2 The deep Pacific

Island governance and seabed mineral development

Katherine Genevieve Sammler

Introduction

The ocean has long been imagined by those in many cultures as a wild frontier, an alien place. Even more so, the deep sea has been understood as a place of profound mysteries, obscured from extensive scientific inquiry by a few thousand metres of dark, cold, salty seawater. As the place where life originated and evolved on this planet, the deep sea holds clues to our evolutionary past in its myriad diverse, extraterrestrial, aquatic life forms. Very little of the ocean's depths have been explored in detail because of its immensity and the expense of operating in its extreme conditions. Yet, in the last few years global metal markets and technological advancements have made deep seabed resource extraction increasingly feasible. Seabed mining remains an experimental technology intended to dredge up mineral sands, nodules, cones and crusts that contain ores accumulated on and within the seafloor. In the struggle to meet resource production demands, some have turned offshore to satisfy growing food, fuel, and mineral appetites, implicating the seabed as the latest location for large-scale resource extraction. However, arguments put forth regarding seabed mining as inevitable, as essential progress towards harnessing this 'frontier' space, disregard previous attempts and failures of such endeavours.

While relatively little is known about the deep sea compared to land, data are being collected that fundamentally change how ocean spaces are thought about and engaged with. Beneath the surface of our planet's expansive oceans lies the prospect of a new gold rush (after Shukman, 2013), one in which, in pursuit of sunken geologic treasures, companies scour the seabed for minerals and rare metals. The desire to locate such deposits is spurring a surge in attempts to map sections of seabed in high resolution and to probe the ocean floor to determine the extent and composition of its raw materials. These technical assessments are steps in a process to assert national marine territorial boundaries, key to transforming the seabed into a space for industrial-scale resource extraction.

Before mining has even begun, one effect of proposed projects to mine the seabed is the constitution of this vast and historically invisible resource space

as a location of desire, hope, friction, and anxiety—with important implications for evolving state practices of resource governance. A sense of urgency then characterises attempts to exploit this seafloor wealth, and it is evident in discourses of resource scarcity and narratives about inevitability of development in the deep. In response, Pacific peoples, for example, are grappling with how to determine new legislation, environmental management regimes, and economic benefits associated with such a space.

This chapter aligns itself with a 'focus on Oceanic Studies to reorient our critical perspective from the vantage point of the sea" (Blum, 2013, p. 155), and with the work of various island studies scholars. The aims are to present an historical analysis of the shifting geopolitical and economic conditions that have produced the ocean as a space of industrial development and, in doing so, to focus on ocean materiality and notions of territory. Drawing on insights from the scholarship of political geography and islands studies, my intention is to investigate why and how island locations are central to the development of proposed seabed mining activities, and to ask what makes this moment unique in the record of these activities and allied industries. These labours are deepened and grounded by reference to an empirical case study of New Zealand, where the national government has made recent forays into promoting and regulating seabed mining.

Such work is significant because it is the first investigation into the emerging practices of national territory and sovereignty on the seafloor, contributing to understandings of the continued political expansion of islands beyond the land/sea binary. It is motivated by emerging spatial theorizations of the vertical dimension that are asking us to move away from thinking of territory as two-dimensional planar areas, to the exclusion of activities based off-land. The chapter presents an investigation of the processes that construct ocean/island/seafloor imaginaries and of their co-constituted material assemblages – this in order to think beyond islands and oceans to analyse the seabed by considering its legal construction as the prolongation of the nationally bounded continents and simultaneous manifestation as a contingent and shifting submerged space. Thus, recognizing the powerful material realities of the ocean, this research will contribute to human geography and island studies by investigating the spatial ontologies of ocean spaces.

To such ends, what follows are sections on the creation of the legal oceanscapes, the relationship of islands to this changing ocean space, and a focus on New Zealand's approach to legislating and regulating seabed mining within its marine territory. The historical context offered in the first section offers insight into the Law of the Sea as it relates to the development of the seabed mining industry and more broadly the capture of ocean space within the nation-state system, utilizing the juridical invention designated as the Exclusive Economic Zone (EEZ). In the second section, analysis focuses on how jurisdictions are inscribed onto island marine spaces – places where the sea is integral to identities and livelihoods, where land and sea distinctions dissolve, or never existed. As one of the first governments to pass legislation

regulating seabed mining, New Zealand is a critical exemplar to draw on to analyse the applied rendering and regulation of the seabed, on which many island governments, industry investors, and environmental activists keep watch. Two proposed New Zealand mining projects will offer insight into the process of regulating industry seeking to operate on the seafloor.

A brief history of offshore mineral desires

> The desire for seabed transformation from *aqua incognita* to productive metallurgist, situated on the perimeter of the social – a frontier – required a decoding and recoding of flows and permutations, of definitions and practices, of land/sea territorial boundaries.
>
> (Deleuze and Guattari, 1983, pp. 175–6)

Contemporary relationships between national land and sea territories have evolved over many decades. It is useful to understand the shifting historical ideas and conditions leading to the current situation in order to contextualise the social construction of ocean space in relation to the legal and technological 'taming' of wild seas (Steinberg, 2001). Desire both to develop and protect ocean space manifested in the 1982 signing of the third United Nations Conference on the Law of the Sea (hereafter, the Law of the Sea or UNCLOS). The treaty divided up the world's largest resource space – some 361 million square kilometres (139 million square miles) – three times the area of all the continents combined. Among the several motivations informing UNCLOS was the desire to create a stable legal framework to extract minerals from the seafloor.

Fast-space and loose-space

Prior to the United Nations' formalising of the Law of the Sea, ocean space had been subsumed under various arrangements of exclusive and inclusive uses. For example, in an attempt to monopolise trade routes and exploratory voyages, in 1494 those who drafted the Treaty of Tordesillas partitioned the known maritime world between Spain and Portugal. Yet just over a hundred years later, in 1608, such exclusionary practices gave way to *Mare Liberum*, a legal precept invoking the freedom of the seas and sanctioning all nations' rights to navigation. In the early eighteenth century those seas, common to all, again were claimed as territorial waters. Many coastal nations extended their sovereignty offshore to three nautical miles (5.6 kilometres), a distance supposedly based on the range of a shore-based cannon. After a 1945 presidential proclamation expanded United States' sovereignty past territorial waters to an unspecified distance of the continental shelf (Truman Proclamation, 1945), many national governments began staking claims to marine territories of varied distances offshore. Each territorialisation represented an attempt to reimagine ocean spaces by superimposing the fixed

grid of terrestrial boundaries over the surface of an unruly sea (Deleuze and Guattari, 1987). Steinberg (2013) notes that producing oceanic space in such manner dismisses the challenging dynamism and turbulent and itinerant fields of ocean materiality. Yet, this imposed static spatiality normalizes ocean space in ways redolent of developments in other intractable places – for example, the Arctic. The 'aim of this process is, in the end, to increasingly normalise the Arctic and make it like any other place within the dominant Westphalian system: A region that is governed by states, in which law and order is maintained so as to facilitate investment and commerce without major conflict' (Steinberg *et al*., 2015, p. 164).

Offshore mineral resources were first uncovered when Her Majesty's Ship *The Challenger* fished manganese nodules from the seabed in the 1870s. The crew's exploration of the deep sea was the first of several expeditions lasting into the 1950s, yet there was little understanding of the ecosystems below. Indeed 'our understanding of the deep ocean was one of low biodiversity, no primary production, no seasonality and a uniformly cold, food-poor, dark, tranquil and invariant environment. It was with this scientific framework that the United Nations Convention on the Law of the Sea (UNCLOS) was written' (Ramirez-Llodra *et al*., 2011, p. 1). Over time prevailing understandings about the ocean underwent immense changes as material experiences were transformed by technology. With the decline of sailing and whaling, and the advent of steam ships and improved navigational technology, metaphors, imaginaries, and practices of embattlement and antagonism over fearsome and infinite seas gave way to others invoking paternalistic conservation and calculative management of a bounded and beleaguered global ocean. Current social constructions of oceans maintain a state of flux (Steinberg, 2001). While often represented as a wild place or a last frontier (Glassner, 1991; Ramirez-Llodra *et al*., 2011), the sea is also known to be greatly affected by activities entangled with modern technologies, such as overfishing, plastic pollution and acidification (Gregory, 2009; Murray, 2009; Srinivasan, 2012). Even as such activities and impacts move farther offshore and deeper beneath the surface, because the ocean is situated on the perimeter of political and social spheres it is still dominantly imagined as a space outside the human realm (Steinberg, 2001).

