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Thinking architecture with an Indian Ocean aquapelago

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Abstract

This article takes up the charge of thinking architecture with one of the Indian Ocean's central coral atoll formations, the Maldives archipelago. It is undertaken as a critique of the concept of the archipelago as deployed in architecture since the 1970's. Architects have used the archipelago as a metaphoric metageographical concept based on a land/sea binary, to conceive of architecture as autonomous from its environments. This permits the discipline exemption from its contexts and frames its engagement with the diverse mobilities of contemporary globalization. To counter this, the article draws from a broad body of literature familiar to readers of *GeoHumanities*, namely island studies, urban island studies, political ecology and thinking with water to undertake a reading of the Maldives as an oceanic aquapelago, as an alternative metageographical concept for architecture in today's globalized world.

Keywords

architecture, island, archipelago, aquapelago, Maldives

Introduction

This article is written as a critique of the concept of the archipelago as it has been deployed in architectural discourse since the 1970's. Architects have used the archipelago as a metaphoric, metageographical concept to conceive architecture's autonomy from its environments (Ungers 1977; Koolhaas 1995; Aureli 2011; Bhatia and Casper 2013). To counter this, I draw from a broad body of literature familiar to readers of *GeoHumanities*: from island and archipelago studies (Deleuze 2004; Jackson and della Dora 2009; Stratford et al. 2011, Stratford 2013; Pugh 2013), drawing most significantly on Hayward's notion of the aquapelago (Hayward 2012a, 2012b); from urban island studies (Grydehoj et al. 2015, Gupta 2015); from political ecology (Moore 2015), and thinking with water (Anderson 2012; Steinberg and Peters 2015). This provides the framework for a reading of the Maldives as an oceanic aquapelago, which I propose as an alternative metageographical concept for architecture in today's globalized world.

The research for the paper was undertaken as part of an ongoing study of the Indian Ocean I have undertaken since 2005, contributing to the "amphibious history" of the Indian Ocean (Pearson 2003, 5) and developing an alternative account of globalization from that usually told from an architectural or built environment perspective. Instead of bringing global cities and celebrity architects into view (Sassen 2001; Newman and Thornley 2005; Burdett and Sujic 2007; Adam 2014 et al.), by beginning in the ocean, new sites in global circuits, many on the margins of the urban world have come into focus (Bremner 2013, 2014, 2015). This has provided not only a privileged vantage point from which to view a changing world order (Hofmeyr 2010), but also fertile ground for repositioning architectural thought

and practice. As a continuation of this research, I paid two visits to the Maldives in 2015, one when I interviewed architects and engineers in the capital city, Male, and visited a resort island; the second, a field trip to Male and Maafushi with twenty Master of Architecture students. These students have subsequently investigated the themes of the aquapelago laid out theoretically in this paper, through design.

Structurally, the paper is divided into four parts. After this introduction, part two begins with Unger's (1977) 'The City in the City: Berlin: A Green Archipelago' and tracks its impact on architecture through brief reference to three key texts: Koolhaas (1995), Aureli (2011), and Bhatia and Casper (2013). I then outline the theoretical journey I have been on to develop instruments to critique this way of thinking the archipelago, primarily Deleuze (2004), Anderson (2012), Steinberg and Peters (2015), Stratford et al. (2011), Stratford (2013), Pugh (2013) and Hayward (2012a, 2012b). I draw on Hayward's idea of the aquapelago as a performed integration of terrestrial-marine spaces (Hayward 2012a) to propose that thinking the Maldives as an oceanic aquapelago offers a counter geography for architecture to think with. In parts three and four, the body of the article, I bring this idea to bear on the Maldives; part three focuses on the aquapelagic underpinnings of cultural life and spatial practice in the Maldives; part four examines the transformation of these relations after the advent of tourism in the 1970's. This not only re-aligned the aquapelago with tourist dollars, it also introduced a new quasi-object, the artificial island (Jackson and della Dora, 2009) into the assemblage, re-arranging land and sea, and human relations with them and each other. I conclude the article by returning to architecture and reflecting on what this reading of the Maldives offers to architecture today.

Part Two: Green Archipelago or Oceanic Aquapelago

In 1977 Oswald Mathias Ungers conducted a summer school for a group of architecture students from Cornell University in West Berlin (Marot 2013). At the time the city's population was in decline after the Berlin Wall had turned it into an enclave in East Germany. Ungers began to think about what it meant to inhabit this shrinking city and proposed the trope of the archipelago to do so. Certain parts of the city with architectural significance, the islands so to speak, were to be reinforced, while the rest, the ocean, was to be ignored, left to decay, to develop in an unregulated manner or to return to forest. Hence the name of his manifesto: *'Die Stadt in der Stadt, Berlin das Gruner Stadtarchipel,'* translated as 'The City in the City: Berlin: A Green Archipelago' (Ungers 1977, reprinted in Hertweck and Marot 2013, 83-130). This hypothesis contains a blueprint for the city as a collection of architecturally significant, value-laden fragments floating in a gridded, valueless (from an architectural perspective) metropolitan sea; and, reminiscent of Carl Schmitt's view of the sea as "nothing but waves" (Schmitt 2003, 13) and of Roland Barthes idea of the sea as a "non-signifying field" (Barthes 1993, 112), the metropolis was assigned the status of nothingness, as foil to the something-ness of architecture: "through parallel actions of reconstruction and deconstruction, such a city becomes an archipelago of architectural islands floating in a post-architectural landscape of erasure, where what was once city is now a highly charged nothingness" (Koolhaas 1995, 200).

This idea was further theorized by Pier Vittorio Aureli in his book *The Possibility of an Absolute Architecture* (Aureli 2011), in which he argued that for architecture to

engage politically, culturally and socially with the city, it has to be set apart from the forces of urbanization, as an archipelago of site specific, formal interventions. From there, architecture's history, theories, formal logics and compositional rules confront and, in Aureli's view, stabilize or make sense of the changing socio-political conditions around them. "Through its act of separation and being separated, architecture reveals at once the essence of the city and the essence of itself as political form: the city as the composition of separate parts" (Aureli 2011, back cover).

Ignoring for a moment the obvious correlation between this image and the fragmented, militarized nature of the post modern city (Grydehoj et al. 2015), what this does for architecture is to set up clear boundaries between what it is and what is not, where it is and where it is not and to reinforce the idea of architecture's disciplinary autonomy.¹ Where architecture is, its history, theories, formal logics and compositional rules are sovereign and endlessly repeated. Everything outside of this is rendered as non-architecture, unthinkable, invisible, denied or eradicated.

