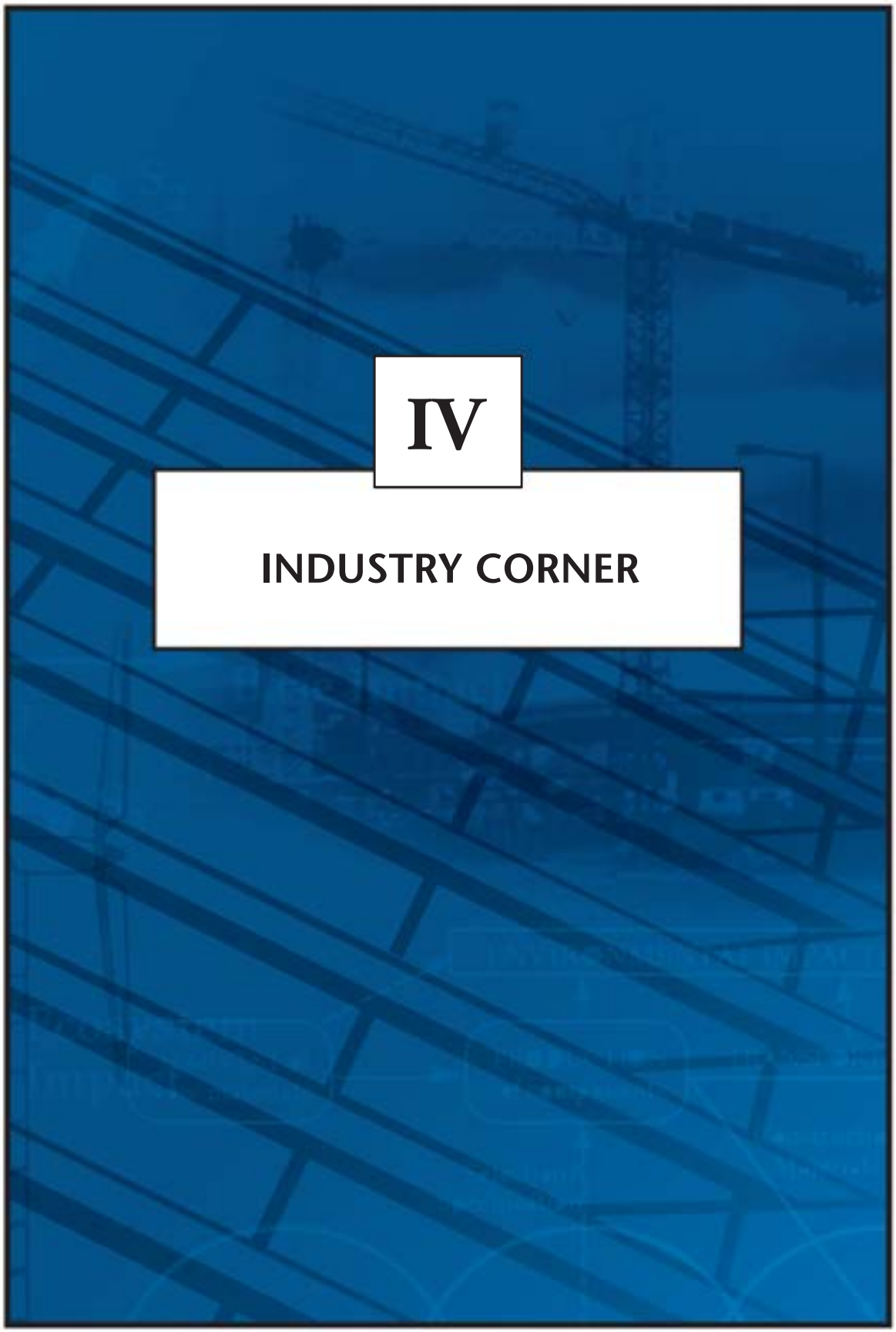

IV

INDUSTRY CORNER

EQUITABLE ADAPTATION PLANNING IN HISTORIC COASTAL CITIES: OBSERVATIONS FROM AN ARCHITECTURAL PRACTICE

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INTRODUCTION

In communities all along the seaboard, we have large and challenging conversations ahead of us. Historic coastal cities must reconcile tensions between preserving a community's existing cultural heritage and the reality of planning for several feet of sea level rise in the coming decades. As more frequent tidal flooding and more extensive storm surges begin to affect the lowest-lying neighborhoods, cities and states are faced with decisions about where and when to invest in adaptation measures and at what scale. Adaptation measures will undoubtedly change the landscape of the existing built environment, which contributes to each community's cultural heritage and its collective psyche. How can a community move forward with the joint goals of preservation and protection?

