Countries Without Borders: Reterritorializing the Maldives

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The Maldives defies definition. Its geography presents a unique spatial problem. The island nation operates as 1,192 separate islands. The official name of the country, Republic of Maldives, a mixture of singular and plural nouns, presents a grammatical conundrum, announcing the country's struggle (like many other island archipelago nations) to reconcile its definition as a singular entity with its innate multiplicity. An archipelago of atolls in the Indian Ocean, each atoll consists of another series of subatolls defined by a loosely ring-shaped scattering of the country's 1,200 lagoon-enclosing, donut-shaped islands. As a series of rings (atolls) made up of smaller rings (subatolls), made up of even smaller rings (islands), the Maldives is, or *are*, in its aggregation, more coastline than land. This doubling and redoubling of concentric perimeters, multiplied and dispersed across a 500-mile expanse of ocean, create the impossibility of fixing a definitive boundary for the country.

The geometric problem of the country's physical plan is compounded by the geography of its section. With 80% of the islands less than 3 feet above sea level, the boundary of existing islands dramatically shifts on a constant basis. New "islands" emerge and submerge with daily tidal fluctuations. This daily dynamic is compounded by the volatility of the future. The country's 1,192 islands are currently classified as "inhabited," "uninhabited," or "disappeared," with an increasing number in the last category. Faced with the ubiquitous threat of rising sea levels, the coastline of the Maldives will be completely submerged at some point in the not too distant future.[1] Without its already elusive and illusive territory, the Maldives will cease to exist as a country—at least, a country as we know it.

TERRITORIALITY

The definition of a country has historically been linked to its physical territory. The impetus to secure, control, and administer the extents of a country's territory is as old as civilization itself. The geographer Robert Sack describes human territoriality as "a geographic strategy to control people and things by controlling area." It is, in essence, a "strategy to affect,

influence or control."[2] Territoriality is identified as a human behavior that is intrinsically linked to geography, a spatial and organizational imperative. It was the institutionalization of surveying, under Julius Cesar, that formally codified the geographic extents of the Roman Empire. Surveying became inextricably linked to colonization as the Roman Empire's appetite for expansion remained unabated in a succession of triumvirates and emperors. Land surveys and cadastral maps became not just potent symbols of the empire but also the primary instruments of expansion and control. From "centuriation" and gridding to land registration and allocation, these new systems of organization sponsored development through ever-increasing definitions of territory.[3]

DETERRITORIALIZATION

For the Maldives, the power equation of Sack's definition of territoriality has been reversed. The country's inability to control its area through a geographic strategy has rendered its people and things powerless. While the Maldives exists as an antiterritorial entity, its survival will be contingent upon its ability to successfully negotiate its perimeter.

The mathematician Benoit Mandelbrot famously illustrated the cartographic challenge of representing boundaries, and coastal perimeters in particular, in his seminal 1967 essay, "How Long Is the Coast of Britain? Statistical Self-Similarity and Fractional Dimension."

Mandelbrot posited the impossibility of determining the length of a coastline of a country, stating that "geographic curves are so involved in their detail that their lengths are often infinite or, more accurately, indefinable."[4] This paradox of the perimeter is magnified in the Maldives, which not only consists of multiple islands and atolls but also has one of the highest ratios of coastline or perimeter to land area in the world. When unfolded, its total coastline is approximately 400 miles long, enclosing a total area of only 116 square miles. This exaggerated condition sets the Maldives apart from the majority of the countries in the world. Rather than a land mass, the country is essentially a coastline—and a mathematically indefinable one at that. The Maldives is a country without borders.

DISPERSAL AND DENSITY

The impossibility of defining a physical boundary is further exacerbated by the extreme dispersal of the islands. Although the total combined area of all 1,192 islands is only five times the size of Manhattan, the island chain spans nearly 500 miles, approximately the entire length of the northeast coast from Boston to Washington, D.C., America's most dense metropolitan region.