This template has had widespread impact on architectural ideas about urbanism ever since, from Rossi's *The Architecture of the City* (1982) to Koolhaas' *Delirious New York* (1994) to Allen and McQuade's *Landform Building* (2011) and Callejas' *Islands and Atolls* (2013), amongst others. These texts and the practices they have productively given rise to unquestioningly adopt the trope of the archipelago as collection of islands in an otherwise hostile or neutral sea. This was emphasized in a recent project to re-envision oil platforms as a new form of urbanism, published as *The Petropolis of Tomorrow* (Bhatia and Casper 2013). In this, Casper sums up what

is meant by archipelago urbanism: “a collection of diverse parts and their situation suspended within a clearly secondary context – constitute the core elements of archipelago urbanism” (Casper 2013, 109). White, in the same publication, while attributing to the sea some agency in determining what is or is not an archipelago, still describes it as a “self-similar surface between differentiated land bodies” (White 2013, 83). It is as if architects are blind to the sea!

It is in part to challenge this binary, urban- and sea- averse logic that my work on the Maldives has been undertaken. What if the archipelago was a fluid, mobile, relational, terra-aqueous form? What if architecture, instead of setting itself apart from the urban, thought itself from within the “fluid mobility and tactile materiality” (Steinberg 2013, 157) of the urban relations in which it is configured?

In order to undertake this thought experiment, I embarked on a theoretical journey that began with the bipartite typology of islands proposed by Deleuze in his short essay, ‘Desert Islands’ (Deleuze 2004). In this, Deleuze argued that geologically speaking, there are two kinds of islands: continental islands and oceanic islands. The former are fragments of continents, split off from a continental mass by erosion or fracture. The sea intervenes between them and the continental mass of which they were originally a part. The islands of the Aegean Sea, the original archipelago (Stratford et al. 2011, although Hayward 2012a identifies those of the Adriatic Sea as original) belong to this type. Given this, it is not surprising that, in western thought, relationships between land and sea have been thought of as binary and opposing and the archipelago associated with its terrestrial fragments alone. *The Green Archipelago*’s formulation of West Berlin as outcrops of architectural singularity pitted

against a dividing sea of negative or, at best, neutral urbanization, follows this model. There is however another way of thinking the archipelago if one starts from Deleuze's other category, oceanic islands, to which Indian Ocean island formations, including the Maldives, belong. Oceanic islands, as their name suggests, originate in the ocean. They are extra-continental formations, emerging as a consequence of sub-aquatic events, usually volcanic eruptions. They cannot be theorized in relation to continents, for they never were continental. In the case of the Maldives, they do not even stand on a continental shelf, but arise directly from the earth's mantle, as a consequence of tectonic shifts and rifts. In order to think with this kind of archipelago, one has to think from and with the sea.

Here I turned to the work of Anderson, Peters and Steinberg. Anderson (2012) argued that, until recently, much of human geography was terrestrial and paid little attention to the marine world. However, the intensification of change brought about by globalization has altered the notion of the terrestrial landscape from one of stasis to one of emergence. This has created the conditions for thinking *from* the ocean, not only to gain theoretical insights about human interaction with the oceanic world, but also to "offer a different perspective on terra firma when we theorize back to the land" (Anderson 2012, 571). Steinberg and Peters (2015) go further and propose that thinking *with* the sea can assist in re-conceptualizing understandings of space, place and time. "In short, we propose a wet ontology not merely to endorse the perspective of a world of flows, connections, liquidities, and becomings, but also to propose a means by which the sea's material and phenomenological distinctiveness can facilitate the reimagining and re-enlivening of a world ever on the move (Steinberg and Peters 2015, 248).

With this in mind, I turned to work on the archipelago by island studies scholars. Lewis and Wigen (1997) remarked that of all metageographic categories, the archipelago is the most under-theorized. This charge was taken up by Stratford et al. (2011), followed by debates in special issues of *Shima* (2012) and *Island Studies Journal* (2013), and elsewhere since. What is distinctive about the archipelago these scholars argue, is that it invites reflection on dynamic inter-relationships between land and sea, island and continent and island and island that are both binary and topological (Stratford et al. 2011, Stratford 2013, Pugh 2013). Archipelagos are “fluid cultural processes” (Stratford et al. 2011, 122), models of “a world in process” (Deleuze 1997, 86 in McMahon 2013, 56). For Hayward (2012a) however, the idea of the archipelago was too heavily associated with its islands to be useful for regions in which aquatic spaces play a vital constitutive role. He proposed the term aquapelago to describe “an assemblage of the marine and land spaces of a group of islands and their adjacent waters” (Hayward 2012a, 4) and to advance the idea that these environments are generated or performed into being by “human (inter)activity” (Hayward 2012b, 2). This drew on earlier work of Pacific Ocean scholars, who conceptualized Oceania as “a sea of islands with their inhabitants” rather than as “small areas of land sitting atop submerged reefs or seamounts” (Hauʻofa, Waddell, and Naidu 1993, 153). Aquapelagic assemblages, are “performed entities,” (Hayward 2012a, 6) generated by changing climate patterns, trading systems, socio-economic relations, and technologies etc. Hayward later went further to propose that the “actants” (Latour 2004, 237) that perform an aquapelago are not only human, but include the animate (biological), inanimate (geological) and energetic forces that animate an aquapelagic environment: “The air above the waters and land, the

weather that occurs in it, the windblown seeds and species than are born by it and the birds than inhabit the air, sea and land are just as much part of the integrated space of the aquapelago (Hayward 2012b, 2). This idea of a continuum rather than a binary between human and environment is central to what follows in this article. These ideas provided me with the conceptual tools for analyzing the terra-aqueous environment of the Maldives and driving my critique of archipelagic urbanism. They suggested that thinking architecture out of the myth of its own autonomy, and into the emergent conditions of the contemporary city might be possible. Before I get there though, I will examine the dynamic geological, hydrological, animal and human interactions that produce the Maldives as a fluid, relational, oceanic aquapelago.

