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A retreat critique: Deliberations on design and ethics in the flood zone

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Abstract

Climate change is increasingly making areas of our planet difficult or dangerous to inhabit. ‘Managed retreat’, the intentional relocation of settlements away from hazardous zones, is growing as a proposed strategy for adapting to climate change in the United States and around the globe. As designers begin to integrate retreat into their toolkit of adaptation strategies, and as they are asked to participate in projects that include managed retreat, it is important that they also understand and negotiate the social, political and environmental implications of this form of climate adaptation. Retreat projects are often fraught with equity issues: who should relocate? And who should decide? Puerto Rico, which has a long history of displacement due to purported environmental risk, and which is currently the site of new retreat proposals as a result of Hurricane Maria’s destruction, provides a space for analysing retreat projects and policies, and the role of spatial designers in their design and implementation.

*Managed retreat / climate change / sea level rise /
Puerto Rico / climate relocation*

Many millions of Americans live in coastal areas threatened by sea level rise; in all but the very lowest sea level rise projections, retreat will become an unavoidable option in some areas of the U.S. coastline.¹

Introduction: Designing retreat?

Climate change is reorganizing our planet: locations of water, drought, heat and cold no longer inhabit familiar zones. Adaptation will require reorganizing the way we live: the locations of our homes, cities, infrastructures and even nations. Managed retreat, or simply ‘retreat’, is a climate adaptation strategy geared towards moving human settlements away from zones vulnerable to disasters. Most commonly associated with flooding and sea level rise, retreat is increasingly proposed as a mechanism to deal with wildfires, mudslides, tsunamis and even drought.

The devastating toll of recent hurricanes inspired a spectrum of proposals in academic and popular media ranging from structural flood mitigation to the relocation of households out of floodplains. As put forth in the US 2018 National Climate Assessment, *retreat*²—the movement of populations and infrastructure away from hazard zones—is likely to become a necessary component of adaptation toolkits as climate change makes coasts, riverbanks, wildland-urban interfaces and other zones increasingly dangerous to inhabit. Most proposals for retreat, however, fail to query the equity of retreat actions, leaving vulnerable populations to carry the burdens of migration away from hazardous areas, while wealthy inhabitants are allowed to stay. What are the broader political, cultural, ecological and urbanistic implications? What are the impacts on receiving communities?

What does it mean to ask a community, with deep ties to their people and place, to relocate? Before we call for others to retreat, designers and planners must comprehend the ethics and politics of (incentivizing) displacement.

Proposals surrounding recent disasters in the United States illustrate how retreat as a form of adaptation can perpetuate inequality and vulnerability. This essay emphasizes questions of professional design ethics and equity in the context of US retreat programmes, with a focus on programmes in Puerto Rico that both predate and respond to Hurricane Maria (2017). In particular, we place the work of the community organization ENLACE in contrast with programmes that target low-income informal communities for top-down displacement either through disincentives or more direct means. These retreat proposals highlight the ways in which a critical framework is fundamental to ensuring that adaptation goals do not release a second storm on the most vulnerable populations.

Querying how we imagine and manage retreat is becoming increasingly urgent in the United States. Hurricane Sandy (2012) prompted a spate of buyout programmes for heavily impacted coastal regions, and drew national attention to the concept of retreat. The violent storms in 2017 and 2018 highlighted the exigency of creating new models. As retreat enters the discourse and practice of landscape architects, urban designers and planners, new frameworks are essential to ensure that resilience is achieved equitably. Through the cases, the aim of this article is to frame the design and planning of managed retreat as a political act. Retreat is not a silver bullet: these cases show how it is complicated, messy and can even be violent. De Certeau's notions of *strategies* and *tactics* are leveraged as conceptual tools for expanding the way we engage with new regimes of climate change adaptation. In the context of retreat, design practices have the potential to amplify injustices, but there is also potential to leverage our collective disciplines to envision equitable climate-changed futures.

Typologies of retreat

Proponents of retreat (including the authors) advocate that resettlement away from hazard zones can have additional benefits, such as creating space for ecosystems to buffer against hazards and allowing coastal ecologies to adjust to climate shifts. In coastal zones, retreat away from shorelines that return coastal systems to their natural processes can also eliminate the need for expensive and often destructive defensive infrastructure and beach nourishment programmes. However, there is no one way to retreat: a number of spatial configurations, timelines and policy mechanisms are possible across different contexts.

There are three categories of retreat proposed by William Neal, David Bush and Orrin Pilkey: *avoidance* of hazardous areas (via setbacks and zoning), *abandonment* (loss of development during a disaster, condemnation or removal post-disaster) and *relocation* (buyouts, planned relocation).³ Avoidance strategies that accommodate the fluid nature of beaches and the incremental nature of sea level rise such as rolling setbacks and easements are emerging. Disincentivizing strategies, such as raising flood insurance rates for developing in disaster-prone areas, could fall into all three of these

categories depending on whether they prevent development, discourage reconstruction or result in people deciding to move. Relocation most closely aligns with the ways retreat is imagined, but these other mechanisms also shape the shifting of settlements away from shorelines.