Yet, the Maldives is, on average, more than three times as dense as the BosWash metropolitan region.[5] With the average island too small for adequate development, the overwhelming majority of the islands, nearly 1,000 in number, remain uninhabited. The remaining 200 islands house the country's rapidly growing population of 320,000. Around 30% of this total population is located in the capital, Malé. With 100,000 people occupying less than 1 square mile, Malé is, by some measures, the densest city in the world,[6]

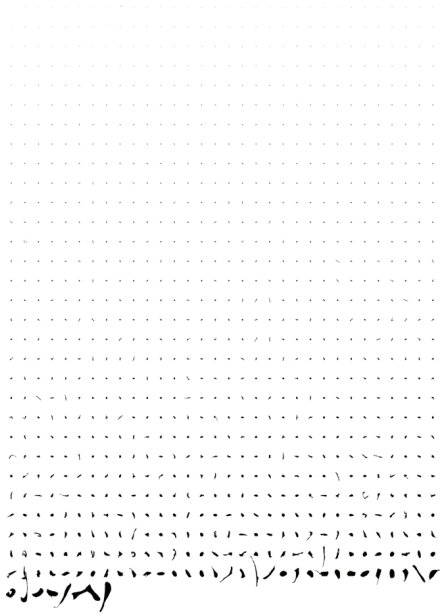

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Figure 1: Matrix of the Maldives's 1,192 islands, reorganized and sequenced by size of land area.

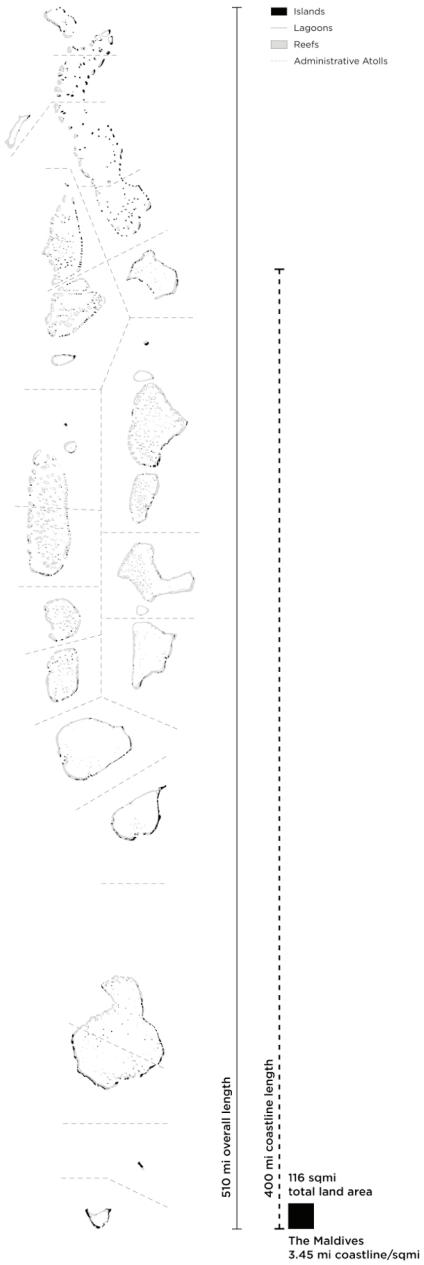

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Figure 2: Maldives map with comparison of land area to coastline length.

denser than Manhattan, Tokyo, Lagos, Mumbai, or Jakarta. This simultaneity of extreme density and complete dispersal creates a country that insecurely exists at opposite extremes: a bipolar state.

BIPOLAR STATE

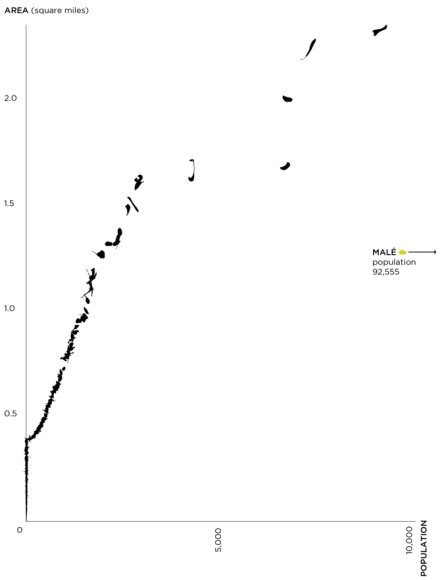
The Maldives is bipolar not only spatially but also socially. Like the country's twinned condition of density and dispersal, an extreme cultural divide further confounds attempts to define the nation, creating invisible borders that cannot be trespassed and further fracture the physically fragmented country.

