

# studies in

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## The Production of Space through Land Reclamation

by Niclas Kern

### Abstract

This dissertation argues that land reclamation has become geopolitical. Land reclamation has added a new dimension to international relations and this dimension cannot be ignored, for it touches upon our fundamental understanding of state territory and spatial practice. Drawing on Stuart Elden and Henri Lefebvre, territory is understood as a set of political technologies that produce different dimensions of our modern conception of territorial space. Land reclamation operates as such a territorial technology and alters our understanding of maritime space in contemporary geopolitics and international law. Two case studies will explicate this development. The first study will investigate coastal reclamation in Singapore and its effects for the city-state's international relations. The second study will analyse Chinese reclamation works in the disputed region of the South China Sea. Both investigations will approach these activities with a focus on the United Nations Convention on the Law of the Sea as the international juridical space of territory. In conclusion, this dissertation claims that the material and conceptual production of space triggered by advancements in land reclamation technology are reshaping territorial state practice and the corresponding legal framework of maritime space.

*Traditional International Law did not anticipate the creation of an island by means of engineering but confined itself to the title derived from effective occupation of uninhabited land masses. The fate of such activities will be determined by two factors: the number of sites available for such constructions and the objectives. Coastal States will be provoked to reaction only if they consider national interest to be threatened.* - Elizabeth Young, 1971

Land reclamation, the extraction of physical land from the seas, is often seen as an expression of status and prestige for rich nations. High-profile reclamation projects like the artificial islands of 'The World' or 'The Palm' in Dubai have captured public imagination and awe for today's technological capabilities. The proliferation and use of land reclamation, however, signals a shift beyond mere progress in humanity's ability to shape its physical environment. What does it mean for our understanding of international politics, if states can expand their physical territory with technological tools? What do these developments say about the relationships between state, territory, land and sea? The discipline of International Relations has thus far paid little to no attention to these questions. The salience and importance of this issue, however, can be expected to increase in the near future. In 1971, Elizabeth Young already suspected that land reclamation might one day

became a thorn in the relations of states and international law. International law did not anticipate the creation of artificial land, and nearly 50 years later, our legal regimes have yet to come to terms with these capabilities. As Young predicted, a real engagement with the implications of land reclamation has only begun as certain states considered their national interests threatened by it. The flipside of this observation is that other states started to see the potential of land reclamation to advance their national and foreign policy interests. These conflicts are now taking shape most clearly in South East Asia. The technological progress in land reclamation has enabled states to engage in the construction of artificial land on a scale that has become significant for international relations. This dissertation will thus attempt to analyse the use of land reclamation from a legal and geopolitical perspective.

Part I will provide a theoretical framework for our investigation. The physical growth of states effectively translates into an expansion of territory. But what exactly is territory today? Drawing on Stuart Elden and Henri Lefebvre, I understand territory as something that is no longer fixed and static, but fluid and dynamic. Territory is a social construct and not only concerned with the concrete physical space occupied by the state, but instead functions as a set of political technologies that enable the states to treat physical space as their territory. Territorial state practice is a production of social space. Following Lefebvre, space is not only produced materially, but socially. This social production of space has profound effects on our spatial practice. The way we materially produce space through land reclamation and then conceptualise that space, particularly in international law, will affect our territorial practice. Part 1 will end by introducing dredging technology, the fundamental operation at the heart of contemporary land reclamation.

Parts II and III will then consider two case studies of land reclamation. Part II will look at Singapore, a state that is engaged in an extraordinary project of increasing its physical size. The city-state appears to be motivated primarily by economic considerations, as the main benefit of newly reclaimed land is its potential for continued economic growth. The state's never-ending need for space thus continuously pushes its physical borders seawards – much to the anxiety of its neighbours. Land reclamation has thereby created new political tensions in the region. To understand these geopolitical effects, I will discuss the United Nations Convention on the Laws of the Sea (UNCLOS), the legal framework that governs maritime state conduct. A crucial aspect of UNCLOS regarding land reclamation is the role of territorial baselines that determine a littoral state's maritime zones and international boundary delimitation. Singapore's expanding baselines have thus led neighbouring states to worry about a cartographic zero-sum game. Another important feature of Singapore's reclamation works is its immense need for sand as base material for its expansion. This demand too, has negatively affected neighbouring countries where sand is sourced.

Part III will move on to consider the Chinese employment of land reclamation in the sovereignty dispute over land features in the South China Sea. China has occupied multiple reefs and islets in the disputed region and has aggressively expanded these features for military-strategic objectives. China may thus be the first state to use land reclamation as a central tool in its foreign policy. A major part of the analysis will return to UNCLOS to understand Chinese actions in the context of international law. Of particular interest is here the South China Sea arbitration between China and the Philippines which came to an end in 2016. The dispute offers an interesting perspective on the production of maritime space in international law, a production that is contested due to several weaknesses of UNCLOS and the Tribunal's final award. Land reclamation interacts with the framework of the Law of the Sea in two ways. Chinese reclamation works seem to reject the authority of UNCLOS, but simultaneously are shaped by it. We will see, how social space can produce back onto us and affect state spatial practice.

Finally, part IV will return to the initial theoretical framework and engage in a further

analysis of the case studies. I will argue that we can discern multiple productions of space triggered by land reclamation projects. Most obviously, a material production of space is taking place, expanding the physical space of states. This newly appropriated territory may be approached and produced in economic terms, as in Singapore, or in military-strategic terms, as in China. Second, land reclamation has led to a conceptual reproduction of 'land' and 'sea' space. Reclaimed land links to a deeper problem in the Law of the Sea that arises from the materiality of water. The fluid and smooth spaces of the oceans resist the conventional bordering practices of international law. Reclamation technology now adds to land some of that material dynamic. The traditional elemental distinction between land and sea in international law is thereby challenged. Finally, these processes are now shaping a contested social reproduction of UNCLOS. The indeterminacy of provisions in UNCLOS enable a variety of legal interpretations which are in turn social productions of space. This complexity is exacerbated by land reclamation and maritime space is now subject to different competing reproductions.

In sum, this dissertation argues that land reclamation has become geopolitical. Land reclamation has added a new dimension to international relations and this dimension cannot be ignored, for it touches upon our fundamental understanding of state spatial practice.

## **I The Production of Territory through Land Reclamation**

The concept of territory has long been viewed as something fixed and static. John Agnew has called this assumption 'the territorial trap' and identified three main factors in intellectual discourse responsible for a simplistic view of territory. (1) Positivist approaches to international relations have an inherent preference for abstract and 'closed systems'. The state is viewed as an 'ideal type' that is 'ahistorical and aspatial' and state territories 'have been reified as set or fixed units of sovereign space'. (2) The concept of state has been inflated with the concept of nation and functions primarily as a 'container of society'. (3) In the intellectual division of labour a sharp distinction developed between the domestic and the international, requiring a 'uniform conception of the state' (Agnew, 1994: 58-59).

To escape this reification of state territory, Stuart Elden proposes to conceptualise territory as 'a bundle of political technologies' (Elden, 2013: 322). From this perspective, states use different tools that enable them to treat space as state territory. Territory then becomes 'a political question in the broad sense', comprising 'economic, strategic, legal and technical' dimensions. Furthermore, since territory is a social construct, we must approach it in its 'historical, geographical and conceptual specificity' (Elden, 2010: 811). What are the different dimensions of territory, or in other words, the different political technologies in operation of territory? The first dimension is the 'political-economic' and closely tied to the notion of "land": 'Land is a relation of property, a finite resource that is distributed, allocated and owned, a political economic question. Land is a resource over which there is competition.' The political-economic is an important part of any analysis of territory, but it should not be overstated for it is only one social construct imposed upon territorial space. For example, before land can be 'distributed, allocated and owned' we must have some sort of spatial understanding where a specific piece of land actually is.

This leads us to the technical-strategic dimension of territory. Central to the technical are processes of measuring and calculating space, most importantly cartography. The development of cartography enabled the mapping of space through a calculative grasp of the material world. This is a precondition for modern bordering practices, as a border cannot be drawn without some form of cartographic understanding of the space in question

(Elden, 2013: 326). Furthermore, we must note the inherent violence in all acts of bordering. Spatial differentiation is a process of inclusion and exclusion, and the maintenance of territory presupposes a commitment to its defence (Lefebvre, 2005: 112, 280). Here we find the connection between the technical and the strategic. Developments in the calculative sciences have been instrumental in the creation of the modern military and the concept of 'terrain' (Elden, 2010: 809). From this perspective, space is approached as a 'field, a site of work or battle' and terrain - the materiality of territory - becomes a crucial cornerstone in strategic planning.

