Post-Island Futures: Designing for Uncertainty in a Changing Climate

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Introduction: Unstable Futures

In contemporary climate change discourse, Tuvalu is represented as a 'sinking nation' whose apocalypse has been predetermined by rising seas. However, unpacking climate change uncertainties in the context of cyclical Tuvaluan histories shows multiple possible futures that Tuvaluans may inhabit. Historically, Tuvaluan peoples were mobile, canoeing between islands for trade and war, or seeking new ground when their atolls' fragile water supplies ran dry. Atolls, coral islands rising only a few meters above sea level, are fluid as well; corals adapt to changing sea levels by growing upwards towards the light. Re-considered as a fluid entity, Tuvalu might survive the rising seas, and atoll communities and geographies could be bolstered through hybridized interventions.

In the context of migratory populations and unstable geographies this project proposes design as instigator of multiple possible futures, unfolding in multiple timelines that travel deep into time and space, as a way of de-colonizing and re-politicizing Tuvalu's "apocalyptic imaginaries" (Swyngedouw, 2011). Paralleling a future studies framework of alternative futures, this architecture/urbanist design research project offers possible deep future narratives for Tuvaluan atoll-dwellers through a process similar to "rigorous imagining" (Candy, 2010; see also Miller, Shapiro, & Hilding-Hamann, 2008).

Rejecting the notion of a singular solution, the architect/urbanist instead frames multiple possible interventions across several scenarios through the propagation of architectural 'seeds' which 'grow' territory to accommodate Tuvalu's uncertain futures. Through a discussion of these speculative design scenarios and strategies, this essay seeks to explore the potentials of designing for multiple possible futures in the context of a human-altered climate. The essay also shows how future thinking logics have been leveraged in this design process, suggesting possible further collaborations between architecture, urbanism, and futures studies.

Climate Change Uncertainty: Re-politicizing a "Sinking" Tuvalu

Tuvalu, a tiny archipelagic nation of nine coral atolls located in Polynesian Oceania, has come to serve as a global symbol for the risks climate change poses to humanity. Like other low-lying island states, it faces not only natural disasters (i.e. cyclones) and resource constraints (i.e. fresh water) stemming from anthropogenic climate change, but the potential loss of habitable land as corals die and sea levels rise. With the submersion of the nation's physical space, Tuvalu's status as a nation-state is endangered. Deemed a 'sinking nation' (Park, 2011), Tuvalu has become part of the climate change apocalyptic imaginary, in spite of uncertainty surrounding specific greenhouse gas impacts on atoll systems. While climate change is certainly real and happening, uncertainty regarding from specific manifestations on the ground arise from the inability of models to exactly

replicate the complexity of the earth's atmospheric systems, and the rapidly evolving nature of climate change science and policy; even the Intergovernmental Panel on Climate Change (IPCC) acknowledges huge gaps in our collective scientific knowledge (IPCC, 2014; Deser, Phillips, Bourdette, & Teng, 2012). Furthermore, as Dator's First Law of the Future notes, "'The future' cannot be 'predicted' because 'the future' does not exist" (Dator, 1995). The degree of sea level rise in Tuvalu in the next century and its impact on atoll geographies depends on many factors, including the decided uncertainty of how the world—the collection of actors including nation-states, corporate entities, and individuals—will change its environment-impacting activities.

Tuvalu's recent rise to fame as a "sinking nation" has paralleled its representation as an origin for the environmentally displaced (Gemenne, 2015; Shen & Gemenne, 2011). "Climate refugees" are represented in the media carrying their belongings through waist deep water or marching across barren deserts. The title of "refugee" eliminates the agency of the individual from the conversation; the climate happens to them, and they have no choice but to evacuate. Within the framework of this singular narrative, it has been nearly impossible for Tuvaluans and other atoll nations to develop alternative futures for their archipelago. That this representation has been applied by the outside Western world is additionally problematic, positioning Tuvalu as a tiny pawn in a global narrative in spite of their rich cultural history.