The Maldives is internationally renowned as an exclusive and extravagant island resort destination. Frequented by celebrities on limitless budgets, the Maldives and its private islands set the stage for the quintessential fantasy escape. Local citizens, on the other hand, suffer from a massive housing shortage crisis, unemployment, illiteracy, and heroin addiction. A national policy and spatial strategy of cultural enclavization isolate tourists from the local population on allocated resort islands. International vacationers arriving from all around the world are blissfully shielded from social and development challenges as they are discretely transported to their remote pleasure resorts.[7]

Similarly, the local population is also isolated from global culture, physically and socially separated from the international jet-set crowd who bring their many Western "vices" and indulgences that contradict the local culture's inviolable codes of conservative Islamic conduct and Sharia law. The severity of this divide is underscored by the recent political turmoil. In February 2012, President Mohamed Nasheed, the first president to be democratically elected after 30 years of autocratic rule, was forced to resign at gunpoint in a military coup after three short years.[8] A favorite of Western media, Nasheed made it his priority to make the Maldives more liberal and "not so Islamic."[9]

FOREIGN DEPENDENCE

Despite both a media image and a national cultural policy of isolation, the Maldives is, in fact, the neither isolated nor disconnected from the world. Its extensive network of trade partners reflects not only a growing footprint in the geopolitical stage but also a compulsive dependency on other countries for its basic subsistence and existence—the complete dissolution and lack of control over economic borders. The Maldives relies almost completely on foreign sources for revenue, goods, and labor. Thirty percent of its GDP comes from tourism. Fishing, the primary export, is dwarfed by the volume of imports: nearly all basic necessities, including fuel, food, machinery, and manufactured goods, are imported.[10] With an overwhelming trade deficit and few domestic resources aside from fish, the Maldives's economy is as unstable and volatile as its coastline, vulnerable to external fluctuations and forces. Even labor is an imported commodity despite a 14% unemployment rate, with foreign workers constituting 40% of the labor force. The local educational and training infrastructure appears to be severely lacking, as managerial staff are predominantly drawn from an influx of foreign workers



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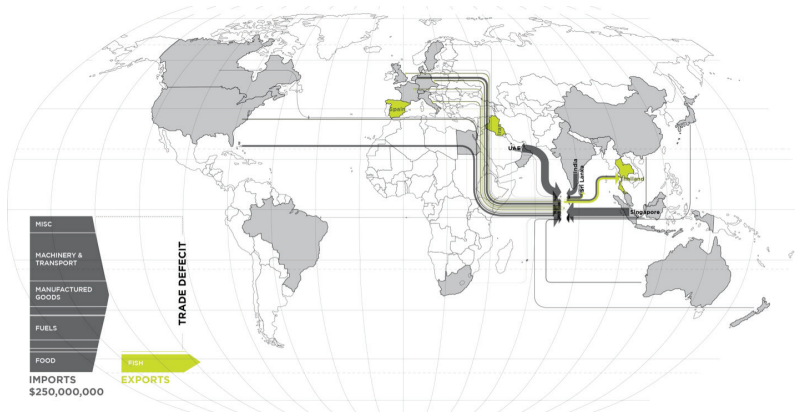

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from Bangladesh, India, and Sri Lanka.[11] Even if the Maldives were able to define national borders and control its geographic area, physical or cultural, it clearly controls neither its people nor its things.

These economic vulnerabilities and foreign dependencies undermine long-term planning and the economic security of its territory. They have, in many ways, rendered the country powerless. The inherent conflict between autonomy and global exchange, independence and interdependence, materializes as an intense challenge to notions of territoriality, an inability for the country to define itself as a singular, independent economic entity and control its own development.

A NATION WITHOUT A TERRITORY?

On October 17, 2009, former President Nasheed went to work in full scuba gear, conducting a 30-minute cabinet meeting underwater, using hand signals and whiteboards to communicate with his ministers. Nasheed carefully choreographed this media stunt to highlight the predicament of a country literally going underwater and bring global focus to the country's critical environmental issues.

While the physical, spatial, cultural, and economic geography of the Maldives defies control, the global environment remains the single entity with the greatest control over the nation. While new spatial and economic planning strategies can counteract immediate development issues that threaten the longevity and viability of the country, climate change presents an inevitable environmental catastrophe. The Maldives is one of the first countries projected to be eradicated by sea level change in the next 50 years. The country will be at the forefront in dealing with an environmental crisis that all nations will eventually have to confront, despite the undeniable fact that its contribution to this global problem is negligible. Mirroring the country's physical and economic borderless-ness, this is yet another example of how external fluctuations and forces wield the most power over the country's future.

Figure 3: Chart of all 1,192 islands of the Maldives, graphing population (x-axis) against land area (y-axis). Not surprisingly, the number of inhabitants per island increases as the size of the islands increases. The capital of Malé, one of the densest cities in the world, is the only outlier and an extreme exception to this rule.

