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Viewpoint

The Right to Make Mistakes? The Limits to Adaptive Planning for Climate Change

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Abstract: While the UN recognizes the right of individuals "to take risks and make mistakes", there are reasons to question whether this right can be universal. In the context of a changing climate, it is imperative that individuals have access to a safe and sustainable environment; yet we must ask if this covenant is broken if people choose to place themselves in harm's way. In its first part, this paper explores outcomes of climate change denial, manifested as continued migration to dangerous locations, and skepticism for adaptive strategies. The second half of the paper explores how localities can create a false narrative concerning risks, and asks whether communities also have a right to make mistakes?

Keywords: climate change; risk; risk communication; floods; adaptation; local governments; rights

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1. Introduction

The United Nations Committee on the Rights of Persons with Disabilities recognizes the right of individuals "to take risks and make mistakes" [1]. While this is appropriate for those confronting disability, there are reasons to question whether this right can be applied universally. Crucially, this paper points to the apparent contradiction that exists between the UNCHR's normative goal of individuals enjoying a "safe, clean, healthy and sustainable environment" on the one hand, and "the right to take risks" on the other [2]. In the context of a changing climate, it is certainly imperative that individuals have access to a safe and sustainable environment; yet we must ask if this covenant is broken if one chooses to place oneself in harm's way—if one in fact makes a choice to live in an *un*safe and *un*sustainable setting.

Risk exists in many contexts. It may be increased during periods of social and environmental flux and is especially apparent in an era of climate change, as many people find themselves facing new hazards in communities that are unprepared for more frequent droughts, fires or floods. Nonetheless, many societies appear skeptical of what we are told may be in store for the planet, and this climate change denial can be manifested as a 'business as usual' approach and an indifference towards the need for adaptive strategies. More startling is the apparent willingness of households to ignore risk entirely and to migrate *towards* more hazardous locations. Often, these are decisions driven by poverty, but there are also many instances where poor choices are freely made. To take just two examples from the US (the geographical focus of this essay), population growth continues to be rapid in Houston, Texas, where intense storms leading to extensive flooding have grown more common, while real estate development in Florida continues despite predictions that many parts of the state face eventual immersion from rising sea levels, as well as devastation from more powerful hurricanes [3]. It is this latter example that will be developed in greater detail in Section 2.

2. Risky Business and Situated Behaviors

2.1. Real Estate in the Sunshine State

The State of Florida has grown very rapidly in the 21st century, increasing its population by approximately one-third to an estimated 20 million. Due to its archipelagic

geography and the importance of its beaches for tourism and retirement communities, it has been calculated that approximately three-quarters of its population lives within 10 miles of the coast [4] The pace of this growth is surprising given the current risk statistics recorded for the state and their likely deterioration over the remainder of the century [5]. Florida is frequently in the path of tropical storms and hurricanes moving through the Gulf of Mexico and the Atlantic. In 1992, Hurricane Andrew was solely responsible for USD 25 billion in damage, while in recent years more active storms and longer storm seasons have increased the damage done to property, with a single storm (Irma) responsible for USD 50 billion in losses [6].

In addition to the dangers arising from storms and storm surges that threaten lives, there are also the more insidious impacts that are attributable to climate change. Sea levels are rising steadily (SLR) and so-called 'nuisance flooding' is endemic; this will be exacerbated by a projected SLR of up to 18" (45 cm.) by 2050 [7]. Regardless of the possible rate of increase, there is no question that by the end of the century the landscape of Florida will be greatly altered, and that significant environmental change will have taken place [6]. This will include loss of primal vegetation, coral and marine habitats, and even potable water shortages [8].

We might expect that these increasing risks would deter in-migration and lead to falling prices in Florida's real estate markets. This has been measured by economists during previous decades [9]. However, quite the opposite is occurring today, as the state has added 2.7 million residents since 2010. Property sales for the past three years have broken records (despite the COVID-19 pandemic); this is especially visible in Miami, the state's largest urban area, where high demand is reflected by higher prices (Table 1).

Table 1. Completed real estate transactions, Miami-Dade County, 2019–2021.