This project seeks to provide de-colonized alternatives for Tuvalu's future (Dator, 2005) away from the fetishized imaginary of a drowning nation. The future visioning process considered in this project seeks to return Tuvalu agency over its own future by creating tools for speculative alternatives which draw on Tuvaluan history and culture. The spectrum of proposals seeks to provide a method for self-determination through the production of alternative, locally-produced futures.

Testing Futures: Alternative Scenarios

In this project, projected futures deal with future time in two primary ways: through multiple *scenarios* and through *expanded time scales*. Multiple scenarios, set in alternative possible futures, re-politicize (Swyngedouw, 2011) climate change, by taking it from fetishized imaginaries towards a richly complex social issue. This method invites discourse over what climate-changed futures might be, and how we can deal with future uncertainty. Within each future scenario, design interventions deal not with a single moment, but operate in broad swathes of future time-space. They envision not a final condition, but processes and systems that unfold responsively.

While possible futures for Tuvalu are limitless, the current climate science suggests some scenarios as more probable than others. This project uses as a starting point two of these scenarios, with each examining not only different climactic/social events, but also exploring broad ranges of time and space (Figure 1). Playing out these alternative future timelines as semi-fictional narratives frames possibilities for how architectural interventions can advocate for Tuvaluan populations.

Future A or 'climate change as usual' looks at a condition of incremental sea level rise, aligning with existing IPCC projections, and extrapolates Tuvalu's existing population boom. Design interventions suggest possible strategies for growing Tuvaluan cultural space both in- and ex-situ (Figure 2).

Future B explores a rapid ice-melt scenario, where the catastrophic collapse of major ice sheets results in rapid out-migration and necessitates strategies for defending Tuvalu's claims to territorial waters. Here, the nation is re-imagined as a strategic, collectivized economy (Figure 3).
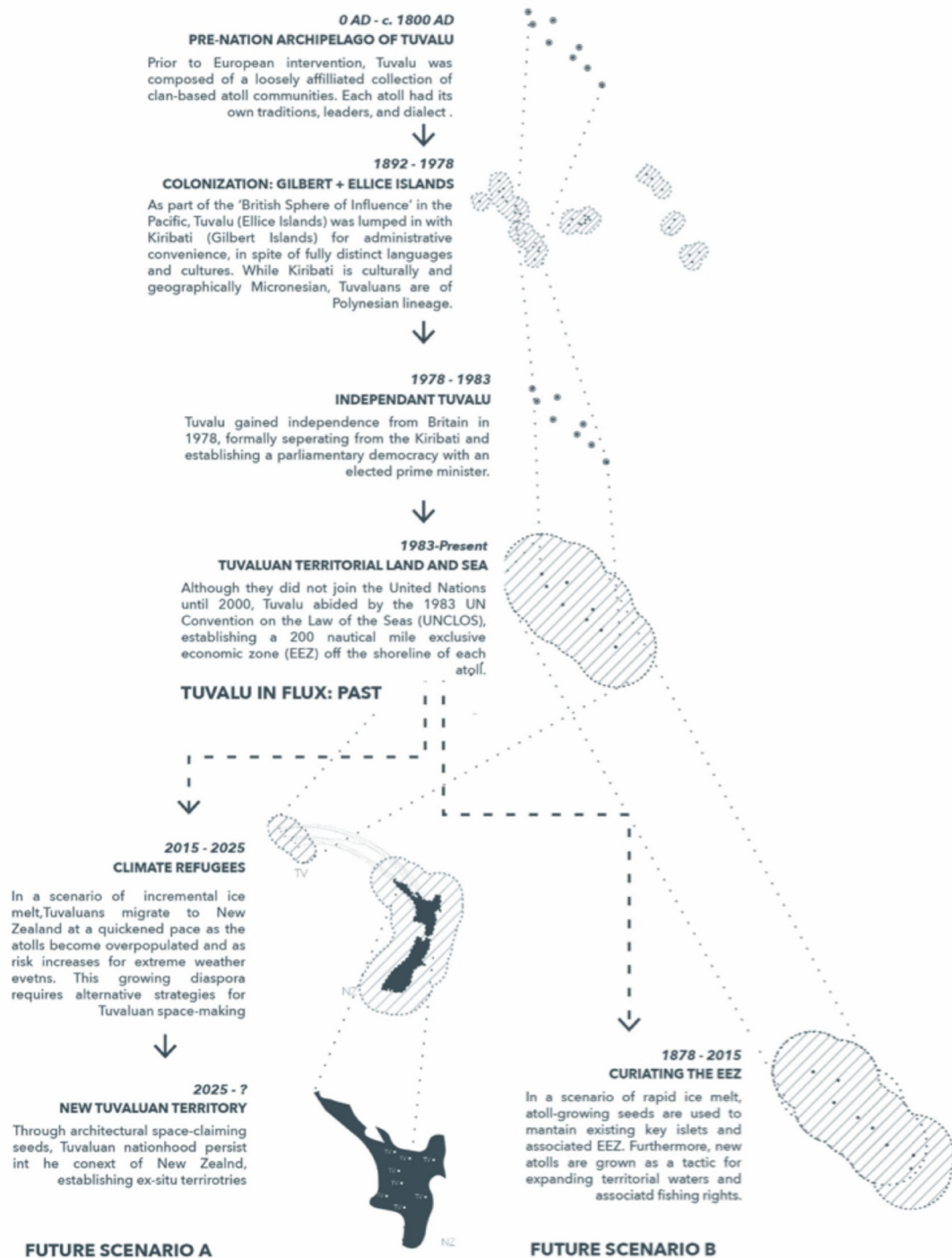
0 AD - c. 1800 AD
PRE-NATION ARCHIPELAGO OF TUVALU