Processes in the technical-strategic realm of political technologies are accompanied by developments in a political-juridical dimension. It is here that the sovereignty-territory relationship is articulated to determine political rule over space. Milano accordingly defines territory as 'the spatial sphere within which a state's sovereignty is normally manifested' (Milano, 2006: 66-67). In a broader sense we can say that political-juridical techniques render the concept of space as a political category. This enables states to engage in a legal codification of space to internally and externally legitimise their territory. Ultimately, the state-claimed space becomes something that is 'owned, distributed, mapped, calculated, bordered and controlled' (Elden, 2010: 810). Territory thus functions as an 'extension of state power', utilizing tools such as law, economics, administration and statistics (Elden, 2013: 322, 327).

The strategic notion of 'terrain' entails a further dimension of territory - the geophysical-geopolitical. Terrain in this sense is the materiality of territory, the geophysical landscape that is its primary object (Elden, 2013: 208). 'Terrain is crucial because it combines materiality and strategy - the physical and human dimensions of geography, and the way they complicate political and legal questions' (Elden, 2013: 217). In other words, the geophysical and geopolitical meet through terrain. An interesting example of this process can be found in the realm of international law, where sometimes geophysical features are the explicit basis for jurisdictional and territorial claims. The materiality of space thereby conditions its territorialisation and has led for instance to the different legal regimes of land and sea (Elden, 2013: 204, 211). All these dimensions of territory are interrelated and often mutually constitutive. Furthermore, it must be noted that this brief list is not exhaustive. Since Territory must be approached in its specificity, the makeup of territory will vary over time and space. As a social construct, it is 'produced, mutable and fluid' (Elden, 2010: 811). The conceptualisation of territory as political technology thus serves to keep the concept open as it depends on historical and geographical contexts (Elden, 2013: 323).

The proposition that territory is such a set of political technologies can be better understood with the work on space by Henri Lefebvre. Lefebvre argued that space cannot be analysed in its material production and manifestation only. Instead, it is crucial to take account of our mental and social production of space. In other words, understandings and representations of space lead to continuous production and reproduction of space (Lefebvre, 2005). Lefebvre differentiates spaces for his analysis of space, two of which are particularly relevant for this discussion. The first space is the 'perceived space', the materially and empirically observable space. It thus includes the geophysical concept of terrain as introduced above, as well as the built environment. The second space is the 'conceived space' or 'social space' which dominates our thinking about space. This space is produced in our conceptualisations and verbal discourses, and these activities take place in and through our social environment (Lefebvre, 2005: 36-46).

Even though social space is an abstraction from the first space, it is nevertheless real in a practical sense. It is a concrete abstraction like money that has become so ingrained within our lives that it has assumed a status of seemingly unquestionable factual reality

(Lefebvre, 2005: 15, 86, 100). In consequence, the second space is not only produced by us, but produces back onto us: 'if space is a product, our knowledge of it must be expected to reproduce and expound the process of production' (Lefebvre, 2005: 36). Everything around us has therefore a certain "spatiality", which may be defined as the 'political dimensions of space, qua produced space' (Mendieta, 2006: 209). The crucial point here is that social space is not a given or fixed, but is produced and continually reproduced. In a similar vein, Elden thus claims that territory is 'a process not an outcome' (Elden, 2017: 206). Since social space is produced by our discourse over space, its production is dominated by elites of spatial practice such as planners, architects, and scientists. By extension, this conceptual world of representations of space is therefore under the strong influence or control of ideology and authority. According to Lefebvre, the main producer of social space is thus the state. The state creates 'an (artificial) edifice of hierarchically ordered institutions, of laws and conventions' and 'this social architecture, this political monumentality, is the state itself'. The state is 'born in and with space' (Lefebvre, 2009: 224). This is the constitutive relationship between space and the state. 'The national territory' is 'a production of space', per Lefebvre (Lefebvre, 2009: 224). And this production of space is a reproduction of the state itself.

Let us now return to the concept of territory as a set of political technologies. How do these technologies combine to produce the political space of territory, or in Lefebvre's words, social (state) space? Technical-strategic instruments enable the state to "understand" the space it claims for itself. Cartography creates mathematically and geometrical Euclidian space that enables the precise mapping and division of territory (Lefebvre, 2005: 1). As Jacques Revel states: 'knowledge of the territory is a production of the territory itself' (Revel, 1991: 134). Knowledge of space is an important precondition for any further social abstractions. Baudrillard similarly argues that 'territory no longer precedes the map [...]. Henceforth, it is the map that precedes the territory' (Baudrillard, 1988). This observation emphasizes the continuous social reproduction of space: The map – an abstract representation of the physical first space is the basis for a further removed social representation of that space in the concept of territory. Territory becomes 'hyper-real', an abstraction of an abstraction, a social imagination based upon imagination. This process contributes to the conventional reification of state territory as something fixed, material and static.

We arrive then in the political-juridical dimension, which develops legal instruments to legitimise and stabilise this production. Territory is reproduced in the realm of law and transformed into a political category. Administrative tools then aim to maintain control of that territory. At the same time, political-economic considerations come into play to influence and circumscribe the social production of space. For example, capitalist ideology may determine how space is to be understood, distributed and used. The geopolitical-geophysical dimension seems to exist only as a reminder of the material/natural space from which the political state space – territory – is born. It continues to influence social abstractions of space, although on first sight only through the military-strategic focus on terrain to defend state territory. With the increasing state use of land reclamation, however, the geophysical-geopolitical dimension forces itself to the forefront of territorial questions. The geophysical has become increasingly dynamic through human interference and now provides states with a territorial technology to appropriate new spaces. To appreciate these new geomorphological capabilities, the next section will summarise the recent technological progress of land reclamation and its corresponding dredging technology.

Land reclamation is of course not a new practice. Coastal land reclamation has, for instance, a long history in Britain. The Romans are believed to have started the deliberate reclamation of the Fens, Romney Marsh and the Somerset Levels for farming (Goudie and Viles, 2016: 35). The construction of land from sea space is also well known in the context of the Netherlands. The use of land reclamation for islands is not an entirely new

phenomenon either. The Roman historian Pliny the Elder wrote of the Friesian mounds in the North Sea, and of Leukas, a peninsula turned into an island by the Corinthians in the 7th century BC (Fischer, 2012: 36-37). Technological advancements since the 1990s, however, have fundamentally transformed the possibilities and uses of land reclamation. Of special importance to contemporary land reclamation is dredging, the process of removing material from water environments, especially sand. Historically, dredging technology served mostly the creation and maintenance of waterways and channels, but contemporary dredging operations focus on the mining of material for land reclamation. The primary material needed is sand. However, not any sand is suitable to reclamation works. Desert sand, for example, is too fine and round to bind effectively. Instead, marine and river sands are primarily the material needed today (United Nations Environment Programme, 2014: 3).

Marine dredging technology has seen remarkable improvements in the past decades. The main machinery in use are dredging ships, most importantly Trailing Suction Hopper Dredgers (TSHD) and Cutter Suction Dredgers (CSD). TSHDs are mobile and suck up large quantities of loose and soft soils (mainly sand, gravel, silt, clay) from the marine bed and either store the material within for transport or directly discharge it via pipelines or cannons to a nearby reclamation site. In the 1990s, TSHDs reached a crucial tipping point in economic feasibility. Enlarged hopper (storage) capacities drastically decreased the cost to transport mined material to its target destination (Dolmans, 2007: 1-3). At the beginning of the 1990s, the largest TSHD could store around 12,000m<sup>3</sup> of material within its hull. 1994 then saw the completion of a new dredging vessel with a 40% increase in hopper capacity to 17,000m<sup>3</sup>. In 2000, capacity reached 24,000m<sup>3</sup>, and by 2009, the largest TSHDs could boast a hopper capacity of 46,000m<sup>3</sup> (Kolman, 2015: 63-64). Recent years then saw increased industry interest in Cutter Suction Dredgers. CSD vessels must operate stationary but are equipped with a rotating cutter head for cutting and fragmenting harder soils. CSDs have no storage capabilities and instead discharge the material directly via pipelines to a nearby project site or onto split hopper barges for further transport. Since 2005, these CSDs 'have become larger and heavier' and 'the areas of automation and instrumentation showed enormous advances, making dredgers much more suitable for the rough conditions on soil types while minimising over-depths – unpaid cubic metres – considerably' (Verhoefen, 2018: 5). These developments make today's large land reclamation projects possible and growing international interest continues to drive further investment. 2019 will see the completion of "Spartacus", the largest CSD to date with length of 165m and an engine power of 44,180kW (Dredging Today, 2017). Spartacus will increase the industry limit of mining depth for CSDs from 35m to 45m, while requiring only one person for its dredging operation (DEME Group).

