

Power and rationality in coastal planning: effects on participation and possibility in the management of barrier island dunes in Flagler Beach, Florida, U.S.A

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Abstract This article offers an empirical example of how power and rationality interact in coastal resource planning and management and reveals their implications for meaningful public participation in such processes. Participation has gained significant popularity over the last decades especially regarding the need to develop appropriate and democratic opportunities for meaningful public involvement in resource planning and management. However, planning processes involve interactions between different actors with different levels and types of power and thus pose problematic contexts for democratic decision-making and public participation. Understanding planning processes as manifestations of the interactions between power and rationality provides a useful analytical lens to interrogate past and current planning procedures, and how such dynamics may impede the potential for more desirable modes of public participation. Drawing on ongoing research in the coastal community of Flagler Beach, Florida, I demonstrate, through qualitative analysis of public documents, legislation, interviews, and observations, how this plays out in a real-world planning context. I draw conclusions from the empirical case area relevant to the praxis of action-oriented researchers concerned with facilitating social change for sustainability. I propose three axioms relevant to power-laden resource planning and management processes and central to future critical planning research: power-rationality relations have historical

roots; power-rationality relations are context-dependent; power-rationality relations affect the potential for public participation. Taken together, these indicate that any research intending to critically investigate planning processes with the goal of enhancing the potential for meaningful public participation should incorporate these axioms, maintain a responsibility to identify others, and adjust theory and research praxis accordingly.

Keywords Power · Rationality · Participation · Florida · Barrier islands · Sustainability

Introduction

Coastal systems, despite their relatively small geographic extent, provide the basis for a significant portion of the world's total ecosystem goods and services (Wilson et al. 2005). In the United States, coastal shoreline counties account for around 40 % of the total population and continue to grow (NOAA 2013). The state of Florida, a state well-known for its coastal resources, saw around a 20 % increase in over-all population in the last decade, surpassing 19 million residents in 2011, with approximately 70 % of that growth and associated development occurring on or in the vicinity of the state's coastal barrier islands (FDEP 2010). Barrier islands are long and thin offshore deposits of sediment that run parallel to the coastline and are separated from the main land by a shallow water body. Today, along with this population growth, Florida has become the world's most popular tourist destination, with some 94 million people having visited the state in 2014 (a record number), the majority of which sought beach-based tourism (Visit Florida 2014). The combination of growth in population, tourism, and coastal infrastructure, combined with the expanding threats posed by anthropogenic climate change,

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has increased the pressure on Florida's coastal resources and increased the urgency of adopting more sustainable coastal planning and management strategies (The Florida Oceans and Coastal Council 2010).

Flagler County, located on the northeast Atlantic coast of Florida and lined by a barrier island, experienced the highest percentage increase of any county in the U.S. over the past three decades (FDEP 2010; Crosset 2005; U.S. Census Bureau 1995, 2012). Within the context of this dramatic increase in Flagler County's population, the city of Flagler Beach, a small barrier island community of around 4500 residents, in many ways embodies the challenges of balancing the growing and differentiated uses of the state's coastal resources. In particular it exemplifies those challenges specific to settlements located on dynamic landscapes, such as barrier islands, which are unstable and particularly susceptible to anthropogenic manipulation (Elko and Davis Jr 2006). As a result of their dependence on the local coastal environment, a substantial portion of the city's resources go to the continued maintenance of the local beach and dune system and remain a central point of controversy in official city and county planning (Personal Communication, Flagler Beach Elected Official #1, January 16, 2014). The local dune system, which runs the entire length of the city along the Atlantic coast, provides a variety of services to adjacent communities, including protection from coastal hazards, such as hurricanes, for inland infrastructure, as well as providing habitat for a variety of threatened and endangered species, such as Green (*Chelonia mydas*) and Leatherback (*Dermochelys coriacea*) sea turtles. This dune system, however, continues to be degraded through the interactions between natural coastal processes and existing coastal infrastructure, in particular an armoured artillery road (Fig. 1), with serious implications for local social, economic, and ecological sustainability.

Decisions regarding future maintenance of the road, and thus the future quality of the barrier island dune and beach, are shaped by a complex network of planning and management processes where availability of power and perspectives on rational action interact in ways which influence such processes and their outcomes. Of particular interest here is their influence on public participation. These interactions, by reducing the capacity for local citizens to influence project goals or outcomes, may work to constrain resource mobilization, inhibit the identification of potential substitute management approaches, and encumber the pursuit of more socially and ecologically desirable futures.

In this article, I interrogate the intersection of participation, rationality, and power in a real-world planning process to show how power is applied by particular actors who appeal to particular "rationalities" in context-based ways. I discuss how the outcomes of the relationship between power and rationality may set boundaries on the possibilities for meaningful public participation in coastal resource planning and

management, drawing on ongoing research in Flagler Beach, Florida as an exemplary case. I aim to show that action-oriented research such as that conducted under the rubric of Sustainability Science (Wiek et al. 2012; Jerneck et al. 2011), and practitioners of action-oriented methodologies such as Action Research (Gustavsen 2007; Brydon-Miller et al. 2003), need to remain cognizant of and incorporate into research praxis a critical understanding of the influence of power-rationality interactions as a means to more adequately conceptualize and navigate the influences of power and rationality on participation. Understanding what implications these interactions may have for producing socially and environmentally sustainable management arrangements may ultimately improve the effectiveness of research aimed at social change for sustainability. Three axioms for the study of the power-rationality-participation nexus are suggested as relevant to research and practice in natural resource planning and management in the coastal zone and beyond. These include: (1) power-rationality relations have historical roots; (2) power-rationality relations are context-dependent; (3) power-rationality relations affect the potential for public participation.

Analytical framework

The political geography of coastal resource planning and management

Natural resource planning and management occurs within a system of hierarchically nested institutions where various actors at different administrative levels have disparate decision making powers (territorial competence) over geographically diverse, politically demarcated areas (spatial domains) (Hägerstrand 2001). Fragmentation in cooperation within and between system levels makes inter-level coordinated planning and management of natural resources difficult and contradictory decision making between levels more likely. This issue is particularly problematic in the context of coastal zone planning and management because of the enhanced diversity of actors, regulations, and resources implicated in planning and management processes at the water-land interface (Kay and Alder 1998). Coordination within these nested institutional environments becomes even more complex when one considers the extensive networks of transportation infrastructure, such as federal, state, and local roadways, which permeate and connect the various nested administrative boundaries. A U.S. federal highway, for example, which may pass through numerous states, dozens of counties, and through the heart or periphery of countless towns and cities while becoming a part of the daily lives of millions of individuals, is both a material and symbolic representation of the web-like networks of regulatory and material infrastructure that penetrate and connect

