercial suborder is enthusiastically adopting by envisioning a multi-planetary future that is changing our relationship with outer space and with Earth. The Moon is understood as a possible launching site into the universe, and Mars as a “back-up planet” in case humanity fail on Earth (BBC, 2019).²⁵⁴

²⁵⁴ Comment by Laura Foster, science reporter, in “Elon Musk and Jeff Bezos: The Silicon Valley space race” (BBC 22 July 2020). In the video, Elon Musk remarks “science-fiction does not have to be science-fiction forever” (BBC, 2019).

Moreover, from this study, we learned that besides the increasingly viable resource extraction, there are even ideas about waste disposal in outer space. Concerning the former, shortly after China's Chang'e-5 mission to the Moon, NASA contracts private companies to collect lunar regolith or moon soil.²⁵⁵ This is the beginning of extraction from the lunar surface, with the aim to develop techniques for space resource extraction. According to Justin Cyrus CEO of Lunar Outpost, a robotic firm, "it is a paradigm shift in the way society thinks about space exploration" (Harper, 2020). Space expert, Sinead O'Sullivan comments, "[t]he innovation here is not of financial value but of creating business and legal norms of creating a market of buyers and sellers outside of Earth's constraints" [sic] (BBC, 2020). In combination with the transmission belt (including the IoT), which speeds up production, natural resources can be extracted remotely and production can be ongoing continuously on Earth and beyond. Recently, a new term for this process has surfaced. The term is Continuous Production Agility (CPA), which aims to adapt production to a "speed of relevance", to "outpace the threat" [China] (Jones, 2020).²⁵⁶ When the world again is extending, the fundamental question that arises is what happens then to the sense of responsibility for the finite Earth?

In addition, in accordance with the principles of space superiority and the military professional responsibility to protect, protecting the space market could increasingly be perceived as a military necessity and energizer. Thus, it appears as if the commercial and military futures are converging. Moreover, as activities in outer space increase and the Earth for astronomers increasingly resembles a lightbulb with a crowded LEO, the scientific suborder will have to move their scientific instruments deeper into outer space in the relentless search for the birth of the universe. So far, GPS-time and other data have mainly been transmitted towards Earth, but the reach of the gigantic transmission belt encompassing IoT, autonomous platforms and continuous remote production is extending.

²⁵⁵ The last lunar sample return mission was conducted in 1976 (Amos, 2020b). The Chinese mission targeted the volcanic region called Mons Rümker and touched down on the Moon 1 December, 2020 (ibid.).

²⁵⁶ This paper discusses CPA related to space and acquisition; however, this can also be associated with more general world order trends and the speed up and remote-controlled industry enabled by the IoT.

9.3. Glimmers of hope – possibilities for political order and political reason

The focus on political decay has undeniably set the tone for this inquiry. Yet, the aim throughout this study has been to better understand the phenomenon and thereby to increase the chances to address it. To recall, the main study and the diorama model conceptualize a heterarchical order with an absent, stagnated and lagging political suborder as well as a generally weak and divergent sense of *nomos* among the professional orders.²⁵⁷ It also conveys the de-synchronization of politics, the emboasted transmission belt and its epistemological impact. Moreover, it suggests that hypermodernity reinforces heterarchy and that the transmission belt amplifies the trajectories of the defining suborders to a varying degree. Finally, the emerging outer space shows how the world now is on the verge of again being extended, which has implications for the sense of responsibility and hence for political reason and possibilities for political order. The emerging outer space order illustrates a hypermodern world defined by the commercial, military and scientific suborders, whereas the scientific suborder is possibly leaving Earth behind. Thus, the emerging space order illustrates a tiled order, in which the political suborder is no longer defining the direction. Thus, when tossed into hypermodernity *what are the possibilities for political order and political reason?*

9.3.1. Possibilities for political order

In a transition phase, the awareness of new problems makes us see the “inadequacies of conventional mental constructions that tend to make us focus on problems other than those of emerging salience” (Cox 1992:139). In addition, there is often a perceptual lag of transformation, and even a collapse might be a nonexperience for the persons involved. This lag increases the risk of a situation in which we continue in accordance with established and familiar patterns, and thus go to work in a ‘business as usual’ mood. Yet, great power games and everlasting strivings to increase material wellbeing have become obsolete mental

²⁵⁷ The heterarchic order emerging in outer space further shows that in the state-layer, the principle of the liberal order is vague and non-liberal states are influencing its direction. At the same time, the liberal normative centres and leadership are weak and long-term visions are few, except for the SDG and the LTS-guidelines.

constructs in a world of environmental crisis in need of sustainable development and planetary security. Likewise, in an era of a perceived shrinking future, the political and military suborders' renationalization and efforts of state competition appear as inadequate as the scientific search for extra-terrestrial life. Recalling Cox's words, "when it appears to be a disjunction between problems and hitherto accepted mental constructs, we may detect the opening of a crisis of a structural transformation" (Cox, 1992:138). Hence, modernity's constructs that served as a foundation and made sense of our, now taken for granted, professional identities are increasingly obsolete.

Fortunately, epistemological change "relates not only to what is *known* but to what can be *asked*" [emphasis in original] (Rescher, 2000:60). Therefore, informed by insights from the emerging outer space order, I ask; how might political order and a hypermodern nomos arise? How might we master the gigantic transmission belt to create possibilities for political order? How might the professional identities be upgraded/renewed to become more meaningful and adequate for the contemporary conditions? I find that within the answers to these questions lie the key to the possibilities for political order in times of hypermodernity and heterarchy. In the following, I aim to only just to begin discussions about these questions by providing some initial thoughts. Because like Rengger, who observed that modernity manifests a certain way of being political (2000:10), now, I find there is opportunity (and a necessity) to deliberate on what it means to be political in hypermodernity. This is inspirational, because not trying to find answers might increase the risk that the hypermodern and even the human era will merely become a blink of astronomic history.

*Political reason at the individual level
- the structural and ontological possibility*

Given the deep structures of heterarchy, hypermodernity and the desynchronization of politics, we are in a situation in which the professional orders generally do not converge. In the current situation, there is no overarching order, a weak normative centre and a vague and diverge sense of nomos.²⁵⁸ The consequence of the deep material, social and

²⁵⁸ The scientific real typical suborder is conceptualized as neglecter of the state-centric modern order, the commercial as transformers and the political and military as guardians. The real typical legal suborder was strikingly directionless.

temporal structures is that political order is foremost possible to arise at the individual level and within the parallel professional orders. In addition, only when the political is understood in a wider sense, not narrowed down to the state, there is a substantial ontological possibility for responsibility and political reason. In other words, the responsibility can no longer be pushed away to the state or explained away as bureaucratic shortcomings. Thus, responsibility lays at the individual and not on these abstract constructions. This classical and wider understanding of the political and political responsibility constitutes a political condition that also might create truly meaningful (professional) lives. According to ancient Greek political philosophy, political order starts with balance at the individual level, therefore the classical Greeks ideas of reflective political reason and *nomos* might not merely serve as analytical categories, but as fruitful normative guiding principles.

Reflective reason is suitable in a heterarchical situation. As through reflective reasoning, it is understood that “multiple and open hierarchies are ultimately in the common interest” (Lebow 2008:514). It highlights the positive sides of diversity, which resonates with the comment in the main study, “thanks to Mother Nature our expressions are different” (Mukai 2017). Central to reflective reason is the emphasis on dialogue and ontological equality. Because dialogue coupled with ontological equality implies openings for plurality. According to Lebow’s reading, “[a]ffection and reason together make us seek cooperation, not only as mean to achieve specific ends, but of becoming ourselves” (Lebow, 2008:201).²⁵⁹ Cooperation becomes valuable for its own sake as collective identities reshape our understanding of self-interest, which

²⁵⁹ According to Mouffè, politics is always antagonistic and always with a ‘we’ and ‘they’ distinction. She finds that antagonism is constitutive of the political and a struggle is required for revitalization and deepening of democracy (Mouffe, 2005:29-34). I do not fully agree, rather with professional diversity it would be politics with meaningful frontiers. Moreover, Mouffe does not believe in the power of dialogue but argue that this idea has resulted in the impasse of today (2005). This is true for shallow dialogue, which creates a sense of neutrality that is covering up inequality, but not for a genuine passionate dialogue, founded in ontological equality, which is the focus here.

gives additional incentives to constrain spirit and appetite (ibid.).²⁶⁰ Most importantly, Lebow's historical reading of reason reminds us that reason is not only a mental activity to obtain different goals, but is in itself the highest goal of lifelong learning, dialogue and wisdom. Hence, reason is the highest form of political order, which also create meaning and happiness at the individual level. It relates to the individual strivings for upholding a continuous self, identity and a coherent reality.

Nomos sometimes needs to be reformed (Lebow, 2008:515). The contemporary faces of political decay present us with a chance to do so. The mere understanding of the need for and value of political order, in turn, will mitigate the decontextualized past and future as well as generate order and meaning. In this respect, the obvious *hypermodern nomos* aligns with the classical view of order. *It is a holistic nomos centred on the nature and the perseverance the planet including its orbital environment* (cf. Deudney, 2020). This hypermodern *nomos* is straightforward, it travels through the noise of the transmission belt and it is suitable for a limited attention span. Moreover, along with ancient thinking and a more unified ontology, as accentuated by for example Hägerstrand and Wendt, we are all parts of this nature. Thus, in hypermodernity, this ecological reasoning can also be underpinned on pure instrumental anthropocentric grounds.²⁶¹

²⁶⁰ According to Lebow, Socrates contends that only a few reaches this level but the closer they come the happier. "Justice is analogous to mental health because it trains and constrains the appetite and spirit in a manner best suited to human nature" (Lebow, 2008:126). There is no conflict between justice and well-reflected self-interest because justice is essential to obtain the latter (2008:14). Lebow finds that one of the principal goals of Plato's *Republic* was to demonstrate that happy life also is a just life, and that it requires a just life, self-restraint and respect for others, "rather than depriving one of pleasures, making those we have more enjoyable and satisfying" (Lebow, 2008:126). Reason helps us balance the other drives and "[...][a]t the macro level, balance sustains that instantiate the principles of justice on which all successful orders are based" (Lebow, 2008:6).

²⁶¹ Max Weber showed how different strands of Protestantism was a heritage from which the belief in capitalism and the free market grew. He also showed how the call for working hard in the name of God was replaced with working hard in the name of rationality and the economy (Weber, 1960:76ff). Religion built this rationality and the state and religion fostered norms. Now, the professional call could meaningfully be associated with the hypermodern *nomos* of working hard for the planet.

Mastering the transmission belt - creating possibilities for political order

While there are opportunities for reflective reasoning and a unified ontology, the question remains; how can the transmission belt create possibilities for political reason and thus for political order? Below follow some initial suggestions. First, the transmission belt will draw us closer, and time will be released by the increased efficiency of professional life.²⁶² For example, instant translation between all different languages can be facilitated in real-time. Moreover, with the increased efficiency of production, time will be released for face-to-face dialogue. Time is critical for perceiving each other, ourselves through the eyes of others and for empathy.²⁶³ Likewise, philosophical reflection takes time. Jeff Noonan, who also return to the ancient Greek thinkers (Aristotle), finds that the time needs to be “elastic”, to follow the argument and “needs to go on as long as it needs to go on in order to resolve itself” (2019:768). Because philosophical insight cannot be willed, and unlike consumer demand, it does not follow straightaway from the demand of it (Noonan, 2019:767).²⁶⁴ However, if the elastic time for reflection becomes available thanks to the transmission belt this opens possibilities for reflective reason, pertaining to the direction of actions in relation to nomos, which will generate deep work. Hence, with the added time released by the transmission belt, it will be possible to come closer, to establish dialogue face-to-face also with persons far away, which fosters empathy and for reflective reasoning in relation to nomos. Still, political reason must start at the individual level.

Conceptualizing an overarching order, I suggest that despite heterarchy, it is a possibility that an organic order is rising. The organic order unfolds on a quantum-mind level from person to person, throughout the world. Ordering is due to an imminent hypermodern nomos spreading

²⁶² Since Covid-19 has happened to the world, the importance of, and reliance on the gigantic transmission belt has only become more pronounced for the contemporary world order. The outbreak of Covid-19 also shows that there are possibilities to change material and social patterns, which is a valuable experience in relation to the time required for political reason and to possibilities for change and alternative futures.

²⁶³ For example, if things happen too fast, there is a risk you will not be able to reflect on other people’s psychological condition (Immordino-Yang et al., 2009).

²⁶⁴ He finds that the “‘efficient’ execution of the dominant political and economic routines is undermining the conditions of life on the planet” (Noonan, 2019:763). In the words of this inquiry, the political and military suborders combined with the commercial telos, is an ‘efficient’ execution of surface work.

horizontally and simultaneously, as an AI-infused enlightened synchronization. The transmission belt provides us with more data, higher resolution as well as an enormous capacity to process data. Quantum-mind entangled professional orders empowered by reflective reason and a gigantic transmission belt are creating a 'collective mind'. This mind could have been called a virtual mind. However, since it is real and increasingly a part of our deep frames it is not virtual but rather a 'big data 5G mind'. Contrary to the definitions of hypermodernity above that stipulates a world in which the object has been replaced by the attributes of the object and with the "glass cage", the emboosted transmission belt in this future holds the promises to take us closer to the object again. When so, hypermodernity and the diversity of heterarchy carry the possibilities to mitigate what modernity produced.

In the crucial example of outer space, I observed that there was some hope for that an organic order was establishing itself. There were accounts that pointed to how the professional suborders were solving their specialized tasks while presuming that everyone else was doing the same. There was confidence in the belief that someone else was probably working as hard as they did to solve the other critical world order tasks. Friedrich Hayek discussing spontaneous orders does refer to something similar, to the general mechanism of the individual's mutual adoption, based on the hope that other individuals will solve other tasks that will benefit you as your work and strivings will benefit them (2015:318). Hence, a spontaneously quantum-mind entangled order will arise despite that the overarching order can never be comprehensible. Still, for this spontaneous order to arise the intelligent individual should know how to use their specific knowledge in an efficient way to achieve their goals, and sufficiently predict what kind of assistance they can expect from others (Hayek, 2015:319). Hence, meaningful individual-, and spontaneous orders are upheld by this knowledge about a socialized nomos and the confidence that 'someone else is working on it'.