While the seabed was once considered a space devoid of life, technological advancements are revealing it to be rich in magnificent amounts of biomass and biodiversity (De Leo et al., 2010). Improved technologies also disclose pockets of manganese, cobalt, phosphate, iron and many other precious ores (Glasby, 2000). In the 1970s, a hundred years after *The Challenger's* discovery, there was a rush to develop these seabed minerals, but a real economic mandate was never reached and attempts were largely abandoned as metals markets declined. In the three decades that followed, improved metal prices, cheaper underwater technologies, and increased scientific understanding and mapping of the deep sea continued to pique interests in the seafloor as a potential site for mining. However, transforming the seabed from *aqua*

incognita to productive metallurgist necessitated new understandings of sovereignty over the seas and re(in)scription of geopolitical land/sea territorial boundaries.

Completing this project to normalise the sea necessitated consistent, codified, and internationally recognised jurisdictions. From 1958 to 1982, at the same time as many national governments were engaged in arbitrarily expanding their oceanic claims, delegates at the United Nations' first, second, and third Conferences on the Law of the Sea strived to achieve a consensual standardisation of offshore territorial boundaries that both satisfied desires to secure a framework for resource ownership *and* assured unimpeded navigation. Defining a new jurisdictional category to reconcile these contrasting spatial logics was not straightforward. Instead, it required the ocean to be written into a new paradigm, its flows and permutations to be reimagined – from an untamed frontier to 'an abstract point on a grid, to be developed' (Steinberg, 2001, p. 207). Finally emerging after 35 years of negotiations, the 1982 Law of the Sea captured the oceans in a vision of freely flowing commodities and properly fixed resources.

Exclusive Economic Zones: jurisdictions of convenience

With the writing of new borders across the deep seas, the Law of the Sea apportioned marine spaces by creating new national jurisdictions called Exclusive Economic Zones (EEZs). Only in 1994, after the sixtieth signature was secured, did the Law of the Sea come into force, granting nations control over new and vast marine spaces. As with previous attempts to organise and control these spaces, the reterritorialisation made possible by the Law of the Sea was based on land metrics. Embracing the established and fixed grid coordinate system of terrestrial boundaries, land metrics have no capacity to accommodate the unique aquatic materiality of ocean space. As Hubbard (2013, p. 95) explains in her environmental history of marine space, via technology 'ocean spaces [have] become extensions of the terrestrial spaces dominated by industrialised nation-states'. These territorialisations function through explicit assertions about exclusive access to resources on the seabed and within the water column, while preserving mobilities and flows of commerce. Thus, the EEZ was developed with this very particular logic: a strategic jurisdictional ambiguity serving to normalise and make legible the sea (Baldacchino, 2010; Scott, 1999).

The EEZ is the largest national spatio-juridical designation in the Law of the Sea Treaty. Extending 200 nautical miles (370 kilometres) from coastlines, globally EEZs comprise approximately a third of the world's oceans. Coastal states may apply to extend their marine territories even further offshore by submitting for consideration by the United Nations new Extended Continental Shelf (ECS) limits (United Nations 1982, Article 76). EEZ jurisdictions form a crucial part of the Law of the Sea framework, creating legal

precedent for the assertion of resource-based sovereignty – granting sovereign rights over resources, but not conceding sovereignty over the space itself.

> In the [EEZ], the coastal State has: sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone.
>
> (From Article 56(1a), United Nations Convention on the Law of the Sea 1982 United Nations. Reprinted with the permission of the United Nations)

Sovereignty is exerted over a resource, not the space containing it, and this distinction enables the legal extraction of minerals and metals from the seafloor without implying the kind of rights or responsibilities indicated by full territorial sovereignty on land, nor offering pragmatic management parameters (Johnston and Saunders, 1987). Framing of the ocean within these jurisdictions creates a space in which nation-states can expand a set of rights framed around specific functional uses. Understanding this mode of organising sovereignty and space offers insights into the political geography of non-terrestrial spaces and territories which are increasingly important as resource prospecting moves further offshore, poleward, and even off-planet (Dickens, 2009; Williams, 2010).

Dominant discourses that narrowly interpreting territories as the bounded sovereign spaces of nation-states have been called into question (see, for example, Painter, 2010). In practice, territory manifests in diverse arrangements. Elden (2010, p. 801) argues that territory 'needs to be interrogated in relation to state and space, and that its political aspects need to be understood in an expanded sense of political-legal and political-technical issues'. He suggests that one way to approach territory is to view it as a political technology using techniques to calculate and evaluate land and control terrain. Over time, desired objects of calculation and control have changed and new political technologies have emerged. For example, to command submerged terrain, the EEZ was created as a strategic political technology, enrolled to normalise ocean space and secure it for national endeavours; it is the materialisation of a specific territorial imaginary still in the process of being produced technically, scientifically and practically.

Arguably, the inchoate status of the EEZ requires further theoretical and empirical investigation. Drawing on intellectual contributions from political geography and island studies, I argue that the EEZ should be investigated as a novel geographical strategy, which is better understood by reference to its historical context and the material conditions under which it was and is being produced (Baldacchino, 2010; Elden, 2007, 2010; Steinberg, 2005, 2013).

Island/ocean geographies

> … the idea of smallness is relative; it depends on what is included and excluded in any calculation of size. [Among those who hail from continents] their calculation is based entirely on the extent of the land surfaces they see.
>
> (Hau'ofa, 1994, p.152)

As an experimental political technology, the EEZ, is being implemented within an existing assemblage of cross-scalar relationalities that draw into a complex web island nations, subnational island jurisdictions, metropolitan powers, intergovernmental organisations and global capital. Economic drivers coalesce with political will and technological capability to enable certain actors to press the deep sea into industrial service, this context suggests the particularity of the events now informing and constituting seabed mining.

Seabed mining is arguably a distinct *moment* in the accretion of conditions and constraints that characterise both ocean imaginaries and materialities. In such light, understanding territory as a produced phenomenon demands an investigation into the historic, economic, legal and technical facets involved in the political reorganisation of ocean space (Elden, 2010). The land/sea binary dissolves into a constellation of island-island, centre-periphery, developed-developing, surface-volume, fixed-flowing relations converging in material ocean spaces (Pugh, 2013). As ocean territories are operationalized in distinct ways across island nations in the Pacific Ocean, for example, the scales of national and international maintain some meaning as categories of analysis, yet the ocean itself exceeds such human spatial and temporal scales. Certainly, colonial and post-colonial relations between islands and continents, contribute to this new territorial category being superimposed over existing embedded institutions, infrastructures and congealed relations of power in the Pacific; so, too, do connections between island nations, islanders, and oceans, all.

Island constellations/ocean relations

At various times, European and American rhetorics have portrayed the Pacific as an ocean void scattered with empty islands (Matsuda, 2007). Discursively constituted as vacant space, the Pacific became a ready target of exploitative practices of resource extraction. Legacies of these colonial practices still scar island landscapes and oceanscapes. Passed from one colonising power to another, many Pacific island territories have suffered extensive resource extraction – for example, in the form of fishing, agricultural cash crops, timber harvest, guano extraction, and terrestrial mining (Burnett, 2005). Jurisdictional arrangements, originating from imperial interventions in the Pacific, contribute to heterogeneous political, economic, and social topologies. The results are varied compositions of sovereignty, territory, jurisdiction, and

enclave across a spectrum of potential political manifestations: 'a constellation of subnational island jurisdictions … illustrating the flexibility and tenacity of global capital, of federal politics, of smaller autonomous territories, as well as of sovereignty and the geography of power generally' (Baldacchino, 2010, p. xxii).