The decisions are daunting and imagining a built environment that accommodates a rising sea can be a surreal exercise. Questions will be raised such as, what funds are available for large-scale infrastructure projects? Or, why is investment continuing in this neighborhood if it will be under water in fifty years? Architects may feel unequipped to enter these conversations. The easiest, and likely last, series of decisions in this process may be about how to elevate a building. However, before arriving at such a decision, an interconnected web of related conversations must occur. Despite one's reluctance to participate in such a daunting task, a designer's skill set is useful in the process. The assistance that is required of architects at the front end of preparing historic coastal communities for sea level rise includes gathering and presenting existing conditions data, facilitating robust and inclusive conversations, educating decision-makers, and illustrating options, all of which empower communities to work together toward an appropriate and equitable solution. Architects have an opportunity to not only facilitate and participate in adaptation planning conversations, but also to advocate for and influence the structure of decision-making processes to be more inclusive and participatory.

The following discussion highlights specific challenges in historic coastal cities, using several examples from our work in Rhode Island, as well as observations of state and municipal planning processes. As architects and urban designers, it is Union

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Studio's mission to enrich the lives of people and communities through the design of buildings and places for this generation and the next. We dedicate ourselves to projects ranging from large-scale neighborhood masterplans and public libraries to smaller-scale urban infill development and residential design. The change in scale from one project to the next compels us to consider the implications of small-scale design details on the overall character of a place and, conversely, the implications of broad regulatory policies on the design of a single building or home.

KEYWORDS

sea level rise, adaptation planning, historic coastal cities, social equity, participatory comprehensive planning, public libraries

BACKGROUND

In New England, where we practice, accelerating sea level rise is well-documented (NOAA, 2017) and projections are continually increasing. In January 2016, the Rhode Island Coastal Resources Management Council adopted the National Oceanic and Atmospheric Administration's (NOAA) high-level projections for sea level rise (RI CRMC, 2016). In 2016, the high model projected a 1-foot sea level rise by 2035, a 2 feet sea level rise by 2050 and close to 7 feet of sea level rise by 2100. Notably, in January 2017, NOAA released a report with new, extreme projections for the Northeast coast of the United States that suggest up to 9 feet 10 inches of sea level rise by 2100 (NOAA, 2017). With sea level rise comes higher high tides and more frequent flooding (Spanger-Siegfried, Fitzpatrick, Dahl, 2014). Sea level rise also increases the risk of a positive storm surge, which occurs when high winds from a hurricane force ocean water up and out, usually onshore, flooding low-lying coastal areas (National Hurricane Center, 2018).

Additionally, data indicates an observed change in very heavy precipitation in the Northeast of 71% from 1958 to 2012 (Karl, Melillo, Peterson, 2009). In coastal cities where ground water tables are high and there is limited pervious surface area, aging stormwater infrastructure systems bear the burden of accommodating increased stormwater run-off. Historic urban ports are challenged with managing the confluence of increased precipitation and high tides in stormwater infrastructure systems that have limited capacity. In a recent project in the Point neighborhood of Newport, RI, we learned that tide gates are installed on the outlet of stormwater pipes that discharge into Narragansett Bay. While the tide gates prevent water from the bay entering the stormwater system during high tide, they also prevent stormwater discharge into the bay during high tide. Water that should be exiting the system overflows through the storm drains in the street, flooding the neighborhood (Figure 1). With sea level rise, the high tides are getting higher, meaning the tide gates are closed more frequently, causing flooding on a more regular basis.

Sea level rise and associated higher tides and greater storm surge, combined with heavier precipitation events, challenge coastal cities in both their short-term and long-term planning priorities. Cities are faced with questions about adapting hard public infrastructure systems, such as piping, storage tanks, and sea walls, regulating building design in flood hazard areas, and facilitating public conversations about comprehensive plans, historic preservation and

FIGURE 1. Increasing pressures of stormwater drainage and more frequent high tides in the Point neighborhood of Newport, RI.

budgeting. The importance of holding public conversations about these issues should not be underestimated. In 2016, a team of researchers at Yale University's Program on Climate Change Communication completed a nationwide public opinion poll about global warming based on data derived at the local level. It is interesting to note that while 69% of the population in the United States believes that global warming is happening, only 39% of residents of Newport County, Rhode Island, an island community at the mouth of Narragansett Bay, believe that global warming will harm them personally (Howe, Mildenberger, Marlong, Leiserowitz, 2015). How can cities develop political support for adaptation projects in coastal areas such as Newport, when the impacts of climate change are not perceived by residents?