Buyout programmes purchase homes in hazard-vulnerable areas to help shift settlements away from risky areas. While Neal, Bush and Pilkey categorize buyouts as 'relocation', it is worth noting that, at least in the United States, buyouts are primarily defined by the movement of a household away from a site. Where households relocate to is not typically regulated (though some programmes provide incentives for relocating within the same city, county or state). In some cases, those being bought out even rebuild elsewhere within the floodplain.⁴

Planned relocation refers to a process by which a community moves away from a vulnerable site *en masse* and to a relocation site together (usually a greenfield development). While planned relocation as a form of coastal climate change adaptation has rarely been implemented, there have been planned relocations from American riverine sites, and there are a smattering of international precedents linked to climate change.

In the United States, the most visible mechanisms for retreat are federal grant programmes, particularly voluntary buyouts via the Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) and the US Department of Housing and Urban Development (HUD)'s Community Development Block Grant Disaster Recovery (CDBG-DR); both are currently made available after federally declared disasters.⁵ HMGP grants require that groups of homeowners in an area decide collectively to be bought out and that the land be converted to open space to help absorb water from future storms. Homeowners receive cash based on pre-disaster home values and decide on their own where they will relocate. While 'retreat' typically brings to mind hurricane-battered coastal cities, to date the majority of buyout programmes have been inland sites hit by riparian flooding.⁶ CDBG-DR funds can be used for buyouts, but they have also been allocated to proposed group relocation projects including the Isle de Jean Charles relocation in coastal Louisiana. As these are administered at the national level, a critical design approach is necessary to mediate between the rigidity of federal programmes and the needs of communities on the ground.

Retreat and displacement in Puerto Rico: Pre- and post-Maria

In September 2017, Hurricane Maria swept through the United States territory of Puerto Rico,⁷ damaging or destroying hundreds of thousands of homes. Maria prompted a barrage of calls for retreat from flood zones across Puerto Rico, particularly of informal communities. While the hurricane created devastation across demographics, many low-income communities with high rates of self-built housing were shattered. While, like most retreat proposals, these programmes are put forth as apolitical strategies for reducing hazard risk, in reality they end up distributed in ways that unfairly target poor and racially marginalized communities, often as purported culprits for risk creation.⁸ The vulnerability of these communities is often exacerbated in the process of displacement.



Figure 1 Home marked for demolition post-Maria in Catano, Puerto Rico, March 2019. It is estimated that 49 per cent of Puerto Ricans live in landslide hazard zones. More than 200,000 homes are located in flood zones, of which certain communities are being targeted for relocation.⁹

This emphasis on retreat post-Maria must be understood in the context of Puerto Rico's history of *arrabales* (informal settlements) and their often violent clearance. Informal settlers are usually called *invaders* (*invasores*) in the Puerto Rican dialect, but term themselves *rescuers* (*rescatadores*), claiming a moral rather than legal right to housing. These communities formed following the failure of the government to address the Puerto Rican housing crisis in the 1940s and 1950s, and people responded through organized collective land 'rescues'. Throughout the 1960s and 1970s, the very existence of these communities was met with violent government response.¹⁰

Hurricane Maria is the worst recorded storm to strike Puerto Rico, with winds up to 155 mph (250 kmph) and heavy flooding across the island. Nearly 3,000 people were killed.¹¹ Maria's first round of displacements resulted from the island-wide damages, the disruption to power and logistics, and the lack of post-disaster housing options. As United States citizens, Puerto Ricans can migrate freely between states, and nearly 400,000 left the island between October and February 2018.¹² Without on-island options, FEMA spent US\$92 million on vouchers to relocate about 7,000 families to hotels across the United States.¹³ Over time, this temporary migration may develop into permanent retreat: according to the Center for Puerto Rican Studies, 160,000 residents had relocated to American mainland states one year after Maria.¹⁴

Those attempting to remain and rebuild may find that outside conceptions about where it is safe to live affect their ability to receive housing assistance. The government of Puerto Rico, via a CDBG-DR grant, will only provide reconstruction assistance to households *outside* zones defined as hazardous (Fig. 1).¹⁵ A proposed US\$757 million in CDBG-DR funding will be allocated to relocate nearly 9,000 families. While the aim is to provide safer housing to those living in high-risk areas, some municipalities have directly proposed plans for relocating residents out of flood zones with the sole purpose of 'eliminat[ing] *arrabales*'.¹⁶ The policy also raises questions about what is categorized as 'a floodway, floodplain, or areas vulnerable to landslide'; in a public comment for the CDBG-DR plan, some have called into question hazard zone designations.¹⁷ One community leader notes: 'With this plan, the resident has no right to choose, but he is pressured to have to move because he cannot rebuild his house in the place that has been his home.'¹⁸ CDBG-DR relocation assistance, as with all United States buyouts, is framed as voluntary. However, without feasible alternatives, 'voluntary' becomes forced, and people are left without a say in whether they stay or leave.