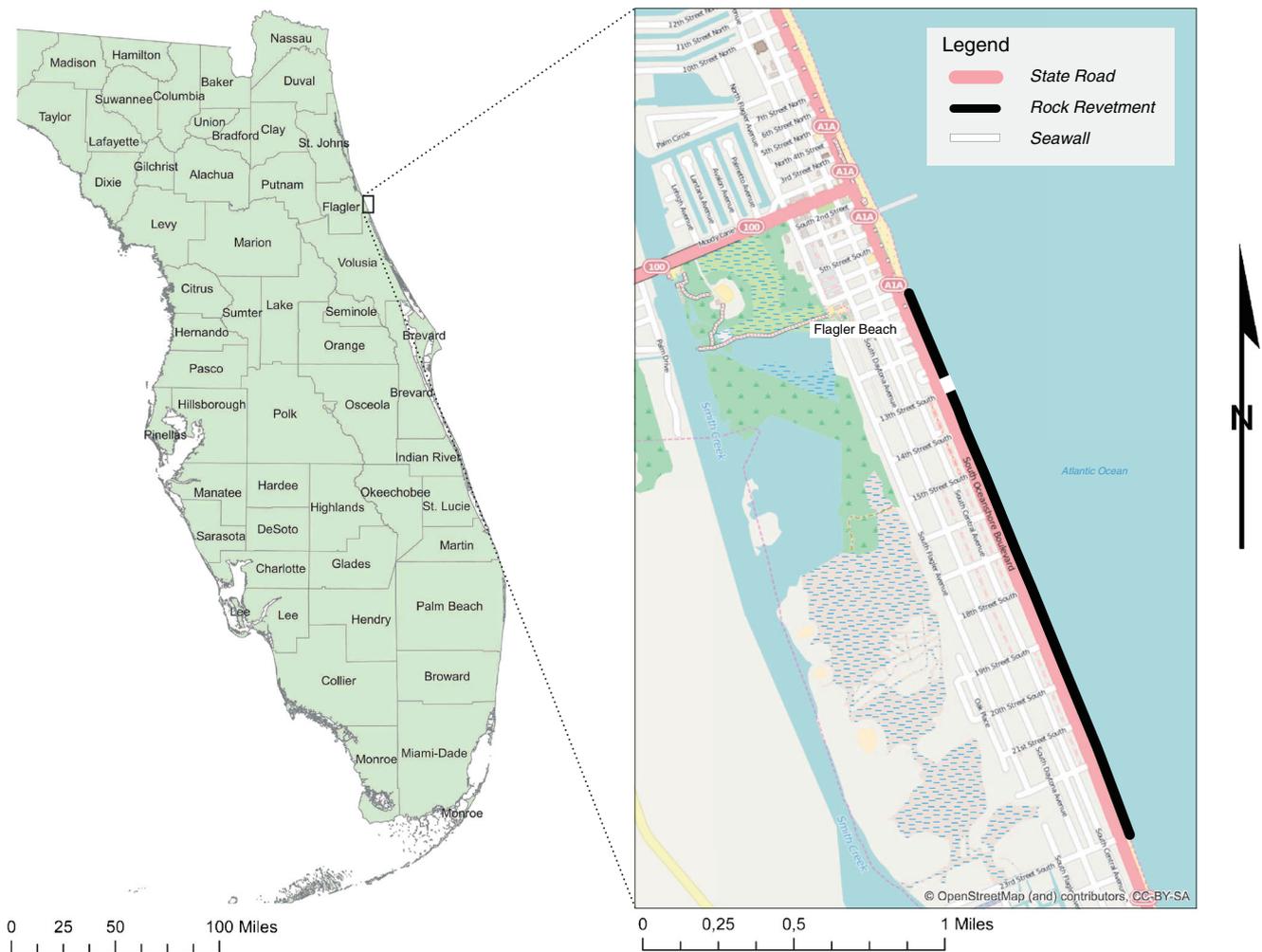


Fig. 1 Location of State Road A1A and select FDOT erosion control infrastructure in Flagler Beach, Florida, USA

the levels of social and political systems. Transportation infrastructure in particular is deeply connected to city planning and resource management (Hägerstrand and Clark 1998). This means that the establishment of infrastructure in particular locations may provide the legal and material basis for those (often higher-level) decision makers to influence local planning processes and outcomes.

Rationality in planning and management

“Rationality” remains a central concept in political theory and practice and has, since the Enlightenment, served as the basic premise for modernity, progress, and science-based decision making (see for example Callinicos’ (2007: 159-170)). Within planning research and praxis more specifically, Flyvbjerg (2002) has emphasized how the expectation that decisions and their outcomes should be “rational” and “informed” is omnipresent in policy and legislation, often centered on the ideal notion that *power* and *rational thinking* remain separated. The separation of power and rationality is,

however, different in theory and practice. That is why ‘distinguishing between formal rationality and “*Realrationalität*” is as important for the understanding of rationality and planning as the distinction between formal politics and *Realpolitik* has been for understanding politics’ (Flyvbjerg 1996: 383). *Realrationalität* is an outcome of the interactions between rationality and power, and its investigation requires a detailed interrogation of real-world planning and management contexts (Flyvbjerg 2003). The influence of power on rationality can be significant, with rationality often becoming rationalization of planning and management positions and decisions when under the influence of power (Flyvbjerg 1998). In fact, as Flyvbjerg (2003: 320) reminds us, ‘rationalization presented as rationality is a principle strategy in the exercise of power’. As the analysis of this article’s case example will show, the particular rationales used to justify proposed projects can be strongly supported by the ability of dominant actors to draw on resources (legal, financial, etc.) and exclude other potential participants; in other words, their ability to employ *power*.

Power in planning and management

The debate over power in the social sciences is immense, and a review of it is far beyond my purposes here. Still, a brief discussion about power to clarify its position in this analytical framework is prudent. As mentioned in the introduction, this article aims to engage the wide audience of action-oriented researchers, particularly in sustainability science, and to take steps towards enhancing the capacity of such research to facilitate meaningful change towards sustainability. This aim requires an idea of power capable of conceptualizing change. Avelino and Rotmans, who argue that ‘the majority of power interpretations as found in the literature seem to privilege stability over change,’ (2009: 548) have developed a useful conceptualization of power in the context of transition studies, an interdisciplinary research field focused on the history, dynamics, and governance of transitions in social institutions, technologies, and general systems (Geels 2011; Smith et al. 2005). Avelino and Rotmans’ conceptualization of power draws on structural definitions of power such as those proposed by Giddens (2013), where social structures are theorized as both enabling and constraining and power is considered the capacity of agents to utilize these structures to achieve their desired outcomes. They further draw on ideas such as those of Clegg (1989) which theorizes power as manifest through the complex interplay between agents, rules, and the structures of the societal system. Avelino and Rotmans (2009) ultimately define power as the ability of actors to mobilize resources, whether these are social, cultural, monetary, or environmental, as means to influence the outcomes of social decision-making processes. This definition is consistent with the need to understand how power can be mobilized on different levels and by different actors in nested institutional environments as discussed above. Understanding power dynamics is also crucial for interrogating how power influences the creation of both desirable and undesirable participatory potential, and what kind of participatory potential is needed to facilitate social-institutional transformations for sustainability in different power-laden contexts (Cornwall 2004).