Layered on top of the scientific reality of climate change is the social reality of the effects of 20th century urban planning policies. Historic, coastal cities in the United States are embedded in the structural and systemic histories of racism, borne out in practices such as redlining and urban renewal projects that led to clear health, education and economic disparities that run along racial lines. The urban planning challenge of adapting our cities to climate change must now respond in a way that acknowledges the existing societal inequities and empowers those who are most vulnerable to participate in the decision-making process.

MULTI-SCALAR CHALLENGES AND OPPORTUNITIES

Because the effects of climate change are multi-faceted and multi-scalar, the decision-making process for adaptation planning is complex and there are no easy answers. Looking at adaptation planning for a single residential neighborhood or business district demands a discussion of all possible options, the positive and negative impacts of each option, and the costs and feasibility of each option. Public support is possible when the decision-making process is transparent and democratic. As architects and urban designers, we are used to looking at problems at a range of scales, from the design of street networks to understanding the details of how a building relates to its site. We can use this multi-scalar approach in problem-solving efforts, in facilitating conversations and in proposing a framework for solutions. This role, of framing and

facilitating conversations, is one that the architectural profession can embrace in contributing toward adaptation efforts. We have used the charrette process in a variety of project types to convene municipal officials, property owners, and professionals in joint conversations about a specific issue. We have employed charrettes in developing updates to municipal comprehensive plans and design guidelines, in designing new public libraries, and in our study of flooding in Newport's Point neighborhood. The charrette process can be designed to study base conditions, distribute information, gather ideas and present options to participants. For projects and decisions that have multiple implications for the public, the utility of a charrette is dependent upon the range of people involved. As architects, we can use our seat at the table to ensure that all community members have an opportunity to participate, especially members of minority groups. However, as I will discuss, we have seen in our own city of Providence that the charrette process is not enough. We must be aware that while the charrette process gathers input, it does not guarantee a seat at the decision-making table. For an equitable decision-making process, governance structures must be established that acknowledge the inequitable distribution of environmental burdens on frontline communities of color and provide people of color with decision-making authority (REJC, 2017).

PLANNING FOR ADAPTATION AT EVERY SCALE

In 2016, our office completed a study on behalf of the Newport Restoration Foundation looking at how homes in the historic Point neighborhood of Newport could begin to adapt to sea level rise and the flooding associated with large storm events. In the Point, which is a National Historic Landmark District, history is told as much through the way the 18th century houses relate to the street and to each other, as much as it is conveyed through plaques and stories (Figure 2).

We decided early on that the study could not focus on how individual homes might adapt but needed to consider how an entire neighborhood might adapt. Ultimately, the sustainability of a neighborhood is not dependent on the ability of one home to adapt to environmental changes, but on the ability of a whole series of interrelated infrastructures to adapt. If each home were to choose a different adaptation approach, the character of the Point could be lost, and the neighborhood's resilience to flooding might be threatened (Figure 3).

Theoretically, there are multiple options at hand to begin to adapt the neighborhood, as a whole, to the effects of climate change, including increasing the capacity of the existing

FIGURE 2. Representative existing historic streetscape.

FIGURE 3. Representative future streetscape, with individual homes adapted to accommodate flooding, in absence of design guidelines.

stormwater management system, elevating individual homes, or entire streets (similar to the way in which Galveston, Texas, responded to a devastating Hurricane in 1900) and installing levees and green infrastructure, all of which range in scale, flexibility and amount of financial investment (Figure 4). One of the least costly, but potentially most effective recommendations involves developing a set of design guidelines that could guide both the Historic District Commission and individual property owners in adapting existing historic buildings to flood risks.

Design guidelines are a useful tool, as they illustrate agreed-upon development principles for very specific neighborhoods, articulating building setbacks and appropriate massing to describing contextual architectural details and construction assemblies, all calibrated to ensure that the existing architectural character of a place is not lost. Design guidelines can be used to describe best practices and agreed-upon approaches to designing new buildings and adapting existing buildings in a historic district located in a floodplain (Figure 5). Design guidelines for adaptation planning can depict the detailing of the sacrificial first floor level so that it does not

FIGURE 4. Potential large infrastructure projects such as the construction of a levee (upper) or elevating all buildings and the entire street network (lower) could protect the Point neighborhood from flooding.