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Figure 2 Toa Baja, Puerto Rico, after Hurricane Maria, January 2018. Villas del Sol in Toa Baja lies in a floodplain and was the site of violent expropriations in the name of reducing risk. The low-income community was severely damaged by Hurricane Maria.

For many in Puerto Rico, this type of policy is linked to past violent expropriations. One example is Villas del Sol, a predominantly Dominican community in the municipality of Toa Baja founded in the mid-1990s. After Hurricane George (1998), Villas del Sol was declared a flood zone and became part of FEMA's New Secure Housing Program, which granted \$180 million towards relocating multiple settlements. An Office of Inspector General (OIG) report later revealed that the Puerto Rico Department of Housing mismanaged half of the money that was meant to provide housing in safe zones.¹⁹ As a result, a number of families lacking alternatives remained in Villas del Sol and the population regrew over time. In 2007 and 2009, the community faced forced removal and violence on the basis of occupying of a FEMA flood zone, leading to an official American Civil Liberties Union (ACLU) complaint.²⁰ They were promised land nearby for relocation, which also proved to be flood prone, and families returned again (Fig. 2).

More recently, the spectre of flood risk and the associated displacement of informal communities has been used to make room for high-end development. The expropriation of a community in Vietnam, Puerto Rico,²¹ located just across the bay from San Juan, was driven by a political agenda to create the Guaynabo City Waterfront—a site for tourists and elites. The most vulnerable were targeted for buyouts, including the elderly and less educated, often through misleading information. Offers well below market price

(\$20,000 to \$30,000) forced people to look for housing far away from their social and economic networks.²² The expropriations began with a sudden emphasis on the neighbourhood's flood risk, followed by the posting of new tsunami signs. However, at the same time that these narratives indicated that it was too risky for current residents to remain, high-end development was proposed for the site. Demolition was weaponized, with bulldozers and debris creating a health hazard while destroying the community's social and physical infrastructure. The community's essential services were cut, including trash collection and the maintenance of water drains, creating unprecedented flooding—which was then used as further 'proof' that the community was at a high risk of flooding.²³ The process of expropriation fragmented the community, fuelling the perception of a decaying neighbourhood; this was later used as an additional argument for displacement. Vietnam residents were excluded from the planning process and in most cases those who were displaced were not provided with relocation options appropriate to their social and economic needs (Figs. 3 and 4).²⁴



Figure 3 Community group 'Residentes Unidos en Lucha por Vietnam, Inc.' ('Residents United in the Fight for Vietnam, Inc.') showing the documentary *Vietnam = Puerto Rico* (2017) to residents for the first time, a film that documents attempts to erase and redevelop the community.



Figure 4 Empty lots in Vietnam, Puerto Rico. Though residents did not experience flood risk as a major concern, a sudden emphasis on flood and tsunami risk by the local government was used as evidence for buying out 'risk prone' homes, often using dishonest and misleading practices.

United States retreat projects: Retreat for whom?

These problematics of retreat are not unique to Puerto Rico. Rarely do mainland American retreat projects consider where impacted communities will locate to, meaning new homes may even increase the vulnerability of 'retreates'. Calls for retreat ignore the importance of connections to place and communities: this is especially significant given the role of social capital in resilience.²⁵ A recent National Public Radio (NPR) investigation highlighted how buyouts are frequently inequitable in their current form:

White Americans and those with more wealth often receive more federal dollars after a disaster than do minorities and those with less wealth. Federal aid isn't necessarily allocated to those who need it most; it's allocated according to cost-benefit calculations meant to minimize taxpayer risk.²⁶

Federal disaster assistance tends to favour owners over renters, and to give more money to the wealthy (who have higher home values).²⁷ Understanding these potential inequalities is key for designers and planners who see retreat as a (preferred) mechanism for dealing with climate risk. It also suggests opportunities for design to make federal programmes more effective for communities as they help translate policies to people and places on the ground.