Understanding the relationships between power and rationality in planning and resource management has important implications beyond the exposure of undesirable power relations. It also can help explain the physical manifestation of planning policy as made apparent in the infrastructure which is actually constructed and imbedded in the local environment (Flyvbjerg 2004). Of course, the decisions made by planning institutions regarding natural resource management help shape the social and environmental contexts in which individuals and communities live. The outcomes from planning and management praxis have important material consequences in that they affect which projects will come to fruition, what the distribution of costs and benefits will be, and what possibilities or constraints remain for future generations (Yiftachel and

Huxley 2000; Cooper and McKenna 2008). If, as Robert Park has argued, shaping our environment also means shaping ourselves (Park 1967), then those affected by planning and management should also maintain the capacity to participate in the processes that will shape their lifeways and world. The right to participate in the production of one’s own environment has been called ‘The right to the city’ by Henri Lefebvre (see, for example, Lefebvre 2002), recently having been dusted off and reconstituted by Harvey (2008) and Mitchell (2012) among others. Harvey (2003: 939) defines the right to the city as ‘not merely a right of access to what already exists, but a right to change it after our heart’s desire. We need to be sure we can live with our own creations (a problem for every planner, architect and utopian thinker). But the right to remake ourselves by creating a qualitatively different kind of urban sociality is one of the most precious of all human rights’. Realizing this right to the city seemingly requires the capacity to produce and utilize opportunities for meaningful participation. This in turn requires a critical engagement with the relationship between rationality and power in planning and management.

Participation in planning and management

Concern over democratic and sustainable resource planning and management in the United States and elsewhere has long resulted in calls for more inclusive decision making processes (Hickey and Mohan 2004; Day 1997). This ideal is more and more discussed as being best achieved by improving forums and processes of participation (Reed 2008; Bulkeley and Mol 2003; Innes and Booher 2000; Grimble and Wellard 1997). As Barnes et al. (2003: 379) emphasize, ‘enhanced public participation is viewed as capable of improving the quality and legitimacy of decisions in government, health services, local government and other public bodies, as well as having the potential to address the ‘democratic deficit’ and building community capacity and social capital.’ The opportunities created for participation can take many forms, some which are conducive to just and sustainable decision making, and others that impede it. The type of opportunity that is created for participation has important implications for meaningful civil engagement with planning and management practices (Cornwall 2004). Participatory practices are, however, often designed and facilitated by external actors with varying degrees of power, where the possibilities for meaningful civil engagement are potentially suppressed (ibid), for example, when a state transportation agency has the power to set the duration and agenda in public participation meetings, limiting the potential for concerned citizens and decision makers to criticize and adjust the content of proposed projects. This results in a narrowing of possibilities for those alternative approaches which may not directly serve the commitments of the agency proposing the project (an issue discussed further below).

Participation is of particular importance in coastal resource planning and management as coastal processes and management challenges often transcend traditional decision-making boundaries, increasing the need for coordination between private citizens, planning agencies, and regulatory bodies over space and through time (Swaney et al. 2012). Achieving these ends is important since uncoordinated interventions can potentially have enormous collective detrimental consequences for long-term sustainability in the coastal zone (Magliocca et al. 2011; Cooper and McKenna 2008). If we hope to steer humanity forward with sustainability as a guiding principle, those opportunities for participation that facilitate “tokenism” are arguably less desirable than those that encourage more direct civic engagement (such as Arnstein 1969). Thus, effort should be made to criticize undesirable participatory approaches while simultaneously working to understand and facilitate the conditions necessary for creating meaningful opportunities for public engagement.

Materials and methods

Below, I explore the implications of the relationships of power and rationality in coastal planning and management, particularly how they relate to the participatory opportunities created in an ongoing planning process in a real-world context. I do this by drawing on a variety of different data: public documents from city, county, state and national sources, personal observations and photographs, meeting minutes and public workshop transcripts, historical maps and records, newspaper articles, interviews with citizens and planning officials as well as relevant academic and popular literature. The analysis of these primary and secondary sources is grounded in a material-critical approach to planning studies (Fuller and Kitchin (2004)), where scholars such as Flyvbjerg (1998), Yiftachel and Huxley (2000) and Harvey (2010), among others, have led the way in placing a stronger emphasis in research on the nature of planning, its real-world practice, and its social and material effects. While my analysis is qualitative, and utilizes analytical methods of document and discourse analysis which provide the means to reveal rationalization and the use of power as captured in official documents and public discourse, I further ground this analysis in the material context of the case study area, in other words, actually existing infrastructure, real planning meetings, etc. This helps demonstrate how outcomes of power and rationality interactions are manifest in material projects. I furthermore relate the empirical evidence to the broader social and economic structural processes that shape the local context generally, for example, changes in political-economic conditions.

Below, I introduce the case example, beginning with some contextual insights on the development of the case study area. I focus in particular on the interaction between the

construction and maintenance of coastal transportation infrastructure, how it has exacerbated the problems of erosion and beach degradation in Flagler Beach, and how this relates generally to the over-all challenge of coastal management. I then mobilize the analytical framework to examine a recent (2007–2013) decision making process, centered on a project proposed to the City of Flagler Beach by the Florida Department of Transportation (FDOT), which aimed to address large sections of the local critically eroded beach primarily as means to stabilize and protect FDOT’s existing infrastructure. Following the case analysis, I offer conclusions in the form of three axioms for planning research engaged with the power-rationality-participation nexus.

Transportation infrastructure, planning, and coastal management in Flagler Beach

Since its formal incorporation as a city in 1923, Flagler Beach has relied heavily on two major roads to provide its residents with access to adjacent settlements or provide visitors with access to the beach and its tourism amenities (see Fig. 1). For our purposes here, the main road of interest is the coastal State Road (SR) A1A. SR A1A was built in the early 1920s, a time of intense interest in land speculation and real estate development in Florida as a whole (Proctor 1996; Stronge 2008). It originally provided the means to facilitate faster and more scenic travel between St. Augustine to the north and the growing city of Daytona Beach to the south, though now it stretches the entire length of the Florida Atlantic coast. Local newspaper articles from the time of construction in Flagler County suggest that the road symbolized more than a transportation route; it was hoped that it would bring modern development to the region and enable the newly empowered automobile-driving American to cruise the Florida coast in constant view of the majestic Atlantic. The Flagler Tribune (1925) at the time of construction advertised the new road as ‘one of the most scenic routes down the east coast of Florida ever planned’, labelling the road’s pathway the “American Riviera”. The article further boasted that ‘Property values along the route of this highway are increasing by leaps and bounds. Flagler Beach... has seen tremendous strides in development and real estate transactions since the plans for the boulevard were completed’.

The combination of the desired oceanic automobile experience and the lack of coastal construction regulations meant the road was built very close to, often directly on top of, the original barrier island foredune. Barrier foredunes, when unimpeded, naturally help stabilize the dune system and offer protection to ecosystems and infrastructure further inland from coastal hazards. Within Flagler Beach city limits, due to most road construction preceding the establishment of coastal construction regulations, much of SR A1A is located

within the boundaries of what is now the Coastal Construction Control Line (CCCL), a regulatory boundary designed explicitly to prevent public and private infrastructure from being developed in vulnerable coastal locales (FDEP 2014).

The development of this road was initially funded by private investment to facilitate further beach development on the island (Wilson 1998); however, in 1942 the State Road Department assumed control of the road and current maintenance remains the responsibility of the FDOT (FDOT 2012). Being currently classified under the Surface Transportation Program which ‘provides flexible funding that may be used by States and cities for projects on any Federal-aid highway, including the [National Highway System], and bridge projects on any public road’, means that the future maintenance of SR A1A may continue independent of the financial position of the City of Flagler Beach (USDOT n.d.; FDOT 2014a). SR A1A has been designated as a National Historic Byway and a State Scenic Highway, making available further funds for the maintenance of the road that is now considered a central component of the entire region’s tourism economy (Florida Scenic Highway n.d.). More significantly, the road has been designated as a primary hurricane evacuation route for Evacuation Zone A in Flagler County, which covers all of the coastal zone east of the Intracoastal Waterway, a zone which, due to its low lying topography, is evacuated for all levels of hurricane intensity (www.flagleremergency.com).