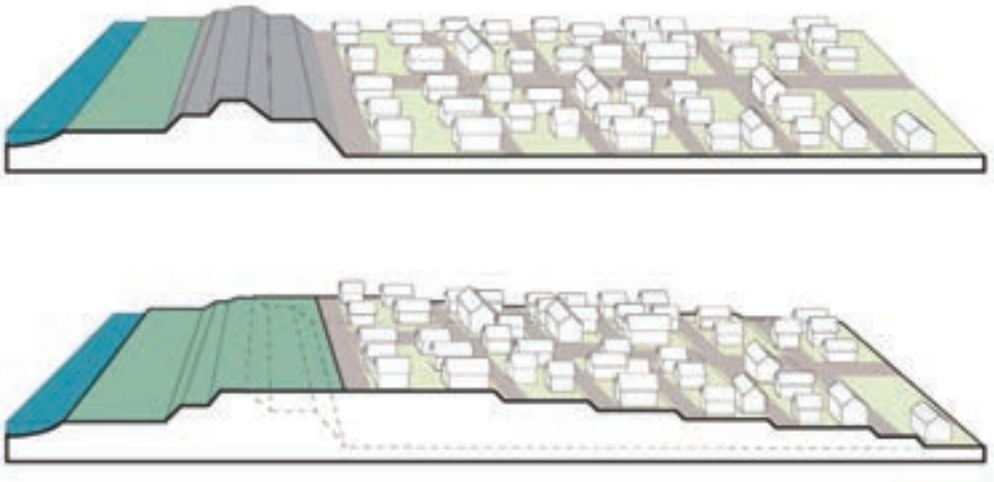

FIGURE 5. Representative future streetscape, with individual properties elevated in consistent manner due to presence of design guidelines.

detract from the pedestrian experience at street level to techniques for incorporating green infrastructure into a property. Design guidelines become an indispensable reference for municipal planning boards as they review new development proposals. The board can point to the design guidelines document to encourage design and construction detailing that is either consistent with the existing character of a place or with the future vision for that place. In the best cases, design guidelines document mutually agreed-upon details that make a common vision for a place reality. However, design guidelines cannot be created without a development framework in place. A common vision must to be established first, prior to outlining the details.

While the creation of design guidelines that preserve historic coastal neighborhoods in the face of sea level rise may seem a far cry from conversations about race and equity, the very decision to invest municipal resources in the preservation of one neighborhood over another has broad implications and requires a community conversation with all city residents. Perhaps the preservation of a historic coastal neighborhood ensures the sustainability of the tax base for public school funding, or it prevents residential displacement in adjacent neighborhoods. Perhaps upgrading the stormwater infrastructure system benefits neighborhoods upstream, as well as downstream. The point is not that historical coastal neighborhoods should not be preserved—the point is that adaptation planning necessitates community-wide conversations that address equity, in conjunction with the economic and environmental impacts of climate change. As professionals that are privileged to participate in decision-making processes, we can use our position to advocate for greater inclusion in policy generation.

COMPREHENSIVE PLANS

As a start, municipalities already have policy tools in place that can be modified to reflect their adaptation framework. Each community's Comprehensive Plan, which guides land use, such as future development locations and permanent conservation areas, can begin to address plans for adapting to the effects of climate change. In the State of Rhode Island, municipal planning departments can follow the *Guidance Handbook #12: Planning for Natural Hazards and Climate Change* (RI State Planning Council, 2016), a document that guides planning staff through the process of incorporating adaptation planning into municipal comprehensive plan updates. Following our study in 2016, the City of Newport incorporated several statements into their 2017 comprehensive plan update that address the need for developing an adaptation plan that

is in keeping with the City's historic character. As part of establishing an adaptation framework, Newport's Comprehensive Plan lists as a high priority two goals which link historic preservation and planning for the effects of climate change:

- 'Include historic preservation as part of a Climate Action Plan. (HC-2A);
- Develop, adopt and administer design standards for historic neighborhoods that are consistent with historic preservation requirements and which do not alter the character of the neighborhood. (LU-2H)' (City of Newport Comprehensive Land Use Plan, 2017)

Fine-grain adaptation tools such as design guidelines are useful only if they are developed out of, and reinforce, a municipality's wider comprehensive plan and adaptation approach. However, because a municipal comprehensive plan is such a powerful tool, developing an equitable plan that incorporates adaptation planning suggests the need for a participatory process that involves the public in all aspects of the plan generation. Currently in Rhode Island, municipalities are required to hold a minimum of one public hearing and provide an open invitation for comments in their comprehensive plan update process (Rhode Island State Planning Council, 2018). Equitable adaptation planning in historic cities suggests that the level of public input and participation be reconsidered.