Figure 4: Map of Maldives global trade network tracking imports (gray) and exports (green).

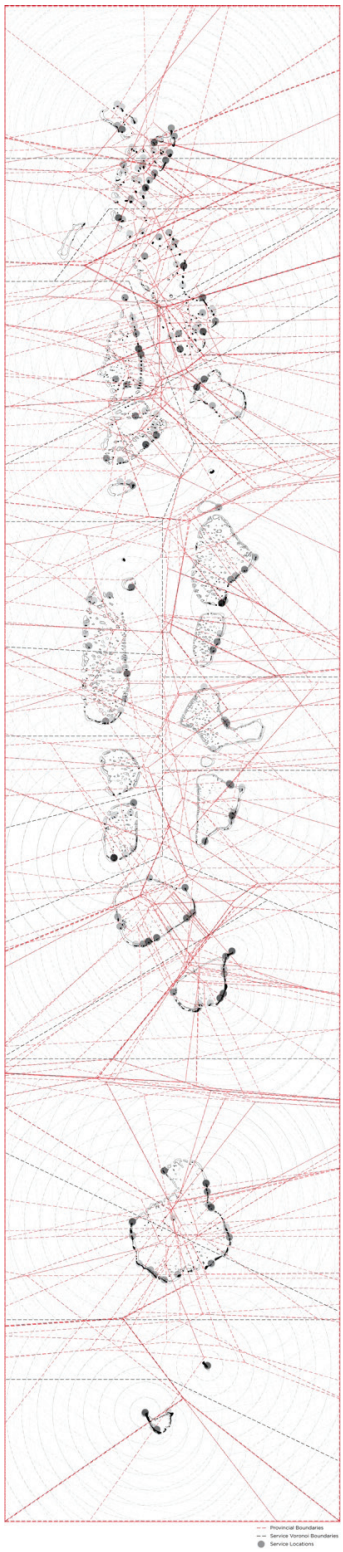

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Figure 5: Voronoi boundaries for service points.

Nasheed has also been garnering headlines by declaring the ultimate strategy of retreat as a viable solution to handle the threat of climate change—the relocation of the entire country, a nation of 300,000 people. With potential sites in Australia, Sri Lanka, and India, the prospect of an entire country of "climate refugees" has provided sufficient impetus for international attention, if not action.[12] Not a media stunt, this news cycle does, however, present a real question: if a country loses all its physical area, does it cease to exist? What is a nation without a territory?

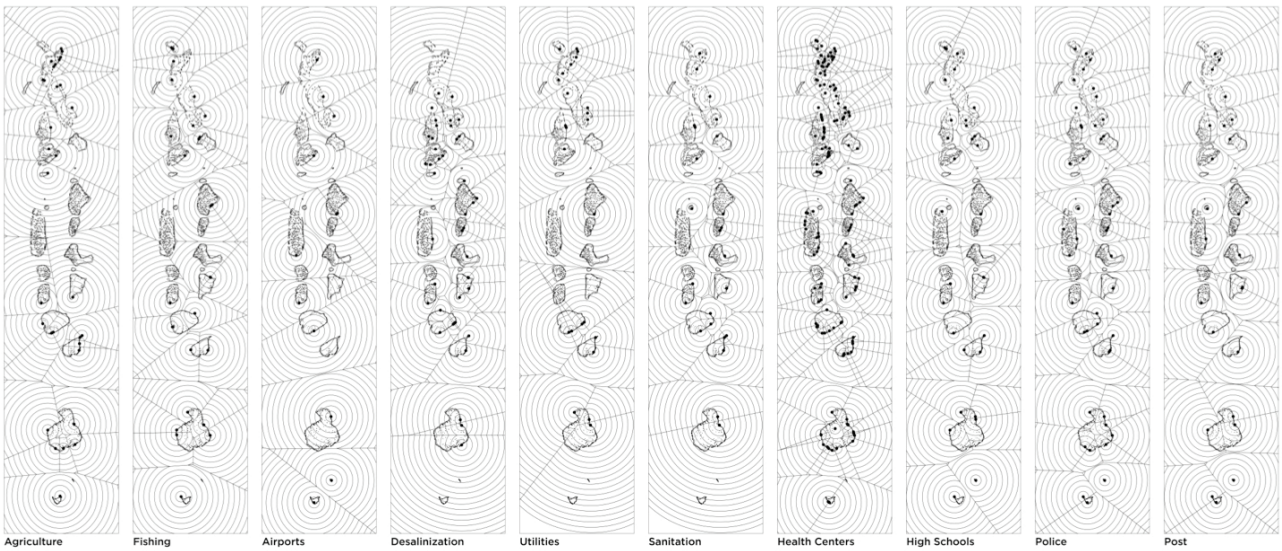
The Maldives is not alone in this predicament. Together with a host of other small island states in the Indian and Pacific Ocean, such as Tuvalu, Kiribati, the Marshall Islands, and Vanuatu, the Maldives faces the specter of nationhood without territory.[13] As issues of territoriality have an impact on issues of international refugee law and migration, "the disappearing states or 'sinking islands' phenomenon … has become the litmus test for the dramatic climate change on human society," calling into question the legal rights and criteria for statehood, as recognized by the international community.[14] Whether these nations are considered "deterritorialized" or "ex situ," their citizens "ecological exiles" or "climate refugees,"[15] the global exchange between social, political, and geographic systems is irrevocably mutated, demanding new terms of territorial classification and definition.