Many dependencies and associations thus exist within and between islands, or between islands and their former or current continental powers. In the Pacific, examples of these relational archipelagic arrangements include the Cook Islands, Niue, and Tokelau. Passing from British control, these islands are now in 'free association' with New Zealand on matters of mutual interest – allowing their peoples citizenship, budgetary assistance and diplomatic representation, and varying degree of independence. These island groups, together with New Zealand's unrecognised Antarctic claim, comprise The Realm of New Zealand constituted under the nominal head of state, HM Queen Elizabeth II.

There are, of course, many other relational webs that bind together island governments in archipelagic interconnectivity. Kiribati and Samoa are supplied defence assistance by the governments of Australia and New Zealand, having no military forces of their own. Search and rescue services are provided by New Zealand 'from the Equator to the Antarctic, and from half way to Australia to half way to Chile', one of the largest in the world at 30 million square kilometres (11.58 million square miles) (Maritime New Zealand, n.d.). These examples demonstrate some of the strong political, economic, and strategic connective dynamics in existing Pacific relations.

Beyond these connections at the nation-state level, island peoples share associations that transcend official borders and exceed land/sea divisions. Indigenous populations with strong historical claims to the sea have attempted to call attention to the extreme biases of the categorisation and overlay of linear boundaries over a lived and living ocean space (Stratford *et al*., 2011). Those in subnational and cross-national networks of Pacific island peoples negotiate various island jurisdictions, asserting their rights to fisheries and marine spaces of all types, maintaining independent identities, politics, and sovereignty movements (Hau'ofa, 1994). In New Zealand, several Māori *iwi* (tribes) continue to make claims on the coastal seafloor and seabed with the conviction that their treaty rights apply to 'dry land' and to the marine area as well (Douglas, 2010). Decidedly, these indigenous discourses of land/sea spatiality differ from coloniser practices of political boundaries; island cosmologies residing as much in the sea as on land (Hau'ofa, 1998).

Submerged terrain/submarine materialities

The sorts of tensions that typify debates about seabed rights as they manifest in New Zealand are neither surprising nor singular. Indeed, Pacific nations are presumed to have the most to gain from developing their seabed resources because their EEZs are tens, hundreds, sometimes even thousands of times

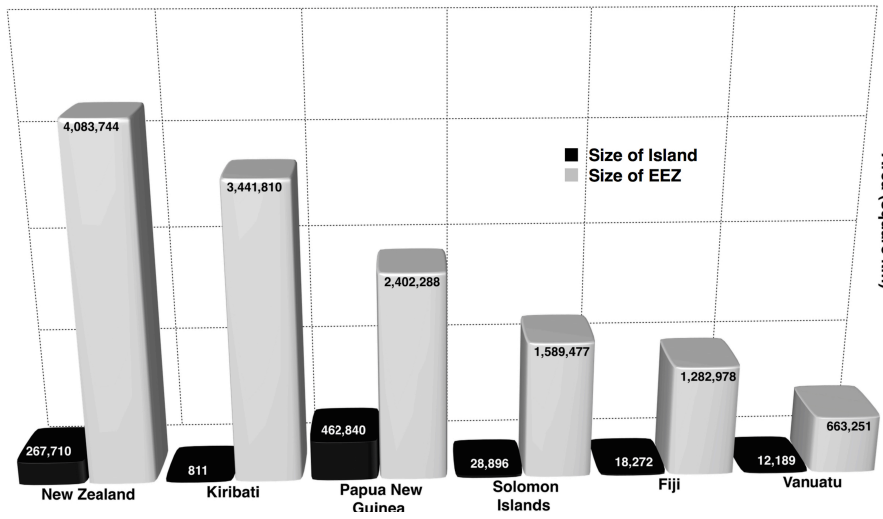

Figure 2.1 Select Pacific Island nations: land and terrestrial areas. (Extended Continental Shelf areas excluded, as they continue to be assessed by UN.) Image by Katherine Sammler. Data sources: United Nations, 2015.

larger than the island groups' landmasses (Figure 2.1). Even the smallest island nation may be granted 125,700 nautical square miles (431,000 square kilometres) of marine territory – estimated on the area of a circle (πr^2), where r is 200 nautical miles, assuming island circumference of one. Of course, many of these islands exist in close enough proximity to have overlapping claims for EEZs, which must be split amongst them; requiring precise calculations to delimit shared marine borders.

Beyond considerations of size, the Pacific region is expected to contain an amount of minerals greater than that found in other ocean basins (Boschen, *et al*., 2013). Many of these small nations are situated above geologic conditions ideal for the formation of seabed minerals: converging and diverging tectonic plates with continental and oceanic crusts mashing together or oozing apart (Pandey, 2013). Thus, both islands' geographic position atop *terra mercurial* and the tremendous size of their EEZs offer ideal material conditions for those wishing to access extensive seafloor resources. Mark Brown, finance minister for the Cook Islands, contends that mining in its EEZ could transform the nation into one of the richest in the world in terms of per capita income and 'increase gross domestic product a hundredfold' (in Neate, 2013, n.p.). As a governmental entity, the Cook Islands is currently ranked in the bottom ten nations for national purchasing power parity (PPP), a statistic representative of many Pacific Small Island Developing States (SIDS) (Hegarty and Tryon, 2013). Ostensibly, this position is due to a lack of natural terrestrial resources and isolation from foreign markets, and certainly it

is a product and/or legacy of colonial and postcolonial extractive industries, neo-colonial free trade agreements, and debtscapes.

Extensive resources within these submerged territories indeed have the gleam of sunken treasures for developing nations and are economic lifelines. For this reason, even though management strategies are emergent and extraction techniques untested in the deep sea, many SIDS governments and global investors are eager to start mining. In fact, some Pacific island governments are at the forefront of national seabed development. Yet, the EEZ is being implemented differently across the Pacific's national governments, in part as a function of existing and emergent governance structures, and significant political challenges and incalculable environmental risks stand in the way of mining seafloor riches. Island nation governments and enterprises seeking to engage in this industry are still creating the legal frameworks and generating governance and other capacities to govern the extraction of non-living resources from their expansive marine territories. Notwithstanding such complications, various seabed mining projects are in the planning stages across the Pacific. For example, national governments in Papua New Guinea and New Zealand have taken steps to implement legislation and engaging in economic calculations that would permit their first mining operations. As a result, and noting that the governments of Australia's Northern Territory and of the nation of Vanuatu have issued moratoria on mining in waters off their coasts, some island nations may now be on the brink of significant economic, ecologic, and governance transformations.

It is important to consider that EEZ boundaries were created in tension with the context of ocean physical extremes, among them pressure, temperature, and darkness. A corrosive fluid of unbounded flows and mobilities (Steinberg, 2013), the ocean remains an extremely difficult space upon which to impose governance regimes or to enforce regulations. Organising the vast horizontal and vertical spaces of the ocean has proven challenging to institutions historically developed to govern, manage, and develop land (Palan, 2003). The wayward physical properties of the ocean restrict neither ecosystems nor pollutants from spilling over politically and legally constructed boundaries. Laws and policies are not so easily inscribed on such a place (Scott, 2010). Thus, the materiality of the ocean plays an active role in its constant reformulation as it generates waves, exerts buoyancy, absorbs light, transports heat, and dissolves materials which respectively limit infrastructures, afford navigation, conceal objects, propagate energy and corrode solids (Lehman, 2012).

Within this tempestuous medium, seabed mining is an untested industry necessitating the extrapolation of land-based strategies of management and excavation to locations beneath oceans. Sediment plumes from mining operations and post-extraction mine tailings returned to the seabed are thought to have devastating potential. Suspended sediment may increase toxicity or block out sunlight in the water column, and clog the filter-feeding apparatuses of benthic organisms. Plumes that block sunlight would decimate photosynthetic plankton, the foundation of the aquatic food chain posing a risk

to ocean ecosystems and the communities that depend on them. These risks are particularly dangerous to Pacific nations, due to their exceptional dependence on marine spaces economically and culturally.