THE ADVANTAGES OF ESTABLISHING A COMMON VISION

Establishing a common vision for a municipality's approach to adaptation is necessary for several reasons. First, it sets a framework in place for financial spending. Adaptation projects can range from regulatory adjustments to new public infrastructure investments. For municipalities preparing to proceed with large expenditures for large-scale projects, public support is critical. Second, it becomes a common point of reference for residents and business-owners as they consider how they will adapt their own properties. Third, it provides regulatory direction for new development projects and for municipal land use planning. The difficulty about establishing a common vision for a municipality's approach to adaptation is that it involves public decision-making processes about changes that are personal in nature. Although regular flooding has become a reality for many coastal residents, the idea of relocating one's home or place of business is an emotional personal, and collective, decision. The towns and cities that are situated along the eastern seaboard of the United States have histories that are tied directly to the water. The origin stories of these coastal cities range from serving as naval outposts and commercial trading destinations to seaside resorts and fishing ports. The idea of having to protect a coastal town from the water, which, in many cases, continues to be the heart of commercial and recreational activity, is a drastic change in a community's self-perception and identity.

Beyond the regulatory necessity of generating a municipal adaptation plan, private property owners will soon want information to guide them in investment decisions. For homeowners and potential homebuyers who are looking at sea level rise projections within the timeline of a standard 30-year mortgage, municipal adaptation planning provides relevant information about how best to plan and prepare for significant environmental change. In the Point neighborhood of Newport, flood risk threatens the long-term economic sustainability of the neighborhood. Historic 18th century homes are located up to 6 feet below FEMA's base flood elevation, making flood insurance cost-prohibitive. With the requirement of flood insurance for federally-backed

mortgages for homes in flood plains, the only people who are now purchasing homes in the Point are those who can buy the properties outright with cash. Flood risk is turning the Point into one of the most economically segregated neighborhoods in the city. Soon, without a municipal adaptation plan, flood risk might deter any investment in the neighborhood. While that is certainly one approach that a city could take, it would mean passive neglect of the preservation of a National Historic Landmark District, the loss of property taxes that could impact the delivery of critical public services, and other unintended, indirect impacts on Newport's residents.

CURRENT STATE OF REGULATORY UNCERTAINTY

As architects and professionals involved in the design and planning of the built environment, we are often caught in the middle of the regulatory uncertainty that exists without a comprehensive adaptation plan. We sit at the intersection of designing and preserving buildings and places that are physical expressions of cultural values, economic demands and environmental conditions at a specific point in time, and the regulatory policies under which projects must be developed. The projects in which we are involved raise pointed questions about each community's adaptation approach. Developers are continuing to invest in historic main streets, which in Rhode Island, originated, and continue to sit, along the water's edge. While coastal communities might not yet have specific zoning regulations governing architectural solutions that address sea level rise and storm surge, we are aware of these threats and seek to design buildings that are well-prepared for flooding. However, designing floodproof buildings has a significant impact both on the character of historic main streets and on the feasibility of each project. With existing zoning regulations and height restrictions, the occupiable floor area of a site is essentially reduced by one floor to adequately prepare buildings for flooding, which makes the development pro-forma for any given site a challenge. Currently, projects in Rhode Island's coastal cities are seeking variances from the current height limitations to create an economically feasible building program that locates the first finish level above the Federal Emergency Management Agency's current base flood elevations.