RETERRITORIALIZATION

Given the aterritoriality of the Maldives and the elusiveness of it spatial, geographic, social, economic, and environmental bounds, what mechanisms of control can be deployed? The Maldives demands alternative tactics and geographic strategies to reposition its spatial relationships, redefine territories, and reassert control. Despite these challenges of dispersal, density, division, and dependence, current strategies of control and containment insufficiently employ and enforce normative models. Islands are clustered according to administrative boundaries, which are grouped according to the existing geographic configurations of atolls.[16] The reliance on static political and administrative configurations is neither adequate nor effective in providing basic infrastructure. The need to reorganize, requantify, recategorize, and remap the Maldives requires a paradigm shift where territoriality is tethered no longer to a physical territory or a singular controllable area but to a malleable series of relationships between services and people.

NEW SERVICE BORDERS

The atomized distribution of basic services in the Maldives, frequently dispersed over extreme distances, provides opportunities for defining new boundaries. By dissociating these service centers from conventional boundaries of land and area, territories can be reconfigured as a series of points in space according to their relationship to one other. This type of cartographic distribution is reconceived as a series of service cells, or "Voronois." Voronoi distribution patterns can be traced as far back as the seventeenth century. Renee Descartes's *Principia Philosopiae*, published in 1644, conceptualizes matter in the universe using Voroni-like diagrams and depicts the universe as a series of vortices with a sun at each center.[17] Voronoi cells are



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a defined space in which the distance to the service center of all points in the given space is not greater than their distance to other service centers. Each cell consists of a service center within its perimeter. Taken together, the cells form a field of points within a network of perimeters. The perimeter is no longer defined as a limit of administration and physical area or as a boundary of difference but rather as a line of equivalence between adjacent centers.

Services such as agriculture, hospitals, police stations, schools, stadiums, airports, public utilities, and desalinization plants each produce their own Voronoi, or cellular distribution pattern. The resulting cells illustrate the variegated regions of each type of service and provide a means of understanding the distinct areas and populations serviced by each node. A new kind of relational space emerges that is defined by points and their corresponding spheres of influence rather than definitive areas. At the scale of the country, a cartography of Voronoi cells reconfigures the islands not according to traditional divisions or geology, i.e., administrative districts or atolls, but by spatial distances relative to the distribution of basic services. This method of defining a perimeter subverts the impossibility of delineating boundaries previously noted.

Collapsing all the Voronoi service cells into a single and hybridized territorial entity reveals the collective inefficiencies, redundancies, convergences, and possibilities of allocating services within the Maldives. In this reterritorialized state, the aggregation generates not one but multiple boundaries of service clusters that oscillate dynamically between one another, offering a new model for encapsulating the indeterminate relationships of perimeters to centers or regions served to service points. The conventions of absolute areas and definable limits are superseded in favor of a

Figure 6: Aggregated Voronoi distribution.