The road that would become SR A1A was opened in 1927 and has remained of central importance in the city ever since; however, due to its location on top of the primary fore-dune and proximity to the mean high water line it has been at the center of many of the community’s beach management concerns. While historic photos of Flagler Beach suggest small coastal armaments were utilized in the first several decades of the city’s existence to stabilize certain sections of the dune, the larger-scale installments of rock revetment can be traced back to Hurricane Dora in 1964, the only major hurricane to make landfall in northeast Florida in over a century. The United States National Weather Service described how ‘[Hurricane Dora’s] storm surge caused extensive beach erosion, inundated many beach communities, washed out beach roads, and swept several residences into the sea’ (U.S. Weather Bureau 1964: i). SR A1A in particular received extensive damage from erosion and overwash, prompting the reinforcement of numerous sections with rock revetments and even the relocation of several sections of the road to presumably less vulnerable locations (Pilkey et al. 1985).

In Flagler Beach specifically, Hurricane Dora caused severe erosion of the local dune system which seriously threatened the future existence of SR A1A in the area, prompting the FDOT to install several large sections of stone revetment in various locations as a means to “stabilize” the eroding sand dune face (see Fig. 1). Since its installation, the FDOT has continued to maintain and in certain instances expand this

armament which is now approximately 9000 ft long (USACOE 2014). The city of Flagler Beach, which has long been dissatisfied with the rock revetments unsightliness and propensity to collapse, causing hazardous conditions for beach goers, intensified its search for long-term solutions to the beach erosion issue around 2004–2005, when a particularly bad hurricane season exacerbated already troubling erosion conditions. An emergency meeting of the Flagler Beach City Commission was called on September 7, 2004 to deal with a variety of issues related to Hurricane Francis, including the fact that ‘boulders have fallen from the rock revetment’, and that steps were ‘being taken by the FDEP, FDOT, and FEMA for a hazard mitigation grant’ to address the problem (Apperson 2004). In addition to the reconstruction of sections of the rock revetment, these problems prompted the FDOT to install a 140-foot steel sheet pile seawall to protect a vulnerable section of SR A1A.

The FDOT has a long history in Flagler County and, as alluded to above, in Flagler Beach this history has largely been centered on the maintenance of SR A1A. Since its founding, Flagler Beach has been periodically affected by tropical storms, hurricanes, and nor’easter winter storms, many of which caused severe erosion along the coast (USACOE 2014; NOAA 2014). As a means to deal with the continued and often punctuated coastal erosion, the FDOT eventually came to propose the expansion of hard-infrastructure to help stabilize SR A1A, namely, the extension of a seawall. This proposal was met with resistance and controversy from Flagler Beach citizens and representatives. It is this proposal that is the primary planning process of interest below.

Discussion: power, rationality and participation in FDOT coastal planning and management

Power and the FDOT

Much of the power held by the FDOT to influence planning outcomes is based in their legal authority to maintain transportation infrastructure within their right-of-way, particularly in emergency situations, as well as their ability to draw on public funds. This may be despite the fact that, as mentioned above, much of this infrastructure was constructed in locations deemed vulnerable by current coastal construction regulations. While the earliest installments of hard infrastructure such as rock revetments in Flagler Beach date back to the 1960s, and smaller-scale installments even precede this, according to public documents, the FDOT considers the origin of the current rock revetment in Flagler Beach to be the permits granted to them by the Department of Natural Resources in 1981 and in 1985 for the construction of stabilization measures to protect SR A1A from structural collapse (FDOT 2010: 5-1). In 2000, the FDOT submitted an emergency

application for construction within the CCCL for the enhancement of the rock revetment installed in the 1980s (ibid). In 2005, initiated by road closures along SR A1A due to storm-induced erosion, the FDOT installed the aforementioned seawall which they determined to be ‘the only viable emergency repair for that section of SR A1A’, with an application submitted to the Florida Department of Environmental Protection (FDEP) in 2006 for *ex ante* permitting (ibid). As a result of these emergency installments, which were designed solely for purposes of stabilization of the road, both the Florida Fish and Wildlife Conservation Commission (FWC) and the United States Fish and Wildlife Service (USFWS) have deemed the emergency installments as constituting a “take”¹ of protected species (regarding three threatened or endangered sea turtle species) on various occasions, most recently stating that ‘the continued existence of rock revetment and steel structures along the nesting area will continue to result in take of sea turtles until they are removed or the beach substantially accretes to the point of providing ample nesting area’ (USFWS 2009: 33).

The FDOT, when submitting required documents for approval of emergency installations, is not required to open the project to public bidding or consultation if it is deemed that ‘it is in the best interest of the public for reasons of public concern, economy, improved operations or safety’, as covered under Florida statues Section 287.055 (3) (a) and Section 337.11 (6). Further strengthening the FDOT’s prerogative to maintain the SR A1A road, and in particular the emergency rock-revetment and seawall installations, the United States Army Corps of Engineers (ACOE), issued a Nationwide No. 3 Permit (No. SAJ-2005- 11010NW-AWP) giving the FDOT the ability, as it sees fit, to facilitate ‘repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure, or fill... provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification’ (USACOE 2012: 1).

The rationale for installing the original revetments and the subsequent seawall, to maintain the public’s best interest for ‘reasons of public concern, economy, improved operations or safety’, serves as a powerful basis to justify a lack of public involvement in the planning, design, and implementation of hard infrastructure. Additionally, the reinforcement of this precedent by the ACOE Nationwide No. 3 Permit further established the right of the FDOT to maintain the existing infrastructure as it sees fit, adding a layer of federally protected

legal power to take unilateral action in the Flagler Beach community. The ACOE clearly states that such repair ‘does not require pre-construction notification. This is because restoring a structure or fill to its pre-event configuration will not result in more than minimal adverse effects relative to the pre-event status quo’ (USACOE 2012: 6). The most recently proposed project, which sought to expand and enhance existing hard armoring in Flagler Beach, was estimated to cost nearly \$30 million (in 2006 dollars), with an annual upkeep of \$1.25 million. While no funding sources had been identified at the time the project’s feasibility study was released, the above-mentioned funds available to the long-term maintenance of SR A1A under the Surface Transportation Program, as well as its designation as a National Historic Byway and State Scenic Highway, provide powerful means to procure funding if the project were to be accepted by the Flagler Beach community.

The use of power by the FDOT to implement hard infrastructure installments absent of public involvement, both based on power supported by legal and financial resources, remains an important point of contention in Flagler Beach. While the FDOT is not required in all situations to consult the local citizens, these same local citizens must live with the material consequences of the FDOT’s unilateral decisions (Fig. 2).