For each project, the regulatory approval process for such variance requests can turn into a series of repetitive and unpredictable conversations for the town's planning board, zoning board and historic district commission, with little guidance from existing zoning ordinances or comprehensive plans on how to proceed. Without regulatory guidance, both cities and developers are forced to endure an unpredictable approvals process that results in a development pattern based more on political whims than on deliberate planning efforts. To maintain development interest in coastal downtowns, the state of Rhode Island has begun to address this conundrum by approving legislation that will change the definition of building height measurements. Beginning in March 2019, the height of buildings located in flood zones will be measured from the design flood elevation (base flood elevation plus freeboard) instead of from average existing grade (RI Gen L, 2018). While this regulatory change provides significant relief to developers looking to invest in existing economic centers and offers a directive to local planning and zoning boards tasked with the development approval process, it is a blunt tool that does not consider the scale of existing contexts.

The state's change to the definition of the term *building height* is noteworthy, but it is necessarily only a first step in addressing how historic coastal communities will regulate and guide development with sea level rise and flooding in mind. The market-based realities of developing in flood zones are indicative of a larger question of whether municipalities should continue to

encourage development on the coast. However, if municipalities are tempted to let the market decide where development occurs, they must not ignore the social implications of this approach. It is well-understood that the effects of climate change will impact those already most vulnerable in our society. If municipalities do not take this opportunity to undertake community-wide adaptation planning that considers the social implications of such changes, any hope of creating equitable places will be dashed.

FACILITATING COLLECTIVE DECISION-MAKING PROCESSES

As advisors to municipalities, and to individual property owners, architects have an opportunity to take an active role in facilitating collective decision-making processes geared toward generating an adaptation framework. In our experience, there are a few ways to facilitate a process that ensures a democratic sharing of information that values the knowledge embedded in local communities as much as the knowledge to be gained from technical experts. The first step in a collective decision-making process for adaptation planning is gathering feedback and information about the existing conditions. The second step involves organizing and presenting the information gathered in the research phase back to the community so that all members have access to the initial set of quantitative and qualitative data. The third step, of generating options, can involve public workshops and conversations, and is useful once municipal officials, business owners, residents and public service organizations have all had an opportunity to absorb the information presented and can discuss using a common set of information and terminology. The next step forward, of outlining a comprehensive adaptation approach, should be decided by the community.

The initial data-gathering phase can involve municipal officials and professionals, but should also directly engage residents, as well. The research is most useful when it includes an analysis not just of maps, environmental conditions and projections, but also discussions with residents to gain a better understanding of their lived experiences. Data-gathering can take many forms, from surveys and interviews to focus groups and experiments that measure environmental conditions. When community members are involved in data-gathering, cities can understand the full scope of a problem and empower residents in the process. In our project in Newport, residents of the Point neighborhood submitted photos of flooding along with stories about the precipitating storm events (Figure 6, Figure 7). From this process, we were able to discern the multiple causes and types of flooding that occur in the neighborhood—sometimes from the confluence of heavy precipitation and high tide, and other times from storm surge. Residents also shared the difficulties of obtaining flood insurance and the regulatory challenges they face as they consider how to protect their homes from flooding. Without understanding the many layers and effects of environmental change on individual communities, exercises in adaptation planning may be futile. Our investigation benefited from the City of Newport's Geographic Information System Department research that indicates that 53.76% of Newport's property parcel acreage lies in the floodplain with a potential combined property loss of $3.8 billion (Barker, 2015). In addition to economic impacts, the report identifies a public safety risk with over 25% of roads in Newport located in the flood plain, many of which are designated evacuation routes (Barker, 2015).

The second step of presenting existing conditions information back to the community in the context of climate change projections offers an opportunity to engage in an educational discussion that is directly relevant to residents and municipal officials. Although community

FIGURE 6. Photo of basement flooding in the Point neighborhood, submitted by property owner. (Photograph by Newport Restoration Foundation)

members may already experience the consequences of climate change, it is useful to discuss the science of climate change and projections for the future so that everyone can participate in conversations with a common set of terms, understandings and expectations. In the Point neighborhood, we installed an exhibit in the backyard of 74 Bridge Street so that all residents could visit and read about the existing problems, which ranged from regular occurrences of flooding, to data that indicates accelerated rates of sea level rise. After residents had the chance to read and absorb the information contained in the exhibit, they organized a community meeting to start discussing next steps.