Topologies and contiguities

Although seabed mining has the potential to create many political, economic, social, and ecologic changes, most Pacific island governments are still in the early stages of devising legislative and administrative programs that are based on the understanding that the EEZ is a territorial category. Practically, this work involves several difficult tasks – producing codified rules and norms, and converting these into legal and regulatory performances to bring this new national space into being. As this space emerges and becomes available for exploitation, extraction, and accumulation, the boundaries drawn around islands in the Pacific represent new potential island-seabed topologies of power, drawing attention to the already 'complex and overlapping intermediations between islands and between land and sea' (McMahon, 2013, p. 56).

Previously separated by hundreds of kilometres of ocean, island nations now have territorial contiguity (Figure 2.2). By creating this maritime border connectivity between Pacific nations through their adjoining seabeds, additional topologies prompt questions about access, flows, cooperation, and regional governance. Historically, lines drawn on maps of the ocean could be considered lines of division or of connection (Steinberg, 1999), and EEZ boundaries can be represented in both ways. Globally, national governments now have stewardship over almost 40 per cent of the Earth's ocean area (131 million square kilometres/50.5 million square miles, which excludes Extended Continental Shelf claims; see UNEP/GRID-Arendal, 2011). Thus, they are able to protect and/or exploit resources within the water column and on the ocean floor. Yet, with a large portion of the west Pacific now a mixture of EEZ jurisdictions, it is difficult to imagine how watery volumes of flow and movement, interlaced with these leaking borders, will be managed at, or exceeding, the national scale. Governance within the region is not homogeneous, but, rather, functions within networks of power relations among those actors and entities implicated in national, regional, and international governance, and of various flows of capital. Indeed, capitalism 'decodes and deterritorializes with all its might' (Deleuze and Guattari, 1983, p. 336) – it penetrates the seas, as the seas transgress the borders, and its protagonists seem to see only the land and resource beneath.

Along with the general difficulty of managing ocean space at all, varying colonial and postcolonial pasts and presents, and the numerous sub- and transnational archipelagic arrangements and relationships point to the EEZ being implemented very differently in practice across the Pacific. Notwithstanding, regional governance associations influence island-to-island knowledge creation and dissemination, and manifests as substantial instruments of power.

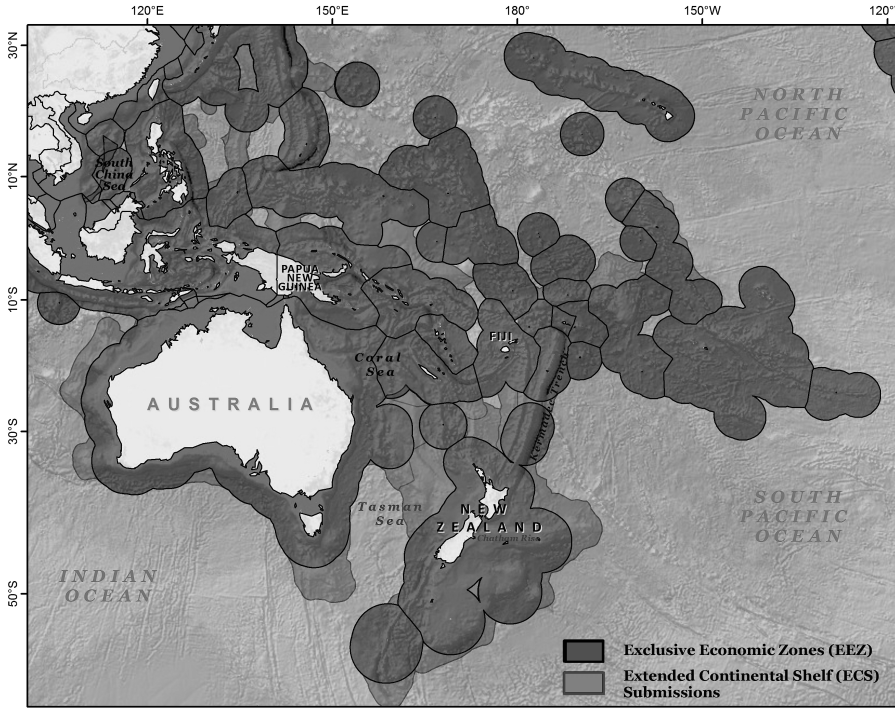

Figure 2.2 Territorial contiguity in the Pacific created by EEZ jurisdictional borders. Image by Katherine Sammler. Data sources: VLIZ, 2014.

Island studies literatures highlight how a territorial border defined by a land/water interface is a 'critical feature of islands but by no means is it definitive, for the land and sea boundary is a shifting, fractal and paradoxical one' (Stratford *et al*., 2011, p. 115). As island territories have thrust seaward, past land-sea boundaries and into the deep, the annihilation of such binary distinctions is exposed by the very existence of the EEZ.

Furthermore, meditation on archipelagic thinking reorients island inquiry away from a focus on connections to the mainland. Instead, archipelagic thinking considers the strengths of island-island connections, 'relations that may embrace equivalence, mutual relation and difference in signification' (Stratford *et al*., 2011, p. 113). In this conceptualisation, because of island nations' interconnectedness and cooperation they may be better positioned to manage the seaward thrust of their territorial boundaries. Yet, competition over mining contracts could motivate reduced regulation or decreased royalties in a race to the bottom. If mineral prospects are pursued near a shared EEZ border, transboundary issues of mobile pollutants or sprawling ecosystem damage could become a point of conflict.

Despite the potential for conflict, cooperation is not new among Pacific island states. The Secretariat of the Pacific Community (SPC), formally

entitled the Pacific Commission, is a remnant of colonial powers in the region. Its membership, when founded in 1947, comprised territorial administrators from Australia, France, New Zealand, the Netherlands, the United Kingdom, and the United States. As island nations gained independence or self-government in the 1960s and 1970s, they became members of the SPC under their own political leadership. In many technical, economic, and political matters, the organisation now represents 22 island nations and their metropolitan counterparts. For example, the SPC is amassing technical information under its Applied Geoscience and Technology Division. With funding from the European Union, the SPC Deep Sea Mining project is establishing recommendations and best practices for formulating legislative frameworks and environmental management in anticipation of seabed development. Additionally, the Pacific Island Forum has released several reports on the potential viability and drawbacks of seabed development for its 16 member states. Such relational webs constitute multi-directional flows of information and power among islands, now connected by the political and physical topography of the seabed.

Despite the existence of both shared regional and global governance frameworks on which Pacific governments may draw, there are many competing ideas regarding deep seabed mining. Those working in development groups express hope that funds flowing from seabed mining activities will provide their nations with much-needed income to improve infrastructure and spark further investment. In contrast, local environmental groups and sceptical citizens envision seabed development as yet another transfer of resources from their islandS to a mainland or continental force, leaving behind environmental ruin unlikely to be fully remediated.

The geopolitics of New Zealand's deep-sea mining strategy

> May our mountains ever be / Freedom's ramparts on the sea, / Make us faithful unto Thee …
>
> (*God Defend New Zealand/Aotearoa*, New Zealand's national anthem)

New Zealand is a developed economy and archipelagic nation in the Pacific region comprising two large islands and over 700 smaller offshore islands. It is important to deep sea mining politics because of the national government's pioneering efforts in the development of EEZ legislation, policy, and management structures. Focusing here on New Zealand enables consideration of what it means to envisage and implement marine spaces, which are especially difficult to govern – both alluding to and evading categorisation as national sovereign territory. Such consideration, in turn, offers important insights into emerging legal, political, economic, and social constructions of the deep sea.

I undertook three months of fieldwork in New Zealand in 2014, work that resulted in many lengthy interviews with key stakeholders from regulatory offices, non-government organisations, grassroots environmental movements, mining companies, and legal and Pacific scholars. I consulted documents in the New Zealand National Archives in Wellington, via multiple online government sources and, later, did the same in the United Nations Archives in New York City.

