Subaltern Learnings: Climate Resilience and Human Security in the Caribbean

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Subaltern Learnings: Climate Resilience and Human Security in the Caribbean

Abstract

The UN's invocation of "human security" a generation ago promised a world increasingly governed by a "people-centred" security agenda (UNDP, 1994, p. iii). In this paper, we focus on arguably the most vital global security challenge faced throughout the planet today: climate resilience. We outline how advancing smart climate action and securing climate resilience can be aided by securitization practices that recall the earlier emphases of the UN's human security concept. The paper draws upon evidence from the Caribbean as a territory defined dominantly as part of the Global South yet offering vital knowledges of productive climate security governance that can be instructive to the Global North. The impacts of global warming are particularly evident for the people of Small Island Developing States such as those located in the Caribbean (IPCC, 2018). By analysing the case of Cuba as a country increasingly resilient to extreme weather events, and by interrogating the genealogy of the broader Caribbean's hurricane culture, we show how an effective human security vision for climate justice and resilience can be achieved by recognising and integrating the valuable forms of locally-attuned knowledge that continue to emerge and coalesce in vulnerable geographies.

Keywords: climate resilience; human security; climate justice; Cuba; Caribbean

Introduction

Over 25 years ago, the United Nations set out a new vision for international security, framed around human security. In its 1994 Human Development Report, the UNDP (United Nations Development Programme) announced a new focus of security goals that would "redefine humanity's development agenda" by prioritising "the new compulsions of human security" in a post-Cold War world (UNDP, 1994, p. iii). The UN's invocation of human security promised

a world increasingly governed by a "people-centred" security agenda and involving interventionist practices defined by "development, not arms", whose endgame was the securing of "human life and dignity" (UNDP, 1994, pp. iii, 1, 22; see also UNDP, 1993). The September 2001 attacks in the United States led to a renewal of the hegemony of military security, and curtailed and redirected much of the UN's efforts to advance a human security agenda. Yet the subsequent failures of US and more broadly Western state-building and humanitarian-labelled interventions in Afghanistan, Iraq and elsewhere accentuated once again the need to rethink security grand strategy on a global scale. We focus in this paper on arguably the most vital global security challenge faced throughout the planet today: climate resilience. Advancing smart climate action and securing climate resilience necessarily involves, we contend, a prioritisation of securitization practices that recalls the earlier emphases of the UN's concept of human security. By drawing upon the example of Cuba and the broader Caribbean, a region that has encountered severe climate insecurities, we show how a human security vision of climate resilience can be achieved by recognising and prioritising precarities at the margins, by seeing the most vulnerable. It must involve a strategy of solidarity, both locally and globally conceived, and it must listen to the subaltern in a manner that scales up and activates vital, locally-attuned environmental knowledges from the Global South, which are key in productively informing climate politics on a global scale.

The concept of human security is not without its limitations. Its fragmentation (into seven distinct areas)[1] has elicited critique for its dilution as a policy objective, and its parsing out has led to some elements being prioritised more than others (Gasper and Gómez, 2015).[2] Yet, as Breslin and Christou (2015, p. 8) detail, key elements of human security – particularly food security, health security and environmental security – have "not only become firm parts of debate and discussion, but also significant policy areas that have had considerable time, effort and money devoted to resolving". Understood and operationalised holistically, these

interconnected components of human security have facilitated valuable governmental approaches to tackling climate change, especially in the Global South (Elliott, 2012). Such approaches involve integrated responses to environmental precarity and the advancement of resilience strategies that are locally attuned, culturally and gender sensitive, and informed by historical human heritages. We believe Cuba's historical and contemporary experience is an illustrative example of one such strategy, and can be read as an instructive case study of effective climate security governance from a Small Island Developing State (SIDS) nation in the Global South.

Although some uncertainties remain with respect to global warming and the future of storm formation and development in the Atlantic,[3] the increasing strength of extreme weather events corroborates that climate change is a global threat to human security (IPCC, 2018). Addressing this risk poses a particular methodological knowledge-production challenge. As Mahony and Hulme (2016, p. 1) note, assembling a coherent global knowledge infrastructure will require looking at what they call the "epistemic geographies of climate change", the specific geographies in which knowledge about climate change is and has been produced. In this light, the paper focuses on the case of Cuba because of its distinctiveness as a country in the Global South that has proven resilient to extreme weather events in spite of its economic limitations. The aim is to highlight the import of locally-attuned stewardship in effectively facing climate change, via a vision of human securitization that recognises the most vulnerable and activates and scales upwards their knowledges.

The Caribbean: a case for resilience and climate justice

In spite of the diverse languages, cultures, geopolitical backgrounds and forms of governance that prevail in the Caribbean as a result of differentiated processes of colonisation and postcolonial reconstruction, the people of the region not only share a common history of

resilience in the face of enslavement, expropriation and displacement, but also a territory. The physical (dis)continuity of the islands of the Caribbean, which are both separated and linked by the sea, was used by cultural theorist Antonio Benítez Rojo (1989) in his book *La isla que se repite* [*The Repeating Island*] as a metaphor to illustrate how imposed political and cultural frameworks artificially disassemble what constitutes a single landscape. Similar to Benítez Rojo's sophisticated theorisation of the "polyrhythmic" unity of the Caribbean, transregional extreme weather events alert us to the fact that the region, although diverse, is one. Hence, creating resilience to "borderless climate risks" in the shared environment of the Caribbean basin calls for transnational forms of governance that bear in mind "the additional potential benefits – and beneficiaries – of adaptation, beyond local and national scales" (Benzie and Persson, 2019, p. 374).

Although geo-physically positioned in the Northern hemisphere, the Caribbean is a region geo-culturally and geo-historically located in the Global South. Its peoples were at the centre of the processes of expropriation and enslavement that granted wealth to communities of the Global North at the expense of the lives of others. The colonial and postcolonial history of the Caribbean demonstrates a story that not only involves a cultural survival of the subaltern but also a uniquely physical survival in the face of both political and environmental precarity. Understanding resilience in a historicised sense entails acknowledging that, in postcolonial and oversea territories such as those in the Caribbean, it is the result of sustained injustice. In this light, the use of the term "resilience" is not without controversy, as its focus on the skills necessary for overcoming the impacts of dispossession could lead to a neglect of the abilities that are crucial for action, transformation and "imagining other worlds possible" (Bracke, 2016, p. 853). Nevertheless, resilience is arguably intrinsic to subalternity and to precarious postcolonial environments, where surviving has required not only to adapt but also to act and transform. In the specific case of Cuba's disaster risk reduction strategy, functioning subaltern

actionable knowledges have proved pivotal to effective environmental management. Its story can add positively to a more historically informed discourse on resilience and to the effective responsive strategies that can be envisioned and resourced in front of climate change.