The controversy that buyouts have predominantly gone to whiter communities is linked to the way these projects are assessed.²⁸ The use of cost-benefit frameworks to analyse the worthiness of buyouts has a tendency to favour retreat for lower-income, often minority communities, while infrastructural solutions will likely be favoured in wealthier, whiter areas where home values are higher (and accordingly more expensive to buy out).²⁹ Many of the coastal communities protected by expensive defensive infrastructure and beach nourishment projects are in fact investment properties.³⁰ Moreover, while 'costs of retreat are felt locally (e.g., loss of community)', 'benefits accrue across scales (e.g., individual safety, community insurance premiums lower, national disaster recovery costs avoided)'.³¹ As in Vietnam, Puerto Rico, the monetization of risk and resilience implies that some communities are more deserving of living along coasts and rivers than others.

Both in Puerto Rico and on the mainland, minority groups with less capacity to negotiate are more likely to be targeted for retreat projects. The racialized nature of retreat proposals was highlighted in New Orleans following Hurricane Katrina, where survivors were disturbed by the so-called 'green dot plan', which highlighted highly damaged, largely low-income communities as potential sites for future flood-absorbing parkland: 'Debate over whether people had the right to return to their own homes and properties took place among outsiders in a discursive disenfranchisement that belittled the meaning of place.'³²

The main argument for buyouts is their capacity to remove populations from high-risk zones. Yet following Hurricane Sandy, city-led (as opposed to state-led) buyout programmes in Staten Island replaced 'retreating' households with new development with higher flood-proofing regula-

tions.³³ While retreat programmes that convert former neighbourhoods to marshland or swale systems can serve as sponges for future storms, rebuilding in the floodplain even to a higher standard increases impervious surfaces—increasing flood risk for everyone—and will likely expose future occupants to environmental risks as climate change impacts become more severe (while developers make off with a profit in the short-term). While federal buyouts are nominally voluntary, homeowners may be required to make expensive alterations in order to rebuild in a flood zone. Also, although FEMA does not track where people go following voluntary buyouts, an independent study of 323 buyout participants post-Sandy found that over 20 per cent moved to areas with flood hazards at least as high as their original locations, and 321 of 323 moved to neighbourhoods with higher poverty levels.³⁴

The National Flood Insurance Program (NFIP) also reframes our relationships to shorelines, by variously incentivizing and disincentivizing development in hazardous zones. The NFIP was invented as a mechanism for discouraging floodplain development, as well as to partially privatize relief funding where private insurers were unwilling to take on the risk.³⁵ However, by partially subsidizing policies, some argue that the cost of inhabiting risky zones was inadvertently reduced and risky development incentivized. Now, proposals to raise rates to more closely align with risk may have serious implications, including 'the potential pricing out of low- and middle-income homeowners, which would further compound economic inequality'.³⁶ Many coastal zones would become places only affordable to America's most wealthy. Wealth can also play into where FEMA flood zones (which help determine NFIP rates) are designated: low-resolution FEMA flood maps can be damaging for individuals and communities, but costly remapping is only accessible to wealthy municipalities.³⁷ Like the parameters on post-Maria CDBG-DR assistance in Puerto Rico, these policies can increase the vulnerability of low-income or marginalized households if safe and equitable relocation is outside of their reach.

Planned, collective relocations may address some of the shortcomings of buyouts and financial disincentivization programmes, but have been difficult to implement within United States programmes, particularly for minority and indigenous communities. For example, the intentional breaching of a Mississippi levee in 2011 devastated the historically black community of Pinhook, Missouri. The community attempted to relocate collectively, but struggled to access federal assistance or find a site that would allow it to plan a group resettlement.³⁸ Similarly, the Inupiaq Eskimo community of Shishmaref, Alaska, (Fig. 5) is actively seeking group relocation as coastal erosion undermines their community's buildings and infrastructure, but has not yet succeeded. Buyouts, as the primary vehicle in the United States for facilitating relocation, do not accommodate this collective approach, and the home valuations they are based on are difficult to calculate in sparsely populated Arctic landscapes. Market-based, property-centred, individualistic strategies of retreat fail to meet the needs of communities that see relocation as a collective endeavour.³⁹



Figure 5 The traditional Inupiaq Eskimo village of Shishmaref, Alaska, is seeking to relocate collectively as a result of erosion linked to permafrost and sea ice melt, storm surges and rising seas.

The Native American community of Isle de Jean Charles (Figs. 6 & 7) was heralded as the 'First American Climate Refugees'⁴⁰ when their community received a \$48.3 million HUD grant (CDBG-DR) for a planned relocation inland. Since 1955, 98 per cent of their land has disappeared, and each hurricane season threatens to be their last.⁴¹ In early 2019, Louisiana purchased a 515-acre (208-ha) former sugarcane plantation for their resettlement. While relocation was never an easy decision given the cultural roots of the community, many of whom make their living upon the marsh, the tribe has expressed increasing frustration with the relocation process: 'State planners have steadily erased our role as leaders of the resettlement process'.⁴² The tribe had spent more than twenty years developing a relocation plan, and while the state's master plan included superficial parallels, it ultimately lacked the nuanced social and ecological values of the tribe's design. In February 2019, Chief Albert Naquin requested that the Isle de Jean Charles tribe's name be removed from the project. While the National Climate Assessment emphasizes that: 'The historical context of forced relocations of Indigenous peoples emphasizes the need for retreat frameworks that protect self-determination',⁴³ the United States still lacks effective strategies for managing retreat among indigenous groups and other close-knit communities. Policy changes are essential, but there is also a need for better mediation between government programmes and the communities they impact on the ground.