Thinking about New Zealand's seabed mining development, in what follows I argue that two characteristics dominate 'the conversation'. First is a persistent tension between rhetorics and practices, imaginaries and materialities. Documents reveal, and stakeholders speak of, the development of the seabed as 'inevitable', even as they acknowledged that economic and ecological uncertainty greatly endanger the feasibility of undersea mining projects. Second, as revealed by documents and stakeholders, there exists a patchwork of legislation in response to the EEZ territory, which they understand as a deeply ambiguous jurisdiction.

Land of the long white cloud, sea of the deep crown minerals

Having among the largest marine territories in the world, New Zealand's more than four million square kilometres (1.54 million square miles) of EEZ holdings are roughly 20 times the size of its landmass (EPA, n.d.; Figure 2.3). New Zealand is an influential member of regional inter-governmental organisations and maintains various arrangements and associations with multiple islands nations and territories. Its relative dominance in the relational topology of Pacific seabed development makes it an important barometer in the region, as its development and security activities will be significant for those in many Pacific nations.

At time of writing, New Zealand differs from many Pacific governments currently working to introduce legislation on seabed mining. It is a much larger island group with a more diverse economy, more resources overall, and a greater capacity to initiate novel governance frameworks for its maritime territories. New Zealand declared 200 nm of marine territory in 1978, at the same time as many other nations were scrambling to assert strategic claims offshore. Its claims included the Kermadec, Chatham, and several sub-Antarctic islands.

In 1991, the Crown Minerals Act staked New Zealand's claim to the entire continental shelf beyond the EEZ for the mining of minerals, petroleum, and other natural resources, with rights to explore and exploit these resources vested in the Crown. The national government ratified the Law of the Sea treaty in 1996, but only on 28 June 2013 did the Exclusive Economic Zone and Continental Shelf Act 2012 (EEZ Act) came into force. The New Zealand Environmental Protection Authority (EPA) began evaluating its first marine consent application in early November 2013.

Conservation groups, fishers, and other concerned citizens organised a campaign and protests against this instantiation of seabed development

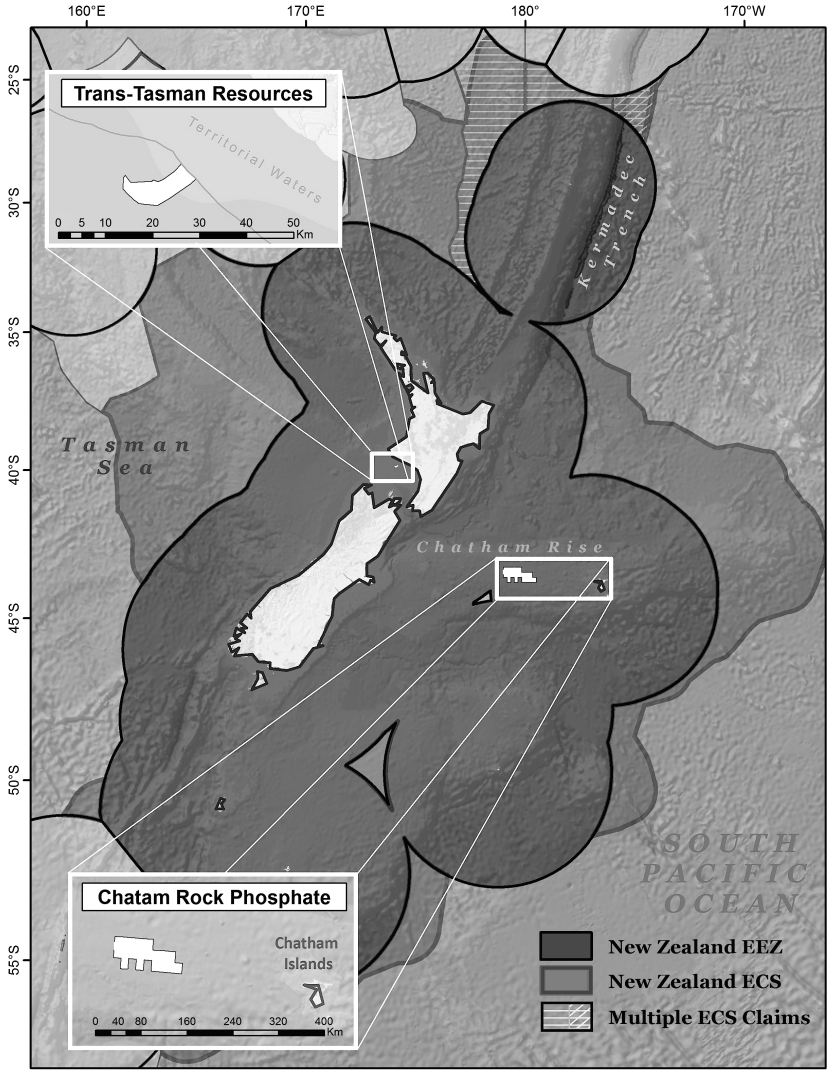

Figure 2.3. Proposed mining sites, New Zealand's EEZ and ECS marine territory. (Sites pertain to the Trans-Tasman and Chatham Rock Phosphate companies.) Image by Katherine Sammler. Data Sources: VLIZ, 2014; EPA, 2014; 2015.

because of concerns about the experimental status of mining technologies, and perceived lack of oversight and economic fairness. The national government's response has been to amend the Crown Minerals Act 1991 to create exclusion zones around prospecting, exploration, and extraction vessels and structures. The Act authorises the New Zealand Defence Force to arrest and detain anti-mining protesters, and enables steep fines and potential incarceration (Crown Minerals Amendment Act, 2013, 101B-C). The amendment

instigated its own protests and a tirade from Moana Mackey of the New Zealand Labour Party.

> [T]he United Nations convention on the continental shelf tells us that we do not have the right to pass legislation on the water column above the continental shelf. We have the right to exploit minerals in the continental shelf, we can drill into it, and we can tunnel into it, but in the water we have no jurisdiction … How is it, then, that we have the right to regulate shipping activity that is protesting in the water above the continental shelf? We do not. It is humiliating that the Government is sitting here passing law that we have no right to pass. You might as well pass a law on Mars, because you do not have jurisdiction there, either.
>
> (New Zealand, Parliament, 2013a)

The debate over seabed mining off the North Island of New Zealand clearly demonstrates the contradictory imaginaries that have produced ocean territories. In tension here are complicated dual modes to secure resource ownership and ensure the freedom of navigation. Restricting offshore activity serves to privatise ocean space to approved commercial entities and activities by removing protesters. Providing the legislative certainty for offshore investors guarantees the private rights of the extractive industry over a public commodity represented by the Crown. This situation highlights the jurisdictional ambiguity and patchwork legislation being passed to fill regulatory gaps over the EEZ. It also reveals both environmental and economic anxieties produced by potential seabed mining projects affecting New Zealand's maritime territories.

El Dorado meets the white whale: inevitability vs uncertainty

It is postulated here that seabed mining ventures are typified by visions of El Dorado: tempting riches with a high barrier to overcome, an inevitable promise with the elusiveness of the white whale. Nevertheless, stakeholders in New Zealand's seabed mining debate appear to accept, whether reluctantly or eagerly, that exploration and extraction are inevitable – next steps in the unrelenting march of progress. Comparing onshore and offshore mining, in September 2014, a geologist shared with me the following:

> Either way, it's gonna happen, so which would you rather? Which has greater effects? Which is more easy to mitigate? People don't think about this stuff. They just say 'not in my backyard' or 'shut down all mining.' What you mean 'shut down all mining'? Life as you know it would cease to exist. Everything that you do – your cell phone, your TV, your car, the plane that got you here – everything requires metals.