At the same time, the emboosted transmission belt brings possibilities for an augmented overview and for horizons to fuse since social and material patterns of the professional order would convey in designated digital political spaces designed for interaction and dialogue. In addition, a clearer vision of the past, present and future will mitigate the contemporary situation of a decontextualized past and empty open future produced in the present. Adam and Groves find that the key elements of a

“social future”, such as knowledge, action, and ethics/responsibility, are drifting apart (Adam & Groves 2007:165ff). Thus, with the emboasted AI transmission belt, these key elements could again come together. Relatedly, Virilio argues (albeit with scepticism) that “the past, present and future contract in the omnipresent of the instant, just as the terrestrial globe does these days in the excessive speed of the constant acceleration of our travels and our telecommunications” (2010:71). At the same time, the gigantic transmission belt could be so constructed to uphold these temporalities. Databases can provide high-resolution information about the past, present and calculated futures generated by an overview and fusion of the present projects producing the future on Earth and beyond. Moreover, with the AI transmission belt, the differing chronos of the professional orders might be re-synchronized or even orchestrated to benefit chances for timely political judgment.

For all this to happen though, we need to master the transmission belt, to literally build in and create spaces for political reflection and to reserve time for reflections outside of the belt, to log on and to *log off* deliberately. Thus, instead of googling for the answer, we would reserve time for a walk in the forest. To immerse ourselves in nature, for wellbeing but also for the reason of reminding us of its uniqueness, beauty and fragility. This would alert us to that notwithstanding how advanced societies and how far out in space we reach, “you should not be misled that human innovations and power release her from fundamental earthly ordering principles” (Hägerstrand, 2009:66). When logging on again, the critical and appropriate questions, in the light of the hypermodern nomos, could be sent into the transmission belt for processing and solutions. Notably, for mastering the transmission belt, human *agency* is required. While, Virilio’s work is enlightening in this regards, in the current transition phase more optimism is essential. For, no less imperative than to instill political reasoning is to inspire agency. Let us, therefore, hope that Wendt is right to argue that compared to the classical man, “the quantum man is very much alive” (Wendt, 2015:153). With this view of the human condition, a quantum-entangled effect might occur. Because, although the transmission belt poses challenges, it has positive impacts as well. It is a modern idea of order that the world is manageable, and this idea of modernity is fruitful to sustain. Positive visions of the transmission belt and not the least about the future itself are therefore critical.

Renewed professional identities - in the light of a hypermodern nomos

The hypermodern nomos emphasizes individual responsibility and a unified ontology. In the light of the hypermodern nomos and the current transition phase, there is an opportunity to see the world anew and to deliberate how the professional identities might be upgraded. Here follows some initial thoughts, grounded in my empirical observations of the professional orders. For example, if political reason were instilled into the professional orders, the real typical engineers would seriously deliberate the direction of their innovations and expand the stock of knowledge beyond technical solutions. From this follows that the engineers and scientist literally would build in political reason into the configurations and algorithms of the world, including the critical structure of the gigantic transmission belt.

In the light of the hypermodern nomos, the political suborder would dare to deviate from the modern nomos and become forerunners. For example, national delegations would send their high-level representatives regardless of what other states do, to emphasize reflective reason in practice without being hindered by routine procedures and prestige as defined in relation to the modern nomos. Imitating and observing is not enough in an era of fragility, automation and depoliticized orders. Political scientists too would move out of familiar dioramas and with a dialogical approach to the world, bring a chair and sit with the other (professional orders). These professionals would engage more actively in the world order, including the professional spaces of natural sciences. In this transition into hypermodernity, it is evident that this cannot wait. Because, being a part of the world fabric and the passing present, what we do in the very now, permits us from doing different things or things differently, from setting new paths in motion. We are all parts of this world order fabric and its trajectory. Acknowledge this provides us with a chance for change.

With the hypermodern nomos, the scientific suborder of the emerging outer space would be more engaged with the future of the home planet since the planet needs the attention of the most elevated scientist. On Earth, too, there is a need for excitement and curiosity as well as multi-dimensional, new and counterintuitive thinking. For the military suborder, it would be truly meaningful to take part in activities mitigating climate change and environmental damage, including what this

professional order has already produced. Thus, the military suborder would build an identity and legitimacy based on a more diverse range of missions beyond national security, the balance of power and competition. This would make the military suborder stand out as less obsolete in the hypermodern conditions. For the commercial suborder, it would become (and already is) evident that material well-being is not enough for visionary entrepreneurs. They like to do more. They are inclined to, and willing to take risks and breaking barriers, to challenge the normal, which is a crucial part of innovation and of utmost importance in the contemporary situation. Perhaps, this new type of enthusiasm will break state barriers that previously have hampered normative progress. Alternatively, it would modify these barriers or reiterate their meaning. From the conceptualization in the diorama model, it seems that the military and commercial suborder right now are best positioned to make a meaningful and historical difference. There is great potential for the scientific, legal and the political suborders as well.

Once the professional orders are attuned to their influence and responsibility, political reason becomes part of their professional education and everyday life. Indispensably, identity formations are constitutive for the professional orders, relations, patterns, processes and products and as such for the trajectories of the world order fabric. Hence, the impact of these upgrade professional identities should not be underestimated. Therefore, the heterarchical emerging outer space order is an illustrative example and critical element of a hypermodern world, which carries glimmers of hope.

References

Books and journal articles:

- Adam, B., & Groves, C. (2007). *Future Matters: Action, Knowledge, Ethics*. Boston: Brill.
- Adams, G. B., & Balfour, D. L. (2014). Toward a Political Economy of Regime Values, Ethics, and Institutions in a Context of Globalization and Hypermodernity. *Administration and Society*, 46(2), 131–140.
- Albert, M., & Buzan, B. (2013). International Relations Theory and the “Social whole”: Encounters and Gaps between IR and Sociology. *International Political Sociology*, 7(2), 117–135.
- Albert, M., Buzan, B. Zürn, M. (2013). *Bringing Sociology to International Relations: World Politics as Differentiation Theory*. Cambridge: Cambridge University Press.
- Albert, M., Cederman, L.-E., & Wendt, A. (2010). *New Systems Theories of World Politics*. Basingstoke: Palgrave Macmillan.
- Allan, B. (2018). *Scientific Cosmology and International Orders*. Cambridge: Cambridge University Press.
- Alvesson, M., & Einola, K. (2018). Excessive Work Regimes and Functional Stupidity. *German Journal of Human Resource Management*. 32(3-4), 283-296.
- Andrews, M. (2007). *Shaping History: Narratives of Political Change*. Cambridge: Cambridge University Press.
- Antoniades, A. (2003). Epistemic Communities, Epistemes and the Construction of (World) Politics. *Global Society*, 17(1), 21–38.
- Armitage, J. (1999). Paul Virilio: An Introduction. *Theory, Culture & Society*, 16(5–6), 1–23.
- Armitage, J. (2000). *Paul Virilio: From Modernism to Hypermodernism and Beyond*. London: SAGE.
- Armitage, J. (2013). *The Virilio Dictionary*. Edinburgh: Edinburgh University Press.
- Aronczyk, M. (2009). Living the Brand: Nationality, Globality and Identity Strategies of Nation Branding Consultants. In Albert, M. et al., *Transnational Political Spaces, Agents - Structures - Encounters* (pp. 116–141). Frankfurt: Campus Verlag.
- Bacchi, C. L. (2009). *Analysing Policy: What’s the Problem Represented to be?* Frenchs Forest, N.S.W.: Pearson.
- Bacchi, C. L., & Goodwin, S. (2016). *Poststructural Policy Analysis: A Guide to Practice*. New York, NY: Palgrave Pivot.
- Badersten, B. (2002). *Medborgardygd : den europeiska staden och det offentliga rummets etos*. Stockholm: Natur och kultur.
- Bartelson, J. (2001). *The Critique of the State*. Cambridge: Cambridge University Press.
- Bartelson, J. (2009). *Visions of World Community*. Cambridge: Cambridge University Press.

- Baumann, R., & Dingwerth, K. (2015). Global Governance vs Empire: Why World Order Moves Towards Heterarchy and Hierarchy. *Journal of International Relations & Development*, 18(1), 104–128.
- Bell, D. (1973). *The Coming of Post-Industrial Society: A Venture in Social Forecasting*. New York: Basic books.
- Belmonte, R., & Cerny, P. G. (2021). Heterarchy: Toward Paradigm Shift in World Politics. *Journal of Political Power*, 1–23.
- Bengtsson, B. (2018). Mönstersökning med hjälp av ideltypsteori och sociala mekanismer. *Statsvetenskaplig Tidskrift*, 120 (1).
- Berenskötter, F. (2018). Deep Theorizing in International Relations. *European Journal of International Relations*, 24(4), 814–840.
- Berger, P. L., & Luckmann, T. (1991). *The Social Construction of Reality: a Treatise in the Sociology of Knowledge*. London: Penguin.
- Bernstein, R. J. (1983). *Beyond Objectivism and Relativism: Science, Hermeneutics, and Praxis*. Oxford: Basil Blackwell.
- Björkdahl, A., Hall, M., & Svensson, T. (2019). Everyday International Relations: Editors' Introduction. *Cooperation and Conflict*, 54(2), 123–130.
- Björkdahl, A., & Kappler, S. (2019). The Creation of Transnational Memory Spaces: Professionalization and Commercialization. *International Journal of Politics, Culture and Society*. 32(4), 383–401.
- Blount, P. J. (2019). *Reprogramming the World, Cyberspace and the Geography of Global Order*. Bristol, England: E-International Relations Publishing.
- Bond, S., Diprose, G., & Thomas, A. C. (2019). Contesting Deep Sea Oil: Politicisation-Depoliticisation-Repoliticisation. *Environment and Planning C: Politics and Space*, 37(3), 519–538.
- Bormann, N., & Sheehan, M. (2012). *Securing Outer Space*. London: Routledge.
- Bousquet, A. J. (2018). *The Eye of War: Military Perception from the Telescope to the Drone*. Minneapolis: University of Minnesota Press.
- Bowen, B. E. (2014). Cascading Crises: Orbital Debris and the Widening of Space Security. *Astropolitics*, 12(1), 46–68.
- Bowen, B. E. (2020). *War in Space*. Edinburgh: Edinburgh University Press.
- Branson, R. (2011). *Screw Business as Usual, Turning Capitalism into a Force for Good*. New York: Penguin.
- Brinkmann, S. (2015). *InterViews: Learning the Craft of Qualitative Research Interviewing* (3., [updat]). Los Angeles: Sage Publications.
- Brinkmann, S., & Kvale, S. (2005). Confronting the Ethics of Qualitative Research. *Journal of Constructivist Psychology*, 18(2), 157–181.
- Brumfiel, E. M. (1995). Heterarchy and the Analysis of Complex Societies: Comments. *Archaeological Papers of the American Anthropological Association*, 6(1), 125–131.
- Brünner, C., & Soucek, A. (2011). *Outer Space in Society, Politics and Law*. Wien; Springer-Verlag.
- Bull, H. (2012). *The Anarchical Society: a Study of Order in World Politics*. New York: Columbia University Press.
- Butterfield, H., & Wight, M. (1966). *Diplomatic Investigations: Essays in the Theory of International Politics*. London: Allen & Unwin.

- Buzan, B. (2004). *From International to World Society?: English School Theory and the Social Structure of Globalisation*. Cambridge: Cambridge University Press.
- Buzan, B., Jones, C. A., & Little, R. (1993). *The Logic of Anarchy: Neorealism to Structural Realism*. New York: Columbia Univ. Press.
- Charmaz, K. (2014). *Constructing Grounded Theory*. Thousand Oaks, CA: Sage Publications.
- Clark, I. (2013). *The Vulnerable in International Society*. Oxford: Oxford University Press.
- Correll, R., & Worden, S. (2005). The Demise of US Spacepower: Not with a Bang but a Whimper. *Astropolitics: The International Journal of Space Politics and Policy*, 3(3), 233–264.
- Corry, O. (2011). What is a (Global) Polity? In Rengger, N. (Ed.). *Evaluating Global Orders* (pp. 157–180). Cambridge : Cambridge University Press.
- Corry, O. (2013). *Constructing a Global Polity: Theory, Discourse and Governance*. Basingstoke: Palgrave Macmillan.
- Cox, R. W. (1992). Towards a Post-hegemonic Conceptualization of World Order: Reflections on the Relevance of Ibn Khaldun. In J. N. Rosenau & E.-O. Czempiel (Eds.), *Governance without government: Order and Change in World Politics* (pp. 132–159). Cambridge : Cambridge University Press.
- Crumley, C. L. (1995). Heterarchy and the Analysis of Complex Societies. *Archaeological Papers of the American Anthropological Association*, 6(1), 1–5.
- Cumming, G. S. (2016). Heterarchies: Reconciling Networks and Hierarchies. *Trends in Ecology & Evolution*, 31(8), 622–632.
- Darity, W. (Ed.). (2008). *Heterarchy. International Encyclopedia of the Social Sciences* (2. ed.). Detroit: Macmillan References USA.
- Dasenbrock, R. W. (1991). Do We Write the Text We Read? *College English VO* - 53(1), 7-18.
- Davies, M. I. J. (2009). Wittfogel's Dilemma: Heterarchy and Ethnographic Approaches to Irrigation Management in Eastern Africa and Mesopotamia. *World Archaeology*, 41(1), 16-35.
- Dawson, R. (2009). Heterarchy: Technology, Trust and Culture. *People & Strategy*, 32(1), 13.
- DeGrasse Tyson, Niel & Lang, A. (2018). *Accessory to War: The Unspoken Alliance Between Astrophysics and the Military*. W. W. Norton & Company.
- Della Porta, D., & Keating, M. (2008). *Approaches and Methodologies in the Social Sciences: a Pluralist Perspective*. Cambridge: Cambridge University Press.
- Deudney, D. (1982). *Space: the High Frontier in Perspective*. Washington, D.C.: Worldwatch Institute.
- Deudney, D. (2007). *Bounding Power: Republican Security Theory from the Polis to the Global Village*. Princeton, N.J. ; Princeton University Press.
- Deudney, D. (2018). Turbo Change: Accelerating Technological Disruption, Planetary Geopolitics, and Architectonic Metaphors. *International Studies Review*, 20(2), 223–231.
- Deudney, D. (2020). *Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity*. New York: Oxford University Press.