The success of Cuba's risk reduction strategy has been widely acknowledged; it encompasses preparedness plans, coordination between national and local forms of governance, and a shared "culture of safety" that is key for effective citizen mobilisation and participation (Isayama and Ono, 2015; Lizarralde et al., 2015; Sims and Vogelmann, 2002; Thompson, 2007). A recent article that problematises resilience in the context of the severe 2017 Hurricane Season locates Cuba at the forefront of the creation of a "decolonial framework for resilience" in the Caribbean (Moulton and Machado, 2019, p. 15). Other studies that explore the impacts of extreme weather events on the region also show that decolonising resilience implies both historicising vulnerability, highlighting power asymmetries and acknowledging the determinant role of local actors in creating strategies to face environmental challenges (Ferdinand, 2019; Grove, 2014; Rhiney, 2018). The case of the Cuban Risk Reduction Management Centre model, which widely relies on local forms of governance, is particularly useful to illustrate the important role of communities in both reducing risks of environmental threats and integrating local knowledge into systems scalable at the national and regional levels.

The Cuban socialist state relies on local forms of governance and the work of communities for guaranteeing the success of not only its disaster risk management strategy, but also its sustainable development initiatives in other interrelated fields, such as health, agriculture, eco-tourism and conservation (Bretos et al., 2017; Clouse, 2014; Winson, A., 2006). Cuba's community-based decolonising perspective on disaster risk reduction, and its leading role in South-South cooperation and triangulation with the UNDP, is aligned with the necessary economic reparations, cultural recognition and collective participatory action

necessary to counteract the impact of centuries of environmental injustice in the Caribbean, now accelerated by climate change (Jafry, 2018; Klinsky and Brankovic, 2018). Similarly, the successful transfer of the Cuban risk reduction model to other countries through the Caribbean Risk Management Initiative corroborates the UNDP's acknowledgement that "while the countries of the region are varied in terms of language, culture and political-economic organization, they are linked by geography, history and common development challenges, allowing them to benefit from each other's experiences" (UNDP, 2016a, p. 7).[4]

Over three decades ago, Gayatri Chakravorty Spivak called attention to the epistemic violence of imperialist economies, law, and culture that both produce and reproduce social realities in which "the subaltern cannot speak" (1988, p. 308). More recently, the IPCC report (2018) has drawn attention to the fact that climate change is leading to increasing environmental threats and inequality, with an acceleration of risks for the poor and vulnerable, whose voices are commonly marginalised. The report backs up research pointing at four specific framing asymmetries associated with the impacts of global warming that are key for evaluating resilience under conditions of inequity and climate injustice: (i) the differential contributions to global warming, with a greater responsibility from industrialised countries; (ii) a disparity in relation to climate change impacts, which are worst for the disadvantaged; (iii) the gap in capacity to shape solutions and response strategies, and to guarantee that the worst-affected states, groups and individuals are well represented; and, finally, (iv) an unequal future response capacity (IPCC, 2018). Climate change brings into focus the epistemic violence of imperialism critiqued by Spivak; it illustrates the "perverse paradox" of the fact that the wealth historically expropriated from the Caribbean to feed industrialisation processes in the Global North has contributed significantly to the historical environmental degradation of the region and – through an imperial boomerang effect – to the global warming of today (Sealey-Huggins, 2017, p. 2445).

The Caribbean's vulnerability to climate change is enhanced also by its geographic characteristics. Most of the region is composed of small islands, where the combination of size and topography restricts the availability of land and demands the use of narrow coastal areas and steep hillsides for the location of population settlements (Taylor, Stephenson, Chen and Stephenson, 2012; cf. Pulwarty, Nurse and Trotz, 2010). The combined historical and geophysical contexts of the region have shaped extreme socio-environmental vulnerability to climate change. This "*climate sensitivity* is both interwoven into and entrenched in all levels of Caribbean existence", making the region highly susceptible to both short-term weather variability and long-timescale changes in climate (Taylor et al., 2012, p. 172). The greater frequency of Atlantic hurricanes can be taken as evidence of a long-term shift in climatic patterns, and model simulations suggest that losses of livelihoods and environmental assets in the Caribbean due to severe tropical storms are likely to increase (Moore, Elliott and Lorde, 2017). A recent study of past and future comparative vulnerabilities of some Caribbean countries to climate change shows that intra-regional variations are important: of the 12 Caribbean countries examined, locations in Jamaica, Guyana and Belize emerge as among the most vulnerable (Stennett-Brown, Stephenson and Taylor, 2019).[5] Whereas all three territories were also highlighted for elevated socio-economic vulnerability, which likely indicates low adaptive capacity, Cuba emerged as one of the less vulnerable countries. Studies have also showed that overseas territories in the Caribbean are more vulnerable to climate change than sovereign states (Bonilla, 2020; Siegel et al., 2019).

Our critique of the negative impact of imperialism on the region's response capacity to environmental threats draws upon "the idea of a *climate dialectic* that recognizes the wider justice and development implications of climate change" (Rhiney and Baptiste, 2019, p. 75). Acknowledging the role of both past and present forms of imperialism and extractivism[6] in accelerating risks and the vulnerability of postcolonial communities is key to understanding

the challenges to resilience in the Global South. This is why we echo research that adopts the terms 'Plantationocene' and 'Capitalocene' over 'Anthropocene' to capture the current era of climate injustice. Unlike the latter, both 'Plantationocene' and 'Capitalocene' acknowledge the role of the plantation system and capitalism in shaping social inequalities, environmental degradation and socio-environmental vulnerability (Haraway, 2016; Klein, 2014; Moore, 2015, 2016).