Miami Dade County Real Estate Sales	**2019**	**2020**	**2021**
Completed Sales—**Homes**	13,322	13,250	15,705
Median USD	365,000	402,000	495,000
Total billion USD	7.3	9.2	18.7 *
Completed Sales—**Condominiums**	14,114	13,095	23,689
Median USD	245,000	264,000	355,000
Total billion USD	5.6	5.7	11.3 *
Grand total billion USD	12.9	14.9	30.3

Compiled by author from data available from Miami Realtors (www.miamirealtors.com (accessed on 1 April 2022). * estimated proportion of total sales for 2021.

Table 1 shows that not only are more people purchasing real estate in Florida but they are also paying a premium to do so. Internet resources for investors and retirees give the state high marks for 'livability' and growth potential; a typical source states that "Florida is an international tourist destination with year-round sunshine (earning the state its nickname "The Sunshine State") with world-class theme parks. The economy is dynamic and diverse, with dozens of global business headquarters and a government that is both pro-business and pro-development" (https://learn.roofstock.com/blog/florida-real-estate-market, accessed on 1 April 2022). Clearly, climate change and its current and future impact is not being mentioned to potential buyers as a counterweight to these plusses.

This disconnect between objective risk evaluations and subjective decisions to migrate is confounding. We would expect that those contemplating a move to Florida would calculate current and future risks, and that buyers and investors would then seek price discounts in lieu of assurances that their property investments were guaranteed [9]. The risks are not merely hypothetical. The collapse of an entire condominium block in Surfside, Florida in 2021 (which was linked to the dangers of more frequent ocean floods) was widely reported [10].

As a consequence, we could expect that those responsible for housing and land-use policy—especially adaptive planning to deal with floods, storms and SLR—would be vocal in their assurances that everything that can be done to reduce risk is being done. This though, is not occurring, and the next section explores why this is so.

2.2. Miami and South Florida: A Case Study

Many communities actively seek economic development, and this process is often described as a "growth machine" in which business interests, political and policy representatives and civil society organizations are all active [11]. An earlier study of Sarasota, Florida shows that although such interests are likely to have competing agendas (with construction and real estate corporations differing from tourism businesses), they remain committed to a policy of 'business-as-usual' in the face of environmental impacts. In the policy realm, city managers who are focused on sustainability or climate change often have views diverging from those of emergency managers [12]. Divergent views ensure that investment in adaptation, such as new infrastructure, or a moratorium on building in flood zones, is muted. Residents are often co-opted into maintaining the status quo as that guarantees that their property values are stable and that job prospects remain secure.

As already suggested, South Florida is a rich case study because its vulnerability to SLR and severe storms is well documented, yet it continues to attract tourists and residents in large numbers [9]. In order to address this contradiction, we will consider the city of Miami Beach (CMB) as a growth machine, so that we can begin to understand its continued attraction for those purchasing real estate [13].

CMB grew in the 1920s as a playground for affluent tourists and wealthy visitors, who used their homes for the cooler parts of the year. It had an historically strong Jewish community, although covenants defined which neighborhoods they could occupy. African Americans were simply forbidden to rent or buy. Latino residents were under-represented until the 1980s when the Cuban diaspora accelerated. The city's political ethos has been progressive in any context that supported tourism and it has been supportive of a large LGBT community to that end [14].

A recent research project has examined the politics of climate change in CMB, which has focused on adaptive attempts to confront more frequent nuisance flooding [6]. For many years, even a mention of climate change was impossible within political and business circles. This, however, began to alter as the frequency of ocean flooding increased beyond monthly high tides, becoming initially a weekly event and even a daily occurrence at some times of the year. This level of threat was eventually co-opted by a mayoral candidate and was turned in to a winning strategy for elections in 2013.

However, this did not result in successful adaptive planning. Treuer's own findings are summarized as follows ([6], p. 87).

> "As stakeholders became aware of these actions, barriers arose in response. Residential building contractors working in the city opposed seawall standards, arguing that it would require yards to be raised, which would create unappealing discontinuity with neighboring properties. Environmentalists raised concerns about pumps polluting Biscayne Bay and city canals with unfiltered runoff from streets. Miami-Dade County was unwilling to work with the city to elevate the road and sidewalk around the proposed Collins Park Garage. Residents and business owners in flood prone neighborhoods worried about increased flooding if streets were elevated above their sidewalks, doorways, and garages. Additionally, historical preservationists and city planners worried about disruption of the historical nature and walkability of neighborhoods".