To get an idea of the amount of material that can be moved by CSDs, consider the Chinese state-owned vessel "Tianjing" or "Sky Whale", currently the third largest CSD in operation. It has been estimated that Tianjing dredged and discharged 10 million cubic meters of material for Chinese reclamation projects in the Spratlys in only 193 days. This is the equivalent of three times the concrete volume of the Hoover Dam (Dolven et al, 2015: 17). Developments in dredging technology thus had and have an immense impact on land reclamation practice. An estimated 8 million square meters of land have been reclaimed for artificial islands and island expansion in 2006-2016, and this sudden surge has been credited to 'the availability of powerful means to dredge, drain, and dump sediments' (Goudie and Viles, 2016). The technology has thereby become a major tool for Chinese policy in the disputed South China Sea. As one commentator noted, 'in this reclamation contest involving national will and capacity [...] the advanced technology and superior products of the industrial departments will undoubtedly be crucial' (Dolven et al, 2015: 18). If technologies produce the political space that is territory, technological changes will

accordingly be reflected in our social production of space in general, and of territory in particular. Take for instance Carl Schmitt's retelling of the introduction of submarine warfare. The submarine challenged the dominant understanding of maritime space by operating in the depths of the sea. The submarine dimension of sea space was suddenly an issue of military concern, creating a new "theatre of war" and transforming military state practice. Political-juridical reproductions quickly followed. The United Kingdom initially tried to use its global authority as the traditional maritime power to internationally outlaw submarine warfare (Schmitt, 2004: 50). As we know now, this attempted reproduction of marine space was ultimately unsuccessful. The emergence of the submarine thus represents a successful technological challenge to the dominant social space of the sea and transformed its continued existence. Today, we can see a similar process by means of land reclamation and the underlying dredging technology. As Schmitt notes, 'technical-industrial progress will create only a new intensity of appropriations, distributions, and productions' of space (Schmitt, 2004: 57).

The crucial change taking place is the revolutionary ability of states to materially create territory on a scale that becomes significant for international relations and challenges the dominant social production of maritime space in international law. As we shall see, the international community is still struggling to reconcile these developments with its existing legal understanding of territory. Land reclamation technology is now able to transform those physical features that matter in the fixed territorial understanding of international law. The social space of reclaimed land is therefore uncertain and contested. The next sections will discuss two case studies to understand and analyse this development. The first case study will look at the coastal reclamation practice of Singapore, where land reclamation is driven primarily by political-economic considerations of territory that nevertheless start to have profound effects on the state's international relations. The second case study will move on to Chinese reclamation activities in the South China Sea. China's actions are in comparison to Singapore's not only driven by economic considerations, but strategic-territorial ones. Land reclamation is used to appropriate and produce state territory. These case studies will attempt to create a better understanding of how states use, perceive and judge land reclamation and explicate its relationship to territory in reference to the international legal framework of UNCLOS.

## **II Land Reclamation in Singapore**

The New York Times Magazine recently characterised land as 'Singapore's most cherished resource and its dearest ambition' (Subramanian, 2017). The never-ending need for space for the small island state has led to an unprecedented growth of the state through land reclamation. In the 1960s, Singapore's land mass comprised about 580km<sup>2</sup>. By 2007, its physical territory grew to 700km<sup>2</sup>, and by 2007 to 720km<sup>2</sup> [see also Figure 1] (Jun Sen, 2018). This rapid expansion is set to continue and expected to achieve an area of 780km<sup>2</sup> by 2030 (Subramanian, 2017). The demand of resources for this project is immense. In 2012, it was estimated that Singapore's reclamation works required 1.27 billion cubic metres of material to achieve its size (Hassler, 2014: 18).

On the one hand, Singapore needs space to accommodate its growing population. The Ministry of National Development declared in 2013 that an additional 5,600 hectares of space is needed to support the population by 2030 (Jamieson, 2017: 398). On the other, Singapore needs space to continue its strong economic growth. The city-state's GDP rose



from \$192bn in 2008, to \$236bn in 2010, and \$324bn in 2017 (Trading Economics, 2018). The economic value added to Singapore through land reclamation is hard to account for, but the profit of reclaimed land appears to be considerable. For example, it has been estimated that coastal reclamation works in China achieved a profit of 10 to 100 times of the original investment, and the 1000 acres STP2 reclamation project on Penang Island in Malaysia is expected to add \$4.4bn in economic value upon its completion in 2033 (Shepard, 2018). In Singapore, most high value economic areas are now located on reclaimed land. In 2012, it was estimated that the manufacturing and petrochemical industries around Jurong accounted for 27% of Singapore's GDP. The Port of Singapore adds another 7% and is expected to double that contribution with the completion of its port extensions on Tuas. In the entertainment district of Marina Bay, the Sands Casino and World Sentosa Resort alone are responsible for another 1.5-2% (Topalovic, 2014: 55). Property development through land reclamation has thus become a significant investment opportunity. In 2012, the overall cost of reclaimed land averaged at about \$500 per square metre, including measures for shore protection, soil improvements and site preparation. In comparison, the average price per square metre in Singapore in a high demand area (such as waterfront properties) can reach today \$13,000 (Kolman, 2012). Land reclamation has thus become 'the central paradigm of Singapore's urban development today' (Hassler and Topalovic, 2014: 11).



**FIGURE 1**

Information sourced from: Google Maps 2018, MR-Architecture/Charmaine, Chua. "Sunny Island Set in the Sea: Singapore's Land Reclamation as a Colonial Project" *The Funambulist*, (17) 2018, pp. 20-25

The physical expansion of the island has been subsumed under Singapore's guiding principle of pragmatism, a legacy of Lee Kuan Yew who transformed the state from an insignificant island to a major economic power (Jamieson, 2017: 398). This economic transformation has provided the city-state with an immense capability to pursue its physical

transformation. Singapore's two sovereign wealth funds are estimated to control just under a trillion US dollars, and 90% of all property is state-owned (Subramanian, 2017). The 1966 Land Acquisition Act provided the state with the legal means to easily deal with any privately-owned property that may stand in the way of further expansion by allowing the compulsory sale of land without additional compensation for seafront property (Jamieson, 2017: 406). We can see here developments in the juridical dimension to respond to a changing material technology. Singapore used its law to enable and legitimize a maximisation of reclamation capabilities for its territorial growth. To ensure the smooth progress of land reclamation, Singapore furthermore established two strategic sand reserves in Bednek and Pungol Timor Island, again emphasizing the importance of sand for the state.

Even though Singapore's objectives for its territorial expansion are primarily economic, the scale of its activities have led to geopolitical consequences. The islands expanding borders are increasingly seen as a territorial threat by neighbouring countries. To explain this threat, we must first look at Singapore's reclamation works from a perspective of the United Nations Convention on the Law of the Sea (UNCLOS). The United Nations Convention on the Law of the Sea was established in 1982 and is the resulting treaty of the Third International Conference on the Law of the Sea 1973-1982 (UNCLOS III). UNCLOS primarily determines international conduct on the seas and the maritime zones of littoral states. From the theoretical perspective laid out in part I, we can characterise UNCLOS as social production of maritime space by means of international law. It thus provides an important juridical framework for territorial state practice. As will be shown, land reclamation has led to complications and problems in the application of UNCLOS, not least because the idea of "land reclamation" does not appear in the sizeable treaty at all. Significant interpretative work is thus needed to apply UNCLOS to modern reclamation works, and this interpretative work is unsurprisingly contested. To understand the effects of Singapore's physical expansion on its international relations, we must begin by considering the role of "territorial baselines".