In fact, this period is not the first in which seabed mining has been a fervent topic of speculation and debate. Motivations driving the push for many

national governments to formalise the Law of the Sea were prompted by predictions of global mineral shortages and bold faith in the potential for riches from the seafloor. Yet, international research and development investments made through the 1970s and 1980s delivered little return (Glasby, 2000). When the Law of the Sea came into force in the 1990s, seabed mining again promised riches that never materialised because of low market prices for metal and large upfront capital costs. Yet, the uncertain economic benefits of seabed mining to New Zealand are only partly articulated in varied campaigns launched in objection to the industry (for example, consider Deep Sea Mining Campaign, Greenpeace International, Kiwis Against Seabed Mining). Most public discussions about uncertainty focus not on economic matters but on a lack of scientific and environmental data, a prominent and valid concern made stronger by a range of indeterminate economic factors, as discussed below.

Both in area and depth, the scale of EEZs is known to pose immense difficulties to data collection and modelling. The seafloor challenges technical abilities because it is an environment of extremes: freezing temperatures, zero light, corrosive salinity, and crushing pressures. One of the barriers facing the seabed mining industry in New Zealand is the investment needed for data collection at a potential mine site. The viability of the site as well as the permit application necessitates prospecting and exploration, processes that include gathering precise technical information about oceanographic conditions and benthic habitats, taking core samples, and doing economic and environment modelling, the cost of which is borne by the applicant. These data are proprietary and pertain only to the area of interest. In June 2014, an environmental economist explained to me that one problem with this situation is that we 'need to know about places that don't have minerals, not just the places that do, to determine the relative ecological importance'. Mounting arguments against mining emphasise the point that not enough is known about the ecology of prospective mining areas to create a baseline from which to measure mining impacts and ecosystem recovery. Beyond the damage done by physically removing the rock, which is known to completely change the immediate vicinity, there is much uncertainty and concern about the larger impacts of sediment plumes or food chain reactions. Thus, in August 2014 one grassroots organiser shared with me his concern about how 'the uncertainty of the uncertainty is uncertain'. He worried about how little is understood about the interrelationships, interconnections, and interdependencies of ecosystems and physical systems off the coast of his home in New Zealand, especially since there is no period of baseline data with which to compare the impacts of proposed activities.

Illustrative of these tensions is the Trans-Tasman Resources Limited (TTR) mining proposal. Submitted in October 2013, the permit sought to mine iron sand off the coast of New Zealand's North Island (broadly 39.6° S, 174.1° E). It was the first to go through the marine consent process established by the New Zealand government and administered by its EPA. This operation was to take place 12–19 nm (22–36 kilometres) offshore,

in water 19-42 metres deep, which is relatively shallow when compared to most sites of offshore mineral resource evaluations (TTR, 2013). The project proposed the excavation of up to 27 million cubic metres of seabed sand per year in order to extract its iron content. The processing of the sand would have taken place on-board ship with over 90 per cent of the sand then being returned to the seabed. The iron ore concentrate would be available for direct export. Despite the tax and royalty payments to the New Zealand Government, predicted to be in the range of NZ$50 million per year (US$38 million), such estimates were criticised for disregarding the negative economic impacts on tourism and fisheries' interests. For example, it was noted that 'to assess the true economic impact of the project, potential negative effects as well as input assumptions such as iron ore prices need to be included into the specifications of the model' (EPA, 2014, pp. 155–6). A New Zealand regulatory agency staff member told me in July 2014 that:

> the economic arguments are very thin. And they're thin because people don't understand what the inputs are. And if they begin to understand the inputs, it's being played out on an environmental basis very poorly understood … we don't understand where the concentrations of fish are, we don't understand migratory patterns, we don't understand nurseries, we don't understand the food chain … You interrupt that chain at any point … it will have an economic consequence.

In fact, in June 2014 TTR's marine permit was declined. A decision-making committee appointed by the EPA reported their main concerns – including environmental impact uncertainty and lack of clarity about the extent of economic benefit to New Zealand (EPA, 2014). Indeed, the EEZ Act states that 'If, in relation to making a decision under this Act, the information available is uncertain or inadequate, the EPA must favour caution and environmental protection' (s.61(2)). Thus, and given fluctuating commodity markets it has yet to be proven that industrial-scale seabed mining can be done safely in terms of the principle of the precautionary principle enshrined in the Act, or done profitably (Stegen, 2015). In addition, improved offshore mining technology will be in competition with improvements in onshore mining technology and efficiency gains in the latter are likely to negatively affect the former. This precautionary principle places a burden on seabed activities more onerous than that exacted upon land-based pursuits, and is based on an understanding that there are insufficient data available in relation to mining in ocean environments.

Building the plane while flying it: the production of patchwork legislation

In anticipation of seabed mining pursuits, to allocate uses and minimize conflicts between ocean users in June 2008 the New Zealand Government

hastened to draft legislation and implement management regimes within the EEZ jurisdiction (Agardy, 2010). A patchwork of legislation and management regimes has emerged in stages as opposed to appearing as one comprehensive ocean management framework and allied governance agendas. Many of those with whom I spoke referred to the need to 'fill the gaps' in both governance for, and data collection in, the EEZ. In July 2014, one government policy analyst said that his office was always thinking about the newness of the whole endeavor; a new activity in a new environment by new regulators using new legislation to give permits to new companies. Regulators and industry personnel alike recognise great need for political, economic, environmental, and social data to be collected and analysed in order for this vast region to become a coherently governed national space with the responsibilities that come with bordering other nations' EEZs and the global commons of international waters. The EEZ Act is itself is stop-gap legislation, as the Crown Minerals Act 1991 has no environmental impacts regulation. For some, filling these gaps is important for conservation and to develop social license to operate in ocean spaces; for others, it is important to secure stability for capital investment. Known gaps in legal, environmental, economic, and social knowledge and understanding are being filled in an *ad hoc* manner, and stakeholders have reported a lack of unified vision for ocean management. In parliamentary debates, Moana Mackey (New Zealand Parliament, 2013b, n.p.) more than once has called into question the proliferation of seabed mining legislation, observing that 'we seem to be passing an awful lot of legislation for one industry in this country, to the detriment of the environment and the democratic rights of New Zealanders'.

One of the reasons for this so-called patchwork approach arises from the fact that the Fisheries Act 1996, the Resources Management Act 1991, and other pieces of legislation are now being overwritten by the needs of those seeking to engage in seabed mining. The outcome of this situation is that there are different regulations and regulators for near-shore and farther offshore areas, for living and non-living resources, and for different activities within the same spaces, despite the fact that all of the activities in the ocean will have impacts on each other. In July 2014, this regulatory approach was described to me by a government employee as akin to 'building the plane while flying it'. Within the EEZ there are multiple potential uses, and multiple laws and regulators seemingly stacked over the top of each other, an outcome partly attributable to the temporal mismatch between planning and development within the EEZ, a lack of vision for what rights and responsibilities are appropriate in these marine spaces, and the vertical potential for numerous overlapping uses. This governance patchwork can only exacerbate the challenges of administering marine spaces, and operating within ocean space.

One example of a remarkable overlap is demonstrated by the second permit application submitted to New Zealand's marine consent processes. In

May 2014, Chatham Rock Phosphate Ltd (CRP) submitted materials to collect phosphorite nodules from the seafloor at depths of 250-400 metres in an area called the Chatham Rise, 400 kilometres (216 miles) offshore and east of the South Island (43.7º S, 179.7 º E). The proposed project sought to remove roughly 1.5 million tonnes of phosphorite nodules from 30 square kilometres (12 square miles) annually for 35 years, totalling an excavation area of 1,050 square kilometres (405 square miles) (EPA, 2015). All parties acknowledge that breaking apart and suctioning up seafloor materials will destroy all benthic organisms in any given mining area since it involves removing the seafloor on or in which benthic flora and fauna live (CRP, 2014). Paradoxically, the proposed mining area overlaps the Chatham Rise Benthic Protection Area (BPA), established with Fisheries (BPAs) Regulations created by the Fisheries Act 1996, and in which trawling has been banned since 2007. In July 2014, one regulator shared with me the following: 'Chatham Rock [mining proposal] is really interesting in a benthic protection area. The benthic protection area was put in place to stop bottom trawling for fishing. So we take that bottom trawling out and we permit people to destroy the seabed by, they call it vacuuming, but I think that's a euphemism. Vacuuming up to a half meter deep.' Indeed, the mechanism planned by CRP for nodule removal is a trailing suction hopper dredger and drag-head, which can resemble a large, very powerful vacuum.