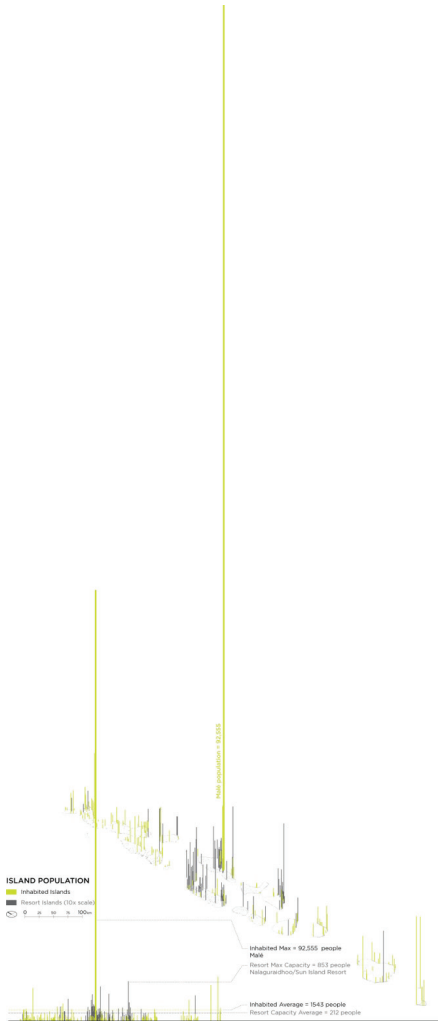

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Figure 7: Graphic showing number of inhabitants per island, indicating local population (green) and the tourist capacity by number of resort beds (black).

variable strategy of compartmentation.

PRIVILEGING POPULATION

The current temporality of land area coupled with the crisis of climate change presents the real possibility of a nation of "climate refugees" without a physical territory. Confronting this reality challenges notions of what defines a country. Nasheed's relocation plans implicitly define the Maldives as a home for 300,000 citizens. Similarly, McAdam argues that the "absence of population, rather than territory, may provide the first signal that an entity no longer displays the full indicia of statehood."[18] In light of its impending deterritorialization due to climate change, the Maldives offers an alternative model for territoriality, resulting from an inversion of normative determinants, from people controlled by area to area controlled by people. A mapping of the population of the Maldives registers as an array of distributed points that fluctuate in intensity, with corresponding regions of impact and influence emanating around them across a distributed field of points in the Indian Ocean.

NETWORKS

The constellation of crises provides impetus to consider new strategies of spatial planning that are attuned not just to the distribution of services but also to how the population can access them. The linkage of population to the diffuse networks of services offers new possibilities for connectivity. Given the Maldives's vulnerability to oil and dependence on seaborne transportation, establishing efficiently distributed networks of routine and critical services is essential to its survival. Optimizing connections between service centers and population can point to new configurations of spatial networks. Two strategies for parametric planning correlate the logic of Voronoi service cells with population distribution. In both strategies, the population-weighted spatial distributions provide configurations for development and control that conventional territorial concepts based on land area can neither codify nor define.

CONCLUSION

The perimeter has served as the ultimate form of security device in controlling land and defining territory. The volatile states of emergency, from

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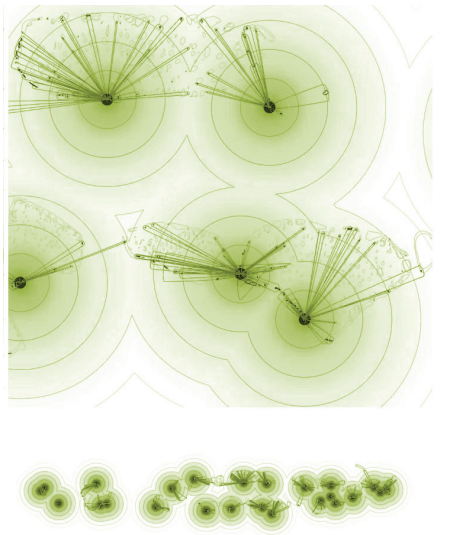

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Figure 8: Parametric planning: how to connect more efficiently? In order to connect population centers more efficiently, the first strategy examines the de-velopment of compact linear networks for services that can be organized around scheduled routes and delivery. The most efficient network path within a single service cluster can be established using an al-gorithmic process (such as Prim's spanning tree). The population-weighted accessibility of the new network of service points offers the greatest improvement to transportation efficiency, thereby reducing the overall carbon footprint.

Figure 9: Parametric planning: where to develop more efficiently? A second strategy of population-weighted development scenarios offers insight into the nation's collective carbon footprint. The potential impact of adding a new service center is analyzed relative to the population centers it would serve and the corresponding impact on the cumulative trans-portation savings for the entire country. A heuristic series of iterative steps yields a network of additional centers that maximize the reduction of the carbon footprint by offering the greatest improvement to transportation efficiency.