Baselines are usually the low water line of a state's coast and determine the extent of maritime zones in which littoral states can claim certain sovereign rights over their surrounding waters. The first zone is the territorial sea, extending up to 12 nautical miles from the state's baseline (UNCLOS, Article 2(3)). Article 2(2) of UNCLOS grants a state sovereign control over water, seabed, subsoil and airspace in the territorial sea. Sovereignty is here 'absolute and uncontested, just like the sovereignty on land' (Ghasemi et al, 2018: 132). The territorial sea is followed by the contiguous zone which extends up to 24 nautical miles from a state's baseline. This contiguous zone restricts a state's authority to customs, fiscal and sanitary laws and regulations (UNCLOS, Article 33(1-2)). Finally, states can claim an exclusive economic zone (EEZ) with sovereign rights over exploring, exploiting, managing and conserving natural resources (living and non-living) of the waters, seabed and subsoil (UNCLOS, Article 56(2)). The EEZ can stretch up to 200 nautical miles from the baseline, but can be extended via continental shelf provisions (UNCLOS, Article 57). The continental shelf is the natural prolongation of a state's land territory to the outer edge of the continental margin, limited to a distance of 350 nautical miles from the territorial sea baseline (UNCLOS, Article 76). The EEZ and continental shelf provisions of UNCLOS thus exemplify a political-economic approach to territory that emphasizes the allocation, distribution and control of resources in space.

Given the great access to maritime resources granted by these maritime zones, the determination of baselines is crucial to state interests. Actions that move the legal coastline seaward aim 'to increase the total area of water over which the coastal state possesses the most comprehensive authority and to decrease the total area within which coastal and non-coastal states share authority and use' (McDougal et al, 1987: 316). It has thus been

argued, that 'spatially excessive maritime claims begin with the baseline' (Lathrop, 2015: 72). Singapore's massive land reclamation efforts are therefore of great interest to our understanding of the relationship between land reclamation and territory. *Prima facie*, it would seem that the continuous growth of the Singaporean island does not just swallow up its own maritime territory but functions as a true expansion of territory. Although existing state practice on this issue is limited, Carleton contends that 'state practice would indicate that provided the reclaimed land does not detrimentally affect the neighbouring foreign coast, it is accepted as a State's coastline' (Carleton, 2011: 53). For example, the land reclamation for the Hook of Holland moved the Netherlands' territorial baseline 5.5 nautical miles outward with no objection from the international community. Singapore claims only three nautical miles of territorial sea at this time, and it is difficult to establish whether it uses its reclaimed baselines for that purpose. It is assumed that they do (Carleton, 2011: 52-53).

However, we must distinguish the unilateral determination of maritime zonal limits from the bilateral process of delimiting the maritime boundaries of adjacent or opposite littoral states. Unless a bilateral agreement exists, international law presumes an equidistance line, the median line between opposing territorial baselines (UNCLOS, Article 74(1)). If such a boundary is contested and not bilaterally delimited, as is the case between Singapore and Indonesia, reclaimed land might not be accepted as a legitimate basis for an international boundary. Singapore may therefore 'lawfully measure the breadth of its zones from the low-water line of reclaimed land, but Indonesia need not (and did not) accept that version of Singapore's baseline for the purpose of delimitation' (Lathrop, 2015: 72). Nevertheless, it is possible that reclaimed land could legally affect processes of boundary delimitation, as other factors than equidistance may be judged relevant. At this time, no authoritative legal precedent exists (Carleton, 2011: 61, 64). The delimitation case between Singapore and Malaysia in 2003 could have potentially provided such a precedent but was settled out of court. 'Thus, no ruling was made regarding the effect Singapore's land reclamation works may have had on the pending delimitation.' (Carleton, 2011: 55). The possibility that Singapore's land reclamation might affect international boundaries has caused anxiety for its neighbour Indonesia. Indonesia's former intelligence chief, General Abdullah Mahmud Hendropriyono stated in 2010 that the issue 'could theoretically lead to a cartographic zero-sum game in which Singapore's gain could be at Indonesia's territorial loss' (Parry, 2010). Singapore has repeatedly maintained that this will not be the case (Ministry of Foreign Affairs Singapore, 2007), but observers note that land reclamation could be the only 'major issue' in future delimitation negotiations between the two countries (Beckman and Schofield, 2009: 21). In response to these concerns and various environmental problems associated with dredging, Indonesia declared a ban on sea sand exports to Singapore in 2003. This was a significant threat for Singaporean plans to further expand the island, and the Singaporean government reacted by releasing its national sand reserve to the market, as well as bearing 75% of the price increase of sand for public projects (History SG, 2007). A response that emphasizes the importance of land reclamation for the city-state.

The tensions between Singapore and Indonesia because of a potential 'cartographic zero-sum game' in maritime boundary delimitation finds another expression in a much more material way. Before the Indonesian export ban in 2003, an estimated 250.000 – 300.000 tons of sand a month were mined for Singaporean land reclamation projects from the Indonesian Riau Islands. This led to significant erosion processes due to the mining of sand directly from the coast, or indirectly through near-shore dredging (United Nations Environment Programme, 2014: 5). As a result, multiple islands disappeared. The Indonesian Minister of Maritime Affairs and Fisheries accordingly cautioned that this disappearance of islands could also affect the international boundary to Singapore's

advantage (Guerin, 2003). Singapore's reclamation efforts could move the international median line in its favour by causing the retreat of Indonesia's territorial baselines due to a material loss of material territory. The term 'reclaimed land' is thus very misleading. The Oxford Dictionary defines 'reclaimed' in this context as a process of making 'wasteland or land formerly under water [...] suitable for cultivation' (Oxford Online Dictionary). The material used for land reclamation is thus judged to be some form of waste, or material with no direct ownership that has no other use. But the vanishing Riau Islands reveal that this is far from the truth. The land is not created from "nothing", the material is transferred from somewhere else. Singapore, however, rejects all evidence that marine dredging can lead to significant erosion of nearby land. Minister of Foreign Affairs George Yeo maintained that 'it is not at all clear how the mining of sea sand in the seas off the outer islands of Indonesia could have an impact on the maritime boundary between our two countries' (Ministry of Foreign Affairs Singapore, 2007). Apart from erosion, other notable, negative environmental effects have been attributed to sand mining. Some Cambodian communities in mining areas reported a 50% decrease in local fish stock and a complete disappearance of swimming crabs, devastating the local economies (Global Witness, 2010: 20).

These negative impacts of Singapore's land reclamation for the territories of neighbouring states led to multiple export bans. Malaysia declared a ban as early as 1997, followed by Indonesia's ban in 2007, a Vietnamese ban in 2008 and a ban in Cambodia in 2017 (Global Witness, 2010: 28; BBC News 2017). The multiple export bans, however, did not solve the problem. Sand usable for construction is today extracted quicker than regeneration is possible (United Nations Environment Programme, 2014: 1). Global demand for sand has thus created a thriving industry of illegal mining. For Instance, in 2008 the so called "Coral Spring Heist" took place in Trelawny, Jamaica, when 400 metres of beach disappeared over night (Carrol, 2008). In India, the illegal sand mining industry is estimated to be worth around \$192 million a year. This "sand mafia" is 'one of the most prominent, violent, and impenetrable organized crime groups in India' with strong links to official mining companies, police, government, and local communities (Rege, 2016: 101, 108). Indonesia too, is affected. After the ban, at least 24 small islands disappeared between 2005 and 2010 due to illegal mining and corresponding erosion. This illegal activity has been linked to construction in Singapore (Parry, 2010).

Of particular interest for our purpose are illegal mining operations in Cambodia because of alleged involvement or wilful ignorance on the part of the Singaporean government. In 2015, Cambodia officially exported 11.000 tons of sand to Singapore, but Singapore noted for the same year an import of 10.967.644 tons of sand from Cambodia. Similar discrepancies were reported in previous years (Parry, 2010). Singapore imports the vast majority of all sand in the region and has thus come under suspicion of being responsible for vast quantities of illegally traded sand (Paviour, 2017). After the first Cambodian export ban to Singapore was introduced in 2009, dredging activities actually increased, even inside environmentally protected areas. A pervasive culture of corruption developed in the local dredging industry and multiple allegations of "informal payments" to Cambodian authorities have been made.

Companies investigated for corruption by the non-governmental organisation Global Witness revealed links to Singapore's government (Global Witness, 2010: 7). These links included subcontracts and partnerships with Singaporean Companies affiliated with the government's Building and Construction authority (BCA). Global Witness retrieved export licences with stamps and signatures of representatives from the Singaporean embassy in Cambodia (Global Witness, 2010: 8-14). Singapore denies all allegations of its involvement in illegal sand trade. Nevertheless, Global Witness argued that 'the fact that the government stated that it is not party to any agreement for the import of sand, and in the next sentence says that JTC engages sand suppliers, suggests the government considers statutory boards

to be separate entities from the government. However, given that JTC, BCA and the Housing and Development Board are within the purview of specific government Ministries, Global Witness believes the government should bear ultimate responsibility for their activities.' Singapore's denial thus seems unconvincing, especially considering its strong motive to establish cheaper sand supplies for its enormous reclamation projects. The import price per ton in Singapore changed from \$3 in 1991 to a staggering \$190 by 2005 (United Nations Environment Programme, 2014: 8). At the very least, Singapore seems to be consciously allowing the development of corruptive cultures in neighbouring countries to satisfy its need for reclamation material. Its physical growth thus resembles aspects of territorial expansionism where space is taken as a zero-sum game. Singapore's gain is its neighbours' loss.