Part Three: Thinking the Maldives as an Oceanic Aquapelago

In the 1990's seismic studies undertaken as part of an oil-drilling program in the Maldives showed that its atolls were built on a volcanic ridge that stretched from a hotspot beneath the island of Reunion to the Deccan Traps of India (Naseer 2006a). This ridge had erupted as the Indian subcontinent underwent its tectonic drift northwards from around 67 mega-annum (Ma) ago, forming a line of volcanoes that today constitutes the undersea Chagos-Laccadives Plateau. When the Indian subcontinent met the Asian plate, it slowed down and the volcanoes slowly subsided into the sea, leaving fringes of upwardly growing coral that built up over centuries to form atolls. The current layer of Maldives reefs began forming at the top of this coral platform about 7500 years ago (Kench et al. 2009; Kench 2012). Today atoll rims surround coral-floored basins 25-50 m deep rising towards their edges and dropping off steeply to the surrounding ocean floor to depths of 2500-4000 m (Naylor 2015).

The tops of these cones mark the ancient fringes of now submerged volcanic peaks to form the slender corridor of twenty-six atolls that make up the Maldives.

Just as the word archipelago carries with it reference to the Aegean Sea, so the word atoll carries reference to the Indian Ocean, more particularly to the Maldives. It comes from the Dhivehi word *atholhu*, which was introduced to the west as *atollen* by Pyrrard de Laval, a French traveler who was shipwrecked and stranded in the Maldives from 1602 to 1611 (Pyrrard 1887). Darwin later took it up as “atoll ... the name given to these circular groups of coral islets by their inhabitants in the Indian Ocean” (Darwin 1842, 2). If one consults the original Dhivehi word however, one finds that it refers not just to a circular group of islets, but to an administrative subdivision. It translates geo-physical phenomena such as islands, reefs, sandbanks, lagoons and the ocean into the realms of politics and governance.

The Maldives comprises twenty-six such atoll provinces spread out over an area of approximately 90,000 sq. kms. Of this, only 300 sq. kms (.003%) qualifies as land, distributed across 1196 islands, of which few are more than 1 sq. km in area or more than 1 - 2 m above sea level (Ellis 2008). Most of the Maldives (99.66% to be precise) is ocean. In terms of the United Nations Convention on the Law of the Sea (UNCLOS) it is an archipelagic state, a terra-aqueous territory defined as “a group of islands, including parts of islands, interconnecting waters and other natural features which are so closely related that such islands, waters and other natural features form an intrinsic geographical, economic and political entity” (UNCLOS 1982, Part IV, Section 46). Land and sea form a continuous, though differentiated unit of sovereign territory (**Figure 1**).

It was Charles Darwin who first proposed in his early monograph *The Structure and Distribution of Coral Reefs* (Darwin 1842) that, because coral only grows to a depth of 45 m below sea level, as volcanic ridges subside, it grows upwards at approximately the same rate to maintain itself in the photosynthetic zone (**Figure 2**). Over centuries, this produced atolls as the peaks of great living pyramids of coral limestone extending down to depths of 3000 m. One of Darwin's contemporaries, T. H. Huxley, at a lecture in Manchester in 1870 said, "it is one of the universal lessons of geology that the land is going down and going up, and has been going up and down, in all sorts of places and to all sorts of distances, through all recorded time. Geologists would be quite right in maintaining the seeming paradox that the stable thing in the world is the fluid sea and the shifting thing is the solid land" (Huxley 1873, 11). We now know of course that this is not the case and that throughout earth's history, sea levels have also gone up and down,² but the point is that thinking the archipelago from the perspective of oceanic, not continental islands, requires thinking in depth (ups and downs), not distance (nears and fars), and in terms of relationalities and continuities, not separations and oppositionalities, between land and sea.

In a report titled 'Vulnerability and Adaption Assessment of the Maldives Coral Reefs' an extraordinary statement is made: "The Maldives is a country built entirely by coral reefs" (Naseer 2006a, 14). It is not a country built on coral reefs, or dependent on coral reefs, which of course it is, but built by coral reefs. This intrigued me. How can a coral reef build a country? I began to investigate what a coral reef is in order to understand to what or whom this agency might be attributed.

It was Darwin again who first realized that coral reefs “although plainly geological structures on a stupendous scale, were created by slow, gradual growth of countless billions of tiny creatures over vast periods of time” (Chancellor 2008). Deleuze recognized this too, stating that coral reefs “display a genuine organism” (Deleuze 2004, 9). This discovery was in symmetry with Darwin’s last book, *The Formation of Vegetable Mould through the Action of Worms* (Darwin 1881) in which he argued that the humble earthworm toiling beneath his feet was literally creating the landscape. The tiny marine organisms that build coral reefs perform similar feats to those of earthworms. They are “small agencies” (Bennett 2010, 95) that, without the slightest idea of what they are doing (or so we think), are, given time, changing the face of the earth, history and human culture.

Reefs are calcium carbonate (CaCO_3) secretions of tiny oceanic organisms called polyps that deposit limestone material beneath them, pushing their nutrient gathering tentacles upwards towards the sunlight. Polyps are nourished by a symbiotic relationship with zooxanthellae, a species of photosynthetic algae that live in their tissue. Coral polyps and algae have a delicately balanced mutualistic relationship that facilitates a tight, economic recycling of nutrients between them.³ This relationship is the substructure, the building block of life in the coral aquapelago. It is the finely tuned relational nexus connecting reefs, fish and other invertebrates, sea grass beds, sand banks, vegetated islands, and, when bundled with human activity, accumulates buildings, cities, livelihoods and recreation as its progeny (Weier 2001). It is integrated into the everyday life and the cultural imaginary of the Maldivian people and socialized and appropriated as unpaid work/energy in the construction, fishing and tourist industries (Moore 2015). The country’s very existence depends on

keeping the symbiotic metabolisms of these tiny sea creatures in a state of good health.

Today however, they are the frontier collateral of local development and changing global climates (Intergovernmental Panel on Climate Change 2001). After tourism and associated investments began to transform the Maldivian economy in the 1970s (see part four below), relations within the ocean ecosystem were dramatically altered (Naseer 1997). Waste discharges, pollution, dredging, reclamation, construction of maritime structures, increased recreational diving and so forth produced changes in ocean chemistry and turbidity. Living coral reefs were covered in sand, blocking their exposure to sunlight and the ability of algae to photosynthesize. Nutrient cycles between polyps and algae began to break down, polyps became physically stressed and expelled their resident algae. This resulted in coral bleaching (for it is the zooxanthellae that give coral their extraordinary colors) and eventually their own deaths.⁴ Global warming related changes such as higher ocean temperatures have similarly resulted in algae losing their ability to photosynthesize⁵ and increasing levels of carbon dioxide in the ocean have affected the chemistry of calcification and reduced coral growth rates (Kleypas and Yates 2009). Rising sea levels, while not necessarily a problem for coral, as it is intuitively primed to respond by growing vertically, can cause it to drown if sea levels rise at rates faster than its ability to grow. Many Maldivian reefs are in this so-called catch up mode at present (Naseer 2006a). Unless checked, these changes could accumulate and result not only in the deaths of polyps and algae, reef systems and fish, but the entire Maldivian civilization (Naylor 2015).