Bringing forth the example of the Caribbean Risk Management Initiative and the leading role of Cuba in sharing actionable knowledge can also contribute to the climate justice challenge of integrating the experiences of SIDS into global discourses about climate change. SIDS are at the forefront of global agendas for climate action, as reflected in the extant documentation of recent agreements endorsed by international organisations, including the *SIDS Accelerated Modalities of Action (SAMOA) Pathway* (UNGA, 2014), the *Paris Agreement* (UNFCCC, 2015), *2030 Agenda* (UNGA, 2015), the *Addis Ababa Action Agenda* (UN, 2015) and the *Sendai Framework for Disaster Risk Reduction* (UNISDR, 2015). Nevertheless, there is still insufficient academic analysis of how SIDS have been adapting to climate change, across multiple countries and regions (Robinson, 2017), and how their successful knowledge practices can fruitfully inform broader human security agendas. The limited presence of SIDS environmental learnings in the academic discourse on climate change in the Global North is part of an enduring postcolonial knowledge-production challenge, and it neglects SIDS's leading role in raising awareness of effective climate change adaptation strategies and tools since the 1980s (Ourbak and Magnan, 2018; Petzold and Magnan, 2019). In addressing this lacuna, this paper illustrates the contribution that documenting SIDS environmental knowledge practices can make in advancing disaster risk reduction, human security governance and climate justice, by exemplifying what we can productively learn from the territory of the Caribbean. In the same vein, our discussion of empirical evidence of

replicable and scalable partnerships in community-based securitization for creating resilience to climate change in the Caribbean is aligned with a growing body of literature highlighting the importance of "hearing local voices" from SIDS (Kelman, 2010, p. 605), and expanding understanding of human security to encompass climate justice and human rights of access to health, livelihoods and education, as well as participation in governance (Robinson and Shine, 2017; Scobie, 2019; Young, 2019). In the following sections, we look at Cuba and the Caribbean as examples of a people-centred approach to human security that is vital in order to achieve and support both resilience and climate justice.

The Caribbean's hurricane culture, and Cuba's culture of safety

The low rate of deaths as a consequence of hurricanes in Cuba invites reflection on how its peoples have built up resilience to extreme weather events (Lizarralde et al., 2014; UNDP, 2015). Strength in front of extreme weather across the Cuban archipelago is the result of the development of a distinct hurricane culture fostered by its indigenous inhabitants before the colonial period and progressed by scientists, intellectuals, authorities and communities from the nineteenth century onwards. By 'hurricane culture', we mean the knowledges, beliefs, behaviours, and cultural expressions acquired through a history of centuries dealing with storms, with a political and governmental backdrop of colonisation, slavery, revolution, postcolonial reconstruction, and both imperial and post-imperial extractivism (Pérez, 2001; Tannehill, 1938;).

The histories and historical geographies of the Atlantic hurricane belt – the region we know as the Caribbean, including the northern littoral of South America, the Gulf of Mexico and the Florida peninsula – cannot be told without considering a common environmental history comprising a shared hurricane culture (Johnson, 2011; Soluri, Leal and Pádua, 2018). That said, the humanitarian crisis in Puerto Rico after Hurricane María (2017) makes evident

that although hurricane culture is common to the territories of the Caribbean, diverse histories of colonialism and imperialism have differentially shaped the administration of responses to extreme weather and disasters across states in the region. In 2017, the Caribbean experienced one of the deadliest hurricane seasons of contemporary history, with 17 named storms of which 10 became hurricanes including six major formations (category 3, 4 or 5 on the Saffir-Simpson Hurricane Wind Scale) and three simultaneously active hurricanes on September 7 alone: Katia, José and Irma. Whereas Irma caused 10 deaths in Cuba, [7] 2975 died a few weeks later in Puerto Rico during María (Andrade et al., 2018).

Hurricane María ravaged the island of Dominica at category 5 and later devastated Puerto Rico as a high-end category 4 hurricane. Nonetheless, the strongest hurricane of the 2017 season was not María, but Irma, a long-lived hurricane that reached category 5 intensity on the Saffir-Simpson Scale. The storm made seven landfalls, four of which occurred as a category 5 hurricane, across the northern Caribbean Islands. Irma caused widespread devastation across the affected areas and was one of the strongest and costliest hurricanes on record in the Atlantic basin. INSMET reported that during Irma unprecedented storm surge flooding occurred in Havana, "in some cases surpassing the coastal floods produced by the Storm of the Century (March 1993) and Hurricane Wilma (October 2005)" (Cangialosi, Latto and Berg, 2018, p. 8); and the UNDP documented how thousands were made homeless across the Caribbean, and how key infrastructure for transportation, water, health, tourism and education was devastated, with between 70 and 95 percent of houses damaged in Anguilla, the Bahamas, the Turks and Caicos Islands, British Virgin Islands, Barbuda and Dominica:

> The impacts of these disasters in the Small Island Developing Countries (SIDS) context had a multiplier effect. The geographic size, small populations, dependent economies and fragile and intricate connections between ecosystems and livelihoods, had immense implications for the sustainability of these nations. When a catastrophic disaster strikes in a SIDS – unlike

> other developing country contexts – the entire population and economy is usually affected (UNDP, 2018, p. 6).

In the devastation wrought by Irma across the Caribbean, it was the poor, the most vulnerable, who were most affected. As highlighted earlier in this paper, the most recent IPCC report (2018) alerts that the most vulnerable groups to global warming are poor populations, indigenous peoples, and local communities dependent on agricultural or coastal livelihoods. Nation-states identified as having a disproportionately higher vulnerability include SIDS across the Caribbean. In all of this, governmental preparedness is vital, and there is clearly much work to be done. A recent report conducted by the Milken Institute School of Public Health at George Washington University on the impact of María in Puerto Rico, for instance, showed the deficiencies in coordination between government communication personnel and the country's Department of Health and Human Services – the limited engagement by government personnel with local authorities and community leaders was especially noted (Andrade et al., 2018; cf. Marcelin, Cela and Shultz, 2016).