Interviews conducted with Flagler Beach elected officials in January of 2014 highlight the frustration felt by local decision makers with the FDOT’s relative autonomy to act in their community:

The people that are making decisions at the off-site, meaning the [ACOE], the FDEP, the FDOT, don’t care what the local community wants. And that is my biggest problem... they will make us overcome every obstacle known to man without sitting down with us... The rock



Fig. 2 Failing rock revetment at South 17th Street, Flagler Beach, Florida. Author’s Photo, January 2014

¹ ‘The term ‘take’ means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.’, while an “incidental take” is regarding a “take” that results from, but is not the purpose of, carrying out an otherwise lawful activity’ (USFWS 2014).

revetment was designed by a civil engineer, not a coastal engineer. It was meant to hold up the road... it's been a problem ever since it went up, and we know it is going to be a problem. So when we called in FDOT to see what they could do for us, they found \$6 million to put up another wall. And that is what led to all this. In Flagler Beach we know that if we become totally a seawall, we will have no beach. (Personal Communication, Flagler Beach Elected Official #2, January 16, 2014).

This sentiment was echoed further by another elected official:

The seawall... was an emergency situation. If the road is going to cave in, [FDOT] can put up whatever they need to put up to maintain that road. And that was kind of the driving force behind us thinking we need to fix the beach before something like that happens. Because they [the FDOT] could still come in at any day and say 'look, [A1A] is falling in, we are tired of dumping sand, we are tired of doing this, we are just going to, you know seawall it all the way down. (Personal Communication, Flagler Beach Elected Official #1, January 16, 2014).

The ability of the FDOT to act unilaterally in emergency situations, and the related project plans they have proposed for a "long-term" solution, are based on a particular rationale that has been mobilized to justify their position and to maintain the decision-making power already afforded them for such issues. It is to this I turn next.

Rationality and the FDOT

As introduced above, the FDOT has long had a significant influence on the coastal management decision making environment in Flagler Beach, largely through its legal prerogative to implement and maintain the necessary infrastructure for stabilizing SR A1A. This legal prerogative is based in an appeal to the rationality of social and economic security. This rationality can be summed up thusly:

1. SR A1A holds a central safety role in the city of Flagler Beach as a hurricane evacuation route and as the backbone of the local economy
2. An unstable dune face means that SR A1A may be compromised, undermining its central social and economic security function in Flagler Beach
3. Maintaining SR A1A is necessary for the continued social and economic security in Flagler Beach's

With the FDOT being the primary agency for upkeep of public roads in Florida, the realization of this rationale naturally falls to their organization and is further championed by

their representatives. This rationale is apparent in a wide variety of FDOT sources, as well as its being supported by the previously mentioned legal authorizations provided by particular federal and state government agencies. Building on their historic presence in the Flagler Beach area, the FDOT in 2010 released the SR A1A Project Development and Environment Study (PD&E) (FDOT 2010), which outlined proposed plans from the FDOT to stabilize, whenever necessary, severely eroded sections of SR A1A. Under the section Purpose and Need (1.2), the FDOT clearly states that 'the primary need for this project is safety' where, they continue, the FDOT is 'committed to protecting SR A1A in its existing location, as this road is a hurricane evacuation route, a designated State Scenic Highway, and National Historic Byway, and provides an economic base for the region' (FDOT 2010: 1-4). In this way, the FDOT utilizes the safety-oriented rationale that protecting the structural integrity of SR A1A is central to maintaining the long-term security of the city, both in providing safe and efficient evacuation as well as an economic foundation in the form of tourism. However, in a recent assessment by the United States Army Corps of Engineers, they acknowledged that the PD&E study was merely a formality for gaining access to federal funds for future maintenance:

The [FDOT] Project Development and Environmental (PD&E) Study covers an approximately 5 mile stretch of SR A1A through Flagler and Beverly Beach. The study includes considerations for the possible construction of segments of seawall, revetment, or dune nourishment and impacts, costs, etc. of those options. FDOT does not currently have any dune stabilization plans for SR A1A in their 5 year work program. The main purpose of this PD&E Study was to comply with NEPA [National Environmental Policy Act of 1970] so that work can be done in the future with federal funds (USACOE 2014: 1-10).

According to the FDOT, the proposed actions in Flagler Beach will depend on 'the site-specific conditions following a severe storm event' where 'one of three erosion control treatments within the authority of FDOT may be warranted' (FDOT 2010: ES-3). The permanent option is a buried seawall with approved sand and the two temporary options are granite rocks with approved sand or coquina rocks with approved sand. All three options have been previously utilized in the Flagler Beach area to some extent. These three options are coupled with proposed "soft armoring", which involves covering the dune face with biodegradable matting with the intention to control erosion from road surface runoff. As stated by FDOT representatives at the July 24, 2007 public hearing on this proposed project, 'a buried seawall with sand is the preferred FDOT approach for erosion control within FDOT's authority, depending on the severity of the erosion' (FDOT

2007: 13). It is important to note that the FDOT maintains the option to do nothing, what they call the “No Build” alternative (FDOT 2010: 2-1). Given that in 2007 alone the FDOT performed 15 emergency or temporary repairs to the Flagler Beach segment of SR A1A (USFWS 2009) at a cost of \$847,000.00, and that between 2000 and 2007 FDOT maintenance costs for SR A1A in Flagler Beach averaged \$1.25 million per year (USACOE 2014), the “No Build” option seems like an unlikely proposition, particularly when considering the FDOT’s commitment to maintaining SR A1A in its existing location (FDOT 2007: 10-11).

The safety rationale has implications beyond the continued upkeep of hard infrastructure itself and has important consequences for the local environment. However, the rationale of safety for the affected city seemingly trumps the various environmental concerns outlined in the Biological Opinion conducted by the United States Fish and Wildlife Service (USFWS 2009). This Biological Opinion clearly determined that the continued use of hard infrastructure for road stabilization will constitute a “take” of federally listed sea turtle species, as well as continue to impede the ability of the dune to be replenished. This is because the sediment available for replenishing the eroded fore-dune will be covered by soft armament and the dune itself “stabilized” by the additional hard infrastructure. However, the FDOT emphasizes in their PD&E report a single sentence from the USFWS Biological Opinion where it is stated that *‘the proposed action is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species’* (USFWS 2009: 35, emphasis in original).

The above-mentioned quote, justifying the project impacts based on the absence of critical habitat, is not due to a lack of *viable* critical habitat within Flagler County. To date no critical habitat for the endangered species considered in the Biological Opinion has been designated in the United States. However, the establishment of such critical habitat zones is currently being explored along the U.S. Atlantic and Pacific coasts, including much of the Flagler County coastline, for example, for the Loggerhead Sea Turtle (*Caretta caretta*) (USFWS 2013). The construction of any hard infrastructure, perhaps ironically having been justified by the absence of critical habitat, may remove the possibility of the affected locations to be designated as critical habitat in the future. This is based on the well documented detrimental effects of such hard infrastructure interventions on barrier island beach dynamics (Magliocca et al. 2011; McNamara and Werner 2008; Bush et al. 2004; Pilkey and Dixon 1996; Pilkey et al. 1985). The fact that Florida beaches host approximately 95 % of all sea turtle nests in the continental United States speaks to the significance of the accelerating loss of nesting habitat in coastal communities (Mosier and Witherington 2002). The sea turtle species of concern in Flagler Beach are all considered either

threatened or endangered, and protected in the United States under the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884). Furthermore, the idea that local effects on the environment will have no significant impact on larger-scale processes or the long-term viability of a particular species has long been viewed as problematic. For example, the concept “the tyranny of small decisions” concerns the phenomenon where many local decisions scale up to bigger impacts which were unintended by anyone yet detrimental to all. As Odum has remarked:

No one purposely planned to destroy almost 50 % of the existing marshland along the coasts of Connecticut and Massachusetts. In fact, if the public had been asked whether coastal wetlands should be preserved or converted to some other use, preservation would probably have been supported. However, through hundreds of little decisions and the conversion of hundreds of small tracts of marshland, a major decision in favour of extensive wetlands conversion was made without ever addressing the issue directly (Odum 1982: 728).