In other words, all the constituencies represented within the city and county promoted their own interests at the expense of a unified adaptive response to the increasing risk.

The material presented by Treuer has also been expanded by Conyers et al. who investigated the physical geography of CMB and its current growth trajectory. They conclude that "The mismatch of property values and vulnerability throughout the [City]

is attributed to high income, transiency, and a lack of responsiveness to SLR from both residents and real estate professionals" [15].

2.3. Analysis

Why are residents (individually and communally) and the housing market (which includes a large number of connected organizations) unresponsive to the risks associated with SLR? At the very least, endemic flooding is a nuisance and makes commuting longer and more difficult [16]. It can reduce the value of vehicles exposed to saltwater, and as noted, there is now dramatic evidence that the integrity of residential structures is under attack [10].

The dramatic growth of in-migration to Florida has created a population that has little social capital due to its transient nature, especially those who reside in the numerous private enclaves. Many buyers of homes use them for vacations rather than as permanent dwellings. Research shows that as a consequence of this, only one-third of buyers ask their lenders about climate change or flooding [15].

A market must rest on a ready supply of capital to remain buoyant, and it is instructive to find the sources of the funds that drive the market in South Florida. Researchers have provided insights into the nexus of urban development, money laundering and limited oversight that typify 'the Sunshine State' [17]. Liquid assets flow in, attracted by a weak regulatory regime that permits shell companies to purchase property. Much of this flow is assumed to come from the drug business, and the prevalence of Spanish speakers eases transactions from Spain and countries in Latin America. Estimates place the amount of cash flowing into Miami alone at up to USD 6 billion annually. As a significant proportion of these transactions do not involve permanent residents, it is understandable that a "don't ask, don't tell" strategy is relatively easy to maintain [18].

While we might expect that clandestine transactions would constitute an explanation for the state's fiscal buoyancy, we can, in reality, dig even deeper. Keenan et al. have provided compelling information on the way in which financial institutions, which hold the region's construction loans and mortgages, offset the risks of SLR and increased storm activity. They conclude: "the empirical results provide evidence to suggest that local, concentrated lenders are already taking action to transfer risk and to limit exposure in SLR zones in the Subject Regions. These local lenders are likely taking these actions based on their ability to collect superior, soft information" [19]. In other words, the risk is well understood by lenders, and liability is structured so that its impacts will be dispersed through the market—as was supposed to happen with derivative contracts prior to the collapse in 2008 [20].

2.4. Summary

This example offers a glimpse of the risks facing those purchasing real estate in South Florida. Superficially, the continued growth in that market seems a sign of misplaced confidence, but as we have dug deeper, we can also see that the complexities of the market make any such judgement premature. It has been set up to succeed for the benefit of local capital interests, even while its assets face long term devaluation. For those laundering money, short-term returns followed by a quick sale achieve the fiscal outcome that was sought. For more stable entities, such as construction companies and REITs (real estate investment funds), the dispersal of risk across multiple investors removes the problems connected to SLR, although, as research regarding real estate professionals points out, responses to climate change constitute something of a game of chicken. No corporation wants to be the first to predict losses to potential tenants and buyers, as this conflicts with their fiduciary responsibilities to shareholders and investors. Their response is to focus on a 20–30 year window of returns—while assuming that climate change is an 80–100 year problem [21].

The potential losers here (as in the housing bubble of 2008) will be the individual purchasers caught within a dynamic real estate machine offering rising values and equity

returns. As Kennan and Bandt observe, "the longer the music plays, the more people there are that want to play the game" [19]. As we saw on the last occasion when a housing bubble occurred in Florida, there are always households attempting to enter the market late, having been informed only about the potential gains and not the likely losses. This is compounded by the threats posed by climate change. Although McAlpine and Porter suggest that there is a high level of awareness of the latter, this is inevitably based on studies of residents rather than new buyers: "for many people, they may not even know that they are playing the game" [17].