The stakes are undoubtedly high then in efforts to orientate more successful resilience strategies to climate change across the Caribbean, where the recognition of a common history is especially important in the development of solidarity and cooperation. The writings of Fernando Ortiz (1940, 1947) and Antonio Benítez Rojo (1989) on the interconnections between the islands of the Caribbean Sea, beyond national, linguistic and imperial borders, stress the commonality of historical experience in what Stuart Schwartz calls the "shaping of circum-Caribbean societies" (2005, p. 381; see also Schwartz, 2015). Hurricanes, which continue shaping these cultures, are perhaps not just meteorological phenomena but metaphors of the destructive power of colonial and capitalist extractivism. However, unlike the empires that frequently disconnected people from their environment, hurricanes might help us to re-make

those connections. A recently published study, which analyses responses from communities, organisations and the government to the humanitarian crisis in Puerto Rico in the wake of Hurricane María, shows how people are gaining a new consciousness about their relationships with nature, communities and the state (Ficek, 2018). In spite of the displacement provoked by María, Puerto Ricans have actively reworked existing networks, and forged new connections, into platforms that could help them to overcome infrastructural deficiencies and attain locally-focused human security objectives.

Why and how were the numbers of deaths in Cuba kept so comparatively low? In 2015, two Japanese social scientists, Kenji Isayama and Naoya Ono, published an influential article that encouraged the Japanese government to look at the example of Cuba's human security priorities to develop resilience to extreme weather events, in the aftermath of the Tohoku earthquake and tsunami and Fukushima nuclear disaster in 2011. Their work acknowledges the pivotal role of an historically developed and distinct Cuban culture of safety, achieved and reinforced across sectors through formal education, the work of community organisations, professional groups and political structures (Isayama and Ono, 2015). The successful transfer of knowledge from Cuba to Japan could undoubtedly encourage other transmissions of knowledge from the Global South to the Global North to face climate change (Hulme, 2018). A culture of safety is a core element of hurricane culture in Cuba; it comprises behaviours that help communities and individuals render themselves safe during extreme weather events, and it directly feeds from both past and present systems of locally-attuned knowledge making guided by environmental, cultural and gender sensitivity (Caribbean Indigenous Legacies Project, 2016; Cuban Civil Defense, 2017; Enarson, 2012). It is a different way of conceiving what many commentators term "risk culture" in scholarship on disaster studies (Awotona, 2016; Pfister, 2011; Rev and Langumier, 2015). A culture of safety intrinsically involves recognising, knowing and acting on environmental risks; and, crucially, it is a more nuanced

and productive conceptualisation of the knowledges, attitudes and tools required for effective resilience strategies. Cuba's Early Warning System, one of the pillars of its resilience to extreme weather events, was established after the great disaster of Hurricane Flora in 1963, and it has continued developing strong cooperation between authorities, scientists, the media and communities ever since. These collaborations, furthermore, draw upon a longer hurricane culture, initiated by Cuba's indigenous inhabitants before the colonial period (Ortiz, 1947).

Cuba's transcultural hurricane heritage

In spite of the attempted colonial cultural eradication, the beliefs and knowledges of the indigenous peoples of the Atlantic hurricane belt survived and found their way into contemporary postcolonial imaginaries and community practices across the region (Earle, 2007; Feliciano-Santos, 2018). It is an historical cultural survival that mirrors the contours of resilience to extreme weather in the region today. A recent exhibition at the National Museum of the American Indian in New York (July 2018–October 2019), titled "Taíno: Native Heritage and Identity in the Caribbean", focused on the "living legacy" of the Taíno indigenous people of the Greater Antilles, and illustrated the survival and adaptation of their cultural expressions through time, especially the integration of their traditional indigenous knowledge into contemporary resilience practices in the region. The exhibition also detailed the cultural and political activism that led to the current Taíno or Neo-Taíno movement, which seeks to reassert the survival of indigenous culture in the Caribbean (Castanha, 2011). Whereas nineteenth- and twentieth-century representations of Caribbean indigenous people widely assumed their total extinction, the current revival of Taíno culture connects with ongoing ethnographic research in communities where people claim a lived historical heritage of distinct indigenous knowledge as part of a dynamic transcultural hurricane culture. The idea of a transcultural hurricane culture linked to the Taínos draws upon Cuban cultural theorist and anthropologist Fernando Ortiz's

research on the exogenous origin of both Cuba's aborigines and its later inhabitants, which led him to propose the concept of transculturation to describe the always ongoing complex process of formation and construction of identities in the Caribbean, beyond genetic and cultural predeterminations (Ortiz 1922, 1940).

The Smithsonian's "Caribbean Indigenous Legacy Project", co-led by José Barreiro and Ranald Woodaman, also explores how Taíno cultural expressions and practices continue to evolve in communities in Cuba, Puerto Rico, Jamaica and Haiti, through spiritual traditions, home-building techniques, agriculture and crafts (Caribbean Indigenous Legacies Project, 2016). And a further example of the survival of indigenous environmental knowledge in Cuba, and its integration into resilience practices, is seen in the Cuban Civil Defence's *Guía familiar para la protección ante ciclones tropicales* [Family Protection Guide in the Face of Tropical Cyclones] for rural areas. Its opening page presents illustrated instructions on how to build a *vara en tierra o bohío*, a traditional Taíno house built with a central wooden rod that provides ground support and is recommended as one of the safest places to dwell during extreme weather (Cuban Civil Defence, 2017).