- DeWalt, K. M., & DeWalt, B. R. (2011). *Participant Observation : a Guide for Fieldworkers*. Lanham, Maryland: Altamira.
- Dolman, E, Cooper, H. (2011). Increasing the Military Uses of Space. In C. Lutes & P. L. Hays (Eds.), *Toward a Theory of Space Power: Selected Essays*. Washington DC: National Defense University Press.
- Dolman, E. C. (2002). *Astropolitik: Classical Geopolitics in the Space Age*. London: Frank Cass.
- Donnelly, J. (2016). The Heterarchic Structure of Twenty-First-Century International Governance. *The Korean Journal of International Studies*, 14(1), 1–29.
- Donnelly, J. (2019). Systems, Levels, and Structural Theory: Waltz's Theory is not a Systemic Theory (and Why that Matters for International Relations today). *European Journal of International Relations*, 25(3), 904–930.
- Dubreuil, B. (2010). *Human Evolution and the Origins of Hierarchies: the State of Nature*. Cambridge: Cambridge University Press.
- Dunne, T., & Flockhart, T. (2013). *Liberal World Orders*. The British Academy: Oxford University Press.
- Duvall, R., & Havercroft, J. (2012). Critical Astropolitics: The Geopolitics of Space Control and the Transformation of State Sovereignty. In Bormann, N., & Sheehan, M., *Securing Outer Space*. (pp- 42-58). London: Routledge.
- Ekengren, M. (2009). *The Time of European Governance*. Manchester: Manchester University Press.
- Ellingson, L. (2009). *Engaging Crystallization in Qualitative Research*. Thousand Oaks, California: SAGE Publications, Inc.
- Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing Ethnographic Fieldnotes*. Chicago: University of Chicago Press.
- Finnemore, M., & Sikkink, K. (2001). TAKING STOCK: The Constructivist Research Program in International Relations and Comparative Politics. *Annual Review of Political Science*, 4(1), 391.
- Fisher, M. (2009). *Capitalist Realism: Is There No Alternative?* O Books. John Hunt Publishing.
- Flinders, M., & Wood, M. (2015). When Politics Fails: Hyper-democracy and Hyper-depoliticization. *New Political Science*, 37(3), 363–381.
- Forstner, C. (2008). The Early History of David Bohm's Quantum Mechanics Through the Perspective of Ludwik Fleck's Thought-collectives. *Minerva*, 46(2), 215–229.
- Froehlich, A., & Seffinga, V. (2019). *The United Nations and Space Security: Conflicting Mandates Between UNCOPUOS and the CD*. Cham, Switzerland: Springer.
- Fukuyama, F. (2014). *Political Order and Political Decay: From the Industrial Revolution to the Globalization of Democracy*. New York : Farrar, Straus and Giroux.
- Gabriel, Y. (2005). Glass Cages and Glass Palaces: Images of Organization in Image-conscious times. *Organization*, 12(1), 9–27.
- George, A. L., & Bennett, A. (2005). *Case Studies and Theory Development in the Social Sciences*. Cambridge, Mass.; MIT.
- Gerring, J. (2012). *Social Science Methodology: a Unified Framework*. Cambridge: Cambridge University Press.
- Goddard, D. (1973). Max Weber and the Objectivity of Social Science. *History and Theory*, 12(1), 1–22.

- Grewal, D. S. (2008). *Network Power: the Social Dynamics of Globalization*. New Haven: Yale University Press.
- Gingrich, A. & Fox, R. G., (2002). *Anthropology, by Comparison*. London: Routledge.
- Groves, Christopher. (2017). Emptying the Future: On the Environmental Politics of Anticipation. *Futures*, 92, 29–38.
- Guzzini, S. (2013). The Ends of International Relations Theory: Stages of Reflexivity and Modes of Theorizing. *European Journal of International Relations*, 19(3), 521–541.
- Haas, P. M. (1992a). Banning Chlorofluorocarbons Epistemic Community Efforts. *International Organization*. 46(1), 187-224.
- Haas, P. M. (1992b). Introduction: Epistemic Communities and International Policy Coordination. *International Organization*, 46(1), 1, 1-35.
- Hägerstrand, T. (1982). Diorama, Path and Project. *Tijdschrift Voor Econ. En Soc. Geografie*, 73(6).
- Hägerstrand, T., Carlestam, G., Sollbe, B., & Perlenhem, L. (1991). *Om tidens vidd och tingens ordning: texter av Torsten Hägerstrand*. Stockholm: Statens råd för byggnadsforskning.
- Hägerstrand, T., Ellegård, K., Svedin, U., & Lenntorp, B. (2009). *Tillvaroväven*. Stockholm: Forskningsrådet Formas.
- Hall, M. (2004). On the Morphology of International Systems. Political Space as Structure and Process in Early Medieval Europe. *CFE Working Paper Series*. Lund: Centre for European Studies at Lund University.
- Hallenberg, J. (2020). Trumps utrikespolitik i historiens ljus. En exceptionell president. *Statsvetenskaplig Tidskrift*, 5 (Särskild utgåva).
- Hannerz, U. (2003). Being there... and there... and there! Reflections on Multi-site Ethnography. *Ethnography*, 4(2), 201-216.
- Harrison, R. (2015). The Role of Space in Deterrence. In Schorgl et al. (Ed.), *Handbook of Space Security*. (pp. 113-130). New York: Springer.
- Harrison, T., Cooper, Z., Johnson, K., & Roberts, T. G. (2017). *The Evolution of Space as a Contested Domain. Escalation and Deterrence in the Second Space Age*. Center for Strategic and International Studies (CSIS).
- Hayek, F. A. von, Ahlström, B., & Ljungberg, C. J. (2015). *Frihetens grundvalar : med förord av Johan Hakelius*. Stockholm: Timbro.
- Hedlund, G. (1986). The Hypermodern MNC—A Heterarchy? *Human Resource Management*, 25(1), 9–35.
- Highmore, B. (2002). *The Everyday Life Reader*. London: Routledge.
- Hill, D. W. (2019). Speed and Pessimism: Moral Experience in the Work of Paul Virilio. *Journal for Cultural Research*, 23(4), 411–424.
- Hobson, J. M. Sharman, J. C. (2005). The Enduring Place of Hierarchy in World Politics: Tracing the Social Logics of Hierarchy and Political Change. *European Journal of International Relations*, 11, 63–98.
- Hoffmann, S. (1995). Report of the Conference on Conditions of World Order: June 12-19, 1965, Villa Serbelloni, Bellagio, Italy. *Daedalus*, 124(3), 1–26.
- Hollis, M., & Smith, S. (1991). *Explaining and Understanding International Relations*. Oxford: Clarendon.
- Huntley, W. (2007). Smaller State Perspectives on the Future of Space Governance. *Astropolitics*, 5(3), 237–271.

- Hutchings, K. (2008). *Time and World Politics: Thinking the Present*. Manchester: Manchester University Press.
- Hutchings, K. (2011). What is Orientation in Thinking? On the Question of Time and Timeliness in Cosmopolitical Thought. *Constellations: An International Journal of Critical & Democratic Theory*, 18(2), 190–204.
- Hutchings K. (2007). Happy Anniversary! Time and critique in International Relations theory. In Rengger & N. Thirkell White (Ed.), *Critical International Relations Theory after 25 years* (pp. 71–90). Cambridge: Cambridge University Press.
- Immordino-Yang, M. H., McColl, A., Damasio, H., & Damasio, A. (2009). Neural Correlates of Admiration and Compassion. *Proceedings of the National Academy of Sciences*, 106(19), 8021 LP – 8026.
- Jervis, R. (1992). Models and Cases in the Study of International Conflict. In Rothstein, R. (Ed.), *The Evolution of Theory in International Relations* (pp. 61–82). Columbia: University of South Carolina Press.
- Johnson-Freese, J. (2007). *Space as a Strategic Asset*. New York: Columbia University Press.
- Johnson-Freese, J. (2009). *Heavenly Ambitions: America's Quest to Dominate Space*. Philadelphia, Pa.: University of Pennsylvania Press.
- Johnson-Freese, J. (2017). *Space Warfare in the 21st Century: Arming the Heavens*. New York: Routledge.
- Johnson-Freese, J., & Handberg, R. (1997). *Space, the Dormant Frontier -Changing the Paradigm for the 21st Century*. Praeger Publishers Inc.
- Kaiser, S. (2008). Viewpoint: Chinese Anti-Satellite Weapons: New Power Geometry and New Legal Policy. *Astropolitics*, 6(3), 313–323.
- Kapiszewski, D., MacLean, L. M., & Read, B. L. (2015). *Field Research in Political Science: Practices and Principles*. Cambridge: Cambridge University Press.
- Kaplan, M. A. (1957). *System and Process in International Politics*. New York: Wiley.
- Kenis, A., & Lievens, M. (2014). Searching for 'the political' in Environmental Politics. *Environmental Politics*, 23(4), 531–548.
- Kessler, O. (2012). World Society, Social Differentiation and Time. *International Political Sociology*, 6(1), 77–94.
- Kinnvall, C., & Mitzen, J. (2017). An introduction to the Special Issue: Ontological Securities in World Politics. *Cooperation and Conflict*, 52(1), 3–11.
- Kissinger, H. (2014). *World Order: Reflections on the Character of Nations and the Course of History*. London: Allen Lane.
- Klein, J. J. (2006). *Space warfare: Strategy, Principles and Policy*. London: Routledge.
- Klein, J. J. (2019). *Understanding Space Strategy: The Art of War in Space (Space Power and Politics)*. London and New York: Routledge.
- Kratochwil, F. V. (1989). *Rules, Norms and Decisions: on the Conditions of Practical and Legal Reasoning in International Relations and Domestic Affairs*. Cambridge: Cambridge University Press.
- Kurki, M. (2008). *Causation in International Relations: Reclaiming Causal Analysis*. Cambridge: Cambridge University Press.
- Kvale, S., Brinkmann, S., & Torhell, S.-E. (2009). *Den kvalitative forskningsintervjun* (2. uppl.). Lund: Studentlitteratur.

- Lake, D. A. (1996). Anarchy, Hierarchy, and the Variety of International Relations. *International Organization*, 50(1), 1–33.
- Lake, D. A. (2009). *Hierarchy in International Relations*. Ithaca, N.Y.: Cornell University Press.
- Lake, D. A. (2010). Rightful Rules: Authority, Order, and the Foundations of Global Governance. *International Studies Quarterly*, 54(3), 587–613.
- Lambakis, S. J. (2001). *On the edge of Earth: the Future of American Space Power*. University Press of Kentucky.
- Laver, M. (1984). The Politics of Inner Space: Tragedies of Three Commons. *European Journal of Political Research*, 12(1), 59–71.
- Lebow, R. N. (2008). *A Cultural Theory of International Relations*. Cambridge : Cambridge University Press.
- Lebow, R. N. (2015). *Constructing Cause in International Relations*. New York: Cambridge University Press.
- Lebow, R. N. (2018). *The Rise and Fall of Political Orders*. Cambridge: Cambridge University Press.
- Luhmann, N., & Backelin, E. (2005). *Förtroende: en mekanism för reduktion av social komplexitet*. Göteborg: Daidalos.
- Lundquist, L. (1993). *Det vetenskapliga studiet av politik*. Lund: Studentlitteratur.
- Lyall, F., & Larsen, P. B. (2009). *Space Law: a Treatise*. Farnham: Ashgate.
- Månson, P. (2015). *Moderna samhällsteorier : traditioner, riktningar, teoretiker* (9. uppl.). Lund: Studentlitteratur.
- MacDonald, F., (2007). Anti-Astropolitik. *Progress in Human Geography*.31(5), 592-615.
- Marcus, G. E. (1995). Ethnography in / of the World System : The Emergence of Multi-Sited Ethnography. *Annual Review of Anthropology*, 24(1995), 95–117.
- Mendenhall, E. (2018). Treating Outer Space Like a Place: A Case for Rejecting other Domain Analogies. *Astropolitics*, 16(2), 97–118.
- Mikecz, R. (2012). Interviewing Elites: Addressing Methodological Issues. *Qualitative Inquiry*, 18(6), 482–493.
- Moltz, James C. (2014). *Crowded Orbits -Conflict and Cooperation in Space*. Columbia University Press.
- Moltz, James Clay. (2008). *The Politics of Space Security: Strategic Restraint and the Pursuit of National Interests*. Stanford, Calif.: Stanford Security Studies.
- Morgenthau, H. J. (1959). The Nature and Limits of a Theory of International Relations. In *Theoretical Aspects of International Relations* (pp. 15–28).
- Morisse-Schilbach, M. (2015). “Changing the World”: Epistemic Communities, and the Democratizing Power of Science. *Innovation: The European Journal of Social Sciences*, 28(1), 18–26.
- Mouffe, C. (2000). *The Democratic Paradox*. London ; Verso.
- Mouffe, C. (2005). *On the Political*. London: Routledge.
- Münch, R. (2013). Functional, Segmentary and Stratificatory Differentiation of World Society. In *Bringing Sociology to International Relations* (pp. 71–87). Cambridge : Cambridge University Press.
- Mutschler, M. M. (2015). Security and Cooperation in Space and International Relations Theory. In K.-U. Schrogl (Ed.), *Handbook of Space Security* (pp. 41–56). New York: Springer.