The BPA regulation specifically states as one of its purposes 'to prohibit the use of a dredge within the benthic protection areas' (Fisheries Regulations, 2007, s.3(c)). This prohibition applies specifically to fishers dragging the bottom for shellfish, however, and does not rule out mining. George Clement, the Chair of Seafood New Zealand and chief executive of the Deepwater Group representing fisheries interests in New Zealand, argued against mining within the BPA, reasoning that the Fisheries Act 1996 was used to create the protection areas because fishing was the only human activity taking place within the EEZ at the time. He commented on this quandary in the following terms: 'We have an unacceptable situation where the seabed in this BPA can be mined quite legally, even though it is illegal to have a fishing net touch or even go within 50 metres of it … It's a case of different rules for different users … the seabed of the BPAs should neither be trawled nor mined" (in Deepwater Group Ltd, 2014, n.p.).

After several delays, in February 2015 the EPA-appointed decision-making committee declined consent. The rejection of the CRP project and of TTR's permit will have a significant impact on how people imagine the feasibility of advancing this industry. As such, those in national governments, regional organisations, and corporations are watching developments in New Zealand, as well as across the archipelago of Pacific Island nations, to gauge if there is progress towards politically, economically, and environmentally viable seabed mining. In the meantime, New Zealanders who believe that the legislation failed in its purpose to grant permits and regulate the seabed mining industry are calling for amendments to be made to the EEZ Act.

Conclusion

Over time, the extension of national space into the global ocean has proven challenging to conventional institutions of governance, prompting concerns over economic fairness and environmental impacts. At the same time that the proposed benefits of seabed mining are being secured or delayed by governments, varied conservation groups, fishers and other concerned citizens are binding together to protest seabed development. Experimental mining technologies, lack of oversight, and economic plunder of this common property are of dire concern to many Pacific peoples, who have long experienced the effects of extractive practices of ocean and island natural resources. Profitability and economic fairness will depend on levels of environmental and economic regulation implemented – both within given nations and across entire regions.

In this light, it is significant that Pacific island nations are heterogeneously interconnected via culture, economics, and governance arrangements, as well as by their recently shared territorial contiguities as formed by abutting EEZs. This archipelagic Pacific must contend with economic markets and drivers, as well as ecosystems and pollutants that never hesitate to spill over politically and legally constructed boundaries in the ocean. Traits of the ocean's materiality, combined with experimental mining technology, make for a very precarious ecological and political situation. Pacific peoples, while presumed to have the most to gain from developing their seabed resources, bear witness to great uncertainties on the horizon regarding seabed mining practices. Both ocean conservationists and seabed developers interviewed by me expressed concern and frustration over the patchwork legislation and lack of unified vision for ocean policy. The fact that legislation and regulation is still in the process of being written, and that the EEZs of the Pacific are still emerging, make this an important moment for intervention and vision.

While the seabed mining industry has been in a fledgling state for decades, its continued resurgence illustrates the power of the discourses of resource scarcity and the inevitability of progress. Assuredly, other Pacific nations will be impacted by New Zealand's development aspirations given the ecological, economic, political, and social ties that bind the region together. Possibly they will be hard-pressed to compete for mining contracts. Those on smaller islands face challenges additional to any confronting those who would push for seabed development in New Zealand's EEZ: for example, there are fewer regulators to implement suitable policy and practice, and fewer scientific resources to address uncertainty surrounding marine ecosystem impacts. Moreover, urgent questions remain about who will benefit from seabed mining projects should they proceed.

In this chapter I have advanced the interrogation of territorial orderings of the world via ocean spaces. Recognizing that spatial organizations are historically and regionally contingent, EEZs represent one such and particular configuration of space that is both a political technology and a geographical

strategy enrolled to secure locations – one that exceeds the categories such as national/international or land/sea. Considering the landscapes and seascapes of the Pacific as more than spatial containers where seabed development is emerging, the social, cultural political, and economic aspects of seabed mining reveal the enormous agency of islands and oceans, archipelagos and basins, seafloors and water columns, salt water and sediment. Demonstrating that the historical contingencies of constructing territory are powerfully combined with the constant challenges of operating within the ocean's material conditions, this chapter thus serves to destabilize discourses of the inevitability of seabed development.

Biliography

Agardy, T., 2010. *Ocean Zoning: Making Marine Management More Effective*. Washington DC: Earthscan.

Baldacchino, G., 2010. *Island enclaves: Offshoring Strategies, Creative Governance, and Subnational Island Jurisdictions*. Montreal: McGill-Queen's University Press.

Blum, H., 2013. Introduction: oceanic studies. *Atlantic Studies*, 10(2), pp.151–155.

Boschen, R., Rowden, A., Clark, M., and Gardner, J., 2013. Mining of deep-sea seafloor massive sulfides: a review of the deposits, their benthic communities, impacts from mining, regulatory frameworks and management strategies. *Ocean and Coastal Management*, 84, pp.54–67.

Burnett, C.D., 2005. The edges of empire and the limits of sovereignty: American guano islands. *American Quarterly*, 57(3), pp.779–803.

Chatham Rock Phosphate Limited, 2014. *Application for a marine consent to undertake a discretionary activity*. [pdf] Environmental Protection Authority. Available at: <http://www.epa.govt.nz/eez/EEZ000006/EEZ000006CRP prescribedapplicationform.pdf> [Accessed 28 July 2014].

Crown Minerals Act 1991. [online] Available at: <http://www.legislation.govt.nz/act/ public/1991/0070/latest/DLM242536.html>.

Crown Minerals Amendment Act 2013. [online] Available at: http://www.legislation.govt.nz/act/public/2013/0014/latest/DLM4756113.html.

De Leo, F.C., Smith, C.R., Rowden, A.A., Bowden, D.A. and Clark, M.R, 2010. Submarine canyons: hotspots of benthic biomass and productivity in the deep sea. *Proceedings of the Royal Society B: Biological Sciences*, rspb20100462.

Deepwater Group Limited, 2014. *Call for seabed 'legal anomalies' to be resolved*. [press release] 19 May 2014. Available at: < http://deepwatergroup.org/dwg-release-call-to-for-seabed-legal-anomalies-to-be-resolved> [Accessed 12 March 2015].

Deep Sea Mining Campaign, 2013. *Campaign overview*. [online] Available at: <http://www.deepseaminingoutofourdepth.org/about/>.

Deleuze, G. and Guattari, F., 1983. *Anti-Oedipus: capitalism and schizophrenia*. Minneapolis: University of Minnesota Press.