From the standpoint of interests operating within the growth machine, the risk has already been discounted. Keenan and Bandt point out that "the challenge facing policy-makers is what to do with the households who are going to be trapped when the music stops" [19]. These residents, with devalued assets, are however clearly not the responsibility of real estate and financial interests and these will not be the entities to deal with the social outcomes. These burdens will pass onto the local jurisdictions, although states such as Florida are notorious for offering minimal levels of support for the weakest sections of their populations [22].

3. Risk and Responses to Risk

As noted at the outset, the right to a safe and sustainable environment is an aspiration for the UNCHR. Yet for those standards to be met, communities must comprehend all the risks that face them, now and into an uncertain future. Even communities that are safe today are likely to need to adapt to conditions that are being shaped by growing populations and new environmental factors. Yet, this is unlikely to occur if there is no admission that adaption to new risks is necessary.

There is research that examines the slow evolution of climate change adaptation in both the US and the EU [23,24]. This summarizes the brakes that have acted to slow adaptive planning (Table 2). It demonstrates a high degree of convergence of factors, which include resource constraints, a lack of leadership and widespread confusion about the risks involved.

Table 2. Climate change adaptation efforts and limits to implementation.

Key Factors in Adaptive Planning Failures	Literature [23,24]	Miami Case Study [6]
Information & risk communication	Information and risk communication	Problem clearly visible, predictions communicated
Resources	Competing interests	USD 500 million became available
Political leadership	Unwillingness to act	new Mayor of Miami Beach
Fragmented decision making	Multiple jurisdictions	City vs. County
Time	Short-term budgeting	Bi-annual election cycle vs. flooding over decades

Assembled by author from published content: see citations [6,23,24].

The Miami Beach case study is enormously useful because it vividly captures the dynamics of risk assessment and the complexities of adaptive behavior within a specific geographical setting. It, of course, also adds to our understanding of the continued growth of the Florida real estate market. In contrast to those studies that have addressed 'barriers to adaption', Treuer allows us to see the systematic ways in which different stakeholders come into play. The differences are crucially important. Instead of conceptualizing *barriers*, we can see *processes* at work, and we can characterize these as dialectical. This means that the county was not a barrier as such: rather, the city and the county had contradictory interpretations of risk and remedy and each was committed to a different outcome. American cities have been structured into city–suburb enmities for decades (in this instance, city–county) and not only do these constitute conflicting views in terms of governance and policy, they have also come to define the polarized electoral landscape in the US.

It is therefore no surprise that when a real estate market contains a large number of fixed and expensive investments, the result is a high degree of inertia. No-one willingly

leaves a home even when the threat is significant, as we saw in New Orleans pre- and post-Katrina. Both the hurricane risk and the likelihood of flooding had been predicted and remain clear [25]. But what may be of even greater significance is that continued climate change represents unknown territory. There exist high levels of climate change denial, fed in part by a longstanding belief that technological fixes can overcome most challenges, coupled in many societies with an expectation that threats constitute a business opportunity in a new guise [26]. We should not, in other words, underestimate the multiple filters that stand between the individual and a reality as it might be measured by statisticians and actuaries.

The brief exploration in Section 2.2 of a market facing severe climate change impacts shows us that to realtors and associated professionals, the risks are not viewed as existential threats so much as just another challenge to doing business. Over decades, local jurisdictions such as Miami, Miami Beach, Palm Beach and Key West have confronted—and sidestepped—powerful storms, falling water tables and radical social changes, ranging from the dismantling of segregation to the recognition of gay communities.

When we come to address the issue of how localities confront climate change and the apparent need for adaptive planning, it is easy to focus on the wrong question. Asking why adaptive planning is not happening is to have normative expectations of the political economy of a city or county. Treuer captures this well when he writes about "a shortcoming of Moser and Ekstrom's (2010) diagnostic framework [of CCA]. Because it is based upon planned, idealized adaptation processes it fails to capture the full situational complexity including why barriers arise in some situations and not others. Therefore, the necessary task now is to identify, in case studies, how barriers appear dynamically over time within the adaptation process [6,27].

As we see in the Florida case—which is little different than many coastal communities around the US and beyond—the barriers are embedded in the growth machine and in the way in which risks and returns are calculated within the local jurisdiction.