In sum, Singapore's land reclamation efforts may be driven by considerations that prioritise the political-economic dimension of territory, but international legal and geophysical effects cannot be denied. The government of Singapore has elevated reclamation technology to one of its most important instruments of territorial strategy and maximised this capability by adjusting domestic law. The inability of UNCLOS to effectively grapple with land reclamation has led to widespread legal uncertainty and increased regional tensions. Even though Singapore maintains that its expanding baselines will not affect any boundary agreements, the present legal uncertainty and changing geopolitical contexts do not guarantee this policy for the future. Indonesia and Singapore recently agreed on a further delimitation of their maritime boundary for a stretch of 9.5km, only the third agreement in a period of over 40 years. The issue is thus far from being resolved.

The next section will turn to Chinese reclamation activities in the South China Sea. The regional dispute is an interesting case because China is arguably the first state to utilize reclamation works as a central tool of foreign policy.

### III Chinese Land Reclamation in the South China Sea

The South China Sea is the arena for one of the most complex territorial disputes of our time. Five states – China, Vietnam, Philippines, Taiwan & Malaysia – occupy nearly 70 different reefs and islets and have constructed more than 90 outposts on these contested features. A great number of these features have been expanded in recent years via land reclamation. Although most states involved in the dispute have engaged in such reclamation works on their occupied features, China's recent activities stand out as particularly aggressive (Dolven et al, 2015: 4). Two main objectives appear to motivate this development. First, it has been speculated that significant gas and oil resources lie under the region's sea beds (Daiss, 2016). Successful sovereignty claims over the disputed features could thus translate into exclusive economic rights to exploit these natural resources. Second, China seems to engage in a challenge to US maritime dominance in the region. The strategy appears to reflect the US Monroe Doctrine in that China considers the region as its "backyard" that is not to be interfered with by other powers. China attempts to legitimize this claim with the so-called Nine-Dash-Line, sometimes also taking the form of a Ten-Dash-Line. This U-shaped cartographic line is taken to represent China's historical claim to exclusive authority over most of the South China Sea. The claim has a long history and finds official expression in state maps and textbooks since the 1940s. Here again, we can see how cartography is employed by states as a political territorial technology. An internal projection and promotion of territorial claims is just as important as its external projection. The cartographic inclusion of the Nine-Dash-Line creates and maintains a public will to employ resources for its realisation. Shan Zhigang, the executive editor of the Chinese National Geographic, summarized this process as highly effective: 'the nine-dashed line [...] is now deeply engraved in the hearts and

minds of the Chinese people' (Wang, 2014). In 2012, China then elevated this foreign policy concern to a 'core national interest, placing it alongside such sensitive issues as Taiwan and Tibet'. In practice, China thereby declared that it is prepared to defend this claim by use of military power (Wingfield-Hayes, 2014).

The next part will have a closer look at the role of land reclamation for China's territorial foreign policy in the disputed region with a focus on international law. Different interpretations of provisions in UNCLOS have led to a conflict in the social production of maritime space. An important question regarding Chinese sovereignty claims in the South China Sea is whether the land features in question are capable of supporting any claims to sovereignty at all. This is particularly difficult to establish for Chinese land reclamation works that are based on reefs. States can only claim sovereignty over land features that qualify as natural high-tide elevations. Low-tide elevations, land that is completely submerged at high tide, cannot provide a basis for sovereignty under UNCLOS (Dolven et al, 2015: 4). Any islands that are based on low-tide elevations would have to be classed as artificial islands, the same category of drilling platforms. These artificial islands are irrelevant to any territorial claims under international law (UNCLOS, Article 60(7)). However, the South China Sea has one of the most complex tidal regimes in the world, and thus complicates any attempt to discern between low and high-tide elevations (Schofield, 2014: 26). This is particularly difficult to establish retrospectively because significant reclamation efforts have obscured the underlying natural features.

Should the original land feature qualify as a high-tide elevation, a distinction must be drawn between islands and rocks. Article 121(1) states that 'an island is a naturally formed area of land, surrounded by water, which is above water at high tide' and (2) these islands can generate maritime zones. Article 121(3) then draws a distinction between islands and rocks: 'Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf'. Much of the controversy over reclamation activities in the South China Sea is based in this differentiation because it has been calculated that if a small 'island deemed capable of generating EEZ and continental shelf claims had no maritime neighbours within 400 nautical miles, it could generate 125,664 square nautical miles (431,014 km<sup>2</sup>) of territorial sea, EEZ, and continental shelf rights. In contrast, if a feature were deemed a mere 'rock' incapable of generating EEZ and continental shelf rights, only a territorial sea of 452 square nautical miles (1,550 km<sup>2</sup>) could be claimed.' (Prescott and Schofield, 2005: 248-249). A crucial question thus arises, namely whether land reclamation efforts can legitimately 'upgrade' a rock to an island. This consideration, however, is notably absent in UNCLOS and was 'commonly considered to be of little practical importance' (Kwiatowska and Soons, 1990: 170-171). In response, McDougal and Burke introduced the idea of a 'practical purpose' limitation to legal discourse (Kwiatowska and Soons, 1990: 173). This provision was meant to prevent actions of 'upgrading' for geopolitical intentions and has subsequently found some support from legal commentators. Tsaltas et al. state that 'upgrading the status of a rock and preventing its diminution follow a totally different mindset. While prevention is considered to be permissible, as it is an action that does not intend to expand land and maritime sovereignty, upgrading is an act that is being condemned as abusive and expansionist.' (Tsaltas et al., 2010: 14). However, they also note the practical problems of determining if the land reclamation in question is expansionist: 'In most cases, it is really hard to distinguish which of the two practices takes place, as well as to find liable (*sic*) scientific data in order to support one or the other position' (Tsaltas et al., 2010: 14). Nevertheless, in China's case, there seems to be little doubt that the construction efforts in the South China Sea have clear geopolitical motives.

This observation has been key in the final award of the South China Sea arbitration. The South China Sea case before an UNCLOS tribunal was initiated by the Philippines in

2013 to determine among other issues the legality of China's Nine-Dash-Line claim and the legal status of several disputed land features in the South China Sea. The final award was handed down in 2016 and was considered by many a milestone decision that provided the first authoritative ruling on Article 121. The Tribunal judged none of the land features in question as natural islands capable of generating maritime zones. Instead, all features were deemed rocks with a maximum territorial sea of twelve nautical miles. It further rejected the Chinese claim of historic rights within the Nine-Dash-Line. The authority and influence of the ruling, however, is very much in question. Chinese land reclamation in the region has since slowed down, but not stopped (Asia Maritime Transparency Initiative, 2017). The legal proceedings were rejected by China from the outset as illegitimate and the state refused to take part in the Tribunal's hearings. Of particular contention are the Tribunal's jurisdiction over the dispute and its interpretation of Article 121(3) regarding the qualifications of islands.

A fundamental problem of Article 121 is the ambiguity of the phrases "human habitation" and "economic life". Beckman and Schofield explain, that 'many states were motivated by specific and conflicting national concerns, often related to the potential impact of small islands on the delimitation of maritime boundaries (Beckman and Schofield, 2009: 10). Complex treaties like UNCLOS thus often result in a 'disagreement reduced to writing' (Allott, 1999: 53). Kwiatkoska and Soons also note that Article 121(3) must be interpreted, and find a lot of variation of such interpretations in their review of legal commentary. For some authors, the existence of a light house or any other feature of navigation could qualify as an "economic life of its own" due to the added value for international shipping, while others argue that any economic life must be based on an island's own resources. Similar disagreement persists over the content of "human habitation", for example if an island may rely on external support to sustain a community (Kwiatowska and Soons, 1990). Kwiatowska and Soons conclude that 'the variety of conflicting approaches exemplified above seems to make it impossible to judge the value of acquiescence or protests by States with respect to the principle in question in any meaningful way' (Kwiatowska and Soons, 1990: 8; see also: Camprubi, 2016: 177).