Degradation of Flagler Beach’s local coastal habitat is part of a larger problem of poor planning and unsustainable coastal development which threatens the future of coastal ecosystems and increases community vulnerability to coastal hazards (Pilkey and Cooper 2014). In fact, *most* of the land vulnerable to rising sea level along the US Atlantic coast is planned to be developed by state and local governments (Titus et al. 2009).

A local example of the effects of the existing FDOT stabilization infrastructure is instructive. In response to the adverse environmental effects of the rock revetment and seawall in Flagler Beach, the Volusia Flagler Turtle Patrol (2013), a non-profit organization whose members volunteer to monitor sea turtle nesting activity in the Flagler and Volusia County areas, have been forced to begin relocating all sea turtle nests that are located in front of the existing FDOT road stabilization infrastructure to locations where they are less likely to wash away, which involves substantial effort from volunteers and may not always be successful (Personal Communication, Flagler Beach Elected Official #2, January 16, 2014). The adverse effects of coastal armaments on sea turtle nesting habitat and hatching success is well documented, including increased instances of inundation, lower emersion rates of hatchlings, and general reduction of viable habitat (Mosier and Witherington 2002). Regardless of documented local environmental impacts in Flagler Beach, the FDOT emboldened the aforementioned sentence from the Biological Opinion (USFWS 2009) in several locations in their PD&E study (see for example, FDOT 2010: ES-3, ES-4, 4-6, 4-7 and 7-1) to further legitimize their claims of the project producing no “significant impacts” on the local environment. Thus, in the interest of safety, the “take” of sea turtle nesting habitat is

considered an acceptable loss, given the claim that the project will not threaten the future viability of the species as a whole.

Participation and the FDOT

Participation in natural resource planning and management has been touted as necessary for producing credible, salient, and legitimate outcomes for the various actors affected by such decisions (Barnes et al. 2003). However, as mentioned above, the kind of opportunities created for participation are important for securing desirable outcomes, and the adoption of particular participatory spaces can be means to securing ends that serve the interest of a more powerful party while neglecting the concerns or interests of others (Cornwall 2004). The FDOT, as a state transportation planning agency, is legally obligated to engage the citizens affected by its planned project in a process of public involvement, except, as mentioned above, in situations deemed an emergency. This legal obligation is covered under several state and federal statutes and orders. For example, under the Florida Statutes, Section 339.155 for Transportation Planning, under section 6, it is stated that ‘the department shall provide citizens... with an opportunity to comment on the proposed plan or revisions. These opportunities shall include, at a minimum, publishing a notice in the Florida Administrative Weekly and within a newspaper of general circulation within the area of each department district office.’

Other similar legal requirements relevant to the Flagler Beach project are covered under Executive Orders 11990 and 11988 on Protection of Wetlands and Floodplain Management (respectively), the Council on Environmental Quality Regulations Title 40 (Protection of Environment) Code of Federal Regulations 1500- 1508 and 93.105, as well as Council on Environmental Quality Regulations Title 23 (Federal Highways) Code of Federal Regulations Part 450 and 771.111. The FDOT, in the development of their Flagler Beach PD&E Study, furthermore drew on their Project Development and Environment Manual (FDOT 2014b) as well as the Federal Highway Administration’s Interim Policy on Public Involvement (USDOT 2013), in the structuring of their processes of citizen engagement. In their report, the FDOT states that their participatory process goals are ‘to share project information with the individuals who live and work in the study area; to listen to ideas and concerns; and to incorporate input received during the study process’ (FDOT 2010: 6-1).

The FDOT’s approach to “public involvement”

Based on the legal obligations for public involvement during FDOT project planning, the FDOT adopted a multi-component approach to public involvement focused on the Efficient Transportation Decision Making (ETDM) screening (FDOT 2013), an advance notification process, an information

dissemination element, two public workshops, and a public hearing. Several of these participatory approaches involved the dissemination of information about the proposed study from the FDOT to public and private actors and a request for public comments to be provided to the FDOT before a particular deadline. For example, the advanced notification process involved the distribution of an information packet containing a project description, explanation of the need for the project, potential alternatives, potential impacts associated with the project, and a copy of the advanced notification distribution mailing list to over 100 federal, state, regional, and local agencies either having interest or direct involvement in the proposed project. Similarly, the information elements were said to have been ‘designed to inform the public and provide an opportunity for the public to express their ideas and concerns about the scope and impact of the study’ (FDOT 2010: 6-2). This included the use of mailing lists, newsletters, a web site, and email.

This kind of information-dissemination-oriented approach provides the public and relevant administrative agencies with information and the opportunity to provide comments and concerns. However, the possibility for the public or other planning institutions to influence the existing agenda, or to take any kind of meaningful decision related to project content or process, is notably absent, with the important exception of full rejection of the project. This seems to be an issue from both “down” and “up” the administrative ladder. An example from a higher-level agency perspective comes from the USFWS’s response to the advanced notification packet, where they ‘recommend reviewing other routes other than A1A, to increase the safety from wave action and evacuation along this highly erosive shoreline’ (FDOT 2010, Appendix G: 4); in other words, to either relocate SR A1A to a less vulnerable spot, or reassign the hurricane evacuation route to a different road. This point was further echoed from below by a Flagler Beach resident at a FDOT public hearing on the project which took place on July 24, 2007, when they said “The seawall will make the beach disappear. Make an alternate route. Delete SR A1A and we will take care of the beach front” (FDOT 2010: 6-5, table 6-2). These recommendations, however, were ultimately not included in the final FDOT PD&E study, perhaps due to the FDOT’s commitment to ‘preserve the existing transportation infrastructure’, as outlined in the first clause of Florida Statutes Title 36 Chapter 339 Section 155. The singular rationale of ‘public safety’ was also questioned by the ACOE in their comments to the advance notification provided by the FDOT. The response from the ACOE stated ‘the only purpose stated [for the FDOT project] is: safety improvements. I can only infer this project is for shoreline stabilization’ (FDOT 2010, Appendix G: 5). At the local level, the level of public participation in the advanced notification and information element approaches is limited to distance-based commenting, with a lack of control over agenda setting,

comment assessment, or inclusion of critical perspectives, leaving the FDOT with the power to record, interpret, and potentially incorporate the comments from various agencies and the public at large. This is indicative of a form of participation which Arnstein (1969: 219) has called Consultation, where such an approach ‘offers no assurance that citizen concerns and ideas will be taken into account’.