It is grazing fish, sea urchins and other organisms that transform coral into the sand and rubble that form islands in a coral aquapelago. They act as bio-eroders, grinding coral skeletons into fragments, digesting the algae they contain and excreting the ground coral (BBC Earth 2010; Johnson 2014). This settles into the reef, forming a porous structure of coral fragments, shells, rubble and sand. This degraded coral debris is not stable and is moved around by winds, waves, tides and currents. Coral islands are piles of sand and rubble formed in this way in a dynamic balance between new sand and coral rubble being added from the reef and being eroded by wind and waves back into atoll lagoons or the open sea. At times this process stabilizes long enough to form sand bars that become vegetated to form islands; at others, the sand and rubble simply disappear back into the sea (Heyerdahl 1986). What is land and what is sea is not fixed but changes all the time from day to day and season to season. "An atoll is not solid ground. It is not a constant thing in the way a rock island is a thing. An atoll is a not-so-solid eddy in a sea of sand and rubble" (Eschenbach 2010). This contrasts with Deleuze's island as an "egg surrounded by the sea" (Deleuze 2004, 11) and Stratford et al.'s island as a "complete encircling by water" (2011, 115). Coral islands are not islands in the ocean, but islands of the ocean, produced by its dynamic energies. They are topological forms, liminal spaces, geology *and* biology, human *and* animal, land *and* sea. They are arrested matter in motion, driven by currents, tides, winds, seasons, and marine life. Islands, lagoons, mangrove swamps, sea grass beds and coral reef flats are little eddies of relative stability in a dynamic flow of relational instability. Landforms are sand-forms, relatively unstable, always moving, formed by erosion, deposition or siltation and shaped by the forces of seasonal monsoons.

This idea of ground as a living, moving combination of territorialized (relatively stabilized) and deterritorialized (relatively dynamic) elements in constant exchange is integral to Maldivian culture. This is evident in many of the stories in the collection *Folk Tales of the Maldives*, (Romero-Frias 2012) of which 'The Sandbank of the Seabirds' is a good example. This begins with a description of a large sand bank "far away from the large islands inhabited by humans" (Romero-Frias 2012, 35), where food is abundant and sea birds breed and rest. One day a large Kovelu bird (one of the few Maldivian land birds, now a protected species) arrives on the sand bank and asks to stay the night. This is agreed and the bird spends the night and flies away the following morning. However, its droppings remain. Over time, the wind covers them with sand, the seeds in the droppings germinate and a pale green bush begins to grow. An old seabird views this with alarm and predicts that soon there will be many bushes on the sandbank and the seabirds will have to leave. Soon the sandbank is covered by lush green vegetation and a fisherman visits. He asks his Atoll Chief for the right to use the island to grow coconuts. This request is granted and coconut palms are planted. Years pass, the palms begin to bear fruit and the fisherman brings his family to harvest them. His children scare the seabirds and plunder their nests for eggs and every now and again, the fisherman catches a bird and takes it home to eat. Finally, the old seabird gathers his few surviving companions and, giving a "last, sorrowful look at the island they had lost" (Romero-Frias 2012, 37), they fly away, in search of a safer place to settle.

While this story tells as much about the hospitality of non-human nature and its appropriation by humans, as well as the Maldivian fear of contamination by the outside world, it also speaks to Deleuze's notion of the archipelago as a world in

process and to Hayward's notion of the aquapelago as an interactive continuum between terra-aqueous energies and human and non-human actants (2012b).

In the Maldives, these interactions are deeply associated with calamity. The nation's founding myth hinges on the story of a demon or jinni that lived in the sea. It came ashore once a month to visit an idol temple and demand the sacrifice of a young virgin. This continued until a pious Berber of Muslim faith arrived at the island on a voyage from North Africa and decided to put a stop to it. He hid in the temple in the place of the young virgin, and, reciting the Koran, succeeding in exorcising the jinni so that it never came back. According to ancient Maldivian writings, this is why the Maldives accepted the Islamic faith and when the Maldivian nation was born (Heyerdahl 1986).

As a buffer against such mythical and all too real calamities, human habitation in the Maldives is located at the center of islands surrounded by a protective thicket of palms, mangroves and coastal scrub. Egress to the sea is via two openings through the enveloping thicket of vegetation, one to the east and one to the west (**Figure 3**). This spatial pattern is a response to the winds and currents of the monsoon, the global oceanic-atmospheric system, which, in the Indian Ocean, reverses direction each season. From June to September it approaches from the southwest, from October to April from the northeast. The two egress points enable boats to be docked and settlements accessed from the opposite side each season to avoid high winds and rough seas. A path connecting these two egress points structures settlements axially, with mosques located at the center on the highest ground. These were traditionally built of hardy, resilient coral nodules, while other buildings were

lightweight and susceptible to damage, but easy to rebuild. They were made entirely of coconut palm products: timber frames, thatched roofs and woven coconut leaf walls, and orientated north-south to “feel the wind” (Ingold 2007, 529) and come in line with its energies (**Figure 4**). Dwellings were spaced and staggered to allow cross ventilation and moderate wind velocities and overhangs to the east and west provided shade and sheltered openings from the wind driven rain of the monsoon (Morouf 1992).

This way of living in and with rather than resisting atmospheric and oceanic energies was supported by a property regime that, until the island of Hulhumale was developed (1997-2002, see part four), had no concept of private property or legal title to land (Faisal no date; Naseer 2006b). The entire archipelago: its islands, reef flats, sandbanks, ocean floor, ocean volume and air space, were invested in the state. Island chiefs allocated a plot of land to every male citizen over the age of eighteen on the island of their birth for housing purposes. Uninhabited islands were communally held as *varuuaa* or for what it's worth islands, allocated by atoll chiefs for the cultivation of coconut palms, the raising of crops or for firewood. No rent was charged for this and no standard regulations governed its practice. On some islands plots changed hands every year, whereas other islands were held as long as long as they were cultivated (Naseer 2006b). Island populations often abandoned their islands and took up residence on another in search of better water supplies or fishing grounds (Bluepeace Maldives 2009). In such circumstances, evacuated islands were formally registered as Uninhabited Areas and handed back to the relevant government authority (Naseer 2006b). Supported by this fluid property regime, relocation was often the response to major oceanic disasters, such as the wash-

overs that occurred in 1812, which forced the abandonment of twelve islands, in 1896–98, which temporarily submerged approximately half of Thulhaadhoo), and by the 2004 tsunami, which heavily damaged 13 islands, and displaced 10,530 people (Cazes-Duvat 2005 in Naylor 2015).