Prior to European intervention, Tuvalu was composed of a loosely affilliated collection of clan-based atoll communities. Each atoll had its own traditions, leaders, and dialect .

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1892 - 1978
COLONIZATION: GILBERT + ELLICE ISLANDS

As part of the 'British Sphere of Influence' in the Pacific, Tuvalu (Ellice Islands) was lumped in with Kiribati (Gilbert Islands) for administrative convenience, in spite of fully distinct languages and cultures. While Kiribati is culturally and geographically Micronesian, Tuvaluans are of Polynesian lineage.

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1978 - 1983
INDEPENDANT TUVALU

Tuvalu gained independence from Britain in 1978, formally seperating from the Kiribati and establishing a parliamentary democracy with an elected prime minister.

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1983-Present
TUVALUAN TERRITORIAL LAND AND SEA

Although they did not join the United Nations until 2000, Tuvalu abided by the 1983 UN Convention on the Law of the Seas (UNCLOS), establishing a 200 nautical mile exclusive economic zone (EEZ) off the shoreline of each atoll.

TUVALU IN FLUX: PAST

2015 - 2025
CLIMATE REFUGEES

In a scenario of incremental ice melt,Tuvaluans migrate to New Zealand at a quickened pace as the atolls become overpopulated and as risk increases for extreme weather evetns. This growing diaspora requires alternative strategies for Tuvaluan space-making

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2025 - ?
NEW TUVALUAN TERRITORY

Through architectural space-claiming seeds, Tuvaluan nationhood persist int he conext of New Zealnd, establishing ex-situ terrirotries

FUTURE SCENARIO A

1878 - 2015
CURIATING THE EEZ

In a scenario of rapid ice melt, atoll-growing seeds are used to mantain existing key islets and associated EEZ. Furthermore, new atolls are grown as a tactic for expanding territoritald waters and associatd fishing rights.

FUTURE SCENARIO B

Figure 1. Scenarios-A+B

Figure 2. Scenario-A

Figure 3. Scenario-B

Combined, these two scenarios provide a productive comparison with a range of climatological and social impacts. Each scenario explores how architectural seeds might be propagated over time, within Tuvalu and the growing territories of the diaspora (specifically New Zealand), as well as impacts and implications from the scale of architecture to the region. The seeds, scenarios, and research were developed side-by-side and inform one another, such that while the seeds attempt to deal specifically with the scenarios as developed, they also operate strategically in Tuvalu's larger context of unstable ground and mobile populations.