Figure 6 top right The Native American community of Isle de Jean Charles, Louisiana, has received federal funding for relocation due to a combination of climate and more immediately man-made environmental risks, but the process has become fraught as a result of state management. Tribal leaders assert that current management of the programme undermines tribal sovereignty: 'We are not merely "stakeholders" engaged in a project. We are rights-holders committed to future generations of our family, our knowledge, our ways of life, and our Island people. Our Tribe's cultural survival depends on it.'⁴⁴

Figure 7 bottom right Isle de Jean Charles: while many of those with means have already begun to migrate to higher ground, those that remain face severe hurricanes, contaminated water, unreliable power and an often-flooded road connection to the mainland.



GOOGLE EARTH PRO



KAREN APRICOT, FLICKR (CREATIVE COMMONS)



EPA URBAN WATERS PARTNERSHIP

Figure 8 El Caño Martín Peña, 1936. The area was first populated in the 1930s after two large hurricanes, in combination with the island's industrialization, led rural families to migrate to San Juan and occupy the wetlands around the tidal channel.



GOOGLE EARTH PRO; SIO, NOAA, US NAVY, NGA, GEBCO

Figure 9 El Caño Martín Peña, today. A combination of development, waste buildup and pollution have made the area along the canal a health and flood hazard.

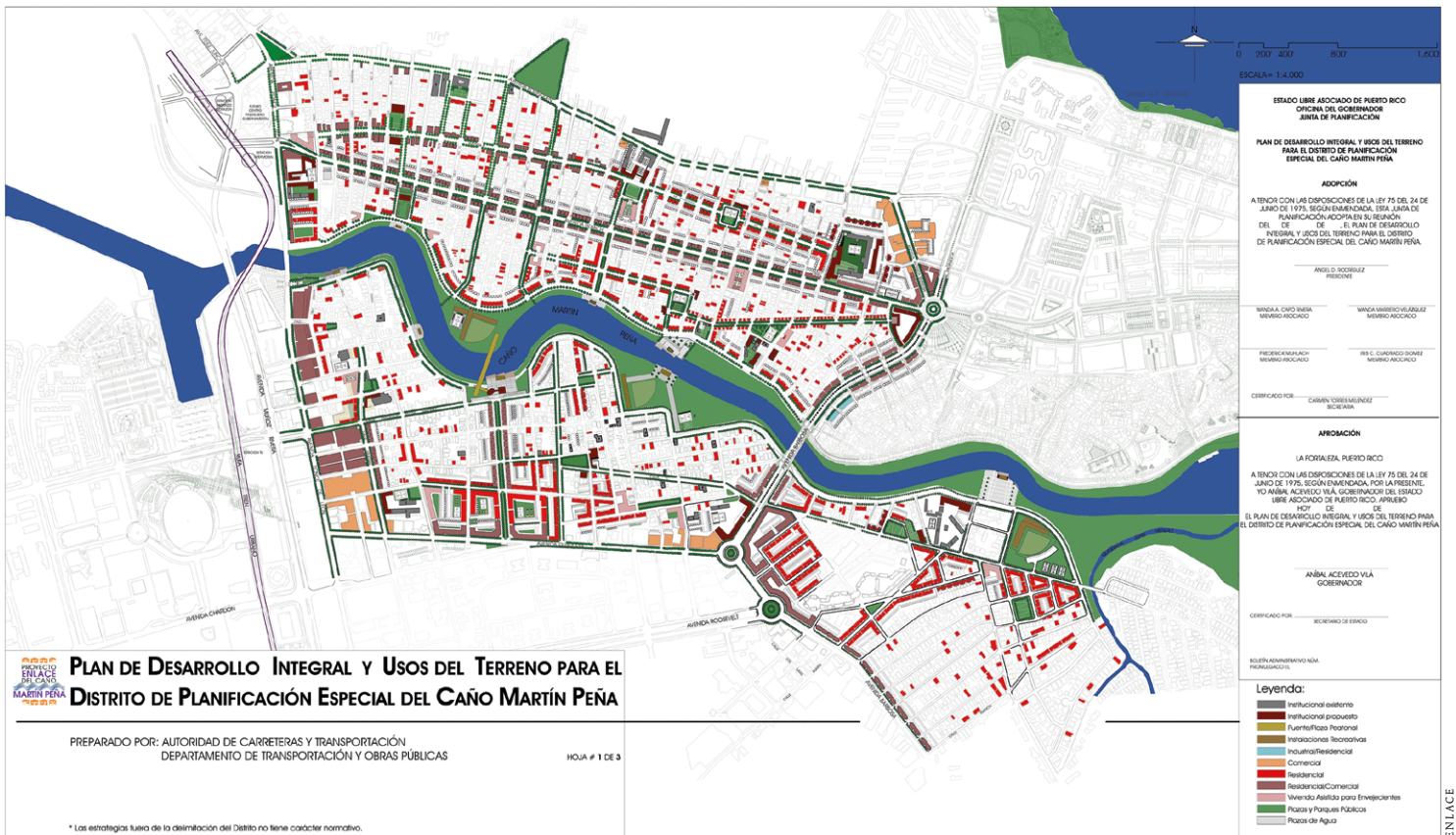


Figure 10 The Caño Martín Peña Comprehensive Development and Land Use Plan. The plan relocates homes away from the floodplain, and was developed through a sustained engagement process, with most participatory meetings hosted by trusted community members.

An alternative retreat: Proyecto ENLACE

Proyecto ENLACE, in Puerto Rico, offers an alternative model for retreat. The community along the tidal channel El Caño Martín Peña, in the San Juan Bay Estuary, was formed in the 1930s during a wave of migrations to San Juan (Fig. 8). These *arrabales* grew to some of the most densely populated areas in Puerto Rico, with over 26,000 people in the eight communities along the Caño (Fig. 9).⁴⁵ Over time, deteriorating conditions of the channel led to pollution and flooding.⁴⁶ In the 1970s, the community of Tokyo, Hato Rey on the opposite side of the channel was expropriated by the government without an offer of replacement housing; it is now a mid-to high-class financial district known as Milla de Oro (The Golden Mile). The area along the Caño is similarly some of the most valuable land in San Juan, placing these low-income communities under constant threat of top-down proposals for hotels and other high-end developments.⁴⁷

Health and flood hazards associated with the polluted canal, in addition to the looming threat of displacement, led to a call for dredging the channel and establishing a long-term vision by and for the communities around it. The G8, a group of leaders from the eight communities that surround the channel, created the Corporación del Proyecto ENLACE del Caño Martín Peña. ENLACE is a public corporation legislatively created in 2002 to carry out a comprehensive plan for making the community more resilient to flooding and other risks. It borrows strategies from Proyecto Península de Cantera, the first community-led public corporation in Puerto Rico, formed as a result of redevelopment pressure after Hurricane Hugo in 1989.⁴⁸ Fun-