These constantly adjusting interactions between land, sea and human and non-human activity embed the ocean within terrestrial lives and political imaginaries and enmesh the daily lives of Maldivian people with the sea. “Fishing,” said former President Gayoom “is the lifeblood of our nation. It is inborn. From the soil on which we live, to the sea around us, it is an integral part of our existence. Fishing, our country and its people, are one and shall remain inseparable forever” (TheMaldives.com 1998-2010). Intimate terrestrial/marine knowledge is performed on a daily basis by Maldivian fishermen. Their unique pole-and-line fishing technique requires detailed knowledge of reefs, seabird movements and ocean currents and socializes the ocean with buoys and fish aggregating devices. Urban life in the Maldives is frequently lived between and among many islands because most are less than 1 sq. km in area (Naseer 2006b). Male, the capital city is itself an assemblage of many islands and the sea, an aquapelago relationally performed anew countless times each day (**Figure 5**). The ocean is an integral part of its infrastructure: it serves as medium of transport, sewage plant, waste dump, and water source. Boat and ferry journeys, often slow and rough, where duration is measured in time rather than distance, make the sea and its rhythms part of daily urban life and the ocean part of political struggle.

All this and more besides is evidence of aquapelagic environment in which the ocean is not void, valueless, neutral or smooth, but a highly articulated polity (Dawson 2012). No event expressed this more potently than the underwater cabinet meeting staged by former President Nasheed in 2009 to sign a document calling for global cuts in carbon emissions and draw attention to the vulnerability of his nation to sea level rise. In video footage of the event, we hear Nasheed and his cabinet breathing slowly through oxygen masks, and see them communicating using hand signals and white boards. They awkwardly sign the climate change document at desks propped on the seabed witnessed by reef fish and snorkeling journalists, diving instructors and military personnel (BBC News 2009). This somewhat incongruous event transformed the oceanic volume into a council chamber and aligned human experiences of the ocean with geo-politics. It emphasized that despite the continuum of land-sea relations in an aquapelago (Suwa 2012), water is not air, and reminded the world that sea level rise will be climate genocide.

Having thus examined the interactions between geological, hydrological, animal and human actants that relationally produce the Maldives as an aquapelagic assemblage, the final section of this article will examine how these relations were rapidly appropriated and reconfigured after the advent of tourism in the Maldives in the 1970's, before I conclude with what this might mean for architecture.

Part Four: “As the plane landed, you will believe that this is heaven.”⁶

At around the same time as Ungers was casting West Berlin as a Green Archipelago, the global tourist industry began to penetrate the Maldives, transforming it from an artisanal fishing economy into an ever-evolving neo-liberal

state.⁷ New modes of capital accumulation and power inaugurated new ways of performing the aquapelago and forged new human relations with the sea.

In the late 1960s, a United Nations Development Program delegation visited the Maldives and reported that the country had no prospects for tourism (Neville 2012). It had no banking services, no telephones (communication was via Morse code and ham radio), no electricity, no manufacturing industry, all consumer goods were imported, it had no international airport and the only mode of transport between islands, the traditional *dhoni*, was slow and expensive (History of Tourism in the Maldives 2000-2010). While all this was true, what the Maldives did have was its ocean.

The Maldives lies in the tropical Indian Ocean. This part of the ocean is divided into two layers - a thin layer of warm ocean heated by high sun angles and abundant sunlight over the equator, floating above a deeper colder water mass. The warm upper layer is less able to absorb CO₂ than temperate or polar water (Comparing Oceans - Temperate versus Tropical Seas 2015). It is also less saline because the intense equatorial sunlight vaporizes ocean water and produces rain on a regular basis. This warmer, less saline layer is less dense than the deeper, colder layers beneath it. It floats above them, separated by a gradient layer where the ocean's temperature, salinity, chemistry and pressure, change. This prevents the vertical mixing of water, keeping organic nutrients in the deeper waters to where they have sunk. Tropical oceans are thus nutrient deficient "oceanic deserts" and free of the "soup" of phytoplankton and zooplankton that feed off nutrient rich water (Garrison 2009, 392). This means that they absorb all colors in the light spectrum except blue,

giving them their characteristic aquamarine color, “from almost white to near black, passing through all shades of blue, turquoise and green. The whole image looks like a huge surrealist painting where the artist painting in deepest blue suddenly took a huge brush with white color and poured it into the blue to turn the thousands of small and large drops into a surrealist vision” (Rioukhina 2009).

The touristic potential of this warm, aquamarine ocean was first identified during a chance meeting in 1971 between an Italian travel agent, Mr. George Corbin and a Maldivian embassy official Mr. Ahmed Naseem in Colombo. As a result of the meeting, Corbin, accompanied by an Italian photographer, Francesco Benini, visited Male and nearby islands hosted by Naseem; a year later Corbin, this time accompanied by twenty Italian photographers and journalists vacationed in the Maldives for twelve days. They stayed in three houses in Male and made daily trips to local islands to photograph, snorkel and spear fish. Once back in Italy, they published their experiences, including Corbin and Benini's *Maldiva: Duemila isole felici* ('Maldiva: Two Thousand Happy Islands,' Bernini and Corbin 1973), and, in 1973 Corbin's agency, Agenzia Viaggi Sesto Continente (Six Continents Travel Agency) began sending tourists to the Maldives (History of Tourism in the Maldives 2000-2010).

At first the Maldives was virtually a free-for-all for tourists. No passports were required and visitors could go anywhere they pleased (Neville 2012). This came to an abrupt end in 1983 when the first Tourism Masterplan (1983-1992) was passed and it became illegal to stay anywhere but on a tourist resort island or to travel outside Male Atoll. Masterplans 2 (1996-2005), 3 (2007-2011) and 4 (2013-17)

followed, along with new state departments, new legislation, new regulations and new education and training institutions. These were key instruments through which aquapelagic relations were recalibrated around tourism.