A look at the in situ approaches to public involvement in the FDOT project proposal, which invited Flagler Beach citizens and decision makers into an in-person forum, provides further insights into the use of power in the FDOT process of public involvement. Two types of live forums for public involvement were utilized by the FDOT: two public workshops and a public hearing. The public workshops took place on August 8, 2006 and November 14, 2006, each two hours in length, with around 115 and 56 attending participants (respectively). The first public workshop was said to have identified ideas and comments from the community which the FDOT was to take into consideration, including ‘maintaining the character and integrity of SR A1A, protecting the beach environment, and protecting the community while preserving its unique characteristics’ (FDOT 2010: 6-3). Similarly, the second public meeting was said to have identified the preferred near-term and long-term solutions, the near-term solution being a seawall in areas threatening the integrity of SR A1A and the long-term solution a patented, and somewhat controversial, erosion control measure called the Undercurrent Stabilizer (I will return to this further below). However, due to a lack of documentation from these public workshops or the processes that were utilized to assess and incorporate comments into the project, it is difficult to assess how these public workshops influenced the over-all project.

The public hearing, which took place on July 24, 2007, was attended by 123 individuals and was intended to ‘allow persons an opportunity to express their views concerning the recommendations to stabilize SR A1A within the study limits’ (FDOT 2010: 6-3). Prior to the public hearing itself, the FDOT received only 7 comments from interested individuals based on the pre-hearing comment platform provided by the FDOT. At the actual public hearing, the FDOT gave a formal presentation on the proposed project before opening the floor to public comment. In their reading of the formal administrative statement into the public record, the FDOT representative proclaimed the project’s legitimacy by stating its compliance with the relevant federal and state legal obligations (as introduced above) and emphasized the level of public involvement in the project up to that point, which covered the previously mentioned FDOT approaches. The FDOT further promoted their project rationale by stating that the proposed project goal is to ‘maintain public access and safety in the area’, remaining ‘committed to protecting State Road A1A in its existing location, as this road is an emergency hurricane evacuation route, a designated State Scenic Highway, a National Historic Byway,

and provides an economic base for the region...The primary need for this project is safety’ (FDOT 2007: 10-11).

After the administrative statements were completed, a total of 11 interested persons spoke publicly at the hearing and a review of the public transcripts offer insights into the public’s reception of the FDOT erosion-control project. Issues discussed in the public comments included frustration with the three hard infrastructure techniques offered by the FDOT as viable options; criticism of the lack of coordination between the FDOT and other state and federal administrative agencies, such as, the FDEP or USFWS; suggestions for other alternatives that do not involve the recommended hard infrastructure; and concerns over the adverse effects on the quality of the local beach and dune system if the FDOT project were to be implemented, occasionally with reference to the FDOT’s existing infrastructure as an example of an undesirable management approach. A local business owner expressed his concerns thusly:

I was telling [FDOT] earlier, and they didn’t like me a little bit, but “seawall” to me is a bad word... I would like to see a system work, but seawalls, to me, are scary... If we go to seawalls, like they did in front of the Topaz [referring to the existing seawall in Flagler Beach], they’ve lost their beach. It’s beating down the wall. How are we going to have tourism? How are you going to support the businesses? (FDOT 2007: 39-40)

Along with verbal comments, some 20 additional comment sheets were handed in at the hearing, with five comments supporting the project and twelve commenting against it. Additional comments focused on the need for more information or other related issues. The above excerpt symbolizes a similar theme found in other statements made at the public hearing which demonstrate some skepticism regarding the continuation of the coastal management approach the FDOT has historically pursued. Comments from the hearing, such as ‘No seawalls. Seawalls make things worse than they are now’, ‘I’m against a seawall of any type’, ‘This project will be the end of Flagler Beach as we know it. A seawall is not the answer’, and ‘It appears there has been no consideration given to building up our beach using other than the three choices shown’, are exemplary of those residents against the project (FDOT 2010: 6-5, table 6-2). While some citizens offered their concerns over costs and issues with coordination, many of the speakers suggested some sort of alternative management approach, some even offering specific suggestions and referring to examples in other locations around Florida and the United States. Despite these public suggestions and concerns over the management strategy employed by the FDOT, the three options of hard infrastructure offered to the Flagler Beach community were the only options within the FDOT’s jurisdiction. In the opening administrative

statement, the FDOT representative explicitly stated ‘FDOT solutions are limited to coquina rocks with sand, granite rocks with sand, a buried seawall with sand, or to do nothing at all... These are the only choices within FDOT’s authority’ (FDOT 2007: 13).

Such legal constraints imposed on the FDOT’s coastal management options, which limit FDOT actions to their legally defined right-of-way and to certain technology, has worked to further tighten the constraints on possibility within this participatory context, reducing the potential for public opinion to influence the content or approach to the proposed project. The use of regulatory power by the State, combined with the legal and monetary power and strong emphasis on the rationale of safety as a legitimizing position used by the FDOT, has culminated in a severe limiting of potential alternatives in this public participatory process. Such combinations of power and rationalization significantly reduced the possibility of Flagler Beach citizens to influence the direction of coastal planning occurring in their own town. However, as the FDOT stated, there is always the option to do nothing, leaving the impression that in such a situation the FDOT would either remain legally required to maintain the road in emergency situations, or, alternatively, the community could potentially be left with an unusable road, severely degraded beach and no financial support for alternative solutions.

Ongoing planning and management issues

The point of this analysis was not to promote the claim that the Flagler Beach citizens, or any local citizens for that matter, *inevitably* know what the most effective beach management strategy is for their local environment, as this is certainly not always the case. In fact, many of the commenters at the FDOT public hearing in Flagler Beach discussed above were associated with an outspoken organization named Save Flagler’s Beach (2011) which, for nearly a decade, intensely lobbied for the city to utilize Holmberg Technologies Inc. (2014) patented technology to address the city’s erosion problem. This technology, however, has created a fair amount of controversy within the United States, including in Florida. The company owner has expressively criticized mainstream coastal science and suggested his technology ‘has successfully restored more than 100 miles of beaches on Great Lakes and ocean shorelines... [with] no adverse side effects to adjacent shorelines’ (Holmberg Technologies Inc 2014). His projects and scientific claims have, however, been met with severe criticism by coastal scientists, perhaps most notably Duke University Professor and Founder and Director Emeritus of the Program for the Study of Developed Shorelines, Orrin H. Pilkey (Pilkey and Sampson 1998; see also The Program for the Study of Developed Shorelines n.d.). I furthermore do not hope to claim that the relatively small numbers of interested citizens that actually showed up and commented at the FDOT meeting

(many of which were in support of Holmberg’s involvement) are necessarily representative of all the residents in Flagler Beach. The point is, rather, to offer a real-world example of how a public institution can mobilize financial and legal power, reinforced by an authoritative claim to rationality and supported by other intra- and inter-level agencies and legislation, and through utilizing this power-rationality relationship, heavily influence the processes of local coastal planning and limit the potential for meaningful public participation.

The city of Flagler Beach continues to search for beach management solutions which will fulfill the city’s vision for their local beach, which was articulated in the February 16, 2012 Workshop on Developing a Strategic Plan of Action for the Beach Stabilization Issue (Overstreet 2012). The FDOT released the final PD&E study in January of 2010, which was meant to have incorporated the comments from the participatory phase as well as concerns of the USFWS’s Biological Opinion (USFWS 2009). The final report recommended the installation of around 1000 ft of additional seawall to stabilize severely eroded sections of SR A1A. Discussion of the project continued in the chambers of the Flagler County City Commission; for example, on October 13, 2011, the City Commission, with strong support from Flagler Beach citizens, motioned to reject a related FDOT proposal to repair the existing seawall at a cost of nearly \$400,000, as they perceived acceptance of such a proposal would potentially conflict with their hopes to secure funds for alternative methods and possibly set an unwelcome precedent for future seawall development (Overstreet 2011).