These ambiguities are also reflected in the inconsistent jurisprudence regarding Article 121(3) prior to the final award in the South China Sea case. Multiple cases of maritime boundary delimitation before the International Court of Justice appear to treat land features as natural islands that would now seem to qualify as rocks only (Takanaka, 2017: 374-376). Inconsistencies are also evident in previous state practice. Even though the Tribunal went to great lengths to justify its jurisdiction over the case in an analysis of state practice, the same argument is conspicuously absent for its interpretation of Article 121(3). Countries such as France, Australia, Mexico, Japan, Venezuela have claimed EEZs for land features that seem to be rocks under the new ruling. It is very unlikely that these countries will now reconsider the legal status of their "islands". Apart from Great Britain and its claim to Rockall, no country has ever abandoned an EEZ claim due to Article 121(3) (Takanaka, 2017: 373).

Neither do the responses of the conflicting parties themselves lend confidence to the UNCLOS Tribunal's authority. China rejected any ruling from the very beginning of legal proceedings and has consistently maintained this stance. The Philippines, on the other hand, initially hailed the award as a milestone decision. With the election of president Duterte, however, the ruling was quickly relativized in its importance and described as 'a piece of paper' that would 'take the back seat' in bilateral negotiations (Kang Lim, 2016). These bilateral negotiations seem to refer to an existing bilateral agreement to solve the issue in negotiations, thereby somewhat confirming China's objection that the court had no jurisdiction because said agreement exists (Perlez, 2016). In particular, China claims its DOC

with ASEAN states qualifies as an opt-out situation under UNCLOS. Article 281(1) states that where parties 'have agreed to seek settlement of the dispute by a peaceful means of their own choice, the [Part XV(2) arbitration] procedures ... apply only where no settlement has been reached by recourse to such means and the agreement between the parties does not exclude any further procedure.'

Many legal commentators reject the applicability of the opt-out clause in China's case. However, the issue is not as clear cut as often presented. Once again, the complicated drafting history of UNCLOS enables different interpretations of Article 281. Guilfoyle discerns two different views of the opt-out clause: the 'sovereigntist approach' and 'communitarian approach'. The former claims that the controversial drafting process of UNCLOS led states to shy away from implementing an expansive and effective dispute settlement system. This approach thus 'supports a presumption either against compulsory dispute settlement, or at least in favour of interpreting such clauses narrowly' and has been the dominant understanding in English Literature prior to the South China Sea case (Guilfoyle, 2018: 53-54, 55). This interpretation can also draw support from previous case law. A review by Rayfuse found that courts tended to maximise states' ability to opt-out: 'Even accepting that UNCLOS compulsory dispute settlement regime was never intended to be comprehensive, it has proved to be even more circumscribed in scope than perhaps even its detractors imagined' (Rayfuse, 2005: 710). Previous legal rulings that employ the opt-out provision (e.g. "Southern Bluefin Tuna") now appear to have been decided wrongly when compared with the South China Sea case (Guilfoyle, 2005: 57-59).

In contrast to the sovereigntist reading of UNCLOS, one could also adopt a 'communitarian approach' in which UNCLOS is viewed as a 'package deal' that understands dispute settlement mechanisms as comprehensive and binding to uphold the integrity of the convention (Guilfoyle, 2018: 54). For example, Phan and Nguyen argue that to 'guard the hard-fought compromises against unilateral interpretations which threaten the integrity and stability of the Convention, a compulsory dispute settlement system was put in place' (Phan and Nguyen, 2018: 40). The apparent legal uncertainty regarding compliance with UNCLOS is further evident in the international community's response to the Tribunal's final award. Prior to the ruling, 31 countries opposed the Tribunal as illegitimate, 121 countries issued neutral statements or no statements at all, and 41 countries publicly supported the court's jurisdiction and, most importantly, future rulings as binding. Of those 41 countries, however, only 7 continued to publicly demand compliance with the decision. The other 33 countries positively acknowledged the ruling, but conspicuously dropped claims that the decisions are binding (Asia Maritime Transparency Initiative, 2016). There is therefore no "correct" interpretation regarding the ability of states to opt-out, any ruling on this matter is an interpretative and political decision. This is not uncommon in international law, where judgments and awards often function as an intervention regarding the history and purpose of a treaty to respond to new international contexts (Guilfoyle, 2018: 53). The Tribunal of the South China Sea case clearly favoured the communitarian approach. This tendency is also reflected in the ruling on Article 121(3), according to which the economic advantages of EEZs are meant to benefit the "deserving", namely 'stable pre-existing communities and especially those practising traditional lifestyles' and not major geopolitical powers on a quest for territory (Guilfoyle, 2018: 62). In sum, China's claim that the court had no jurisdiction due to the opt-out clause is not completely unfounded, and it is not surprising that China feels aggrieved. The final award is stricken with interpretational problems and it is therefore unclear if future tribunals will exhibit legal consistency.

It is also important to emphasize that a main objective of Chinese construction efforts in the South China Sea appears to be a challenge to the United States. However, the United States never ratified UNCLOS itself. From this narrower perspective of the dispute, the



ruling therefore appears to be irrelevant. Instead, it even seems to have aided China by moving Taiwan closer to Chinese foreign policy objectives. Taiwanese society and politics are outraged over the new status of Itu Aba, an island it occupies and is now classified as a rock (Lee, 2017). This decision has proved particularly controversial, since Itu Aba was widely acknowledged as a natural island and was never part of the list of features the Philippines requested to be determined (Dolven et al., 2015: 6).

Overall, China is extremely unlikely to retreat from the disputed islands following the significant investment made. The reclamation efforts for Fiery Reef alone have cost an estimated \$11 billion (Reuters, 2018). Instead, China has reason to consolidate its position and continue a strategy of “creating facts”. Going once more back to UNCLOS, an open temporal question in Article 121 would support such a strategy. Temporal requirements are crucial to interpretations of Article 121. According to the Tribunal, “human habitation” must refer to ‘a stable community of people for whom the feature constitutes a home and on which they can remain’. The word “stable” implies the existence of a community for a certain period of time and aims to exclude the military personnel that currently dominates the population of islands in the South China Sea. The tribunal then emphasizes the importance of historical record: “if the historical record of a feature indicates that nothing resembling a stable human community ever developed there” then there can be no grounds for stable human habitation. Contemporary evidence of habitation is thus less significant to avoid credence to geopolitical manoeuvres; however, it is not excluded. Takanaoka thus argues that these provisions ‘serve to freeze the legal status of maritime features at a certain moment in the past’. However, ‘the capacity of a maritime feature may change over time. As a result, there appears to be some scope to reconsider whether the static interpretation of Article 121(3) of the Convention is or will be always relevant’ (Takanaoka, 2017: 279). The status of a land feature in the South China Sea could change in the future. Charney also notes, that ‘changes in economic demand, technological innovations or new human activities’ could eventually result in a rock fulfilling the criteria of human habitation and economic life. Thus, a possibility persists ‘that the normative status of these features might change’ (Charney, 1999: 867).

State actions that aim to ‘upgrade’ rocks into islands might therefore turn out successful in the long term. A potential candidate for such a future change is China’s Sansha City on Yongxing island in the Paracels. The city was established by Chinese authorities in July 2012 and is part of the greater Hainan province. It claims to administer the Paracel islands, Spratley islands and Zhongsha island (Hill, 2012). In 2014, its official population was 1443, although in 2016 an estimated three quarters of inhabitants were soldiers (Watt, 2014; Zhen, 2016). Nevertheless, China is stepping up its efforts to transform Sansha into a civilian city that could one day question its island’s status as a rock. Facilities on the island now include a hospital, a school, a Branch of the Bank of China, a post office, various shops, hostels, food stations, a small department store, a library, a cinema, and two museums (Zhen, 2015; Reuters, 2017; Watt, 2014). Another crucial construction effort was the completion of a 1000-tons-a-day desalination plant that enabled the planting of hundreds of thousands of trees (Yiming and Xiaoli, 2016). Regarding UNCLOS, fresh water resources are crucial to enable a stable and independent human habitation. China additionally tries to increase the commercial value of Sansha City and thereby its economic life. Due to favourable tax regulations, 157 firms are now registered on the island and have paid more than \$1.53 billion in tax so far (Seok, 2016). In addition, the city has seen significant efforts to realize its potential as a tourist destination. In 2017, 680 commercial flights travelled from the mainland to the island. A cruise route was opened in 2013 via which 70.000 tourists visited the island to date (Reuters, 2018). Chinese state media is now keen to sell Sansha city as a ‘liveable city’ or ‘a proper home’ to increase the civilian occupation of the island (Fan,

2017). The city is said to be a 'blueprint' for future Chinese development in the region, and the China Communications Construction Cooperation earmarked another \$15 billion investment across various sectors in the region, including fishing, logistics, tourism and construction (Reuters 2018).