It has been said that tourists do not so much visit the Maldives as experience an image (Auvray 2010). Marketing campaigns, tourist guides, and more recently Internet sites and social media circulate a stylized image of the aquapelago as “nobody and nothing beyond each encircling beach” (Neville 2012). The Maldives has become synonymous in the tourist imaginary with a pared-down aesthetic of palms, beach, sea, horizon and sky, feeding the allure of an exotic island paradise (Gupta 2015). This image is maintained through a unique Maldivian development model, the one-island-one-resort hotel. Entire islands are leased to tourist companies for development as resorts. They are self-sufficient microcosms, supplying their own power, desalinating their own water, disposing of their own refuse, housing their own workers, dredging their own harbors and offering their own airport transfer and touristic experiences. They are governed by different legislation, regulations and behavioral codes from those that administer life elsewhere in the Maldives, particularly those pertaining to planning, architecture, alcohol consumption and dress. This model of development is an infrastructural, political and social construct invented in the Maldives to capitalize the ocean for tourism against the backdrop of Islam (Henderson 2008; Auvray 2010). It takes advantage of the spatial principle that islands are small and separated by relatively large distances of ocean to transform them into sites for the creative exercise of power to quarantine tourists and local inhabitants from one another and to trap tourist dollars. This extends the longstanding Maldivian practice of isolating foreigners from local people (Bell 1883;

Pyrard 1887; Romero-Frias 2012), with the tourist resort island serving as the inverse of the banishment or prison island and turning tourists into voluntary prisoners of an idealized image of paradise. Under this regime, a generalized model of *rashu bandhu* or island captivity, the aquapelago starts to resemble what Alison Mountz (2011) called the “enforcement archipelago,” where islands serve as spatially significant sites in a strategy to ring-fence surplus value while reducing the chances of touristic practices (alcohol consumption, skimpy bathing suits etc.) contaminating local custom.

From a spatial perspective this model turns the traditional pattern of island inhabitation inside out. (**Figure 6**). Instead of inhabiting islands inside a protective thicket of vegetation, hotel rooms and chalets are arrayed around the circumference of islands or splayed out over shallow reef flats. Over-water villas occupy the space of the sea, but their surface area is calculated as part of the island they extend, thereby confounding land/sea categorization. The two egress pattern developed as a response to reversing monsoons is repurposed as a way of separating guest arrivals from services and deliveries. Elongated island tips and sandbanks, fluid from a hydrological perspective are transformed into prime spots for restaurants and bars. Physical infrastructure barely seen in the Maldives before: piers, jetties, groins, dredgers and desalination plants work hard to mediate and stabilize dynamic island morphologies. New ways of orchestrating human relations with the ocean produce strange perceptual anomalies: construction equipment appears to float above water, villas above waves, boats over sandbanks (**Figure 7**). Recently, having exhausted the value relations of the overwater, resort developers began to explore the underwater as a new frontier of accumulation: the first underwater spa was

constructed at Havenfushi in 2004, the first underwater restaurant at Conrad Rangalli in 2005, and the first underwater nightclub at Niyama in 2012. Far from providing intimate experiences of the ocean and bringing it closer however, these infrastructures frame it through layers of structural glass and distance it further. They emphasize that the experiences of the ocean offered on resort islands are “quasi” experiences (Latour 1993, 51), experiences mediated by engineering, technology and global communication networks.

After the advent of tourism in the Maldives, the financial, communication, transportation, construction, legislative, institutional and knowledge infrastructures required to capitalize it were put in place. New forms of labor: migrant construction workers, resort managers, hotel staff, travel agents and so on, reorganized human relations with the ocean and with each other. This transformed the Maldives from an artisanal fishing economy into a highly centralized neoliberal, tourism driven one. In 1974, State Bank of India established the first bank branch in the Maldives, followed by Habib Bank Limited in 1976 and the Bank of Ceylon in 1981. A year later Bank of the Maldives was floated as a public limited company with majority ownership by the Government. In 1977 British Cable and Wireless established the first telecommunications services in Male and in 1988 it formed a joint venture company with the Government of the Maldives, to create the first Maldivian telecommunications company, Dhiraagu. Dhiraagu introduced dial up Internet services in 1996, mobile telephony in 1997 and in 2006 broadband services via a submarine fiber optic connection with Sri Lanka. In 1974, Air Maldives was established as a National Carrier and in 1981, Male’s airstrip on Hulhule was upgraded from the 3000 ft. long metal plate runway built by the British in 1960 to an

international level. The airport terminal was upgraded in 1994 and plans to upgrade the airport still further are currently underway. Boat transport between islands was motorized in the 1970s and in 1989, helicopter transport from Hulhule to island resorts was introduced, followed by seaplanes in 1994 (History of Tourism in the Maldives 2000-2010).

Most of this financial and infrastructural development was centered on the capital city, Male. Whilst Male had historically been the center of trade and administration in the Maldives, tourism increased its economic importance. Its rapidly expanding government sector and new education and health facilities created significant disparities between it and other islands and atolls. This contributed to considerable in-migration to the capital after the mid 1970s. In 1965, 11.15 percent of the population of the Maldives lived in Male; in 1977, twelve years later, it had rocketed to 20.6 percent. By 1985, an influx of people from outlying islands after the 2004 tsunami had increased this to 25 percent. By the 2006 census, this had risen to 33 percent, a total of 103,693 people.⁸ In 2008 Male was one of the world's most densely populated cities, housing 540 people per hectare or 52,636 people per square kilometer (Faisal no date).

In response to these crowded conditions, a project to build a new piece of territory on the shallow reef flats of a lagoon 1.3 km off Male's north east coast and north of the airport island, Hulhule was launched in October 1997. It was billed as the "most ambitious land reclamation and urban development project undertaken by the Maldives" and proposed as a solution to rising sea levels and Male's housing crisis (Housing Development Corporation 2016). At an area of 2.2 sq. kms, it would double

the size of Male and aimed to house 153,000 people, more than 50% of the 2007 population of the Maldives by 2050. Along with the 100,000 who currently lived in Male, this would make up 68% of the total Maldivian population by 2050 (Gardner 2012). The new island, Hulhumale, would be linked to Hulhule by a 1.6 km causeway running along the outer edge of the reef and to Male by ferry. As a safeguard against sea level rise, its surface was designed to be 2 m above sea level, 1 m higher than Male (Hamilton 2008).