FIGURE 7. Photo of street flooding in the Point neighborhood, submitted by property owner. (Photograph by Newport Restoration Foundation)

The third step, the generation of options, must also involve the community. The charrette process can be used to bring residents, business owners, and municipal officials together to brainstorm possible options and adaptation approaches. Architects, engineers, construction estimators, and other professionals can then research and provide information relative to the benefits and disadvantages of each approach. Designers can also provide the very useful tool of the visualization of options. Seeing illustrations of, or experiencing in 3D, the characteristics of a changed built environment, is informative and provides a basis for discussion. Another useful tool in adaptation planning is the use of participatory games. These games help residents get a sense of the impacts of one decision versus another and support a democratic decision-making process. Following our study for the Newport Restoration Foundation in the Point neighborhood, an Interior Architecture graduate studio at the Rhode Island School of Design, led by Professors Liliane Wong, Markus Berger, and Michael Grugl, continued the investigation of adaptation in the Point. The *Projecting Change: Adapting Heritage in Rising Waters* studio explored five different approaches to adaptation, four of which resulted in detailed 2D and 3D illustrations, and one of which was a participatory game (Rhode Island School of Design Interior Architecture Studio, 2017). When the studio presented their work back to the community, residents were able to actively engage in conversations with the students and with each other using common points of reference.

The fourth step involves collectively deciding on an adaptation approach and identifying the best path forward, whether it is establishing a stormwater management district to fund stormwater infrastructure upgrades and developing a stormwater best practice guide for homeowners, or it means developing design guidelines and applying for funding from the state for elevating public infrastructure. Because any adaptation approach will have positive and negative impacts for different residents, it is important that the decision-making process is inclusive and transparent. When a community is involved in making an informed decision, an opportunity arises that allows the decision-making process to become a process of empowerment rather than one of imposition. As in any municipal outreach project, the success of ensuring a democratic conversation is dependent on who participates.

BUILDING SOCIAL CAPITAL AND TRUST

There are two key factors in having successful community-wide conversations for adaptation planning—social capital and trust. Social capital entails a level of familiarity and comfort among networks of community members. Trust is an aspect of social capital, but in this sense, it relates to the level of trust between residents and municipal leaders. While the level of social capital in a community can be correlated with its ability to recover from the effects of natural disaster (Aldrich, 2017), it is perhaps more important to develop social capital for communicating and deciding upon an equitable adaptation plan, so that residents experience less devastation in the first place. Based on the history of urban planning in the United States and the negative, systemic effects it has had on communities of color, municipal planning authorities may have to actively work to rebuild a sense of trust so that residents are willing to participate in the planning process.

There is no quick fix to building social capital and restoring trust, but a growing body of research points to the role that public libraries can play in developing resilient cities (Dudley, 2013). We have worked on public library projects and have witnessed the ways in which public libraries provide the opportunity for community members to gather and share time

together. With the opening of a new public library in Tiverton, Rhode Island (Figure 8), visits to the library have doubled compared to visits to the former location and program attendance increased 150% just in the first year (Tiverton Library Services, 2018). The public library provides a venue that is open to all, regardless of age, race or economic status. Programming events such as Tiverton's conversation series titled, 'Building Bridges: Reaching Across the Divide,' provide a forum for community members with various backgrounds and world views to discuss topics such as immigration, racial tensions and the ethics of loyalties in an open and democratic environment.

Social capital also develops in the spaces between buildings and houses. Cottage court projects that purposefully cluster homes in a tight development pattern around a communal green space encourage residents to interact with one another and spend time gardening and playing together (Figure 9). Urban parks and plazas deserve design attention so that people are comfortable socializing in a public environment.

Building trust between residents and municipal leaders is a process that takes time and requires effort from municipal leaders. The City of Providence discovered this disconnect between residents and municipal officials during its Resilient PVD Lab in February 2016, the result of a grant program sponsored by the American Institute of Architects and the New England Municipal Sustainability Network's Design And Resilient Team (DART) program. During the three days of workshops, charrettes and community meetings, the Office of Sustainability discovered that, in attempts to involve residents in the Resilient PVD Lab, nearly 85% of workshop participants were white (National League of Cities, 2017), in a city where 65% of residents are minorities (U.S. Census Bureau, 2017). To address this disparity in engagement, and residents' lack of trust in the City, the Providence Office of Sustainability applied for, and

FIGURE 8. Interior of new Tiverton Public Library. Public libraries remain relevant infrastructure elements for fostering social capital in communities. (Photograph by Nat Rea)

FIGURE 9. New cottage community in Concord, Massachusetts, illustrates careful design of spaces between buildings so that neighbors might enjoy spending time together outside. (Photograph by Nat Rea)

was awarded, two successive Equity in Sustainability grants from Partners for Places to focus on addressing environmental justice in communities of color (City of Providence, 2016, 2017). The equity in sustainability efforts led to the creation of a Racial and Environmental Justice Committee (REJC), comprised of members of minority communities, who are most burdened by pollution and negative environmental externalities, and the release of a report titled, 'Equity in Sustainability', that enjoins the City to utilize transparent, participatory and equitable governance structures that provide minority communities a direct voice in decision-making processes.