'Seeding Territory': Strategies and Tactics

The design proposals encompass a series of small interventions, which by accumulation over time or through broader ripple effects in space serve Tuvaluan futures at much larger scales. The seeds are intended as tools to enable Tuvaluans "to generate and pursue their own diverse preferred futures" (Candy, 2014). Like the atolls Tuvaluans have traditionally inhabited, the 'seeds,' (Figures 3 & 4) implemented individually or collectively, accumulate incrementally over time, responding to dynamic contexts of culture and geography. Instead of *building* large scale infrastructures to

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blockade against sea level rise or house massive displaced populations, this project instead proposes *growing* responsive architectures and landscapes for fluid ground and mobile populations. As a microstate with limited economic resources, it is essential that Tuvalu strategically leverages what it does have: sovereignty, oceanic territory, coral reefs, fish stocks, cultural independence. The proposed seeds allow the population to benefit broadly from minimal and incremental interventions applied by and for Tuvaluans.

The distinction between the proposed 'seeds', which play out on the ground at a human scale, and their larger cultural, social, economic, and territorial aims, draws on Michel de Certeau's notion of "strategies and tactics." De Certeau distinguishes between *strategies*, the "manipulation of power relationships" at a site-specific macro-scale, and *tactics* or "calculated actions" without specific sites which operate in response to immediate conditions (de Certeau, 1984). Instead of placing strategies and tactics in opposition, as governor vs. governed, or organizations vs. individual, or even top-down vs. bottom-up, this project instead proposes a collusion of strategies and tactics in service of a collective agenda. Thus, the tactical activities of placing the architectural 'seeds', undertaken by individuals or small groups, can serve larger Tuvaluan agendas as they work toward strategies of creating new economic networks, land-making, cultural space-making, or territorial protection. This 'tactical strategy' parallels Van Alstyne and Logan's (2007) notion of "designing for emergence," where the top-down hand of the designer is balanced with emergent, self-determining behavior of bottom-up agents.

Figures 4. Combined Scenarios

Design and Futures

Designers inherently work with the intangible matter of the future: the as-yet-unknown, the projective, the undefined. Through the window of climate change, this project seeks to expand what it means to design with and for uncertain futures. Global warming has become fetishized as a singular narrative: rising sea levels, retreating cities, sweltering, weather-ravaged communities. Recognizing climate uncertainty, alongside a Tuvaluan culture of indeterminate future models, this project advocates a designer role of imagining possible futures mediated through responsive, time-based strategies. These are not specific recommendations or even kits of parts, but rather tools to show how design can be projective and productive, leveraging existing systems and circumstances.

While not emerging directly from futures studies, many of the methods of future-thinking employed in this project parallel recent work in critical futures studies and experiential futures concepts, including constructing experiential *alternative futures* (Candy, 2010; Slaughter, 1993; Inayatullah, 2008) through deep future scenario timelines, and attempting to *de-colonize the future* (Dator, 2005) by suggesting tools to counter the fetishized representations of sinking atolls. The study of tactical 'seeds' and strategic accumulations further parallels Van Alstyne and Logan's model of *emergent design* incorporating both the top-down hand of the designer with emergent bottom-up processes.

Further, through contextualization within longer spans of time, this project explores whether, in the process of design, it is necessary to defer to lived time scales. This is particularly relevant in the case of Tuvalu where temporality is an inherent part of the place. The maps and indexical drawings of this project conceive of the present moment in the history of Tuvalu and Oceania as not a single event, but as part of a long duration of evolving geophysical, climatological, and human systems. This parallels a futures studies view where the past, present, and future are deeply interconnected (Slaughter, 1993). The window of time contextualizing the project is opened up, considering timescales from the last ice age to the impending collapse of our current glaciers. I hypothesize that designing for futures, such as those prompted by climate change risks, must also include a study of pasts, of moments where humanity and environment, population and geography have previously collided.

The crisis of anthropogenic climate change (itself a result of neglecting to consider possible futures) requires critical future-thinking surrounding catastrophic environmental risks, together with innovation in the process of designing built environments. By studying how architectural and urban design proposals might intervene in potential future narratives for the vulnerable island-nation of Tuvalu, this project advocates for built environment design protocols that engage with uncertainty and emergence, alternative futures, and self-determination.

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Notes

Additional images from the Post-Island Futures project can be found at https://cargocollective.com/lizzieyarina/Post-Island-Futures

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