Some of the first inhabitants of the Caribbean, such as the Taíno and Siboney peoples, represented *Huracán*, the god of whirlpools and storms, as a rotating element, a humanoid head with two warped arms (Ortiz, 1947). Today, satellite pictures reveal the accurateness of these representations, and the scientific community uses the word "arms" to describe the rotating winds that form the radio of tropical storms. Fernando Ortiz studied the representations of hurricanes by the indigenous cultures of Cuba in his book, *El huracán, su mitología y sus símbolos* [*The Hurricane, its Mythology and Symbols*], first published in 1947. Although Ortiz's book shows a certain estrangement in front of Caribbean indigenous knowledge, it provides valuable material to reconnect with a past whose knowledge heritage is the genesis of the region's contemporary hurricane culture. That culture was acknowledged in the first

hurricane warning ever documented, in 1875, by the Catalan-Cuban priest and scientist Benito Viñes.[8] Viñes' alert, published in the newspaper, *La Voz de Cuba*, not only warned about the imminence of a hurricane, but also furnished an estimation of its trajectory, which was already affecting Saint Thomas and Puerto Rico:

> I believe the hurricane is most likely to advance with direction NW without reaching Havana, in which case it would cross to the NE and very far from the city […] we could feel its strong influence from afar, although perhaps only in the superior part with cirrus and in the barometric movement […] It is important to warn the masters of ships sailing E or N […] These are little more than my own estimates, based solely on the general laws of rotatory storms and on my short experience of some years of observation.[9]

The dispatch includes technical elements that contributed to the credibility of the science of hurricanes, which was just coming into being. According to Cuban meteorologist, José Rubiera (who himself helped develop an advanced scientific knowledge of cyclones in Cuba since the 1980s), Viñes' first hurricane warning kept all but one ship from sailing out of Havana's harbour; the ship that sailed sank (cited in Reed, 2018).

Building upon the legacy of Viñes' extensive work (1877, 1885, 1895, 1898, 1902), Cuba established a national weather observatory, the *Observatorio Nacional*, in Casablanca, Havana, in 1908. Between 1913 and 1961, Viñes' successor as the leading meteorologist in Cuba, José Carlos Millás, developed a prolific career in meteorology as director of the National Observatory (now known as the *Instituto de Meteorología*, INSMET), extending Cuba's hurricane forecasting architecture (which included new observatories in the Cuban keys, Isla de Pinos, Cayman Islands and Nicaragua) and establishing a world-leading concentration of scientific hurricane research (Millás, 1928, 1941, 1942, 1968). Cuban meteorologists, such as Viñes, Millás and Rubiera, added a scientific expertise heritage to Cuba's distinct hurricane

culture,[10] and have been an important prompt in the establishment of governmental policies implemented from the 1960s onwards, comprising environmental communication, education and community engagement, which solidified Cuba's "culture of safety" co-produced by scientists, authorities and communities (Isayama and Ono, 2015; Lizarralde et al., 2014; Pichler and Striessnig, 2013).[11] Cuban meteorology remains at the forefront of hurricane forecasting in the Atlantic today, with INSMET as a world-leading institute on hurricane science. Emanating from collaborations strengthened during World War II, its meteorologists continue to work successfully with their US counterparts in a broader hurricane observation network, despite the US embargo of Cuba in the aftermath of the Cuban Revolution in 1959. INSMET, for example, officially carries out a number of functions for the US National Oceanic and Atmospheric Administration's (NOAA) Office of Oceanic and Atmospheric Research and is a vital cog in the US National Weather Service (Anthes et al., 2015).

Strategies for human security: Cuba as a model for a resilient Caribbean

The scientific heritage of weather forecasting in Cuba has significantly contributed to its evolution as a leading country in successfully managing extreme weather events through prioritising key components of human security. Recent scholarship in critical security studies highlights the enabling conceptual and policy perspectives gained from facing our contemporary world's socio-environmental challenges through a people-centred and locally-attuned human security approach (Gasper and Gómez, 2015; Mason and Zeitoun, 2013; Morrissey, 2018). Human security approaches to climate change conceive environmental risk in a carefully contextualised manner involving a clear identification of the complex and interconnected systems in which persons live and die:

> A human security agenda calls not for a permanent scanning and analysis of everything, nor for a permanent fixed focus on one pre-set part of life, but an alternation between periodic wide scanning followed by intensive focus on the insecurities identified as most pressing in the particular time and location (Gasper and Gómez, 2015, p. 113).

Lorraine Elliott (2012, 2015) has underlined how the concept can be productively mobilised in a way that is true to the people-centred declarations of the 1994 UNDP Human Development Report – and also how that vision, and its opportunities, are being missed. Drawing on the example of the cooperative human security ambitions of ASEAN (Association of Southeast Asian Nations), she has called out how the actual human insecurities experienced by people on the ground have frequently been marginalised in climate change security debates.

The securitization of climate change features a focus on political and economic uncertainty at a scale beyond the local. It typically considers the impact of climate change in terms of a multiplier effect on macro-level political and economic systems – a vision that is bereft of any situated human geography. Although changes in both the political and economic sectors directly affect human lives, the displacement and mortality provoked by extreme weather events are always locally experienced, and should be the starting point in security efforts. Lorraine Elliott's critique of the shortcomings of climate change securitization instructively highlights the ongoing occlusion of human security concerns:

> Three dimensions of this securitization of climate change are notable. The first relates to […] language [that] conjures up processes that are out of control and therefore highly threatening to states and to regional or global stability. The second is that the dangers and threats associated with climate change are often articulated in terms of the detrimental impacts this can have on the security interests of the USA, Europe and others, thus seeking the security of 'us' against 'them'. The third – which speaks most prominently to concerns about human

> security – is that in an extension of this 'othering' discourse, those who are most vulnerable to climate change and its impacts are frequently presented as a source of that threat and instability (2015, p. 17).

Elliott is more precise in locating how environmental security is dominantly seen as a "threat multiplier" that will "create or exacerbate political instability through civil unrest, intercommunal violence, political radicalisation and possibly even (in the most dystopian views) state failure" (2015, p. 17). In such a vision, environmental securitization is about securing state order and stability, and once again the most vulnerable groups are not at the centre of any people-centred vision of security.

In envisioning climate change and how best to respond, the UN's *Sendai Framework for Disaster Risk Reduction 2015–2030* offers a renewed commitment to human security. It pivotally acknowledges the importance of assuming "a broader and more people-centred preventive approach to disaster risk" (UNISDR, 2015, p. 11), and proposes guidelines for action, investment, international cooperation and stakeholder participation across sectors at local and global levels. By having, among others, the target of increasing the number of countries with national and local risk reduction strategies by 2020, the *Sendai Framework* echoes the work of the Caribbean Risk Management Initiative, launched in Cuba in 2004 by the UNDP's Bureau for Crisis Prevention and Recovery. From this point, Cuba has sustained a leading role in the Caribbean Risk Management Initiative's task of connecting communities for exchanging experiences and approaches across sectors, languages and cultural groups in the Caribbean through the Risk Reduction Management Centres, drawing upon the effectiveness of Caribbean peoples' "rich, innovative and diversified practices in disaster management" (UNDP, 2016a, p. vi); but it has also crucially "led to groundbreaking South-to-South cooperation" (UNDP, 2015, n.p; see also UNDP, 2010).