The island was built-up over a five-year period (1997-2002) by the Maldives Ministry of Construction and Public Works and a Belgian Joint Venture Company comprising International Port Engineering and Management (IPEM) and Dredging International (DI). Dredging involved “borrowing” sand and bleached, dead coral from what was known as a “borrow site,”⁹ in this instance the lagoon floor on the western side of the Farukolhufushi lagoon, and depositing it on its eastern side. This produced two new topographies - a 1 km x 2.2 km x 2 m high island and 2.2 km x 500 m x 80 m deep subaquatic trench, proposed as a future marina for tourist vessels (Aleem and Jameel 2011) (**Figure 8**). Once the island was in place, palm trees were transplanted from elsewhere in the aquapelago and, in 2001 a masterplan for its development was drawn up. The architects were Singapore based AMC Architects International with UK based engineers J Pro Consultants and Binnie Black and Veatch Ltd. (Housing Development Corporation Ltd. 2016) They paid little heed to traditional patterns of island inhabitation in the Maldives, instead designing Hulhumale’s layout according to the ubiquitous global New Urbanist formula of axial spines, green strips, walkable streets and economic zones and districts (**Figure 9**). When questioned about this at a symposium in Male in November 2015, Maldivian

architect Hussein Ziyath, in a remarkable negation of the oceanic environment said “well, in terms of context, there is not much to relate to”! It is not surprising that the 2004 tsunami washed over this arrangement with little resistance, returning considerable amounts of the borrowed sand to the sea and necessitating that the island’s surface level be raised (Naylor 2015).

Hulhumale’s primary physical and social infrastructure and first residential development, relief housing for people under the poverty line, were completed in 2004 and it was inaugurated by President Gayoom on 1 May that year, with a resident population of 1000 (Kuschk 2011). Primary and secondary schools, a hospital, a mosque, four commercial buildings, a number of industrial buildings and apartment complexes, condominium units and private houses followed. At the end of 2013, Hulhumale’s population stood at 30,000, halfway to the population of 60,000 envisaged by 2020 (Housing Development Corporation Ltd. 2016).

This experiment in appropriating and commodifying the ocean’s floor radically rearranged it and produced a new post-Deleuzian species of island, the artificial island, a “quasi-object” (Latour 1993, 51) combining geology, technology and social space. This required advanced instruments of measurement and mapping, such as single beam echo sounders, side scan sonar surveys, and surveys to produce highly accurate representations of the seabed (**Figure 10**). Dredging equipment sucked-up inorganic matter from the ocean depths and shaped it into platforms of real estate for lease or sale, amounting, as a disgruntled Maldivian put it, to “basically selling the sea” (Comment to Naish 2015). Modes of architectural representation not seen in the Maldives before, such as masterplans, scale models, graphic fly-throughs and

renderings, the ubiquitous “textual and visual rhetorics ... that extend the imaginaries of enclaved spaces as conceptual and developmental metageographies,” (Jackson and della Dora 2009, 2088) were mobilized to market the development as a global investment opportunity. Significantly however, Hulhumale was also the first locality where Maldivians could buy and sell property in their country (Mohammed 2015). Residents of Male were given priority for land and home purchases at discount prices, but any Maldivian could purchase property there. It is also being marketed as a global capital investment opportunity and most of its construction has been tendered out to global firms. This has done away with traditional property relations centered on the island chief, replacing him with a state owned enterprise, the Housing Development Corporation Ltd. (HDC). The HDC operates as master developer, contractor for infrastructure, utilities and services, as regulator of planning and building codes and it deals with the lease and sale of land and property (Housing Development Corporation Ltd. 2016). This managerial approach to urban life and space undercuts previous ways of organizing human relations, causing a café owner to complain “In Hulhumale, we have only one problem: nobody is responsible for these islanders. On Male and other islands, there are island chiefs. But here we have only the HDC” (Luxner 2009). Property ownership has also radically transformed people’s way of dealing with risk. Instead of the guaranteed custodianship of the state, property ownership privatized risk and transformed it into surplus value. There are now two Maldivian insurance companies offering home insurance in the Maldives: Allied Insurance, set up as a joint venture between Commercial Union Assurance UK and the Maldives State Trading Company in 1985, and Amana Takaful Maldives, which began operating in 2003.¹⁰

Since the advent of tourism in the Maldives then, as the technologies and infrastructures to capitalize it were put in place, the ocean became more enmeshed in human affairs by becoming more economically, technologically and digitally mediated. New aquapelagic performances combining infrastructures, technologies and global imaginaries produced new species of islands, new kinds of oceans, new typologies of architecture and new kinds of humans, constantly reassembling the unstable continuum between geological, hydrological, human, animal and technological life according to the laws of value.

Conclusion

To conclude this thought experiment to think architecture from an atoll formation in the Indian Ocean archipelago, is firstly to be mindful that in a coral atoll aquapelago, oceanic processes produce islands and boundaries between islands and the sea are fluid and change all the time. Aquapelagos, as I have argued, after Hayward (2012a and 2012b), are performed geographies, not fixed spatial entities. They are “assemblages that come into being and wax and wane as climate patterns alter and as human socio-economic organizations, technologies and/or the resources and trade systems they rely on, change and develop in these contexts” (Hayward 2012a, 6).

If for a moment, following the Green Archipelago's example, this is taken as a metaphor for architecture and its relations with the city, it is clear that the two can no longer be thought of as binary and mutually exclusive. The long-standing conception of architecture as autonomous from its environment and governed by disciplinary

interiority falls away (Harrison 2013). If thought with the atolls of the Maldives aquapelago, architecture becomes a little eddy of relative stability in the dynamic assemblage of relational instability that makes up the city. That architecture and the city were posited as oppositional and external to one another in *The Green Archipelago* in the first place comes to be seen as a culturally mediated attempt to creating a niche for architecture as a disciplinary practice within an emerging neoliberal economy by positing that its forms, compositional rules, theories and histories are autonomous, self referential, timeless and universal. If, however “the ground beneath our feet turns out to be the sea” (Perera 2009, 1), as has been suggested by my reading of the Maldives aquapelago, architecture’s autonomy falls away. It becomes a topological condition, its internal logics continuous with, formed, deformed and twisted by dynamic economic, social, political, technological processes. This way of thinking privileges cross currents and connections and conceptualizes architecture as a complex relational field. Thinking architecture in this way, means “getting wet” (Baldacchino 2012, 22), metaphorically speaking. It means rejecting an insular imagination and thinking architecture as thoroughly urban-in-nature from the start.