- Nedal, D. K., & Nexon, D. H. (2019). Anarchy and Authority: International Structure, the Balance of Power, and Hierarchy. *Journal of Global Security Studies*, 4(2), 169–189. <https://doi.org/10.1093/jogss/ogy031>
- Nelson, J. (2017). Using Conceptual Depth Criteria: Addressing the Challenge of Reaching Saturation in Qualitative Research. *Qualitative Research*, 17(5), 554–570.
- Newport, C. (2016). *Deep Work: Rules for Focused Success in a Distracted World*. New York: Grand Central Publishing.
- Nexon, D. (2010). Relationism and New Systems Theory. In Albert, M., et al., (Ed.), *New Systems Theories of World Politics* (pp. 99–126). Palgrave Macmillan.
- Nitze, P. H. (1959). Necessary and Sufficient Elements of a General Theory of International Relations. In Fox, W. *Theoretical Aspects of International Relations* (pp. 1–14).
- Noonan, J. (2019). Paul Virilio and the Temporal Conditions of Philosophical Thinking. *Time and Society*, 28(2), 763–782.
- Norris, P. (2015). Eavesdropping. In K.-U. Schrogl (Ed.), *Handbook of Space Security*. New York: Springer.
- Nyman-Metcalf, K. (2017). National and International Regulatory Aspects of Commercial Space Activities: Self-regulation as the Way Forward? In *Commercial Uses of Space and Space Tourism*. Cheltenham, UK: Edward Elgar Publishing.
- Onuf, N. (2009). Structure? What Structure? *International Relations*, 23(2), 183–199.
- Onuf, N. G., Kowert, P., & Kubáľková, V. (1998). *International Relations in a Constructed World*. London: M.E. Sharpe.
- Pace, S. (2011). Merchant and Guardian Challenges in the Exercise of Spacepower. In *Toward a Theory of Space Power: Selected Essays* (pp. 124–149). Washington, DC: National Defense University Press.
- Palan, R. (2007). Transnational Theories of Order and Change: Heterodoxy in International Relations Scholarship. In Rengger, N. & Thirkell-White, B. (Ed.) *Critical International Relations Theory After 25 Years.*, (pp. 47–70).
- Pasco, X. (2015). Various Threats of Space Systems. In Schrogl et al., (Ed.), *Handbook of Space Security*. (pp. 663-678). New York: Springer.
- Pass, J. (2008). Astrosociology and Space Exploration: Taking Advantage of the Other Branch of Science. *AIP Conference Proceedings*, 969, 879–887.
- Patomäki, H. (2011). Cosmological Sources of Critical Cosmopolitanism. In N. Rengger (Ed.), *Evaluating Global Orders* (pp. 181–200). Cambridge: Cambridge University Press.
- Paulsen, R. (2014). The Counterfactual Imagination. In R. Swedberg (Ed.), *Theorizing in Social Science: the Context of Discovery*. (pp. 158-176). Stanford: Stanford University Press.
- Peoples, C., & Stevens, T. (2020). At the Outer Limits of the International: Orbital Infrastructures and the Technopolitics of Planetary (in)security. *European Journal of International Security*, 5(3), 294–314.
- Peter, N. (2010). The New Space Order: Why Space Power Matters for Europe. *Space and Defense*. 4(1), 53-69. US Air Force Academy.
- Peterson, M. J. (2004). Diverging Orbits: Situation Definitions in Creation of Regimes for Broadcast and Remote Sensing Satellites. *American Political Science Review*. 98 (2), 277-291

- Petersson, H. F., (1964). *Power and International Order*. Lund: Gleerups.
- Pollpeter, K. L., Chase, M. S., & Heginbotham, E. (2017). *The Creation of the PLA Strategic Support Force and Its Implications for Chinese Military Space Operations*. RAND Corporation PP - Santa Monica, CA.
- Puchala, D. J. (1992). Woe to the Orphans of the Scientific Revolution. In Rothstein, R. (Ed.) *The Evolution of Theory in International Relations* (pp. 39–60). Columbia: University of South Carolina Press.
- Reed, Isaac Ariail, Zald, M. N. (2014). The Unsettlement of Communities of Inquiry. In R. Swedberg (Ed.), *Theorizing in Social Science: the Context of Discovery* (pp. 85–105). Stanford: Stanford University Press.
- Reich, S., & Lebow, R. N. (2013). *Good-bye Hegemony!: Power and Influence in the Global System*. Princeton, New Jersey: Princeton University Press.
- Rengger, N. (2011). *Evaluating Global Orders*. Cambridge: Cambridge University Press.
- Rengger, N. (2000). *International Relations, Political Theory and the Problem of Order: Beyond International Relations Theory?* London: Routledge.
- Rengger, N. (2017). *The Anti-Pelagian Imagination in Political Theory and International Relations: Dealing in Darkness*. New York: Routledge.
- Rescher, N. (2000). *Process Philosophy: A Survey of Basic Issues*. Pittsburgh: University of Pittsburgh Press.
- Richmond, O. P., Kappler, S., & Björkdahl, A. (2015). The 'Field' in the Age of Intervention: Power, Legitimacy, and Authority Versus the 'Local.' *Millennium*, 44(1), 23–44.
- Rogers, L. (2008). *It's ONLY Rocket Science [electronic resource]: An Introduction in Plain English*. New York, NY: Springer Science+Business Media, LLC.
- Rosa, H. (2003). Social Acceleration: Ethical and Political Consequences of a Desynchronized High-Speed Society. *Constellations*, 10(1), 3–33.
- Rosa, H. (2005). The Speed of Global Flows and the Pace of Democratic Politics. *New Political Science*, 27(4), 445–459.
- Rosenau, J. N. (1990). *Turbulence in World Politics: a Theory of Change and Continuity*. Princeton, N.J: Princeton University Press.
- Rosenau, J. N. (1992). Governance, Order and Change in World Politics. In Rosenau, J. N., & Czempiel, E.-O, *Governance without Government: Order and Change in World Politics* (pp. 1–29). Cambridge: Cambridge Univ. Press.
- Rosenau, J. N., & Czempiel, E.-O. (1992). *Governance without Government: Order and Change in World Politics*. Cambridge: Cambridge Univ. Press.
- Rosenau, J. N. (1997). *Along the Domestic-foreign frontier: Exploring Governance in a Turbulent World*. Cambridge: Cambridge Univ. Press.
- Rosenberg, J. (2006). Why is there no International Historical Sociology? *European Journal of International Relations*, 12(3), 307–340.
- Rothstein, R. L. (1992). *The Evolution of Theory in International Relations: Essays in Honor of William T. R. Fox*. Columbia: University of South Carolina Press.
- Rubin, H. & Rubin, I. (2004). *Qualitative Interviewing: The Art of Hearing Data*. (2nd ed.). London : SAGE, (online resource).
- Ruggie, J. G. (1998). What Makes the World Hang Together? Neo-utilitarianism and the Social Constructivist Challenge. *International Organization*, 52(4), 855–885.

- Ryen, A. (2016). Research Ethics and Qualitative Research. In D. Silverman (Ed.), *Qualitative Research* (pp. 31–46). London: SAGE.
- Salter, M. B., & Mutlu, C. E. (2013). *Research Methods in Critical Security Studies: an Introduction*. New York: Routledge.
- Sassen, S. (2006). *Territory, Authority, Rights: from Medieval to Global Assemblages*. Princeton, N.J.: Princeton University Press.
- Saukko, P. (2003). *Doing Research in Cultural Studies: an Introduction to Classical and New Methodological Approaches*. London: SAGE.
- Scharre, P. (2018). *Army of None: Autonomous Weapons and the Future of War*. New York: Norton & Company.
- Schmitt, C. (2007). *The Concept of the Political*. Chicago: University of Chicago Press.
- Schrogl, K.-U., Hays, P. L., Robinson, J., Moura, D., & Giannopapa, C. (2015). *Handbook of Space Security*. New York: Springer.
- Schweller, R. L. (2014). *Maxwell's Demon and the Golden Apple: Global Discord in the New Millennium*. Baltimore, Maryland: Johns Hopkins University Press.
- Scott. (1982). *The Dynamics of Interdependence*. Chapel Hill and London: University of North Carolina Press.
- Sgobbi, D. (2015). Space and Cyber Security. In Schrogl et al., (Ed.), *Handbook of Space Security*. (pp. 157- 1869. New York: Springer.
- Sheehan, M. (2007). *The International Politics of Space*. London; Routledge.
- Sil, R., & Katzenstein, P. J. (2010). *Beyond Paradigms: Analytic Eclecticism in the Study of World Politics*. Palgrave Macmillan.
- Silverman, D. (2013). *Doing Qualitative Research*. Thousand Oaks, CA: Sage Publications.
- SIPRI. (2019). *SIPRI Yearbook : Armaments, Disarmament and International Security. 2019*. Oxford: Oxford University Press.
- Skinner, Q. (2002). *Visions of Politics. Vol. 1, Regarding Method*. Cambridge: Cambridge University Press.
- Slaughter, A.-M. (2004). *A New World Order*. Princeton, N.J.: Princeton University Press.
- Stark, D. (2001). Heterarchy: Exploiting Ambiguity and Organizing Diversity. *Brazilian Journal of Political Economy*, 21(1), 21–39.
- Stenelo, L.-G. (1972). *Mediation in International Negotiations*. Lund: Studentlitteratur.
- Stevens, T., & Michelsen, N. (2020). *Pessimism in International Relations - Provocations, Possibilities, Politics*. Palgrave Macmillan.
- Stevenson, A. (2010). *Oxford Dictionary of English* (3rd ed.). Oxford: Oxford University Press.
- Stuart, J. (2012). Unbundling Sovereignty, Territory and State. In Bormann & Sheehan (Ed.), *Securing Outer Space*. London: Routledge.
- Stuart, J. (2014). *Exploring the Relationship Between Outer Space and World Politics: English School and Regime Theory Perspectives*. (Diss.). London School of Economics and Political Science.
- Sveningsson, S., & Alvesson, M. (2016). *Managerial Lives: Leadership and Identity in an Imperfect World*. Cambridge: Cambridge University Press.
- Swedberg, R. (2012). Theorizing in Sociology and Social Science: Turning to the Context of Discovery. *Theory and Society*, 41(1), 1–40.
- Swedberg, R. (2014). *The Art of Social Theory*. Princeton, NJ: Princeton University Press.

- Swedberg, R. (2018). How to use Max Weber's Ideal type in Sociological Analysis. *Journal of Classical Sociology*, 18(3), 181–196.
- Tilly, C. (1984). *Big Structures, Large Processes, Huge Comparisons*. New York: Russell Sage Foundation.
- Tooze, J. A. (2014). *The Deluge: the Great War and the Remaking of Global Order 1916-1931*. New York: Penguin Books.
- Tracy, S. J. (2010). Qualitative Quality: Eight "Big-tent" Criteria for Excellent Qualitative Research. *Qualitative Inquiry*, 16(10), 837–851.
- Tronchetti, F. (2013). *Fundamentals of Space Law and Policy*. New York: Springer.
- Turner, J. H., & Stets, J. E. (2005). *The Sociology of Emotions*. New York: Cambridge University Press
- Turner Stephen. (2014). Theorizing, Bricolage, and Building. In R. Swedberg (Ed). *Theorizing in Social Science: the Context of Discovery*. (pp. 131-157) Stanford: Stanford University Press.
- Virilio, P. (1986). *Speed and Politics: an Essay on Dromology*. New York: Semiotext(e)
- Waltz, K. (1992). Realist Thought and Neorealist Theory. In Rothstein, R. *The Evolution of Theory in International Relations*. (pp.21-37). Columbia: University of South Carolina Press.
- Waltz, K. N. (1979). *Theory of International Politics*. New York: McGraw-Hill, Inc.
- Warden III, J. A. (1995). The Enemy as a System. *Airpower Journal*, 9(1), 40–55.
- Wästerfors, D. (2019). Den etnografiskt okänsliga etikgranskningen. *Statsvetenskaplig Tidskrift*, 121(2), 173–205.
- Wästerfors, D., & Sjöberg, K. (2008). *Uppdrag: Forskning : konsten att genomföra kvalitativa studier*. Malmö: Liber.
- Weber, M. (1960). *Den protestantiska etiken och kapitalismens anda*. Lund: Argos, Grahns Tryckeri AB.
- Weiberg, E. (2017). Samhällsodaning – kris, kollaps eller möjlighet? *Statsvetenskaplig Tidskrift*, 119(2), 315–328.
- Wendt, a., & Duvall, R. (2008). Sovereignty and the UFO. *Political Theory*, 36(4), 607–633.
- Wendt, A. (1992). Anarchy is What States Make of it: The Social Construction of Power Politics. *International Organization*, 46(2), 391–425.
- Wendt, A. (1999). *Social Theory of International Politics*. Cambridge: Cambridge University Press.
- Wendt, A. (2015). *Quantum Mind and Social Science: Unifying Physical and Social Ontology*. Cambridge: Cambridge University Press.
- Wong, W., & Fergusson, J. G. (2010). *Military Space Power: a Guide to the Issues*. Santa Barbara: Praeger.
- Ziarnick, B. D. (2015). *Developing National Power in Space: a Theoretical Model*. Jefferson: McFarland and co Ink.
- Zürn, M., Binder, M., Ecker-Ehrhardt, M. (2012). International Authority and its Politicization. *International Theory*, 4 (1), 69-106.