The Risk Reduction Management Centres developed by the Cuban Civil Defence equated to “a new methodological and technological model for strengthening local capacity in risk management: a municipal-level risk reduction centre complemented by community early warning points” (UNDP, 2016a, p. 7). Between 2005 and 2014, Cuba established 92 Risk Reduction Management Centres across its territory, a total of eight provincial and 84 municipal centres, linked to 310 communities. The centres have been instrumental in enabling communities to “significantly reduce the impact of hurricanes by facilitating community awareness and preparedness” (UNDP, 2015). For the 10 years from January 2005 to January 2015, Cuba was hit by 15 tropical cyclones, of which 11 were classified as hurricanes. During this period, the Risk Reduction Management Centres “protected more than 8 million people, evacuated more than 47,000 tourists and relocated three settlements” (UNDP, 2015, n.p).

In investing in, and extending, Cuba’s risk management model, the UNDP’s Caribbean Risk Management Initiative activated many of the core components of its 1994 human security vision. In particular, the initiative underscored platforms for the cross-fertilisation of local knowledges and practices – a hallmark of human security – as one of the main tools in Cuba’s effective climate risk reduction strategy (UNDP, 2010). In this model, disaster risk reduction is supported by a strong legal framework that includes laws, decrees, statutes, and ministerial resolutions, which enable the implementation and oversight of the disaster risk reduction strategy. Each Risk Reduction Management Centre is constituted by professionals from different disciplines who manage an information hub at local level. The centre collects, analyses, compiles and coordinates risk and disaster information for the purpose of informing decision-making by local authorities and facilitates the exchange of information between, decision-makers, national emergency/disaster authorities, and key sector-specific actors in the territories. The functioning of the Risk Reduction Management Centres relies on seven pillars or components: i) the Early Warning Points, which are individuals or teams located in

vulnerable settlements; ii) a Multidisciplinary Group in charge of providing technical and scientific information to local authorities; iii) Risk and Vulnerability Studies to provide qualitative and quantitative assessments of hazards, vulnerabilities and risks at all stages of the disaster management cycle; iv) Databases that are managed at local level and store data on the population, housing, settlements, infrastructures, institutions, available materials, natural resources, public health, historical events and other relevant indicators; v) a Geographic Information System with visualised data for decision-making; vi) Communication technology to reach remote communities and complement national disaster authority communication systems; and vii) Public Awareness and Communication Preparation to reduce the impact of hazards though information distribution, use of mass media, community outreach and training. The pilot experience in five Caribbean countries focused on a maximum of three of the seven Risk Reduction Management Components, those which were considered most relevant to the specific needs of the country and region (UNDP, 2016a).

The centrepiece of the Caribbean Risk Management Initiative's strategy has been scaling up Cuba's Risk Reduction Management Centres across partnering Caribbean states, an approach that led to successful pilot projects between 2011 and 2014 in the British Virgin Islands, the Dominican Republic, Guyana, Jamaica, and Trinidad and Tobago. Lessons learned from the processes of adapting the model to diverse countries showed the importance of: assessing scale, adaptability and vulnerability criteria when selecting sites; taking local political and administrative contexts into account; integrating project roles and responsibilities into existing structures to allow for greater project sustainability; securing high-level commitment and process understanding at the national level; and strengthening in-country competencies, public awareness and education (Fairholm, 2015; UNDP, 2016a). These and other recommendations emerged from successfully adapting the Cuban model on the ground, as illustrated by the case studies below.

Extending climate resilience: the Risk Reduction Management Centre model

The adaptation of the Risk Reduction Management Centre model in the British Virgin Islands significantly improved the population's literacy on preventive measures and highlighted that appropriate planning can help community members work together to reduce injuries, loss of life and property damage, and to preserve livelihoods (UNDP, 2016a). With approximately 300 hundred inhabitants, the small community of Anegada, for example, had a critically insufficient capacity to manage risk due to its limited resources and its distance from Tortola, the main island of these UK overseas territories. A key outcome of the pilot process was the development of the Anegada Vulnerability and Disaster Risk Profile through close collaboration between the Anegada Zonal Disaster Management Team (AZDMT) – created as part of the project – and the community. Four members of the AZDMT, who are teachers at the only school on the island, worked with the Fire Officer and the Department of Disaster Management on Tortola, to help the school attain the SAFE school certification, which is awarded following an assessment of compliance with the School Health and Safety Policy. According to the report, the most notable challenges experienced during the pilot process were related to procurement, given the nuances of working on a small island with limited infrastructures and service providers. Regardless of the deep administrative and political differences between the British Virgin Islands and Cuba, the involvement of local actors in the management of the environment of Anegada mirrors similar experiences of the Risk Reduction Management Centres in Cuban communities with limited resources.

In the Dominican Republic, the primary pilot project took place in La Victoria, a flood-prone municipality in the province of Santo Domingo. A previous comparative statistical analysis between the Dominican Republic and Cuba had shown that the better quality of education in the latter country had both short- and long-term effects on reducing vulnerability; the study concluded that the "desperate situation" of the Dominican Republic, where repeated

hurricanes and related floods have caused high number of casualties, “stands in stark contrast to the apparent sustainability success story of Cuba” (Pichler and Striessnig, 2013, p. 31). A more recent study further highlighted the contrast in age-related vulnerabilities (Stennett-Brown, Stephenson and Taylor, 2019). In spite of the differential vulnerability to climate change and extreme weather events between the two countries, due to their political and demographic differences, the transfer of the model to La Victoria proved possible and successful. In 2013, a Cuban technical assistance mission supported the implementation of the model in the Dominican Republic. The team of visiting experts from the Cuban National Institute of Hydro Resources and the Cuban Civil Defence focused on providing guidance for the implementation of an early warning mechanism for flooding and community-based early warning protocols. The successful adaptation of the Cuban model served to strengthen capacity and facilitate decision making for effective prevention, mitigation, preparedness, response and recovery. It also led to a “paradigm shift” that gave stakeholders “a new appreciation of risk reduction” based on inter-agency coordination and education for the promotion of a culture of prevention (UNDP, 2016a, p. 30).