There is however a danger of thinking metaphorically in this way, for, as Hester Blum reminds us, “the sea is not a metaphor” (Blum 2010, 670 in Steinberg 2013, 156) and neither are architecture nor the city. They are space (geographical), time (historical) and materially (technologically) bound practices through which human beings modify and construct their environments and reproduce themselves. They give form to relations between imagination, technology, knowledge, power and production in the organization of nature to reproduce society according to certain

values (Moore 2015). In my account of the Maldives, I have analyzed these relations as embedded within a dynamic oceanic aquapelagic assemblage, not only as metaphor for architecture's relations with the city, but also as a historic socio-ecological process in which architecture was an integral part, formed by and giving form to the values and forces acting upon it. Architecture is not, to use Aureli's word (2011), "absolute," but continuous with and contingent upon the historical socio-ecological relations in which it is produced, to which it gives form and with which it struggles. It seems to me that a conception of architecture as a conceptual, spatial and material practice pushed and pulled by forces that it responds to, registers, inscribes and gives form is a far more useful paradigm for the 21st C than the rigid binary fictions of the past.

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Notes

1. As remarked by Robert Smithson: “It seems that architects build in an isolated, self-contained, ahistorical way. They never seem to allow for any kind of relationship outside of their grand plan” (Smithson 1973 in Moe 2014, 5).
2. In the Maldives, radiometric calibration of ages from three reef cores have shown that present sea level was first achieved 4500 BP, followed by a late Holocene high-stand of 0.5 m to 1 m between 4000 and 2100 BP before it fell again to its present level (Kench et al. 2009).
3. Polyps provide the algae with a protective environment and the carbon dioxide and water they need for photosynthesis. In return, the algae provide the polyps with oxygen, glucose, glycerol and amino acids derived through photosynthesis. The polyps use these nutrients to produce proteins, fats, carbohydrates and calcium carbonate and to expel their wastes. This forms the skeletal structure that provides the algae with a protective environment and the carbon dioxide and water they need for photosynthesis (Importance of Coral Reefs 2008).
4. The warmer sea temperatures associated with the 1998 El Nino event caused extensive bleaching in the Maldives, killing 98% of its shallow reefs (Hoegh-Guldberg 1999).
5. Coral survives in temperatures of 18 -29°C. Average surface water temperatures in the Maldives, as per daily satellite readings, currently range from 27.7-30.4° C (World sea temperature 2016).
6. This appeared in a brochure I was given in Hulhumale in Nov 2015 (Beach Club Watr (sic.) Sport, no date).
7. By neoliberal, I refer to the ideological shift from state-led development to a pro-capital bias that limits state regulatory capacities and supports privatization,

relying on governments to facilitate capital expansion. For a comparative study in Cyprus and Trinidad and Tobago see Karides (2013).

8 This does not include the large expatriate work force now residing in Male, according to the Employment Ministry amounting to 77,455 registered expatriate workers in 2006 (Faisal no date).

9 In an environmental impact assessment report for Hulhumale Phase 2, “borrow site” and “burrow site” are used interchangeably to designate the area of a lagoon identified for dredging. It is not clear whether this is a typological error or not, but even if it is, both are interesting. In later reports, “borrow site” appears to have become the preferred term (Zahir and Sattar 2015).

10 Takaful is an insurance concept based on Islamic commercial law, a co-operative system in which contributors share risk through a fund to which they contribute regularly.

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Figure Captions

Figure 1

Map showing the archipelagic baselines asserted by the Maldives. Map drawn by the author and Ben Pollock after Office of Oceans Affairs, US Department of State (2005).

Figure 2

Diagram of the formation of coral atolls. Drawn by the author after Ellis (2008).

Figure 3

Kumburudhoo, Haa Dhhaku Atoll, a small inhabited island with a population of 85 in 2006 (Atoll Images 2009). This shows the typical pattern of island inhabitation in the Maldives. Human settlement is surrounded by a thicket of vegetation, with egress to the sea via two openings, one to the east and one to the west. Map drawn by the author from Google Earth.

Figure 4

Traditional building techniques and materials in the Maldives. A. Section through a typical traditional house showing cross ventilation, from Morouf (1992), courtesy of Jameel Morouf. B. Coconut palm screen wall. C. Coral wall construction. D. Service building, Chaaya Island Resort. Photographs by the author.

Figure 5

Map of Male, the capital of the Maldives, showing the assemblage of islands and the sea of which it is comprised. Map drawn by the author and Ben Pollock after Google Earth, photographs by the author.

Figure 6

Profiles of tourist resort islands in South Kaafu Atoll: 1. Adaraan Resort; 2. Adaraan Prestige Vadoo; 3. Cocoa Island by Como; 4. Anantaraa Dhigu; 5. Naladhu Maldives Anantara Resort; 6. Edenic Taj Exotica Resort and Spa; 7. Olhuvveli Beach and Spa Resort; 8. Fihalholi Resort; 9. Jumeirah Vittaveli Ocean Suites; 10. Embudu Resort; 11. Velassaru Resort; 12. Bodufinolhu Resort. Maps drawn by the author after Google Earth.

Figure 7

Three images showing perceptual anomalies on tourist resort and artificial islands: boats appear to float over sandbanks, villas over waves and construction equipment over the sea. Photographs by the author.

Figure 8

Successive aerial photographs of Hulhumale Phase 1, an artificial island constructed on the shallow reef flats of the Farukolhufushi lagoon 1.3 km off Male's north east coast and north of the airport island, Hulhule. A. 1997. B. 2002. C. 2004. D. 2014.

Photographs from Housing Development Corporation Ltd. (2016), courtesy of Housing Development Corporation Ltd.

Figure 9

Hulhumale Phase 1 Land Use Plan as represented on the website of the Housing Development Corporation. This indicates the extent to which the artificial island surface is conceptualized as a blank space to be inscribed by global logics of development and accumulation. Map drawn by the author after Housing Development Corporation Ltd. (2016).

Figure 10

This image shows the extent of dredging operations for Hulhumale Phase 2 for one week. It is both an image of the violence inflicted on the sea bed and of its careful calibration so as not to disrupt tourist revenues. The circular lines on the image indicate no go zones around tourist resort islands, where dredging would disrupt diving activities. Source: Zahir and Sattar (2015), courtesy Housing Development Corporation Ltd.