damental to both organizations' agendas is empowering the communities to be primary agents of change, and the plan's design and implementation revolves around an inclusive, participatory-action planning process.⁴⁹

Alongside the ENLACE corporation, El Fideicomiso de la Tierra Caño Martín Peña—the Community Land Trust (CLT)—is a private, non-profit organization created to manage the land and prevent residents from being priced out. The land trust, a model for collective land ownership where each family has individual rights over their plot, protects residents from gentrification and eviction. CLT also secures affordable housing and provides housing opportunities for relocating families. The community collectively owns 200 acres (80 ha) of land, allowing them to directly benefit from the improvement efforts of the project.

ENLACE's Comprehensive Development and Land Use Plan (Fig. 10) revolves around dredging the channel. Ecologically sensitive design strategies will create new green and recreational spaces in combination with stormwater and wastewater sewer systems. Around 1,000 families⁵⁰ require relocation in order to make room for the channel expansion; as of 2017, 600 families have already moved into safe housing.⁵¹ The relocation process is explained clearly and multiple times at meetings, presentations and community participation activities, ensuring that people understand the entire process.



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Figure 11 Living next to the Caño Martín Peña, Puerto Rico. Although households along the canal are asked to relocate, the decision is voluntary and households play a role in choosing their new home, ensuring they are taking a step towards a better quality of life.



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Figure 12 Vicky Castro, relocated resident of the Buena Vista neighbourhood in the Caño Martín Peña, Puerto Rico, and a member of the ENLACE Relocation Group. Of the ENLACE relocation programme, Castro says: 'You feel good because you know that your neighbour likes the house they are moving to.'

Relocated residents are involved from the beginning. Vicky Castro, a community leader and a resident who was relocated herself, noted: ‘They give you the option to choose, they don’t choose for you, you make your own decisions.’⁵² Residents select three ‘safe, decent and sanitary’⁵³ housing options. Conversations with residents who have undergone the relocation process have revealed that they are extremely grateful even though they acknowledge how emotionally difficult it is to leave their homes. Importantly, they express how being involved in a transparent process both personally and as a community gave them a sense of agency (Fig. 12). ENLACE provides additional support throughout the process, including mental health services to mitigate the emotional stress relocation can cause.