Guyana’s Risk Reduction Management Centre was implemented in Lethem, a town in the Upper Takutu-Upper Essequibo region, which is vulnerable to flooding, fire and drought. Some 90% of the Guyanese population are at risk from the impacts of climate and sea-level change, which are exacerbated for the poor majority through insufficient infrastructures, the gendered and ethnic nature of social systems, political division and low public participation (Hickey and Weis, 2012; Pelling, 1999). A notable challenge faced by the pilot project in Guyana was the lack of familiarity of some local participants with computers. To address this obstacle, the facilitators modified their strategy to include short, simplified training and instruction for low-level users. The implementation of the pilot project in Lethem resulted in increased resilience, awareness, and capacity within the four community districts involved. At

the regional level, a disaster risk management committee was established, while at the national level the pilot project stimulated stakeholder engagement and dialogue on the Cuban model as a potential national-level framework for disaster risk reduction (UNDP, 2016a). The project assumed a participatory approach to data collection and training, which ultimately enabled the technical personnel to develop a better understanding of the local perspective, and to effectively collaborate with indigenous communities. This exemplifies the alignment of the Caribbean Risk Management Initiative with the people-centred human security approach of Cuba, which translated in Guyana into a "polycentric or 'multi-institutional' perspective" in efforts to reduce the country's vulnerability to climate-related hazards (Pelling, 1999, p. 261).

In the same vein, the Jamaican Risk Reduction Management Centre helped offset the failures of a centralised, state-level approach to risk management by supporting key elements of a more localised human security agenda borrowed from the Cuban model. Although Jamaica established its National Disaster Risk Management Framework in 1980, an assessment of its model conducted in 2010 found several barriers to successful risk management, including weak parish-level accountability structures, low performance in risk prevention, insufficient environmental education and limited participation of community actors (Peduzzi, Estrella, Velegrakis, Chatenoux, and Kluser, 2010). The pilot centre based on the Cuban model was implemented in St. Catherine Parish, a south-eastern region prone to flooding, landslides and storm surges, and home to more than 50 vulnerable communities. Of the seven Risk Reduction Management Centre components detailed earlier in this study, Jamaica chose to focus their pilot efforts on strengthening capacity in databases, Geographic Information System (GIS), Risk and Vulnerability Studies (RVS) and early warning systems, to fill a gap in synergised information necessary to make well-informed evidence-based decisions. During this process, "the project team recognized the importance of having a dedicated space which met the requirements specified by the Cuban guidelines, such as adequate security, internet and intranet

capabilities and ease of access to the St. Catherine Parish Council" (UNDP, 2016a, p. 25). In Two visiting specialists from the Cuban Environmental Agency provided technical assistance to support Jamaica's pilot project and help the participants to adapt the Cuban RVS methodology to the Jamaican context. Both local and national authorities participated in the activities coordinated by the technical mission, which contributed to improve synergies between different levels of governance. One of the main results of the Jamaican pilot project was the development of a one-year sustainability plan by the Office of Disaster Preparedness and Emergency Management to support the continuity and success of the Risk Reduction Management Centre. This initiative not only demonstrates the acknowledgement of the success of the pilot by national authorities but also their commitment to human security priorities in following the recommendations issued in supporting the community actors that participated in the project.

Finally, in Trinidad and Tobago, the pilot Risk Reduction Management Centre operated in the Mayaro Rio Claro Regional Corporation, a rural area with 27 communities distributed along major river systems and the coast, in the south east of the Trinidad island. The vulnerability of this region – to flooding, landslides, high wind events, soil and coastal erosion, fires, earthquakes and storms – is intensified by its remoteness. The implementation of the Cuban risk management model was a means to provide a framework for addressing critical gaps in community-based early warning capacity and access to technology, to improve the disaster risk reduction performance of local governance institutions, and to enhance dialogue between local and national actors (UNDP, 2016a). The project was largely focused on capacity building in GIS and early warning systems and included participatory exercises in order to benefit from existing local knowledge while providing new tools for its systematisation. An assessment exercise conducted by the Office of Disaster Preparedness and Management of Trinidad and Tobago in February 2014 qualified the performance of the pilot centre as

satisfactory, with key strengths noted in communications, overall coordination between the centre and early warning points, and the high level of indigenous knowledge incorporated into the early warning point sites. Once again echoing the UNDP's human security vision, the experience in adapting the Cuban model in Trinidad and Tobago illuminates the importance of "a decentralized approach to disaster risk reduction; one that puts more power in the hands of those at the community level and leverages community participation" (UNDP, 2016a, p. 22).

All five case studies show that the Cuban Risk Reduction Management model is adaptable to diverse social realities and physical territories with different vulnerabilities. Although in Cuba disaster risk management is supported by a legal framework shaped by a socialist political system that is unique in the region, the breadth and flexibility of the components of the model, allow focus on specific both local and national vulnerabilities and strengths. The success of the pilot projects in the British Virgin Islands, the Dominican Republic, Guyana, Jamaica, and Trinidad and Tobago shows that the Cuban approach to creating resilience in front of environmental hazards is ultimately scalable across local, national and regional levels. The participatory perspective of the model has proven to be efficient in not only creating bottom-up resilience, but also in supporting climate justice, by integrating local knowledge and subaltern voices into an organised system for community-led environmental management. These examples corroborate the importance of participatory methodologies and community empowerment in planning for socio-environmental resilience, which is vital too in addressing interrelated challenges of conservation, agro-biodiversity and sustainable urban development (Potter and Pugh, 2017). Furthermore, the knowledge transfer experiences above exemplify the "translocal solidarity" necessary for global climate justice, involving reparation, cultural recognition and "the direct participation of those most affected by economic and climate injustices" (Routledge, 2011, p. 385).