In 2012, after significant lobbying by members of the previously mentioned Save Flagler’s Beach organization, the city secured \$50,000 from the county Tourism Development Council to allow Holmberg Technologies Inc. to perform a coastal assessment for the potential use of their patented erosion control technology. The coastal assessment was presented to the commission by Mr. Holmberg on February 14, 2013 (City of Flagler Beach 2013). It was not well received. One month later, a motion to not move forward with the Holmberg project was unanimously carried by the city commission (Overstreet 2013). The city commission is currently discussing a long-term \$3.5 million feasibility study conducted by the ACOE which was released in January 2014 (USACOE 2014). The study outlined a “dune extension” project expected to run a total cost of over \$43 million and begin around 2017, depending on funding availability. Importantly, due to the current location of SR A1A and the areas identified within the ACOE project boundaries, it is estimated that nearly 93 % of the benefits of the proposed project, if approved, would accrue to the FDOT via enhanced protection of SR A1A (Marloww and Company 2014). The FDOT is also expected to contribute significant sums of money to the implementation of the proposed ACOE project if it is actualized (ibid).

Conclusions

The political arena of coastal resource planning and management is where power and rationality interact to influence planning outcomes. The outcomes of these decisions have material consequences for both local citizens and the area's ecological integrity. Such decisions can also set serious limitations on possibilities for future development pathways. The context-specific nature of planning processes, including the way power and rationality interact with the local social and environmental context, imply that action-oriented researchers in fields such as Sustainability Science (Wiek et al. 2012; Jerneck et al. 2011; Clark and Dickson 2003), as well as the many practitioners of action-oriented methodologies such as Action Research in a wide variety of fields (Gustavsen 2007; Brydon-Miller et al. 2003), must account for the place-based complexity and variability of real-world planning practice. Three axioms derived from the above analysis related to the place-based study of the power-rationality-participation nexus are suggested below as relevant starting points for future research and practice. More can certainly be identified and are left to future researchers for explication.

Axiom 1: power-rationality relations have historical roots

The development of the power-rationality relationship is historically contingent. In the case of Flagler Beach, the historical development of transportation infrastructure, and the related long-term intervention into community coastal management by the state transportation agency to maintain this infrastructure, has created a strong precedent, supported both legally and financially, for the continued involvement of the FDOT in future planning and management affairs. This works to enhance the FDOT's power to influence local planning and management processes and outcomes. This precedent is further supported by the numerous federal and state legislative acts which lay out the legal requirements and rights of the FDOT to maintain existing infrastructure for purposes of safety, efficiency, and commerce, many of which rely on historical existence of infrastructure to be applicable. The fact that SR A1A was developed long before construction regulations along the Atlantic coast of Florida were designed and implemented lends another historical dimension to the struggle over coastal planning in Flagler Beach, as the physical placement of the road is a primary reason for the need for maintenance interventions. Unlike many other coastal communities along Florida's Atlantic coast where coastal roads were not built precariously close to the naturally eroding sand dune system, Flagler Beach must seemingly learn to live with a transportation route which, if designed and built today, would likely not be up to acceptable coastal construction regulatory standards. The designation of SR A1A as, for example, a National Historic Byway, adds additional layers of legal designation which

enhance the FDOT's power to influence the coastal management outcomes in Flagler Beach. Researchers must account for the historical roots of power-rationality relations, including historical investigations into previous planning, and incorporate this understanding into approaches for problem-framing and solution development.

Axiom 2: power-rationality relations are context-dependent

As Mitchell (2008) reminds us, context matters. Much of the FDOT's power comes from its historical and legal basis for intervention in transportation infrastructure, as well as the funds available for such interventions, particularly in emergency situations. The rationale of social and economic security (safety) is a particularly powerful rationale in the Flagler Beach context, as the precarious location of the SR A1A, its historical importance, and current framing as essential to local commerce and emergency evacuation lends legitimacy to the calls for continued maintenance and seemingly delegitimizes alternative options which do not involve further maintenance of the road (as these would be unsafe, bad for the economy, etc.). The safety rationale, particularly regarding SR A1A as a hurricane evacuation route, is quite dependent on the geographic location of Flagler Beach itself, with the majority of the city squeezed onto a thin strip of sand less than one mile wide, leaving few other viable locations for evacuation infrastructure to be developed. This appeal to social and economic safety relies heavily on the constraints imposed by the island's physical geography, which is thought to impede the possibilities for alternative approaches. In other contexts, where adequate space for alternative infrastructure development were more readily available, the rationale of social and economic security based on the central importance of a single road would not likely be as powerful an argument, and one would expect official planning rationale to be constructed around other context-based characteristics. For example, Flyvbjerg (2002) has shown, in the Danish context, how public safety can be systematically undermined in the name of economic (instrumental) rationality, rather than safety being a part of the rationality of planning itself. The fact that Flagler Beach is a barrier island community with few viable locations for infrastructure means SR A1A holds a central, and powerful, place in Flagler Beach's existence, giving the FDOT the justification (rationale) needed to exercise its power in influencing coastal planning processes. Researchers must undertake the necessary ground work to uncover what context-specific conditions influence the relationship between power and rationality as a means to better conceptualize how powerful actors utilize these context-specific conditions to support their rationality and power moves, and how planning outcomes are shaped by the interactions between power-rationality and social and environmental context.

Axiom 3: power-rationality relations affect the potential for public participation

The approach to public participation adopted by planning agencies may be constrained by institutional commitments to particular rationales employed in management projects, and potential alternative approaches may be suppressed by the use of various forms of power. In Flagler Beach, the FDOT, while legally mandated to include “public involvement” in their planning exercises, utilized various participatory approaches which are more conducive to informing and consultation rather than delegating meaningful power or full-on citizen control (see Arnstein 1969). This means that public participation, which ideally would open up opportunities for citizens to influence planning means and ends, was reduced to sharing of concerns of an already-designed project, without the possibility of changing the possible project outcomes. This is clearly symbolized by the FDOT’s presentation of the three hard infrastructure options for “stabilizing” SR A1A (a goal grounded in a rationale of safety) as the only viable options with FDOT authority, leaving no room for alternative approaches. The finances available for the FDOT project were closely tied to the select options made available to the city, and when the city decided the three available options were unsatisfactory for their vision of their city and its beach, the finances disappeared with the proposed project, leaving the community with few options for alternative approaches in collaboration with the FDOT. Researchers must account for the ways in which power and rationality influence the potential for public participation and incorporate this understanding into the critique, analysis, design, and implementation of past, present, and future public participation forums.

Final thoughts

While I here have offered a concrete example of the intersection of power, rationality, and participation in coastal resource planning and management, the axioms derived from this case should be considered as inherent in planning and management practice and thus applicable to all natural resource planning and management contexts and not solely the coastal zone. The true challenge for action-oriented scientists and others interested in promoting social change for sustainability is to approach research and practice from such a set of axioms, understand their applicability in particular contexts, and build on this understanding through engagement with real-world planning processes to enhance the effectiveness of research praxis. This in turn can facilitate the identification of possible pathways of change which steer communities closer toward a condition of sustainable natural resource planning and management.

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