Internet-sources, newspaper articles and documents:

- AIAA. (2018). About AIAA. Retrieved September 16, 2018 from <https://www.aiaa.org/about>.
- AIAA. (2019). ASCEND. Retrieved February 6, 2019 from <https://www.ascend.events/>
- Amazon. (2020). Amazon Receives FCC Approval for Project Kuiper Satellite Constellation. Retrieved December 14, 2020, from <https://www.aboutamazon.com/news/company-news/amazon-receives-fcc-approval-for-project-kuiper-satellite-constellation>.
- Amos, J. (2020a). OneWeb Satellite Internet Company is Officially Reborn. *BBC News*. Retrieved November 20, 2020, from <https://www.bbc.com/news/amp/science-environment-55016402>.
- Amos, J. (2020b). China's Chang'e-5 Mission Leaves Moon's Surface. *BBC News*. Retrieved December 3, 2020 from <https://www.bbc.com/news/science-environment-55179983>.
- APRSAF. (2020). Asia-Pacific Regional Space Agency Forum. Retrieved December 15, 2020, from <https://aprsaf.org/>.
- AxelGlobe. (2020). Home. Retrieved January 20, 2020, from <https://www.axelglobe.com/en/>.
- Axelspace. (2020a). Axelspace. Retrieved January 20, 2020, from <https://www.axelspace.com/axelglobe/>.
- Axelspace. (2020b). Mission. Retrieved January 20, 2020, from <https://www.axelspace.com/vision>.
- BBC News. (2020). Tesla Overtakes Volkswagen as Value Hits \$100bn. Retrieved January 22, 2020, from <https://www.bbc.com/news/business-51214824>.
- Bezos, J. (2018). Jeff Bezos talks Amazon, Blue Origin, Family and Wealth. Video. Retrieved May 2, 2020, from https://www.youtube.com/watch?v=SCpgKvZB_VQ.
- Blue Origin. (2019a). Introducing Blue Moon. Video. Retrieved January 22, 2020, from <https://www.youtube.com/watch?v=hmk1oHzvNKA>.
- Blue Origin. (2019b). Visions for the Club for the Future. Video. Retrieved December 14, 2019, from https://www.youtube.com/watch?v=oL-WOlusUK4&feature=emb_rel_pause.
- Bodner, M. (2018). As Trump Pushes for Separate Space Forces, Russia Moves Fast the Other Way. *Defense News*. Retrieved September 4, 2020, from <https://www.defensenews.com/global/europe/2018/06/21/as-trump-pushes-for-separate-space-force-russia-moves-fast-the-other-way/>.
- Branson, R. (2020). Just Mercy. Blog. Retrieved January 22, 2020, from <https://www.virgin.com/branson-family/richard-branson-blog/just-mercy>.
- Crisp, A. (2020). Smallsat IoT: Finally Time to Shine? An NSR Analysis. *Satellite News*. Retrieved March 8, 2021, from <https://news.satnews.com/2020/11/03/smallsat-iot-finally-time-to-shine-an-nsr-analysis/>.
- Dowd, K. (2020). OneWeb Seeks to Increase Satellite Constellation up to 48, 000 Bringing Maximum Flexibility to Meet Future Growth and Demand. *OneWeb*. Retrieved September 4, 2020, from <https://www.oneweb.world/media-center/oneweb-seeks-to-increase-satellite-constellation-up-to-48000-satellites-bringing-maximum-flexibility-to-meet-future-growth-and-demand>.

- Economic Times. (2019). Government Finalises Broad Contours of Defence Space Agency. *Indian Times*. Retrieved January 15, 2020 from <https://economictimes.indiatimes.com/news/defence/government-finalises-broad-contours-of-defence-space-agency/articleshow/69745921.cms>.
- EHT. (2019). Astronomers Capture First Image of a Black Hole. Video. Retrieved April 10, 2019 from <https://eventhorizontelescope.org/press-release-april-10-2019-astronomers-capture-first-image-black-hole>.
- ESA. (2019a). Space Debris by the Numbers. Retrieved April 10, 2019 from https://www.esa.int/Our_Activities/Space_Safety/Space_Debris/Space_debris_by_the_numbers.
- ESA. (2019b). Technology CubSats. Retrieved November 5, 2019 from https://www.esa.int/Enabling_Support/Space_Engineering_Technology/Technology_CubeSats.
- ESA. (2021). ESA and UNOOSA Illustrate Space Debris Problem. Retrieved April 4, 2021, from https://www.esa.int/Safety_Security/Space_Debris/ESA_and_UNOOSA_illustrate_space_debris_problem.
- Euroconsult. (2020). *China Space Industry Report, 2020*. Retrieved December 3, 2020 from https://euroconsult-ec.com/research/CSI20_Brochure.pdf.
- European Commission. (2016). *Space Strategy for Europe*. Brussels. Retrieved May 5 2019 from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0705&from=EN>.
- European Commission. (2019). Breakthrough Discovery in Astronomy: First Ever Image of a Black Hole. Video. Retrieved April 10, 2019, from <https://www.youtube.com/watch?v=Dr20f19czeE>.
- European Commission. (2020). Directorate-General: Defence Industry and Space. Retrieved March 5, 2020, from https://ec.europa.eu/info/departments/defence-industry-and-space_en.
- Fleet Space. (2021). To space again! Fleet Space Technologies announce their fifth nanosatellite to be launched aboard Rocket Lab's mission "They Go Up So Fast" next month. Retrieved March 8, 2021, from <https://fleetspace.com/news/to-space-again-fleet-space-technologies-announce-their-fifth-nanosatellite-to-be-launched-aboard-rocket-labs-mission-they-go-up-so-fast-next-month>.
- Foust, J. (2018). UN Committee Approves Space Sustainability Guidelines. *Space News*. Retrieved from <https://spacenews.com/un-committee-approves-space-sustainability-guidelines/>.
- Harper, J. (2020). Nasa to Pay Company \$1 to Collect Rocks from Moon. *BBC News*. Retrieved December 4, 2020 from <https://www.bbc.com/news/business-55170788>.
- Hitchens, T. (2019, September 16). SPACECOM to Write New Ops War Plan: 100km and up. *Breaking Defense*. Retrieved from <https://breakingdefense.com/2019/09/spacecom-to-write-new-ops-war-plan-100km-and-up/>.
- IAC. (2020). About IAC. Retrieved December 3, 2020, from <https://iac2021.org/about>.
- IISL. (2018). *Annual Report of the International Institute for Space Law Relating to Space Law*. Retrieved from <https://iislweb.org/wp-content/uploads/2018/12/Presidents-Annual-Report-to-GA-Bremen-2018-1.pdf>.

- ITU. (2019a). Committed to Connecting the World. Retrieved October 18, 2019, from <https://www.itu.int/en/about/Pages/default.aspx>.
- ITU. (2019b). Evolving Satellite Communications, ITU's Role in a Brave New World. *ITU News Magazine*, (2).
- ITU. (2019c). ITU Chairman Amr Badawi. Video. Retrieved November 28, 2019, from <https://www.youtube.com/watch?v=ZFWs7O4hTzA&list=PLpoIPNIF8P2PwGUfgBCGICxqehr7-Dhd8&index=44>.
- ITU. (2019d). ITU World Radiocommunication Conference Agrees Key Parameters for Future Communication Technologies. Retrieved February 7, 2020, from <https://www.itu.int/en/mediacentre/Pages/2019-PR24.aspx>.
- ITU. (2019e). Measuring Digital Development, Offline Populations. Retrieved November 28, 2019, from <https://itu.foleon.com/itu/measuring-digital-development/offline-population>.
- ITU. (2019f). Why be a part of ITU. Retrieved February 7, 2020, from itu.org.
- ITU. (2019g). Why be a part of ITU. Retrieved September 3, 2019, from itu.org.
- ITU. (2019h). WRC-19. Retrieved from <https://www.itu.int/en/ITU-R/conferences/wrc/Pages/default.aspx>.
- ITU. (2020a). About ITU. Retrieved February 6, 2020, from www.itu.int/en/about/
- ITU. (2020b). About ITU. Retrieved September 3, 2019, from www.itu.int/en/about/
- ITU. (2020c). *Final Acts WRC-19*. Retrieved from https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.14-2019-PDF-E.pdf.
- ITU. (2020d). ITU-R: Managing the Radio-frequency Spectrum for the World. Retrieved January 19, 2020, from <https://www.itu.int/en/mediacentre/backgrounders/Pages/itu-r-managing-the-radio-frequency-spectrum-for-the-world.aspx>.
- ITU. (2020e). Master International Frequency Register (MIFR). Retrieved February 10, 2020, from <https://www.itu.int/en/ITU-R/terrestrial/broadcast/Pages/MIFR.aspx>.
- ITU. (2020f). The ITU-R Study Groups. Retrieved February 7, 2020, from <https://www.itu.int/en/ITU-R/study-groups/Pages/default.aspx>.
- Johnson, C. (2020). Perspective on US Space Resource executive Order, Christopher Johnson on How US Seeks to be a Pioneer in Space Resources Norm Development. *Spacewatch*. Retrieved November 4, 2020, from <https://spacewatch.global/2020/04/spacewatchgl-perspective-on-us-space-resources-executive-order-christopher-johnson-on-how-the-u-s-seeks-to-be-a-pioneer-in-space-resources-norm-development>.
- Jones, K. (2020). Continuous Production Agility: Adapting at the Speed of Relevance. *The Aerospace Corporation*. Retrieved March 23, 2020, from <https://aerospace.org/paper/continuous-production-agility-adapting-speed-relevance>.
- Kennedy, F. (2020). Boeing's Exit From Space Plane Project Is A Lesson In Why We Need To Kill Zombies. *Forbes*. Retrieved from <https://www.forbes.com/sites/fredkennedy/2020/01/24/boeings-exit-from-space-plane-project-is-a-lesson-in-why-we-need-to-kill-zombies/?sh=ea39c172e44a>.
- LIGO Scientific Collaboration. (2017). Gravitational waves and Gamma-rays from a binary neutron star merge: GW170817 and GRB170817A. Retrieved from <https://www.ligo.org/science/Publication-GW170817GRB/index.php>.

- Lindström, S., & Rydqvist, J. (2019). *Kinas rymdprogram och rymdförhållanden*. FOI. Stockholm. Retrieved from <https://www.foi.se/rapportsammanfattning?reportNo=FOI-R--4718--SE>.
- Lundin, T. (2020). USA pressar länder i öst att stå upp mot Kina. Svenska Dagbladet, (August 13, 2020).
- Luxembourg Space Agency. (2017). Law of July 20th 2017 on the Exploration and Use of Space Resources. Retrieved December 1, 2020, from https://space-agency.public.lu/en/agency/legal-framework/law_space_resources_english_translation.html.
- Luxembourg Space Agency. (2019). UNOOSA and Luxembourg Launch “New Space Law for New Space Actors.” Retrieved January 20, 2020, from https://space-agency.public.lu/en/news-media/news/2019/UN_and_Luxembourg_sign_project.html.
- Luxembourg Space Agency. (2020). Pioneers in Space. Retrieved December 9, 2020, from <https://space-agency.public.lu/en/space-resources/the-initiative.html>.
- MacFarland, M. (2018). Elon Musk’s first tunnel is finished. Here’s what it’s like to ride in it. Video. *CNN Business*. Retrieved January 23, 2020, from <https://edition.cnn.com/2018/12/19/tech/boring-company-tunnel-elon-musk/index.html>.
- Made in Space. (2019). On-orbit Manufacturing: Shifting the Paradigm of Space Exploration. Retrieved November 5, 2020, from <https://madeinspace.us/blog/2019/05/13/2019-5-13dzf3q4dfsdfhg34dhy/>.
- Morelle, R. (2019). Satellite Constellations: Astronomers Warn of Threat to View the Universe. *BBC News*. Retrieved February 13, 2020, from www.bbc.com/news/science-environment-50870117.
- NASA. (2020). Gateway. Retrieved from <https://www.nasa.gov/gateway>.
- NATO. (2017). *Strategic Foresight Analysis*. Norfolk: NATO, ACT. Retrieved from https://www.act.nato.int/images/stories/media/doclibrary/171004_sfa_2017_report_txt.pdf.
- NATO. (2020). Presentation of the French Space Center of Excellence for NATO. NATO. NewSpace Europe. (2018). Breaking the Barriers. Retrieved October 26, 2018, from <https://newspace-europe.lu/>.
- O’Callaghan, J. (2019). The Risky Rush for Mega Constellations. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/the-risky-rush-for-mega-constellations/>.
- OneWeb. (2020). Responsible Space. Retrieved November 20, 2020, from <https://www.oneweb.world/responsible-space>.
- Placido, C. (2020). LEO Speed, When Milliseconds are Worth \$Millions. *NSR*. Retrieved from <https://www.nsr.com/leo-speed-when-milliseconds-are-worth-millions/>.
- Posaner, J. (2019a). Germany wary of Macron’s space force. *Politico*. Retrieved from <https://www.politico.eu/article/germany-wary-emmanuel-macron-space-force/>.
- Regeringen. (2015). *En rymdstrategi för nytta och tillväxt (SOU 2015:75)*. Stockholm.
- Reuters. (2019). Richard Branson’s Virgin Galactic takes off in NYSE debut. *Reuters*. Retrieved December 14, 2019, from <https://www.reuters.com/article/virgin-galactic-ipo/richard-bransons-virgin-galactic-takes-off-in-nyse-debut-idUKL3N27D2HZ>.