The Providence Office of Sustainability's approach to appointing a committee comprised solely of members of frontline communities of color and asking for their help in developing a decision-making process that is more equitable is one example of a trust-building exercise. Members of the committee stressed that residents do not always have the time or resources to attend public hearings. In the Framework for a Racially Equitable and Just Providence (RECJ, 2017), the RECJ suggests the following action item to create a governance structure that is more transparent and allows for greater input:

'For the City of Providence this means:

- All community members have access to participate in decisions about the City. Access includes: compensation so that people without the resources of money or time can

afford to participate without sacrificing their well-being and that of their families'; information sent out in video, paper, online and offline formats; translated into Providence's languages; and using language that all residents can understand.' (RECJ, 2017, p.9)

CONSEQUENCES OF NOT PREPARING AND PLANNING, AND OF NOT CONSIDERING EQUITY

With the scientific data that we have from NOAA (NOAA, 2017), the storms and environmental changes that we have already seen, and the devastation that specific communities have already endured, it is imperative that our professions confront adaptation planning efforts in historic cities with equity as a priority. From the effects of Hurricanes Katrina, Sandy and Irma, we have witnessed the ways in which low-income neighborhoods, often separated along racial lines, have suffered the most from one-time, high-impact events. Low-income and minority residents experience greater devastation and take longer to recover than white, higher-income residents (Fothergill, Maestes, Darlington, 1999; Masozara, Bailey, Kerchner, 2007; Peacock, Van Zandt, Zhang, Highfield, 2014). The threat to low-income neighborhoods and communities of color involves not just singular events, but also the slow change of displacement from inland neighborhoods when environmental conditions and market forces compel higher-income residents to leave coastal areas (Curtis and Schneider, 2011). As we begin to plan municipal adaptation efforts, let us remember those who bear the consequences of not being adequately prepared and those who suffer the most.

The value of equitable adaptation planning is cumulative. Economic resources devoted to adaptation efforts provide savings in recovery efforts following both high-impact storms and regular nuisance flooding. Inclusive participatory planning and decision-making processes engage and empower residents in the development of a plan that has community support and results in equitable outcomes. The educational components of adaptation planning can lead to mitigation efforts that improve the environment. Equitable adaptation planning involves preparedness not just for singular, high-impact events, but also the safeguarding of residents' long-term health and safety by examining the social and environmental impacts of daily living situations. Equitable adaptation planning considers whether evacuation routes will flood during a hurricane *and* if the lack of street trees in an urban neighborhood exacerbates temperatures on high-heat days throughout the summer. Equitable adaptation planning prepares for sea level rise at city hall, as well as at neighborhood community centers. Equitable adaptation planning finds ways to preserve the vibrant life on residential streets, as well as the economy of main street.

CONCLUSION

As cities and states begin to brace for the effects of climate change, the urban planning challenge of adapting our cities must respond in a way that acknowledges societal inequities and empowers those who are most vulnerable. This is a necessary first step in creating equitable adaptation plans. By building trust between municipalities and residents, providing infrastructures for developing social capital, and developing governance structures that foster greater participation and transparency, communities will be able to enter conversations about comprehensive adaptation planning. In historic American cities, the effects of previous large-scale urban planning efforts have left devastating results for low-income and minority communities. One of the challenges of current adaptation planning, another example of a large-scale municipal and

regional planning effort, involves recognizing existing social inequities and ensuring that social equity remains at the forefront of the decision-making process. The conversations in historic coastal cities will highlight the resources necessary to safeguard the preservation of architecturally significant buildings and districts, but will they also weigh the effects of future changes on social networks and personal livelihoods?

Coastal cities will be faced with a series of options and questions about how best to adapt. The equitable response will arise only after open, community-wide fact-finding exercises and dialogue about the reality and consequences of each possible option. As architects and urban planners, we can lend our position, our ears and our craft to facilitating conversations, cataloguing options and illustrating future scenarios. But, we must not forget the responsibility of participating in these efforts—the responsibility of ensuring that adaptation planning forefronts equity and social justice.

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