China thus appears determined to transform some of its occupied 'rocks' into a home for a normal civilian population. As time passes and these islands continue to grow in physical size, human population and economic importance, future Tribunals will be cautious to deny such land features the status of an island because of an absence of human habitation and economic life. Vietnam too seems to adopt this strategy to some extent, having established its own official city on Spratly Island and introduced tourist cruises to the region (Morris, 2015). The development of Sansha City signifies an important aspect in the social production of space. Even though China rejects the rulings of UNCLOS on article 121(3), its policy seems to be nevertheless guided by its provisions. The social space of international law produces back into state action. Chinese strategy responds to the legal conceptualisation of island space by pursuing a future satisfaction of its provision.

The ongoing Chinese investment in civil infrastructure in the disputed region can furthermore be read as an operation of territorial technology itself. Cartography enables territory by mapping what a state claims to control and infrastructure then provides access to realize that control. Michael Mann accordingly defined a growth of infrastructural power as a growth 'in the logistics of political control' (Mann, 1984). 'Rapidity of communication of messages and of transport of people and resources through improved roads, ships, telegraphy, etc' all serve to increase autonomous state power (Mann, 1984: 192). Infrastructural works have thus occupied a crucial role in the formation of modern states. For example, railway connections were central to the creation of the Canadian state because entry to the federation entailed demands for infrastructural integration (Cowen, 2018: 16).

A more obvious push for control of space than civil infrastructure is the development of military infrastructure in the region – the strategic dimension. From this perspective too, China's approach can be characterised as a strategy of "creating facts". Even if its occupied land features are only rocks and not islands, China can at least pursue its claims of sovereignty and continue to expand these features. As seen earlier in the case of Singapore, the absence of definitive jurisprudence and a review of existing state practice indicates that the physical expansion of a land mass is legitimate. China can therefore continue to grow its occupied reefs and use those features to establish military dominance in the region. This strategy links to a fundamental aspect in the evolution of the concept of territory. In the 14th century, Bartolus de Saxoferrato explained that 'territory is so called from terrifying [...] So long as the army is there, terrifying and dictating that place, an offence here committed will properly be punished by the authorities of the city as if it had been committed in their own territory' (Elden, 2013: 222). In other words, authority over space can become *de facto* by means of military power. China has constructed a great number of airfields, docks, helipads, barracks and weapons systems. Military power has thereby been aggressively expanded and consolidated by China with the help of reclaimed land (see Appendix 2).

In sum, China employs land reclamation for explicit territorial purposes. Chinese land reclamation strategy in the context of its historical claims is thus a true expression of another dictionary meaning of 'reclaim': the process of 'reasserting a right'. The geomorphological capabilities of dredging have enabled the Chinese state to create the physical land space necessary for its aspired power projection. Its strategy to transform land features into proper islands has thus far been unsuccessful in the realm of international law. From a theoretical perspective, the conflicting interpretations of article 121(3) and the opt-out clause provide an interesting view on competing legal productions of political space. The ambiguity of UNCLOS has provided states with powerful means to try and reproduce legal space

according to their own objectives. China's refusal to take part in the legal proceedings is a powerful statement against these UNCLOS provisions. Furthermore, the temporal aspects of the Tribunal's interpretation of article 121(3) create the possibility that China's strategy will turn out successful in the future.

#### IV The Spatiality of Reclaimed Land

I now want to return to the theoretical framework laid out at the beginning of this essay and consider the spatiality of reclaimed land. I have argued in Part I for a conceptualisation of territory as a set of political technologies. These political Technologies can be understood to represent the productions of social space for the different dimensions of territory. For example, cartography produces a technical and scientific notion of space, through which space becomes calculable, mappable, and most crucially, divisible. Law produces a juridical conception of space that articulates and legitimises the spatial extent of sovereignty. Capitalist ideology adds an economic dimension to space by producing conceptions of value and thereby directing how we engage and use space. The geophysical is the material bedrock that all social productions ultimately rest on and relate to, as abstract as they may be. But the geophysical also continues to take an active role in the production of territory. It conditions all other approaches and thereby affects its use. This is particularly clear from a military-strategic point of view, where territory is reproduced as a potential field of battle. Natural features like mountains and rivers hereby acquire strategic value in the notion of terrain. But the idea of terrain also links back again to the technical production of space through cartography. The same is true for land reclamation technology, which relies on a calculable grasp of space. The different productions of space – or the different political technologies of territory – are thus complexly interrelated processes that combine in the modern concept of territory. Territory is not static, it is constantly being reproduced and its exact make-up and meaning is in constant flux.

What processes of productions of space and territory can we discern in the context of land reclamation? First of all, land reclamation technology has enabled states to physically grow in size by technical means. The expansion of the coast and the creation or upgrading of islands (or legal rocks) is a material, geophysical production of space. Land reclamation may thus be seen as a paradigmatic example of human activity in the Anthropocene. The Anthropocene is a new, controversial geological epoch 'on the grounds that human activities now dominate the Earth System' (Goudie and Viles, 2016: 1). Our technological capabilities have surpassed natural geomorphological processes such as wind and erosion in the global movement of natural material. The natural material needed for reclamation works, especially sand, however is not an unlimited resource. The role of erosion and illegal sand trade in Singapore's expansion efforts have shown that land reclamation projects can lead to a territorial zero-game. At this time, these effects may seem to be only a side-note to land reclamation. But as human earth-moving capabilities are ever increasing, and reclamation projects continue to grow in frequency and scale, so will geopolitical tensions rise.

Following Lefebvre, a material production of space leads to multiple processes of social reproduction. The spatiality of reclaimed land therefore entails a conceptual reproduction of the legal space in international law, and the very conceptualisation of 'land' and 'sea'. As we have seen, a great weakness of UNCLOS is the ambiguity of some its articles, especially Article 121. This ambiguity has its roots in the materiality of water which poses a fundamental problem to conventional state bordering practices. The sea is a special place due to its materiality. The makeup of the seas is constantly shifting due to earthly processes like winds and jet streams, and planetary forces, most of all gravity. Even though land too is

far from static and subject to tectonic processes, ocean dynamics operate much more rapidly. Water constantly transitions between its physical states of vapour, water and ice, resulting in a very high material mobility (Steinberg and Peters, 2015: 254). The volume of water and the corresponding space occupied by oceans is always on the move. The complex tidal regime of the South China Sea and the resulting difficulty of discerning high and low-tide elevations of land features are a point in case. The materiality of the sea therefore dictates different bordering practices than those on land because conventional markers of territory like fences and walls are unavailable or inefficient (Peters, 2014: 423). Sea space most clearly emphasizes the role of terrain in territorial questions for 'terrain' is also a spatial dimension of our planet that we'll never fully master, for it preceded human life and will outlive us (Gordillo and Elden, 2014). The geophysical landscape thus continues to provide the framework for territorial state practice. 'The chaotic movement and reformation of matter [...] both enables and disrupts (or reterritorializes and deterritorialises) earthly striations', so Steinberg and Peters (Steinberg and Peters, 2015: 255). The modern state system premised itself in response on an 'elemental distinction' between land and sea, externalising the latter (Steinberg and Peters, 2015: 254; Elden, 2017: 204).

This externalisation finds its expression the long-standing legal dictum 'the land dominates the sea' (Schofield, 2014: 26). UNCLOS continues to operate within this framework by employing a territorialisation approach of the sea that Jeppe Strandsbjerg has termed 'cartopolitics'. Maritime territory is determined in reference to certain geomorphological conditions such as low and high-tide elevations, continental shelves and land baselines: 'Translated into the geopolitics of border making this means that the political organisation of space is as much about defining a particular spatial reality as it is a question of enclosing, territorialising, controlling or otherwise partitioning space' and 'the distribution of sovereignty is, in the first place, determined by scientific measurement; i.e., cartography' (Strandsbjerg, 2012: 827). In other words, the technical dimension of territorial political technology is tasked with drawing boundaries based on "objective" geophysical characteristics of space. This cartopolitical approach is nothing fundamentally new and only a continuation of technical territorialisations of the sea. Even though the sea is a 'smooth [fluid and dynamic] space par excellence, [it] was the first to encounter the demands of increasingly strict striation'. From the very beginning of cartography 'maritime space was striated [territorialised] as a function of two astronomical and geographical gains: bearings, obtained by a set of calculations based on exact observation of the stars and the sun; and the map, which intertwines meridians and parallels, longitudes and latitudes, plotting regions known and unknown onto a grid' (Deleuze and Guattari, 1987: 479).