- Sheetz, M., & Petrova, M. (2019). Why in the Next Decade Companies will Launch Thousands More Satellites than in all of History. *CNBC*. Retrieved December 14, 2019 from <https://www.cnbc.com/2019/12/14/spacex-oneweb-and-amazon-to-launch-thousands-more-satellites-in-2020s.html>.
- SpaceX. (2019). Starship Update. Retrieved September 29, 2019 from <https://www.spacex.com/updates/starship-update-09-29-2019/>
- SpaceX. (2020). Reusability. Retrieved January 23, 2020, from <https://www.spacex.com/mission/index.html>.
- TED Talks. (2017). The future we are building- and boring with Elon Musk. Video. Retrieved January 23, 2020, from https://www.ted.com/talks/elon_musk_the_future_we_re_building_and_boring.
- The Publics Radio. (2019). General: US face “Sputnik-moment” in Space Race Competition. Retrieved June 23, 2020, from <https://thepublicsradio.org/article/general-us-faces-sputnik-moment-in-space-race-competition>.
- The Royal Academy of Egeneering. (2011). *Global Navigation Space Systems: Reliance and Vulnerabilities*. London. Retrieved from <https://www.raeng.org.uk/publications/reports/global-navigation-space-systems>.
- The Space Foundation. (2019). The Space Symposium. Retrieved May 10, 2019, from <https://www.spacesymposium.org/>
- The White House. (2017). Vice President Pence hosts National Space Council. Video. Retrieved February 3, 2020, from https://www.youtube.com/watch?v=4_izFqcZ67U.
- The White House. (2020a). *Executive Order on Encouraging International Support for the Recovery and Use of Space Resources*, 6 April, 2020. Retrieved from <https://www.whitehouse.gov/presidential-actions/executive-order-encouraging-international-support-for-the-recovery-and-use-of-space-resources>, (May 3, 2020).
- The White House. (2020b). *Fact Sheet Encouraging International Support for the Recovery and Use of Space Resources*. Retrieved from <https://www.whitehouse.gov/wp-content/uploads/2020/04/Fact-Sheet-on-EO-Encouraging-International-Support-for-the-Recovery-and-Use-of-Space-Resources>, (May 3, 2020).
- Torrieri, M. (2018). Recipe for Disaster of Biggest Opportunity Yet? *Satellite Today*. Retrieved December 10, 2019 from <http://interactive.satellitetoday.com/via/april-2018/megaconstellations-recipe-for-disaster-or-biggest-opportunity-yet/>.
- UN. (2008). *United Nations Treaties and Principles on Outer Space and related General Assembly resolutions*. New York: United Nations Publication.
- UN. (2021). The 17 Goals. Retrieved March 26, 2021, from <https://sdgs.un.org/goals>.
- UN COPUOS. (2015). *Report of the Committee on the Peaceful Uses of Outer Space*. (A/70/20).
- UN COPUOS. (2018). *Report of the Committee on the Peaceful Uses of Outer Space*. (A/73/20).
- UN COPUOS. (2019). *Report of the Committee on the Peaceful Uses of Outer Space*. (A/74/20).
- UNOOSA. (2018a). *Fiftieth Anniversary of the First United Nations Conference on the Exploration and Peaceful Uses of Outer Space: Space as a Driver of Sustainable Development*. (A/RES/73/6).
- UNOOSA. (2018b). *UNOOSA Annual Report 2017*.

- UNOOSA. (2019). *UNOOSA Annual Report 2018*.
- UNOOSA. (2020a). ISU team project “Sustainable Moon.” Retrieved May 20, 2020, from <https://www.unoosa.org/oosa/en/ourwork/copuos/stsc/technical-presentations.html>
- UNOOSA. (2020b). Status of International Agreements Relating to Activities in Outer Space as at 1 January 2020. Retrieved February 10, 2020, from <https://www.unoosa.org/documents/pdf/spacelaw/treatystatus/TreatiesStatus-2020E.pdf>.
- UNOOSA. (2020c). Technical Presentations made at the Scientific and Technical Subcommittee. Retrieved May 5, 2020, from <https://www.unoosa.org/oosa/en/ourwork/copuos/stsc/technical-presentations.html>
- UNOOSA. (2020d). UN COPUOS Journal. Retrieved from https://www.unoosa.org/res/oosadoc/data/documents/2020/stscjournal/stscjournal2020no_8_0_html/stscj2020-08E.pdf.
- UNOOSA. (2020e). UNISPACE+50 Background. Retrieved December 10, 2020, from <https://www.unoosa.org/oosa/en/ourwork/unispaceplus50/background.html>
- UNOOSA. (2020f). United Nations Register of Objects Launched into Outer Space. Retrieved December 10, 2020, from <http://www.unoosa.org/oosa/en/spaceobjectregister/index.html>.
- UNOOSA. (2020g). *UNOOSA Annual Report 2019*
- UNOOSA. (2020h). UNOOSA Organisational Chart. Retrieved December 10, 2020, from <http://www.unoosa.org/oosa/en/aboutus/structure.html>.
- US Air Force. (2018). *Doctrine - Annex 3-14 Counterspace Operations*. Retrieved from <https://www.doctrine.af.mil/Doctrine-Annexes/Annex-3-14-Counterspace-Ops/>
- US Air Force Space Command. (2020). Comment by Commander General Raymond. Retrieved January 15, 2020, from www.afspc.af.mil.
- US Congress. (2015). *US Commercial Space Launch Competitiveness Act*. Retrieved November 4, 2018, from <https://www.congress.gov/bill/114th-congress/house-bill/2262/text>.
- US Space Command. (2019a). *35th Space Symposium*. Dave Grim. Video. Retrieved January 17, 2020 from <https://www.youtube.com/watch?v=u891W03SQ14>.
- US Space Command. (2019b). US Space Command Recognizes Establishment. Retrieved October 7, 2019 from <https://www.spacecom.mil/News/Article-Display/Article/1955528/us-space-command-recognizes-establishment/>.
- US Space Force. (2019a). About us. Retrieved August 5, 2020 from <https://www.spaceforce.mil/About-Us>.
- US Space Force. (2019b). USSPACECOM Expands Key Allied Space Partnership through Multinational Operations. Retrieved January 17, 2020, from <https://www.spacecom.mil/MEDIA/NEWS-ARTICLES/Article/2047780/usspacecom-expands-key-allied-space-partnerships-through-multi-nation-operations>.
- Wattles, J. (2019). Virgin Galactic Soars in its Stock Exchange Debut. *CNN Business*. Retrieved October 28, 2019 from <https://edition.cnn.com/2019/10/28/tech/virgin-galactic-stock-market-spce/index.html>.
- Weeden, B. (2016). Time for the US Military to let go of the Civilian Space Situational Awareness Mission. *Space News*. Retrieved May 3, 2019, from <https://spacenews.com/time-for-the-u-s-military-to-let-go-of-the-civil-space-situational-awareness-mission/>.

- Wilson, R. (2020). The Value of Space. *The Aerospace Cooperation*. Retrieved April 10, 2020 from https://aerospace.org/sites/default/files/2020-05/Gleason-Wilson_ValueOfSpace_20200511.pdf.
- WMO. (2019). WMO Expresses Concern about Radio Frequency Decision. Retrieved February 2, 2020, from <https://public.wmo.int/en/media/news/wmo-expresses-concern-about-radio-frequency-decision>.
- World Economic Forum. (2020). World Economic Forum 2020. Retrieved January 27, 2020, from <https://www.weforum.org/events/world-economic-forum-annual-meeting-2020>.
- Yang, J. (2019). World Artificial Intelligence Conference 2019, Tesla CEO Elon Musk talks with Alibaba founder Jack Ma. Video. Retrieved February 20, 2020, from <https://www.youtube.com/watch?v=IJIPVlqM8sw>.

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Appendix 2. List of Abbreviations

| | |
|--------|--|
| ABM | Anti-Ballistic Missile |
| ACT | Allied Commander Transformation Centre (NATO) |
| ADR | Active Debris Removal |
| AFB | Air Force Base |
| AI | Artificial Intelligence |
| AIAA | American Institute of Aeronautics and Astronautics |
| AICTO | Arabic Information and Communication Technologies Organization |
| ALLEA | All European Academics |
| APRSAF | Asian-Pacific Regional Space Forum |
| ASAT | Anti-Satellite |
| AU | African Union |
| BBC | British Broadcasting Corporation |
| BR | Radiocommunications Bureau |
| CD | Conference on Disarmament |
| CEO | Chief Executive Officer |
| CNSA | Chinese National Space Agency |
| COSPAR | Committee on Space Research |
| CPA | Continuous Production Agility |
| DLR | German Aerospace Centre |
| EHT | Event Horizon Telescope |
| EISP | European Institute for Space Policy |
| ESA | European Space Agency |
| EU | European Union |
| FFAO | Framework for Future Alliance Operations |
| GA | General Assembly (UN) |
| GDP | Gross Domestic Product |
| GDPR | General Data Protection Regulation |
| GEO | Geostationary orbit |
| GGE | Group of Governmental Experts |
| GNSS | Global Navigation Satellite Systems |
| GPS | Global Positioning System |
| GSO | Geosynchronous Orbit |
| HEO | High Elliptic Orbit |
| IAA | International Academy of Astronautics |
| IAC | International Astronautical Congress |
| IADC | Inter-Agency Space Debris Coordination Committee |
| ICAO | International Civil Aviation Organization |
| ICT | Information and Communication Technology |

| | |
|-------|---|
| IISL | International Institute for Space Law |
| IMT | International Mobile Telecommunications |
| INF | Intermediate-Range Nuclear Forces Treaty |
| IO | International Organization |
| IoT | Internet of Things |
| IPT | Interpretative Process Tracing |
| IR | International Relations |
| IR | International Relations (the study of) |
| IRF | Institute of Space Physics (Swedish) |
| ISRO | Indian Space Research Organisation |
| ISS | International Space Station |
| ISU | International Space University |
| ITC | Information and Communication Technology |
| ITU | International Telecommunication Union |
| JAXA | Japan Aerospace Exploration Agency |
| JUICE | JUperiter Icy moons Explorer |
| LEO | Low Earth Orbit |
| LIGO | Laser Interferometer Gravitational-Wave Observatory |
| LTS | Long-Term Sustainability Guidelines |
| MEO | Medium Earth Orbit |
| MIFR | Master International Frequency Register |
| NASA | National Space Agency (US) |
| NATO | North Atlantic Treaty Organization |
| NDPP | NATO Defense Planning Process |
| NEO | Near Earth Object |
| NGO | Non- Governmental Organization |
| NRO | National Reconnaissance Organization? |
| NSR | Northern Sky Research |
| NYSE | New York Stock Exchange |
| OST | Outer Space Treaty |
| PFD | Power Flux Density |
| PR | Public Relations |
| RPO | Rendezvous and Proximity Operations |
| RR | Radio Regulations |
| SDG | Sustainability and Development Goals (UN) |
| SFA | Strategic Foresight Analysis Report |
| SIPRI | Stockholm International Peace Research Institute |
| SOP | Standard Operation Procedures |
| SOU | Statens Offentliga Utredningar |
| SSA | Space Situation Awareness |
| SSF | Strategic Support Force (China) |
| STM | Space Traffic Management |
| TCBM | Transparency and Confidence Building Measures |
| TOT | Time on Target |

| | |
|-----------|--|
| UCS | Union of Concerned Scientists |
| UK | United Kingdom |
| UN | United Nations |
| UN COPUOS | UN Committee on the Peaceful Uses of Outer Space |
| UN GA | UN General Assembly |
| UNDIR | UN Institute for Disarmament |
| UNOOSA | UN Office for Outer Space Affairs |
| UN-SPIDER | UN - Disaster Management and Emergency Response |
| US | United States of America |
| USSR | Union of Soviet Socialist Republics |
| WMO | World Meteorological Organization |
| WRC | World Radio Conference |

Appendix 3. Data

Participant observations have been the foundation of the empirical material. In Sweden, I conducted many informative field visits and I was continuously meeting different practitioners.²⁶⁵ The more formal field trips are listed below:

| Organization | Activity, field trip | Location | Time |
|-----------------------------|--|------------------|-------------|
| UN | COPUOS, Technical subcommittee | Vienna | Feb, 2017 |
| UN | COPUOS, Technical subcommittee | Vienna | Feb, 2017 |
| UN | COPUOS | Vienna | June, 2017 |
| UN | COPUOS, Technical subcommittee | Vienna | Feb, 2018 |
| UN | COPUOS, Legal subcommittee | Vienna | March, 2018 |
| UN | COPUOS, Legal subcommittee | Vienna | March, 2018 |
| New Space | "New Space, breaking the barriers" | Luxemburg | Nov, 2018 |
| Spaceport Sweden | Guided tour, visit | Kiruna | Nov, 2018 |
| Institute for Space Physics | Guided tour, visit | Kiruna | Nov, 2018 |
| NATO | NATO workshop | Oslo | Sept, 2019 |
| NATO | NATO Allied Commander Transformation Centre, ACT | Norfolk | Oct, 2019 |
| US AF Space Command | "The Future of Space, 2060" | Colorado Springs | Oct, 2019 |
| ITU | ITU, World Radiocommunication Congress, WRC-19 | Sharm El Sheikh | Nov, 2019 |

²⁶⁵ For example, I attended a Space weather workshop in Uppsala 9-10 Nov 2017. I attended seminars in conjunction with the inauguration of the new Space Technology Laboratory at the Royal Institute of Technology in Stockholm, 2019. In Stockholm I had the opportunity to participate in preparations for visits, for example pre-meetings for the ITU as a delegate. Since I am situated at the Swedish Defence University, I have been a part of, and at the same time an observer of the military suborder.