4. Rethinking Risk and Risk Communication

So far, this argument indicates that comprehending risk is very complex. There are multiple filters through which people understand risk as it pertains to them, and this is of course exacerbated if individuals confront complex political and business interests that too have a different analysis. There are multiple filters that lead to outcomes which may appear less than optimal.

Risks are not immutable and have to be understood in the contexts of both time and space. To take a simple example, some years ago ten Bos wrote:

> "Generally speaking, billions are spent on technology and research that is supposed to protect Western citizens from relatively remote dangers (e.g., BSE, SARS, bird flu, terrorism) whereas nothing is done to combat real dangers (e.g., traffic, climate change, pollution)" [28].

In a world that has, by 2022, seen over 6.2 million deaths from SARS-COV-v2, we can assert that this appraisal is in serious need of re-evaluation. Indeed, all risk evaluations have to be continually updated, and all behaviors should be considered as "socially situated rationalities" ([29], p. 2). This means that *efforts to identify individual actions—as mistakes or otherwise—usually need to be understood in a context, for within each context a risk calculus needs a unique calculation*.

We can draw upon numerous examples of socially situated behaviors. These can sometimes be relatively simple to understand, while in other situations the examples are reflections of more complex social relations. For instance, due to their location in a very active seismic region, the Hawaiian islands face a high risk of inundation by tsunamis, and indeed, Hilo was badly damaged in 1960 by wave action. Many communities throughout the islands have warning systems, though it has been noted that tsunami klaxons are less likely to generate an evacuation and much more likely to result in spectators heading to watch the ocean and surfers to wait for 'the big one' [30]. Clearly, in an indigenous culture at one with the ocean, powerful waves are to be venerated rather than feared.

We can therefore infer that the list of factors that could account for variations between and within communities in terms of identifying, and responding to, climate change is a long one. Risk assessments can be shaped by a broad range of drivers: local knowledge, different cultural attitudes (including the appropriate time scale within which to assess risks), sunk costs (which cause inertia and an inability to act), and a lack of resources of all types [31]. In addition, we should remember that individual residents and business interests of all types operate in the political jurisdictions where they pay taxes and whose regulations they observe. This dimension has been addressed by Koop and colleagues, whose work focuses on what they term the "capacity of cities" to govern in the face of climate change. Their research is a broad examination of responses to flood risks in the UK and the Netherlands, but it has applications to other risk issues, and is of course generally applicable to the issue of flooding in Florida. Their findings are summarized in Table 3.

Table 3. Conditions that together determine the capacity of cities to govern water challenges.

Conditions (see Koop et al.) [32]	**Explanation (Summarized from [32])**
Condition 1: Awareness	Understanding flood risks in context.
Condition 2: Useful knowledge	Useable Information available to residents.
Condition 3: Continuous learning	Self-scrutiny of local knowledge in the community.
Condition 4: Stakeholder engagement	Stakeholder self-identification and participation.
Condition: 5 Management ambition	Self-scrutiny of policy.
Condition 6: Agents of change	Motivation and mobilization.
Condition 7: Multi-level network potential	Multi-level governance.
Condition 8: Financial viability	Funding for flood risk management.
Condition 9: Implementing capacity	Effectiveness of and compliance with policy.

Material is summarized by the author from [32].

Situating risk in different jurisdictions is building upon the case study approaches that have been carried out by researchers in places such as Miami and Sarasota [6,11,12]. Koop et al. pull together the different interests and stakeholders, the effectiveness of policy makers, and the resources at their disposal as factors contributing to capacity. Incorporating the different levels of government that have a role in climate change responses is also valuable. They show, for example, that while flood awareness is very high in the Netherlands due to years of national education, this has shaped flooding as a high-level policy issue that results in minimal interest in adaptation being displayed by individual residents at the neighborhood level. This is an important lacuna, because in other societies the local knowledge held by citizen scientists is proving to be a valuable resource in developing targeted adaptive responses [33].