Proyecto ENLACE uses an integrated approach to address the social and economic development of the community. Empowerment is fostered through education, including a school that exposes future young leaders to critical thinking, social development concepts and activism. Other social programmes reinforce community unity and a sense of pride. As an ENLACE architect described: ‘There can’t be physical development without social development.’⁵⁴ In whole, these programme components—transparency, ongoing resident involvement, comprehensive planning, community outreach—address many of the concerns scholars highlight surrounding buyout programmes.⁵⁵

Disasters like Maria are linked to influxes of federal government funding. Maria’s destruction only further emphasized the need for adaptive action, and ENLACE initially saw this as an opportunity to catalyse its project. Unfortunately, many of the difficulties associated with the CDBG-DR action plan discussed above have similarly impacted the ENLACE project: ‘As most of the District is currently within the floodplain, by not allowing for new infrastructure and the construction and rehabilitation of housing, the Action Plan promotes displacement, rather than community cohesion and on site recovery.’⁵⁶

Narrow conceptions of who can occupy floodplains and what constitutes acceptable forms of retreat can hinder plans that are clearly in the best interest of, and supported by, hazard prone communities. (The ENLACE project is even advocated as a boon for public health in an official health impact assessment.⁵⁷) How can alternative framings support retreat projects that serve social justice goals, and what can designers offer in this type of process?

Spatial politics of retreat: Retreat as strategy/tactic

The above cases of retreat implementation illustrate how ‘adaptation is political from conception through to execution’.⁵⁸ What forms of climate adaptation are deemed appropriate stems not only from the level of need, but in what way the lands, homes and livelihoods of those who live there are valued. Adaptation programmes can embody cultural biases that are particularly troubling for indigenous and minority communities: ‘If adaptation policies are bound up with white, colonial notions of property, individuality, and market value, then those communities who choose not to organize, or cannot organize, around these principles will be limited in their political options.’⁵⁹ Buyout programmes may be shaped by the electoral aims of political leaders⁶⁰ and even notions that buyouts are voluntary may be flawed: surrounding policies such as construction moratoria and mitigation requirements may effectively block alternatives for occupants of so-called ‘hazard zones’.⁶¹ Clearly, social justice considerations in the design of these programmes is essential to equitable resilience.⁶² It should be fundamental to ask: who are current adaptation projects designed for, and who benefits from future visions of retreat (at whose cost)?

If we accept that designing for climate change is a political act, it follows that retreat and other adaptation programmes cannot be only technical ‘solutions’, but must also be negotiations among the groups impacted by both climate and adaptation risks. Climate change, vulnerability and environmental risk are complex, interconnected problems where any individual’s decisions can impact surrounding households. Paving one’s yard in asphalt can worsen flooding on surrounding lots. Building a levee around one city can exacerbate flooding downstream. As calls for buyout programmes to adopt more holistic, preemptive visions that avoid creating ‘checkerboard’ communities show,⁶³ systemic management of environmental risks is inherently a collective issue. How can this need for large-scale, interconnected adaptations be reconciled with the individual needs and rights of impacted populations?

Michel de Certeau’s concepts of *strategies* and *tactics* are helpful in comprehending this gap. He distinguishes between *strategies* as the ‘manipulation of power relationships’ at a macro-scale, and *tactics* or ‘calculated actions’ that operate in response to immediate conditions.⁶⁴ These are embodied in the strategies of broad institutions that plan and explain urbanism at a holistic level, and the urban inhabitant who tactically responds to his or her environment. In so describing, De Certeau places strategies and tactics as categorical opposites: the tactics of the user are creatively deployed against the strategies of institutional power structures.



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Figure 13 Vacant lots in Vietnam, Puerto Rico, post-demolition. The ways in which empty lots fragment the community can be experienced when walking through the neighbourhood.



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Figure 12 Patchwork buyouts, Oakwood Beach, Staten Island, NY. A mix of standing and bought-out houses similarly fragments this coastal community post Sandy.

The typologies of retreat programmes described at the beginning of this article conceive of retreat strategically: macro-level, top-down. But, as this exploration of retreat projects suggests, this strategic view leaves out important parts of the story: justice, connections to place, social vulnerability, community ties. Yet, it is impossible to imagine climate adaptation as a purely tactical exercise given the interconnected nature of climate risks: strategic approaches are also essential.