Elite interviews:

| Name | Interview conducted | Organization | Position | Profession | Nationality |
|------------------------|----------------------------------|------------------------|--|-------------------------------|--------------------|
| Dr. Sandra Magnus | Vienna June 2017 | UN COPUOS | Executive Director, AIAA | Engineer, astronaut | US |
| Dr. Chiaki Mukai | Vienna June 2017 | UN COPUOS | Chair of STSC, COPUOS 2016-2017 | Scientist, astronaut | Japan |
| Mr. Niklas Hedman | Telephone October 2017 | UN COPUOS | Chief of the Policy and Legal Affairs Section, UNOOSA | Legal | Sweden |
| Mr. Didrik Ehrenborg | Stockholm November 2017 | Meinberg, Radio Clocks | Nordic Sales Manager | Engineer, commercial | Sweden |
| Col. John Warden | Stockholm, November 2017 | US AF | Col., Strategist (ret.) | Military | US |
| Mr. Patrik Schwartz | Stockholm August 2019 | Defence University | Commander | Military | Sweden |
| Dr. David Kendall | Vienna January 2018 | UN COPUOS | Chair UN COPUOS, 2016-2017 | Engineer | Canada |
| Dr. Hermann Opgenoorth | Stockholm January 2018 | UN COPUOS | Vice-Chair COSPAR etc. Umeå University | Scientific, astrophysicist | Ger/Swe |
| Mr. Alfredo Anzaldúa | Vienna February 2018 | National Space Society | Diplomat (ret.), Board of Directors, National Space Society (US) | Diplomat | US |
| Mr. Luc St-Pierre | Vienna April 2018 | UN COPUOS | Chief of the Space Application Section, UNOOSA | Engineer | Canada |
| Mr. Alexander Soucek | Vienna April 2018 | ESA | International Section, Legal Division, ESA | Legal | Austria |
| Dr. Veena Rawa | Sharm El Sheikh November 2019 | ITU | Chair WRC 2003, Chair subwg WRC-19 | Engineer, commercial | Canada |
| Mr. Alexandre Vallet | Sharm El Sheikh November 2019 | ITU | Chief, Space Service Department, BR, ITU | Engineer | France |
| Mr. Jorge Ciccorossi | Telephone December 2019 | ITU | Head Satellite Systems Coordination Section, ITU | Engineer | Argentina |
| Dr. Joel Mozer | Peterson AFB October 2019 | US AF | Chief engineer, US Space Command | Engineer, military | US |

| | | | | | |
|--------------------------|----------------------------------|---------------------------|---|-------------------------|--------------|
| Dr. Jack Anthony | Colorado Springs October 2019 | US AF | Space Engineer (ret.) | Engineer, military | US |
| Ms. Ruth Pritchard-Kelly | Telephone December 2019 | OneWeb | Vice President Regulatory Affairs | Legal | UK, US |
| Col. Kate Shave | Telephone December 2019 | UK AF | Wing Commander | Military | UK |
| Dr. Martin France | Telephone December 2019 | US AF Academy | Brig. Gen. (ret.) | Military, engineer | US |
| Dr. James Greer | Telephone December 2019 | The Aerospace Corporation | Chief Scientist (ret.) | Engineer, commercial | US |
| Ms. Kara Cunzeman | Telephone December 2019 | The Aerospace Corporation | Space Futurist | Futurist | US |
| Dr. James Vedda | Telephone December 2019 | The Aerospace Corporation | Senior Policy Analyst | Political scientist | US |
| Dr. Peter Martinez | Telecon May 2020 | UN COPUOS | Chairman LTS wg. UN COPUOS | Astronomer | South Africa |
| Dr. Kai-Uwe Schogl | Telecon May 2020 | IISL | President of International Institute of Space Law | Political scientist | Germany |

Lund Political Studies

1. Ruin, Olof. Kooperativa förbundet 1899-1929. En organisationsstudie. Stockholm: Rabén & Sjögren, 1960.
2. Vallinder, Torbjörn. I kamp för demokratin. Rösträttsrörelsen i Sverige 1886-1900. Stockholm: Natur & Kultur, 1962.
3. Petersson, Hans F. Power and International Order. An Analytic Study of Four Schools of Thought and Their Approaches to the War, the Peace and the Postwar System 1914-1919. Lund: Gleerups, 1964.
4. Westerhult, Bo. Kronofogde, häradsskrivare, länsman. Den svenska fögderiförvaltningen 1810-1917. Lund: Gleerups, 1966.
5. Wieslander, Hans. I nedrustningens tecken. Intressen och aktiviteter kring försvarsfrågan 1918-1925. Lund: Gleerups, 1966.
6. Söderberg, Olof. Motororganisationerna i Sverige. Bakgrund, grupperingar, aktiviteter. Stockholm: Rabén & Sjögren, 1966.
7. Sjöblom, Gunnar. Party Strategies in a Multiparty System. Lund: Studentlitteratur, 1968.
8. Hydén, Göran. TANU Yajenga Nchi. Political Development in Rural Tanzania. Lund: Uniskol, 1968.
9. Lindeberg, Sven-Ola. Nödhjälp och samhällsneutralitet. Svensk arbetslöshetspolitik 1920-1923. Lund: Uniskol, 1968.
10. Westerhult, Bo. Underdåniga påtryckningar. Fögderitjänstemännens intresse-bevakning från 1800-talets början till år 1918. Lund: Gleerups, 1969.
11. Bergquist, Mats. Sverige och EEC. En statsvetenskaplig studie av fyra åsiktsriktningars syn på svensk marknadspolitik 1961-62. Stockholm: Norstedts, 1970.
12. Lundquist, Lennart. Means and Goals of Political Decentralization. Lund: Studentlitteratur, 1972.
13. Bjurulf, Bo. An Analysis of Some Aspects of the Voting Process. Lund: Studentlitteratur, 1972.
14. Stenelo, Lars-Göran. Mediation in International Negotiations. Lund: Studentlitteratur, 1972.
15. Lindquist, Stellan. Linkages between Domestic and Foreign Policy: The Record of Ghana. Lund: Studentlitteratur, 1974.
16. Bjurulf, Bo. A Dynamic Analysis of Scandinavian Roll-Call Behavior. A Test of a Prediction Model of Ten Minority Situations in Three Countries. Lund: Studentlitteratur, 1974.
17. Hermerén, Henrik. Regeringsbildningen i flerpartisystem, Lund: Studentlitteratur, 1975.
18. Johansson, Conny. Studier över Svenska metallindustriarbetarförbundets förhandlingsorganisation vid förbundsförhandlingar – med samordning. Lund: Studentlitteratur, 1975.

19. Peterson, Carl-Gunnar. Ungdom och politik. En studie av Sveriges Socialdemokratiska Ungdomsförbund. Stockholm: Frihets förlag, 1975.
20. Bryder, Tom. Power and Responsibility. Contending Approaches to Industrial Relations and Decision Making in Britain 1963-1971. Lund: Gleerups, 1975.
21. Jönsson, Christer. The Soviet Union and the Test Ban: A Study in Soviet Negotiation Behavior. Lund: Studentlitteratur, 1975.
22. Kronvall, Kai. Politisk masskommunikation i ett flerpartisystem. Sverige – en fallstudie. Lund: Studentlitteratur, 1975.
23. Liljequist, Gunnar. Distribution av kommunal service. Lund: Liber, 1977.
24. Lartey, George W. The Fourth Dimension: the argument against the theory of evolutionary stages of social development. Malmö: Gotab, 1977.
25. Weston, David. Realism, Language and Social Theories. Studies in the Relation of the Epistemology of Science and Politics. Lund, 1978.
26. Hagström, Bo. 1971 års länsförvaltningsreform. En utvärdering. Lund: Studentlitteratur, 1978.
27. Skogmar, Gunnar. Atompolitik. Sambandet mellan militärt och civilt utnyttjande av atomenergi i amerikansk utrikespolitik 1945-1973. Malmö: Stenvalls Förlag, 1979.
28. Sannerstedt, Anders. Fri konkurrens eller politisk styrning? 1963 års trafikpolitiska beslut – debatten om innehåll, tillämpning och effekter. Lund: Studentlitteratur, 1979.
29. Lidén, Anders. Security and Recognition. A Study of Change in Israel's Official Doctrine 1967-1974. Lund: Studentlitteratur, 1979.
30. Magnusson, Håkan. Kommunerna och den regionala planeringen. En analys av länsplaneringen och den fysiska riksplaneringen. Lund: Studentlitteratur, 1980.
31. Stenelo, Lars-Göran. Foreign Policy Predictions. Lund: Studentlitteratur, 1980.
32. Lundell, Bengt. MBL utan avtal. Kommunerna och MBL. Helsingborg, 1981.
33. Norrving, Bengt. Kommunerna och bostadsförsörjningen. En analys av bostadsplaneringen. Lund: Liber, 1981.
34. Linderöth, Sven. Från konkurrens till monopol. En studie av lokal politisk och ekonomisk journalistik. Malmö: Dialog, 1981.
35. Forje, John. The One and Indivisible Cameroon: Political Integration and Socio-Economic Development in a Fragmented Society. Lund, 1981.
36. Adebo, Tarekegn. Ideological Trends in the Political Thinking of the Developing Regions: The Case of Sub Saharan Africa. Lund: Studentlitteratur, 1982.
37. Elgström, Ole. Aktiv utrikespolitik. En jämförelse mellan svensk och dansk parlamentarisk utrikesdebatt 1962-1978. Lund: Studentlitteratur, 1982.
38. Lindkvist, Kent. Program och parti: principprogram och partiideologi inom den kommunistiska rörelsen i Sverige 1917-1972. Lund: Arkiv för studier i arbetarrörelsens historia, 1982.
39. Bergström, Tomas och Lundell, Bengt. Från MBL till MBA. Kommunerna och MBL. Lund: Statsvetenskapliga institutionen, 1982.
40. Hörberg, Thomas. Prediktion, osäkerhet och risk i internationella förhandlingar. En studie av svenskt förhandlingsbeteende vid förhandlingarna med Sovjetunionen 1940-41 om ett handelsavtal. Lund: Studentlitteratur, 1983.
41. Geraedts, Henry. The People's Republic of China: Foreign Economic Relations and Technology Acquisition 1972-1981. Lund: Forskningspolitiska institutet, 1983.

42. Jerneck, Magnus. Kritik som utrikespolitiskt medel. En studie av de amerikanska reaktionerna på den svenska Vietnamkritiken Lund: Dialogos, 1983.
43. Stenelo, Lars-Göran. The International Critic. Lund: Studentlitteratur, 1984.
44. Bergström, Thomas och Lundell, Bengt. Lokalt medbestämmande. Kommunerna och MBL. Lund: Statsvetenskapliga institutionen, 1984.
45. Sjölin, Mats. Kommunalpolitiken i massmediernas spegel. En studie av dagspressen och lokalradions bevakning av fem kommuner. Lund: Dialogos, 1985.
46. Albinsson, Per. Skiftningar i blått. Förändringar inom Moderata Samlingspartiets riksorganisation 1960-1985. Lund: Kommunfakta Förlag, 1986.
47. Jonsson, Rolf. De okända förhandlingarna. Statens förhandlingsråd och regeringens MBL-förhandlingar. Lund: Dialogos, 1986.
48. Polak, Jiri. Dependence Patterns in the Soviet Bloc: The Case of Romania and East Germany. Lund: Studentlitteratur, 1986.
49. Lundell, Bengt. Kommunerna och MBL. Lund: Statsvetenskapliga institutionen, 1986.
50. Rothstein, Bo. Den socialdemokratiska staten. Reformen och förvaltning inom svensk arbetsmarknads- och skolpolitik. Lund: Arkiv, 1986.
51. Pierre, Jon. Partikongresser och regeringspolitik. En studie av den socialdemokratiska partikongressens beslutsfattande och inflytande 1948-1978. Lund: Kommunfakta Förlag, 1986.
52. Schmidt, Stephan. Pionjärer, efterföljare och avvaktare. Innovationer och deras spridning bland svenska primärkommuner. Lund: Kommunfakta Förlag, 1986.
53. Westerlund, Ulf. Superpower Roles. A Comparative Analysis of United States and Soviet Foreign Policy. Lund: Department of Political Science, 1987.
54. Lundquist, Lennart. Implementation Steering. An Actor-Structure Approach. Lund: Studentlitteratur, 1987.
55. Stenelo, Lars-Göran, red. Statsvetenskapens mångfald. Festskrift till Nils Stjernquist. Lund: Lund University Press, 1987.
56. Nilsson, Ann-Sofie. Political Uses of International Law. Lund: Dialogos, 1987.
57. Bergström, Tomas. Konkurrerande eller kompletterande demokrati? Om företagsdemokrati i de svenska kommunerna. Lund: Statsvetenskapliga institutionen, 1988.
58. Lindell, Ulf. Modern Multinational Negotiation: The Consensus Rule and Its Implications in International Conferences. Lund: Statsvetenskapliga institutionen, 1988.
59. Stenelo, Lars-Göran, red. Makten över den decentraliserade skolan. Lund: Studentlitteratur, 1988.
60. Lundquist, Lennart. Byråkratisk etik. Lund: Studentlitteratur, 1988
61. Petersson, Harry, red. Vem styr förändringarna inom sjukvården – politikerna eller de medicinska professionerna? En studie av subspecialiseringen inom ortopedin. Lund: Kommunfakta Förlag, 1989.
62. Jonsson, Rolf. Fackligt inflytande och politisk demokrati. En analys av regeringens MBL-förhandlingar. Lund: Kommunfakta Förlag, 1989.
63. Johannesson, Bengt. Kommunal bostadspolitik. Lund: Kommunfakta Förlag, 1989.
64. Aronson, Torbjörn. Konservatism och demokrati. En rekonstruktion av fem svenska högerledares styrelsedoktriner. Stockholm: Norstedts, 1990.