5. Discussion

This paper began with a rhetorical question: do people have a right to make mistakes? As has been discussed, this assumes that individuals—living and working in locations at risk from climate change—may be making irrational decisions by moving to, and remaining in, jeopardy. This paper has argued instead that individual actions only exist in context—shaped by culture for instance, but certainly defined by the city or county within which a resident resides. There, risk assessments are shaped and polished by real estate professionals, banks, chambers of commerce and tourism advertisements, which normalize the most optimistic (rather than a realistic) perspective of the hazards in a locality.

It should be understood that the opposite to making mistakes—what has been termed 'adaptive intelligence'—is not usually demonstrated by observing the universal norms recognized by risk analysts but by observing actions in context. March writes that "adaptive mechanisms are myopic . . . ... Learning from others, experiential learning, and differential reproduction and survival all privilege outcomes, threats, opportunities, and preferences

in the temporal and spatial neighborhoods of an adaptive agent" [34]. In other words, rationality is highly situational—it is a situated behavior, as it was termed in Section 2. Individuals (and groups of individuals, acting either as corporate organizations or in neighborhoods, together making up the local community) are rarely programed to see 'the big picture' and are more likely to have a myopic focus upon their own self-interest. They operate as a self-interested communal organization. March concludes:

> "There are cognitive, motivational, and physical necessities that dictate this myopia. It is not something that can be routinely abandoned. Moreover, it makes considerable adaptive sense. For the most part, a local focus contributes to organizational survival. An organization cannot survive in the long run if it fails to survive in the short run, and the circumstances under which the self-sacrificing failure of a local component contributes positively to global success are fairly special" [34].

Linked to the Florida case, this means that the residents, businesses, policy makers and tourists who visit and stay there are operating to a specific and repetitive script, one which focuses on circumstances today, and perhaps circumstances tomorrow, but certainly not into some indeterminate future of environmental demise. It is indeed myopic, but it will work until the disbenefits outweigh the benefits. Only then will reappraisal of the risks take place, perhaps more in line with objective probabilities.

This interpretation raises in turn a different question: do *communities* have a right to make mistakes? Do lenders have a fiduciary obligation to make it clear to the whole community what may happen to its properties in some unstable future? Are policy makers obliged to take forecasts and risk assessments seriously, and to act upon them? This takes us into difficult terrain. While a national government may possess a constitution, a municipality typically lacks such a binding mission statement. There is some consensus that a city or country is obligated to 'provide for the amenity of an area and for the health, safety and general welfare of the inhabitants' [35]. Yet, we have in general been lax in terms of specifying how this is to happen. For instance, it has been widely argued that while *cities* are responsible for high levels of carbon emissions, it is *nations* that are responsible for climate change policies [36]. However, this cannot be the case with adaptive strategies. These must be local in the sense that all climate change impacts must be manifested uniquely, in each locality. From this we must infer that communities do not have a right to make mistakes in the context of climate change. Adaptive plans *must* be made and all stakeholders must operate to the fullest level of rational action.

The alternative is unacceptable (in that harm will fall upon the most vulnerable residents in the community) and unjust (in that those who benefit from taking no action will pass their costs on to others in other communities, via higher insurance premiums or taxpayer supported disaster relief) [37]. As the examples of mistaken behavior in Florida and elsewhere show, "research has led to increasing recognition that the political-economic structures that produce and reinforce inequalities are the same drivers that create climate vulnerabilities and risk" [38].

6. Conclusions

The literature on adaptive planning has focused on 'barriers' and viewed them somewhat analogously to those erected in the roadway to keep out a motorist. Implied is the assumption that we can always drive around a barrier and get to our destination—adaptation in its simplest form. Yet, as we have seen throughout the argument presented in this paper, the barriers are more than temporary hurdles, in many instances they are permanent. Their rigidity exists not because of a lack of policy persuasion but because climate change presents itself within the locality as a 'new thing' but is always understood in the context of existing things and extant self-interest. The implications of this interpretation are that our policy options cannot be understood solely in terms of objective predictions of disaster made by knowledge holders but must rest instead on the subjective interpretations made by stakeholders. From a safe distance, these can appear irrational, even mistaken.

They conform, however, to a calculation of opportunities and the limited choices that are available to actors facing difficult decisions in challenging situations. Individuals may have a right to make mistakes, but policymakers and academics have the obligation to comprehend them and to aim to correct them.

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