Land reclamation now challenges the cartopolitical production of maritime space by blurring the traditional differentiation of land and sea. Reclamation can serve the striation of the seas and only move the boundary between land and water like in Singapore. Yet land reclamation challenges our understanding of land itself. The physicality of land assumes some of the fluidity and dynamism of the sea. The striation of the sea through land reclamation renders land smoother. Of course, land has never been truly fixed and fully striated – the result of constant and geophysical processes and movements including the tectonic plates. An extreme example with territorial effects is the recent volcanic birth of 'Snoopy Island', which eventually merged with the Japanese island of Nishinoshima (McCurry, 2013). But land reclamation now adds such dynamism in land, a new speed and territorial significance achievable through human agency. Like the seas, reclaimed land now challenges traditional social productions of maritime territories and their juridical articulations. The legal dictum 'the land dominates the sea' assumes a new meaning and material expression. Traditional sovereignty is grounded in physical land and extended to

the seas, but land reclamation now questions this relationship because maritime space is no longer reliably fixed through cartopolitics. The coast is increasingly dynamic and legally uncertain, as it no longer marks the definitive end of land and territory. In other words, land reclamation disrupts the traditional interplay between the technical and political-juridical dimensions of territory. It is therefore no surprise that land reclamation is now seen as the only potential major issue in future boundary delimitation between Singapore and Indonesia, and that tensions in the South China Sea have intensified in recent years. Carl Schmitt already suspected that one day 'the antithesis of land and sea [...] will be dissolved in the crucible of industrial-technical progress' (Schmitt, 2005: 49). The materiality of the sea continues to defy its territorialisation, but land reclamation has profoundly changed its relationship to land. The sea is no longer its antithesis because it harbours a realizable potential of more land.

The cartopolitical processes of defining a particular spatial reality through technical instruments are furthermore complicated through their coupling with socio-economic conditions such as "human habitation" and "economic life" in UNCLOS. The concept of "island" in international law has thereby taken on a very specific meaning that is considerably more restrictive than conventional understandings. The contested interpretations of Article 121 can thus be read as another conflict over the definition of a certain spatial reality. In Lefebvrian terms, China and the Philippines are both involved in a social reproduction of maritime space according to their respective geopolitical and territorial processes. China attempts to maximise its land reclamation capabilities for territorial purposes, whereas the less powerful Philippines tries to curtail these ambitions. Chinese strategy has thus been described as 'an audacious attempt to rewrite international law' (Dong, 2015). However, we must also take note of one of the key insights of Lefebvre, namely that the space produces back on us. China might challenge the weak, but nevertheless dominant social production of maritime space in UNCLOS. At the same time, however, Chinese reclamation actions appear to be tailored to one day fulfil the criteria set out by Article 121. These productive processes between UNCLOS and Chinese policy exhibit a similar structural relationship like that between the geophysical and international law in general. Just as China tries to escape the constraints of UNCLOS, so does international law try to break free from the constraints of the geophysical (for example the materiality of the sea). As a response to a respectively more dominant space, these attempts will necessarily be shaped by that dominant space. As long as international law does not explicitly address the issue of land reclamation, it will remain uncertain which place and status reclaimed land occupies in the juridical dimension of territory.

If Cities like Sansha continue their current development, interpretations of UNCLOS that reject their independent human habitation and economic life will at the least appear increasingly ill-suited and thereby lose some of their authoritative force in the legal production of island space. At the same time, we can also discern a more "traditional" territorial approach in China's strategy – the projection of military power. Territory is also political space terrified by state power. The extension and improvement of its regional military capabilities serve to deter other states from engaging in a serious challenge to territorial claims of already occupied features. Land reclamation thereby affects the military-strategic production of territory. The material production of land enables the control of maritime space for China. Maritime power projection is dependent on physical space for military bases and weapons systems. Land reclamation can now custom-build the space needed from a simple reef and military planners employ the technology to manipulate the geophysical terrain for their purpose. Corresponding investment in civil infrastructure and the procurement of domestic public support meanwhile, ensure effective access and political will to establish control. We

can therefore discern a unilateral production of territory. The occupied and expanded land features may not be internationally recognised as Chinese territory, but any visitor to these islands will be in no doubt that they are under Chinese authority and jurisdiction. Control over the disputed reefs and islet is *de facto* and reveals reclamation as a central tool in Chinese foreign policy.

These processes and facets in the production of space through land reclamation are furthermore shot through with political-economic relations. The space of this dissertation has not allowed me to develop this dimension appropriately, but a few comments are in order. Economic objectives drive Singapore's desire for more physical space, providing the potential for continued economic growth and links back to Singapore's economic self-understanding. The demand for sand, however has significant effects on trade in the region and is closely linked to rising corruption and illegal mining. While Singapore's economy thrives, corruption and environmental devastation destroy the local economies where sand is sourced. A deeper analysis of these relationships may thus reveal yet another zero-sum game – one of economic growth. Land reclamation has also been linked with worker migration to Singapore. Charmaine Chua has argued that the negative environmental effects of sand mining provides a cheap and exploitable migrant workforce for Singaporean reclamation projects (Chua, 2018). Political economic objectives also drive occupations of the South China Sea due to the potential of gas and oil resources. Meanwhile, much international trade relies on the freedom of the South China Sea and thus raises global anxiety over regional tensions, complicating an already difficult situation. Finally, land reclamation itself is shaped by economics, as its construction cost per square metre will determine its attraction and feasibility.

In sum, we can discern multiple productions of space through land reclamation. Physical space is produced in land reclamation. Littoral states can materially grow their territory by other means than war. The motivation for this process depends on the specific context of the actor in question. Land reclamation may be guided by political-economic considerations like in Singapore, or by geopolitical ambitions like in China. The conceptual representations of "land" and "sea" are in a process of reproduction because the traditional elemental distinction between these spaces is challenged by land reclamation technology. Land has acquired a new dynamism that cannot easily be squared with its traditional conceptualisation as fixed and static. At the same time, the reproduction of sea space continues. Whereas historically the sea was seen as an empty void, an obstacle to be overcome, contemporary conceptualisations of the sea focus more on its rich natural resources. The creation of EEZs is a legal reflection of this transformation. With the ascent of land reclamation, the sea acquires even more potential. Sea spaces can be turned into land for new economic projects and territorial ambitions. Meanwhile, land reclamation has led to a contested reproduction of maritime territories in international law. Discussing the territories of the fishing industry, Bear and Elden have asked: 'How far can these strict cartographic boundaries deal with the essential fluidity of seas and oceans? How far do the cartographic boundaries demarcate and control the actors and activities of interest?' (Bear and Eden, 2008: 488). It is now time to pose the same questions with reference to land reclamation: How far can UNCLOS deal with the material dynamism of reclaimed land? How far can it still effectively demarcate maritime space? The legal review of Singaporean and Chinese reclamation works has shown that the cartopolitics of UNCLOS struggles to respond to this changing geophysical environment. International law's conventional view of a constant materiality of territory proves to be increasingly inadequate.

Due to the complexity of productions of space and territory, this dissertation was only able to provide a snapshot of current developments. Singaporean and Chinese land reclamation

practices signal that states have discovered reclaimed land as a major instrument for their national objectives. In conclusion, the spatiality of reclaimed land has significant effects on the spatiality of International Relations theory. Much more work is needed to be done to fully appreciate and understand this transformation, and this dissertation hopes to provide fertile ground for further investigations.

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### Endnotes

<sup>1</sup> Young, Elizabeth. *Pacem In Maribus*: Vol. IV. June 28 - July 3 1970. Valetta: Royal University of Malta Press, 1971, pp. 74-75.

<sup>2</sup> Not discussed here is Lefebvre's third space - the "lived" space. Lived space is our actuality in space and may be understood as our being in space-time. This third space blurs the boundaries between all types and groups of spaces. It is a passive experience of dominated space, but it is also subject to our imagination and appropriation and thereby provides a potential for liberation and emancipation from establishes structures of the social space. As far as I understand it, the lived space applies primarily to the individual human. However, a further analysis might provide an interesting argument that Chinese policy discussed later one exhibits such a rebellion of the lived space against a dominant social space. For lack of space, this idea is not further investigated. For the role of the lived space, see for example: Rogers, Tim. "Henri Lefebvre, Space and Folklore" *Ethnologies*, (1) 2002: 21-44.

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