65. Petersson, Bo. *The Soviet Union and Peacetime Neutrality in Europe. A Study of Soviet Political Language*. Göteborg: MH Publishing, 1990.
66. Lundquist, Lennart. *Förvaltning och demokrati*. Stockholm: Norstedts, 1991.
67. Højelid, Stefan. *Sovjetbilden i nordisk press. Svenska, norska och finländska reaktioner på sovjetiskt agerande*. Lund: Statsvetenskapliga institutionen, 1991.
68. Jansson, Per. *Säkerhetspolitikens språk: Myt och metafor i svensk säkerhetspolitisk diskurs 1919-1939*. Lund: Statsvetenskapliga institutionen, 1991.
69. Johansson, Jörgen. *Offentligt och privat i regionalpolitiken*. Lund: Statsvetenskapliga institutionen, 1991.
70. Lundquist, Lennart. *Förvaltning, stat och samhälle*. Lund: Studentlitteratur, 1992.
71. Håkansson, Anders. *Konsten att vinna ett val. En studie av fram- och tillbakagångar för socialdemokraterna i kommunalvalet 1988*. Lund: Statsvetenskapliga institutionen, 1992.
72. Ternblad, Klas. *Planering i norm och handling. Studier av en epok av landstingsplanering*. Lund: Wi, 1992.
73. Persson, Stefan. *Dödlägen i internationella förhandlingar*. Lund: Statsvetenskapliga institutionen, 1992.
74. Sannerstedt, Anders. *Förhandlingar i riksdagen*. Lund: Lund University Press, 1992.
75. Lundquist, Lennart. *Ämbetsman eller direktör? Förvaltningschefens roll i demokratin*. Stockholm: Norstedts, 1993.
76. Gynnerstedt, Kerstin. *Etik i hemtjänst. En studie av förvaltnings- och professionsetik*. Lund: Studentlitteratur, 1993.
77. Schartau, Mai-Brith. *The Public Sector Middle Manager: The Puppet who Pulls the Strings?* Lund: Wi, 1993.
78. Sjölin, Mats. *Coalition Politics and Parliamentary Power*. Lund: Lund University Press, 1993.
79. Stenelo, Lars-Göran och Norrving, Bengt, red. *Lokal Makt*. Lund: Lund University Press, 1993.
80. Iwanaga, Kazuki. *Images, Decisions and Consequences in Japan's Foreign Policy*. Lund: Lund University Press, 1993.
81. Tita-Ghebdinga, Legala. *African and O.A.U. Diplomacy on Dual Paradigms of Self-Determination 1945-1985*. Lund: Statsvetenskapliga institutionen, 1993.
82. Lundquist, Lennart. *Statsvetenskaplig förvaltningsanalys. Problem, trender och program*. Lund: Studentlitteratur, 1994.
83. Blom, Agneta P. *Kommunalt chefskap – en studie om ansvar, ledarskap och demokrati*. Lund: Dialogos, 1994.
84. Agevall, Lena. *Beslutsfattandets rutinisering*. Lund: Statsvetenskapliga institutionen, 1994.
85. Andersson, Jan A. *Nordiskt samarbete: aktörer, idéer och organisering 1919-1953*. Lund: Statsvetenskapliga institutionen, 1994.
86. Bengtsson, Hans. *Förskolereformen. En studie i implementering av svensk välfärdspolitik 1985-1991*. Lund: Statsvetenskapliga institutionen, 1995.
87. Uhlin, Anders. *Democracy and Diffusion. Transnational Lesson-Drawing among Indonesian Pro-Democracy Actors*. Lund: Statsvetenskapliga institutionen, 1995.
88. Kinnvall, Catarina. *Cultural Diffusion and Political Learning. The Democratization of China*. Lund: Statsvetenskapliga institutionen, 1995.

89. Westlind, Dennis. *The Politics of Popular Identity*. Lund: Lund University Press, 1996.
90. Stubbergaard, Ylva. *Stat, kris och demokrati. Lapporörelsens inflytande i Finland 1929-1932*. Lund: Arkiv, 1996.
91. Sendabo, Teferi. *Foreign Aid and State Sovereignty: The Ethio-Swedish Aid Co-operation*. Lund: Statsvetenskapliga institutionen, 1996.
92. Mattson, Ingvar. *Förhandlingsparlamentarism. En jämförande studie av riksdagen och folketinget*. Lund: Lund University Press, 1996.
93. Larsson, Per. *Regimförhandlingar på miljöområdet. En studie av förhandlingarna om LRTAP-konventionen*. Lund: Statsvetenskapliga institutionen, 1996.
94. Stenelo, Lars-Göran och Jerneck, Magnus, red. *The Bargaining Democracy*. Lund: Lund University Press, 1996.
95. McKnight, Utz Lars. *Political Liberalism and the Politics of Race. Beyond Perfectionism and Culture*. Lund: Lund University Press, 1996.
96. Steiner, Kristian. *Strategies for International Legitimacy*. Lund: Lund University Press, 1996.
97. Lundquist, Lennart. *Fattigvårdsfolket. Ett nätverk i den sociala frågan 1900-1920*. Lund: Lund University Press, 1997.
98. Andersson, Ronny. *Medborgarna, politikerna och sjukvården. En studie av attityder och demokrati*. Lund: Studentlitteratur, 1997.
99. Kronsell, Annica. *Greening the EU: Power practices, resistances and agenda setting*. Lund: Lund University Press, 1997.
100. Thunborg, Annika. *Public and Non-Profit Interaction: U.S. Assistance to Eastern European Media 1989-1995*. Lund: Lund University Press, 1997.
101. Johansson, Karl Magnus. *Transnational Party Alliances: Analysing the Hard-Won Alliance Between Conservatives and Christian Democrats in the European Parliament*. Lund: Lund University Press, 1997.
102. Badom, Ted Gogote. *Foreign Intervention in Internal Wars*. Lund: Statsvetenskapliga institutionen, 1997.
103. Söderholm, Peter. *Global Governance of AIDS: Partnerships with Civil Society*. Lund: Lund University Press, 1997.
104. Lundquist, Lennart. *Demokratis väktare. Ämbetsmännen och vårt offentliga etos*. Lund: Studentlitteratur, 1998.
105. Gustavsson, Jakob. *The Politics of Foreign Policy Change. Explaining the Swedish Reorientation on EC Membership*. Lund: Lund University Press, 1998.
106. Hall, Patrik. *The Social Construction of Nationalism: Sweden as an Example*. Lund: Lund University Press, 1998.
107. Sönne, Maria. *Administrative Reforms and the Quest for Foreign Investment in China – The Case of Shenzhen*. Lund: Lund University Press, 1999.
108. Aggestam, Karin. *Reframing and Resolving Conflict. Israeli-Palestinian Negotiations 1988-1998*. Lund: Lund University Press, 1999.
109. Tallberg, Jonas. *Making States Comply: The European Commission, the European Court of Justice, and the Enforcement of the Internal Market*. Lund: Statsvetenskapliga institutionen, 1999.
110. Hall, Martin. *Constructing Historical Realism: International Relations as Comparative History*. Lund: Statsvetenskapliga institutionen, 1999.

111. Spång, Mikael. *Justice and Society: Problems of Reformist Politics*. Lund: Statsvetenskapliga institutionen, 1999.
112. Svedberg, Erika. *The "Other" Recreated: A Relational Approach to East-West Negotiations*. Lund: Statsvetenskapliga institutionen, 2000.
113. Ericson, Magnus. *A Realist Stable Peace: Power, Threat and the Development of a Shared Norwegian-Swedish Democratic Security Identity 1905-1940*. Lund: Statsvetenskapliga institutionen, 2000.
114. Bengtsson, Rikard. *Trust, Threat, and Stable Peace: Swedish Great Power Perceptions 1905-1939*. Lund: Department of Political Science, 2000.
115. Stoltz, Pauline. *About Being (T)here and Making a Difference? Black Women and the Paradox of Visibility*. Lund: Department of Political Science, 2000.
116. Bäckstrand, Karin. *What Can Nature Withstand? Science, Politics and Discourses in Transboundary Air Pollution Diplomacy*. Lund: Department of Political Science, 2001.
117. Lundquist, Lennart. *Medborgardemokratin och eliterna*. Lund: Studentlitteratur, 2001.
118. Hedin, Astrid. *The Politics of Social Networks: Interpersonal Trust and Institutional Change in Post-Communist East Germany*. Lund: Department of Political Science, 2001.
119. Sundström, Mikael. *Connecting Social Science and Information Technology. Democratic Privacy in the Information Age*. Lund: Department of Political Science, 2001.
120. Jönsson, Christer, Jerneck, Magnus och Stenelo, Lars-Göran, red. *Politik i globaliseringens tid*. Lund: Studentlitteratur, 2001.
121. Gustafsson, Rune. *Syntes och design. Den intellektuelle politikern som konstnär*. Lund: Statsvetenskapliga institutionen, 2001.
122. Danjoux, Olivier. *L'Etat, C'est Pas Moi*. Lund: Department of Political Science, 2002.
123. Jönsson, Kristina. *Translating Foreign Ideas into Domestic Practices. Pharmaceutical Policies in Laos and Vietnam*. Lund: Department of Political Science, 2002.
124. Bengtsson, Marie. *Stat och kommun i makt(o)balans. En studie av flyktmottagandet*. Lund: Statsvetenskapliga institutionen, 2002.
125. Björkdahl, Annika. *From Idea to Norm. Promoting Conflict Prevention*. Lund: Department of Political Science, 2002.
126. Badersten, Björn. *Medborgardygd. Den europeiska staden och det offentliga rummets etos*. Stockholm: Bokförlaget natur och kultur, 2002.
127. Boussard, Caroline. *Crafting Democracy. Civil Society in Post-Transition Honduras*. Lund: Department of Political Science, 2003.
128. Janson, Per. *"Den huvudlösa idén": Medborgarlön, välfärdspolitik och en blockerad debatt*. Lund: Arkiv, 2003.
129. Santesson-Wilson, Peter. *Studier i symbolpolitik*. Lund: Department of Political Science, 2003.
130. Johnson, Björn. *Policyspridning som översättning*. Lund: Statsvetenskapliga institutionen och Arbetslivsinstitutet, 2003.
131. Sundström, Mikael, Rosén, Malena och Hall, Martin. *En guide till mellanstatliga organisationer*. Lund: Studentlitteratur, 2004.

132. Sjövik, Kristian. Demokrati bortom nationalstaten? Lund: Department of Political Science, 2004.
133. Hellström, Lennart. Brandts politiska tänkande. En studie i kontinuiteten i Brandts politiska tänkande. Lund: Statsvetenskapliga institutionen, 2004.
134. Lindberg, Staffan. The Power of Elections – Democratic Participation, Competition and Legitimacy in Africa. Lund: Statsvetenskapliga institutionen, 2004.
135. Bexell, Magdalena. Exploring Responsibility. Public and Private in Human Rights Protection. Lund: Department of Political Science, 2005.
136. Jerre, Ulrika. Conflicting Logics? Implementing Capacity and EU Adaptation in a Postcommunist Context. Lund: Department of Political Science, 2005.
137. Rindfjäll, Teresia. Democracy Beyond the Ballot Box. Citizen Participation and Social Rights in Post-Transition Chile. Lund: Department of Political Science, 2005.
138. Fernandez, Christian. Medborgarskap efter nationalstaten? Ett konstruktivt förslag. Lund: Department of Political Science, 2005.
139. Nilsson, Tom. Till vilken nytta? Om det lokala politiska deltagandets karaktär, komplexitet och konsekvenser. Lund: Department of Political Science, 2005.
140. Stripple, Johannes. Climate Change after the International: Rethinking Security, Territory and Authority. Lund: Department of Political Science, 2005.
141. Erlingsson, Gissur. Varför bildas nya partier? Om kollektivt handlande och partientreprenörer. Lund: Department of Political Science, 2005.
142. Strömvik, Maria. To Act as a Union. Explaining the Development of the EU's Collective Foreign Policy. Lund: Department of Political Science, 2005.
143. Niklasson, Tomas. Regime Stability and Foreign Policy Change: Interaction between Domestic and Foreign Policy in Hungary 1956-1994. Lund: Department of Political Science, 2006.
144. Hellström, Anders. Bringing Europe Down to Earth. Lund: Department of Political Science, 2006.
145. Melander, Fredrik. Lokal Forskningspolitik: Institutionell dynamik och organisatorisk omvandling vid Lunds Universitet 1980-2005. Lund: Statsvetenskapliga institutionen, 2006.
146. Hegeland, Hans. Nationell EU-parlamentarism. Riksdagens arbete med EU-frågorna. Stockholm: Santérus Academic Press, 2006.
147. Lundquist, Lennart. Att hantera humanvetenskapens tudelning. Malmö: Liber, 2006.
148. Ahrnens, Anette. A Quest for Legitimacy. Debating UN Security Council Rules on Terrorism and Non-proliferation. Lund: Statsvetenskapliga institutionen, 2007.
149. Alasfoor, Reyadh. The Gulf Cooperation Council: Achievements and Challenges. A Political Analysis to the Study of Regional Integration of the GCC States. Lund: Department of Political Science, 2007.
150. Hedlund, Maria. Demokratiska genvägar: Expertinflytande i den svenska lagstiftningsprocessen om medicinsk genteknik. Lund: Statsvetenskapliga institutionen, 2007.
151. Bolin, Anna. The military profession in change – the case of Sweden. Lund: Department of Political Science, 2008.
152. Broman, Matilda. Taking Advantage of Institutional Possibilities and Network Opportunities. Analyzing Swedish Strategic Action in EU Negotiations. Lund: Department of Political Science, 2008.

153. Kalm, Sara. *Governing Global Migration*. Lund: Department of Political Science, 2008.
154. Rosén Sundström, Malena. *Förankring av socialdemokratisk EU-politik. Med rum för demokratisk debatt?* Lund: Statsvetenskapliga institutionen, 2008.
155. Dannestam, Tove. *Stadspolitik i Malmö. Politikens meningsskapande och materialitet*. Lund: Statsvetenskapliga institutionen, 2009.
156. Knaggård, Åsa. *Vetenskaplig osäkerhet i policyprocessen. En studie av svensk klimatpolitik*. Lund: Statsvetenskapliga institutionen, 2009.
157. Uçarlar, Nesrin. *Between Majority Power and Minority Resistance: Kurdish Linguistic Rights in Turkey*. Lund: Statsvetenskapliga institutionen, 2009.
158. Conrad, Maximilian. *Between Communication and Community. EU Constitution-Making, a European Public Sphere and the (Un-)likelihood of Transnational Political Debate*. Lund: Statsvetenskapliga institutionen, 2009.
159. Scuzzarello, Sarah. *Caring Multiculturalism. Local Immigrant Policies and Narratives of Integration in Malmö, Birmingham and Bologna*. Lund: Statsvetenskapliga institutionen, 2010.
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