Deleuze, G. and Guattari, F., 1987. *A thousand plateaus: Capitalism and schizophrenia*. Minneapolis: University of Minnesota Press.
Dickens, P., 2009. The cosmos as capitalism's outside. *The Sociological Review*, 57, pp.66–82.
Douglas, A., 2010. *Between a rock and a hard place: Does the Treaty of Waitangi provide an avenue for iwi to assert legal interests in minerals in the crown owned conservation estate?* Ph.D. thesis, University of Otago.
EEZ Act (Exclusive Economic Zone and Continental Shelf (Environmental Effects)) 2012. [online] Available at: <http://www.legislation.govt.nz/act/public/2012/0072/latest/DLM3955428.html>.
EEZ Amendment Act 2013. [online] Available at: <http://www.legislation.govt.nz/act/public/2013/0085/latest/DLM5644760.html?src=qs>.
Elden, S., 2007. Governmentality, calculation, territory. *Environment and Planning D: Society and Space*, 25, pp.562–80.
Elden, S., 2010. Land, terrain, territory. *Progress in Human Geography,* 34(6), pp.799–817.
Environmental Protection Authority, n.d. *The Exclusive Economic Zone and Continental Shelf*. [online] Available at: http://www.epa.govt.nz/EEZ [Accessed 2 May 2014].
Environmental Protection Authority, 2014. *Trans-Tasman Resources Ltd Marine Consent Decision*. [pdf] Available at: <http://www.epa.govt.nz/EEZ/EEZ000004/TransTasmanResourcesdecision17June2014.pdf> [Accessed 28 April 2015].
Environmental Protection Authority, 2015. *Decision on marine consent application by Chatham Rock Phosphate Limited to mine phosphorite nodules on the Chatham Rise*. [pdf] Available at: <http://www.epa.govt.nz/eez/EEZ000006/EEZ000006CRP%20Final%20Version%20of%20Decision.pdf> [Accessed 28 April 2015].
Fisheries Act, 1996. [online] Available at: < http://www.legislation.govt.nz/act/public/1996/0088/latest/DLM394192.html>.
Fisheries (Benthic Protection Areas) Regulations, 2007. [online] Available at: <http://www.legislation.govt.nz/regulation/public/2007/0308/latest/whole.html#DLM973975>.
Glasby, G.P., 2000. Lessons learned from deep-sea mining. *Science,* 289(5479), pp.551–3.
Glassner, M.I., 1991. The frontiers of Earth - and of political geography: The sea, Antarctica and outer space. *Political Geography Quarterly*, 10(4), pp.422–43.
Greenpeace International, 2014. *Deep Sea Mining*. [online] Available at: <http://www.greenpeace.org/international/en/campaigns/oceans/marine-reserves/deep-sea-mining/> [Accessed 20 March 2014].
Gregory, M.R., 2009. Environmental implications of plastic debris in marine settings— entanglement, ingestion, smothering, hangers-on, hitch-hiking and alien invasions. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364(1526), pp.2013–2025.

Hau'ofa, E., 1994. Our sea of islands. *The Contemporary Pacific*, 6(1), pp.148–61.
Hau'ofa, E., 1998. The ocean in us. *The Contemporary Pacific,* 10(2), pp.392–410.
Hegarty, D. and Tryon, D., 2013. *Politics, Development and Security in Oceania*. Canberra: ANU E-Press.
Hubbard, J., 2013. Mediating the North Atlantic environment: Fisheries biologists, technology, and marine spaces. *Environmental History*, 18, pp.88–100.
Johnston, D.M. and Saunders, P.M., 1987. *Ocean Boundary Making: Regional Issues and Developments*. London: Croom Helm.
Kiwis Against Seabed Mining, n.d. *About KASM*. [online] Available at: <http://kasm.org.nz/inside-kasm/about/> [Accessed 2 January 2015.]
Maritime New Zealand, n.d. *New Zealand's search and rescue region*. [online] Available at: <http://www.maritimenz.govt.nz/Commercial/Shipping-safety/Search-and-rescue/SAR-region.asp> [Accessed 21 January 2015].
Matsuda, M.K., 2007. 'This territory was not empty': Pacific possibilities. *Geographical Review*, 97(2), pp.230–43.
McMahon, E., 2013. Reading the planetary archipelago of the Torres Strait. *Island Studies Journal*, 8(1), pp.55–66.
Murray, G.R., 2009. Environmental implications of plastic debris in marine settings —entanglement, ingestion, smothering, hangers-on, hitch-hiking and alien invasions.
Philosophical Transactions of the Royal Society B: Biological Sciences, 364(1526), pp.2013–25.
Neate, R., 2013. Seabed mining could earn Cook Islands 'tens of billions of dollars'. *The Guardian*, [online] 5 August. Available at: <http://www.theguardian.com/business/2013/aug/05/seabed-mining-cook-islands-billions> [Accessed 17 December 2014].
New Zealand, Parliament 2013a, *Hansard (debates) Crown Minerals Amendment Act 2013 Amendment Bill -In Committee, Third Reading*, vol. 690, p.10277. Available online: <http://www.parliament.nz/en-nz/pb/debates/debates/50HansD2013051800000004/crown-minerals-amendment-act-2013-amendment-bill-—-in-committee> [Accessed 21 April 2015].
New Zealand, Parliament 2013b, *Hansard (debates) Third Readings*, vol. 689, p.9358. Available online: <http://www.parliament.nz/en-nz/pb/debates/debates/50HansD20130416 00000016/third-readings> [Accessed 21 April 2015].
Painter, J., 2010. Rethinking territory. *Antipode*, 42(5), pp. 1090–1118.
Palan, R., 2003. *The offshore world: Sovereign markets, virtual places, and nomad millionaires*. Ithaca, NY: Cornell University Press.
Pandey, A., 2013. Exploration of deep seabed polymetallic sulphides: Scientific rationale and regulations of the international seabed authority.

International Journal of Mining Science and Technology, 23(3), pp.457–62.
Pugh, J., 2013. Island movements: Thinking with the archipelago. *Island Studies Journal*, 8(1), pp. 9–24.
Resource Management Act, 1991. [online] Available at: < http://www.legislation.govt.nz/act/public/1991/0069/latest/DLM230265.html>.
Ramirez-Llodra, E., Tyler, P.A., Baker, M.C., Bergstad, O.A., Clark, M.R., Escobar, E.,
Levin, L.A., Menot, L., Rowden, A.A., Smith, C.R. and Van Dover C.L., 2011. Man and the last great wilderness: Human impact on the deep sea. *PLoS ONE*, 6(8), e22588.
Scott, J.C., 1999. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, CT: Yale University Press.
Shukman, D., 2013. Deep sea mining 'gold rush' moves closer. *BBC News,* 17 May. [online] Available at: http://www.bbc.co.uk/news/science-environment-22546875 [Accessed 10 November 2014].
Srinivasan, U.T., Watson, R., and Sumailab, U.R., 2012. Global fisheries losses at the exclusive economic zone level, 1950 to present. *Marine Policy,* 36(2), pp.544–9.
Stegen, K.S., 2015. Heavy rare earths, permanent magnets, and renewable energies: An imminent crisis. *Energy policy*, 79, pp.1–8.
Steinberg, P.E., 1999. Lines of division, lines of connection: Stewardship in the world ocean. *Geographical Review*, 89(2), pp.254–64.
Steinberg, P.E., 2001. *The Social Construction of the Ocean*. Cambridge: Cambridge University Press.
Steinberg, P.E., 2005. Insularity, sovereignty and statehood: The representation of islands on portolan charts and the construction of the territorial state. *Geografiska Annaler: Series B, Human Geography*, 87(4), pp.253–65.
Steinberg, P.E., 2013. Of other seas: metaphors and materialities in maritime regions. *Atlantic Studies*, 10(2), pp.156–69.
Steinberg, P., Tasch, J., Gerhardt, H., Keul, A., Nyman, E., and Shields, R., 2015. *Contesting the Arctic: Rethinking Politics in the Circumpolar North*. London: I. B. Tauris.
Stratford, E., Baldacchino, G., McMahon, E., Farbotko, C., and Harwood, A., 2011. Envisioning the archipelago. *Island Studies Journal,* 6(2), pp.113–30.
Trans-Tasman Resources Limited, 2013. *Application for a marine consent to undertake a discretionary activity*. [pdf] Environmental Protection Authority. Available at: <http://www.epa.govt.nz/Publications/FinalApplicationForm.pdf > [Accessed 2 February 2014].
Truman Proclamation, 1945. (no. 2667). [online] Available at: <https://www.trumanlibrary.org/proclamations/index.php?pid=252andst=andst1>.
UNEP/GRID-Arendal (United Nations Environment Programme/Global Resource Information Database), 2011. *Continental shelf – the last maritime zone*. [online] Available at: http://www.grida.no/publications/shelf-last-zone.
United Nations Convention on the Law of the Sea, 10 December 1982

(A/Conf.162/122). Available at: <http://www.un.org/depts/los/convention agreements/conventionoverviewconvention.htm> [Accessed 28 April 2015].
VLIZ, 2014. Maritime Boundaries Geodatabase, version 8. [online] Available at: <http://www.marineregions.org/> [Accessed 18 May 2015].
Williams, A.J., 2010. Beyond the sovereign realm: The geopolitics and power relations in and of outer space. *Geopolitics,* 15(4), pp.785–93.