Lacking a systemic approach to where buyouts are done, and where retreatees go, existing United States programmes eschew a holistic vision for a more resilient coast. Piecemeal home purchases result in patchworks of vacant lots that can negatively impact those who remain and are ineffective as open-space networks, negating strategic benefits (Figs. 13 and 14). Market-based strategies that price people out of high-hazard areas may simply serve as tools for gentrification. There is also no guarantee that the families that move are not relocating to other hazardous areas, as in Toa Baja, where the selected relocation land was also prone to flooding. From an individual (tactical) perspective, the ‘voluntary’ nature of these programmes has been called into question, and retreat may, in fact, increase vulnerability for those who are displaced. Standard frameworks for retreat in the United States—buyouts and disincentivization—fail on both strategic and tactical levels.

Presently, buyouts are largely a policy mechanism. But buyouts and other retreat programmes could be more successful, strategically and tactically, with the contribution of design. In other words, they could more effectively enact large-scale visions and goals surrounding collective resilience while also attending to the social justice considerations of climate change adaptation among impacted populations. As with ENLACE, design can connect the big picture with the grassroots. However, this entails a framing of design that differs from our current systems of education and expertise.

ENLACE’s approach is significant in its agility between the tactical and the strategic. Its plan is tactical in its origin within a network of community organizations, in its positioning relative to local historical context, in its 700+ community engagement activities.⁶⁵ Yet, these micro-scale needs, observations and actions work together towards a larger strategy, which considers the long-term future of the Caño Martín Peña, its watershed and its communities. Emphasis is placed on an integrated and comprehensive plan, where in contrast to fragmented buyouts, decisions tie into larger, systemic logics (hydrology, ecosystems, social networks). The project engages with larger political structures: the creation of the Community Land Trust via new legislation (Law 489-2004) converts a project with tactical ideals into public policy. Law 489 also created ENLACE as a public corporation tasked with the design and management of the master plan and relocation project. They serve as a mediator between the G8 community organization and the government.

Design is fundamental to ENLACE’s intermediary role. The corporation’s staff is interdisciplinary, including architects, landscape architects, planners and urban designers: the space between the strategic and the tactical, the government and the citizen, is occupied by design. Their mandate includes ‘the ongoing citizen participation in the decision-making process, planning, and execution of the ENLACE Project to allow both the long-term permanence of the communities that constitute the District

and fair and equal treatment in the family relocation processes.’⁶⁶ In short, ENLACE serves as a mechanism for retreat to be reconciled with more equitable, tactical approaches emerging from the populations directly impacted by ‘resilience’ proposals.

Climate resilience requires both collective approaches and considerations of nuanced local needs. The spatial design disciplines, with their potential to be both strategic and tactical, can serve as a mediator between the top-down and bottom-up, between the multiscale goals embedded in these types of projects. This requires a new positionality for designers: one that embodies the ways in which mediation, and design itself, are inherently political.

Imagining retreat:

Negotiating and designing climate-changed landscapes

Retreat poses challenging questions for designers. What will become of lots and blocks ‘returned to nature’ and made public through retreat mechanisms? Buyout and disincentivizing strategies emphasize retreat out: how can designers help envision where these communities relocate to? How can we avoid creating new risk within the retreat process, through impacts to displaced communities or upstream watersheds? What will be the future of risky sites after retreat occurs? As Keller Easterling suggests, ‘subtraction offers a redoubled territory for design’.⁶⁷ The future of spatial design disciplines holds major questions surrounding the reconfiguring of human settlements to create spaces that accommodate our increasingly hazardous climate. While we grapple with these questions, it is important that we give credence to the ethics and equity of our design decisions and recognize the rights and expertise of those already living with risk.

For designers, it is important to understand how decisions about climate change adaptation fit into larger questions about resilience, mitigation and social justice—as well as the micro-experiences of households, their communities, their livelihoods and their futures. The ability of designers to think and work across scales provides a foundation for this way of thinking, but requires that our ‘imaginaries of resilience’⁶⁸ be recalibrated to consider social equity across scales and social groups. This essay serves as a call for spatial design disciplines to understand the myriad, interconnected implications of managed retreat policies and proposals in order to ensure that ‘resilience’ is considered for all publics. A critical application of both strategic and tactical methods can help envision just alternatives for how retreat occurs, and where communities might relocate to. Designers’ emphasis on local specificity can help larger strategies (such as federal policies) meet the ground in a more equitable way.

In a changing climate, the responsibilities of designers and planners are shifting. We require tools for conceptualizing the ways in which ‘resilience’ projects are entangled with the rights and wellbeing of multiscale populations as well as ecological environments. While modernist training suggests that designers are doctors who can ‘cure’ a city’s problems, a strategic/tactical designer recognizes that their expertise in urban systems complements the local wisdom of those on the ground. In this framework, design is not a mandate: it is a conversation. Robust relationships among designers, communities and policymakers will be fundamental to creating the equitable spatial reconfigurations our increasingly risky environment requires.

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