The success of the Caribbean's Risk Reduction Management Centres demonstrates a number of key elements in planning for a successful human security endgame, including increased governmental preparedness, higher awareness in the population, public participation and improved synergies between local and national authorities. But the fulcrum of success lies in an integrated system of better decision-making, which starts with a locally-informed governmentality focused on human security, and then scales across regions and communities in an overlapping, cooperative manner. In terms of a practical policy methodology, the UNDP underlines the positive impact of the transdisciplinary and participatory approach of the model (UNDP, 2016a; see also UNDP, 2016b, 2017). Its "sharing what works" in the Risk Reduction Management Centres approach celebrates in particular how professionals from different disciplines successfully manage information hubs at local levels – collecting, analysing and coordinating an array of environmental knowledge for the purpose of informed decision-making.

The use of Cuba as a model for a more resilient Caribbean is an instructive example of South-South cooperation that can provide proven tools for implementing horizontal and inclusive human securitization agendas both in and beyond the region. The UN delineates South-South cooperation as follows:

> South-South cooperation is a common endeavour of peoples and countries of the South, born out of shared experiences and sympathies, based on their common objectives and solidarity, and guided by, inter alia, the principles of respect for national sovereignty and ownership, free from any conditionalities […] It is a partnership among equals based on solidarity [embracing] a multi-stakeholder approach, including non-governmental organizations, the private sector, civil society, academia and other actors (UNGA, 2009, pp. 18-19).

Broadening scale to North-South cooperation, the UN envisions a more global partnership in a North-South-South triangular constellation:

> in many instances, Southern providers of development cooperation require the financial and technical support, and expertise of multilateral and/or developed-country partners in the course of assisting other developing countries. Northern partners also benefit by being able to take advantage of increased institutional capacity in the South and to increase the impact of their aid disbursements by leveraging the resources of multiple Southern partners (UNGA, 2012, p. 5).

The UN's vision here makes clear that countries of the Global South can benefit from the financial and technical support (i.e. knowledge) of the Global North. It fails, however, to envision a global partnership in which communities in the South can also facilitate the transfer of valuable knowledge to the North. The dominant rationality and language of these documents neglect the importance of acknowledging the value of subaltern epistemologies, and of listening to vulnerable and resilient voices for advancing actionable knowledge to support global human security and climate justice.

Conclusion

The Caribbean Risk Management Initiative provides empirical evidence of effective transnational governance in the face of "borderless climate risks" and climate injustice (Benzie and Persson, 2019, p. 369). The partnership between Cuba, the UNDP and the five other Caribbean countries of the Caribbean Risk Management Initiative's pilot programme shows that the so-called subaltern can teach important lessons to international organisations managed from the Global North. It is a SIDS story that is vital in the broader contestation for climate politics in our contemporary moment (Mahony and Hulme, 2016; Mann and Wainwright, 2017;

Moore, 2015). The success of Cuba's Risk Reduction Management Centres, and their extension across the Caribbean, showcases the import of long-standing, locally-attuned experience in developing resilience to the environmental threats of climate change. The locally-sensitive environmental knowledge of the Global South is not only relevant in developing climate resilience within the framework of South-South cooperation; it is also key to developing integrated, effective responses to climate change in the Global North – via proven strategies of solidarity and cooperation for adaptation.

Assembling an informed global knowledge infrastructure to face climate change will require operating outside the dominant models of classification and hierarchical delineations of 'developed countries'.[12] The postcolonial challenge of transcending Othered understandings of geography and knowledge enduringly remains (Spivak, 1988), and it is vital that we render visible and insist upon the demonstrably instructive knowledges of the Global South. In developing Cuba's resilience to extreme weather events, and in extending its successful practices elsewhere in the Caribbean in recent years, a key component has been facilitating and responding to informed, locally-attuned voices. It is a challenge that continues, and one that must take further steps in incorporating culturally-sensitive and gender-sensitive knowledges in safeguarding the most vulnerable human geographies. The securing of "human life and dignity" was at the core of the human security vision that emerged in the United Nations a generation ago (UNDP, 1994, p. 22). It is a vision that needs our renewed attention, activation and resourcing in future-proofing socio-ecological systems and supporting climate justice.

Notes

[1] The seven distinct components of human security identified were: economic, food, health, environmental, personal, community, and political security (UNDP, 1994).

[2] For extended discussion on the genealogy, challenges and uses of the concept, see Morrissey (2020).

[3] Extant research projects that global warming in the Atlantic basin over the twenty-first century will lead to the mean intensity of tropical storms increasing (Bhatia, Vecchi, Murakami, Underwood and Kossin, 2018; Knutson et al. 2013).

[4] The Caribbean Risk Management Initiative is an umbrella programme launched in 2004 by UNDP as a knowledge network for the management of climate-related risks across the region. Participant countries include Cuba, Trinidad and Tobago, Jamaica, Barbados, Guyana, the Dominican Republic, Belize and Haiti (Pallen, 2008).

[5] The countries included in this study were: Antigua, Bahamas, Barbados, Belize, Cuba, Dominican Republic, Grenada, Guyana, Jamaica, St. Lucia, St. Vincent and Trinidad and Tobago.

[6] The term "extractivism" is used to name extractive capitalism in the Americas. It is an economic system based on expropriation and the intensive exploitation of environments as part of colonial and neo-colonial projects (Gómez-Barris, 2017).

[7] This is the second highest number of deaths during a hurricane in Cuba in the 21st century after Hurricane Dennis killed 16 persons in 2005 (Beven, 2005, p. 4).

[8] On the fascinating life of Viñes, see: Ramos Guadalupe (2014).

[9] Translated from Viñes, 1875, p. 1.

[10] The diachronic analysis here of Cuba's hurricane culture does not seek to establish any simplistic, hereditary line between the Taínos, Viñes and contemporary Cuban meteorological expertise, but rather envisages a coalescing of effective extreme weather management practices that emerged from overlapping historical environmental knowledges.

[11] As Lizarralde et al. (2014, p. 89) note, Cuba's "culture of safety" emerged from a vision of activated social capital in which meteorologists' expertise is coalesced into "a social fabric that includes an integrated institutional system and education and health-care systems that emphasise knowledge development".

[12] The UN have specified that "designations 'developing', 'in transition', and 'developed' are intended for statistical convenience and do not necessarily express a judgement about the stage reached by a particular country or area in the development process" (UNCTAD, 2019, n.p). However, discursively, these terms transcend the statistical arena and normalise and reify Othering.

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