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# American Environments: Climate–Cultures–Catastrophe

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# The Cuban Earthquake of 1880: A Case Study from the Past with Frightening Implications for the Future

*Sherry Johnson*

On 22 January 1880, the steamship *Admiral*, sailing from Cedar Key, Florida, arrived in Havana carrying a visiting party of North American dignitaries including former president Ulysses S. Grant, Lieutenant General Philip Sheridan, and their families. Barely twelve hours later, a strong earthquake struck the western half of the island of Cuba. Shocks were felt in Havana, but the greatest destruction occurred in the Vuelta Abajo region west of the capital city. Grant and his entourage were eyewitnesses to the quake, and reporters accompanying the party left sketches and newspaper articles as historical evidence of the event.

This chapter examines the Vuelta Abajo earthquake within the context of recent trends in disaster studies. Interdisciplinary theories about critical junctures, contingency, the nature of disasters, and the part they play as “triggers” for historical turning points are used to evaluate whether and to what extent the earthquake was a significant event in Cuban history. An examination of the circumstances surrounding the event will also suggest why it left no imprint on the historical memory of the island.

## Theoretical Foundations

Critical juncture theory, incorporating the key issues of contingency, choice, and the ability to make a decision, are part of the cardinal theoretical framework used in this research. At every stage of a disaster—before, during, and after,—choices are made or not made that can be critical to the event’s importance. According to critical juncture theory, a relatively minor event can escalate into a major catastrophe if its context is exacerbated by poor decisions taken by the major players (Capoccia and Keleman). A complementary question asks whether a natural hazard such as the Vuelta Abajo earthquake was actually a disaster or not (García Acosta 2010; Quarantelli)? More pointedly: Did the earthquake trigger a series of responses that led to changes in political, economic, and/or social behavior? (Olson and Gawronski 2007; Olson) Or, was it simply an event, a problem for the immediate victims that had no far-reaching consequences (García Acosta 2010; Olson and Gawronski 2007; S. Schwartz)? Another factor in determining the significance

of a natural hazard is to evaluate its context—and the historical context of the Vuelta Abajo earthquake can show us why this disaster was quickly forgotten (Pfister et al.; Pfister). Finally, this chapter will show how this case study from the past can offer warnings for the present, particularly in light of the “environmental legacy of socialism” which is left by the course Cuba has taken over the past fifty years (Díaz-Briquets and Pérez-López).

### The Geological, Geographical, and Historical Context

The series of faults that generated the earthquake were formed in the distant geological past when the Caribbean tectonic plate migrating northwestward collided with the West Atlantic plate. As the earth's crust pushed upward, the island of Cuba and the other islands of the West Indies became visible vestiges of the results of this collision. The more dangerous major fault line runs east to west well south of the island, but as it approaches the coast near the eastern province Oriente, it raises the potential for seismic activity in eastern Cuba, on the island of Hispaniola (as seen in the recent tragedy in Haiti) and in Puerto Rico (Calais et al.). A series of lesser faults criss-cross Cuba parallel to the main fault line, and among these, it was the virtually unknown disjuncture that underlies almost the entire western half of the island that shifted in January 1880 (Instituto Cubano 19).

The region west of Havana, the epicenter of the earthquake, is officially known as the province of Pinar del Río. Even today, the province has no major towns. Instead, the countryside is dotted with small villages dedicated to the region's major enterprise: tobacco farming. A line of hills runs east to west along the north coast while several streams—they can hardly be called rivers—originate in the hills and flow southward to the northern Caribbean sea. The valleys are punctuated by the limestone outcroppings characteristic of karst topography. Near the southern coast, the terrain flattens into a broad alluvial plain where the fertile soil along the margins of the streams produces the exquisite Cuban tobacco so prized by cigar aficionados worldwide (Instituto Cubano 19).

If the context of a disaster can influence whether or not it becomes a critical juncture, the Vuelta Abajo earthquake had the potential to be such a moment, given the historical setting in which it occurred. From 1868 through 1878, the island was engulfed by a rebellion that hoped to achieve independence from Spain for its inhabitants but resulted in little more than extensive property destruction, the economic ruin of many of the primary families on the island, and even greater political conflict. In October 1868, a group of influential men in the eastern region launched a revolt against Spanish rule (Ferrer). For a whole decade (which lent the conflict its name, the “Ten Years War”), the insurrection tore the island apart. The eastern part of the island was largely in favor of independence, while in the western half

most people acquiesced to Spanish rule. Even if they were politically neutral, many families were ruined by the fighting and by reprisals against them for not taking sides (Quiroz 1998). The war was also responsible for the first sustained wave of exiles who fled to the United States.

After the armistice in 1878, in the form of the Pact of Zanjón, which accomplished little more than reinstating the *status quo ante bellum*, Spain promoted emigration from the peninsula (Ferrer; Casanovas). The sole positive aspect of the armistice was a provision that led to the abolition of African slavery in Cuba, implementing an apprenticeship system under which any person still enslaved in 1878 would be freed by 1888 (Scott). The Ten Years' War in Cuba combined with civil war in Spain left both mother country and colony exhausted and in financial ruin, and Spain had little choice but to encourage large-scale foreign investment in Cuba (Quiroz 2003; Fernández; *Brooklyn Eagle* hereafter *BE*, 6 Feb 1880). Railroad construction, which had begun in the 1830s, now took a giant leap forward with Canadian companies, helped by significant US investments, leading the way (Santamaria and García; Zanetti and García). Railroads and steamship lines brought hordes of tourists to Cuba via Florida who demanded further improvements in the infrastructure to maintain their comfort and pleasure (*Diario de la Marina*, Havana, hereafter *DM*, 9 Jan 1880). The demands of the tourists could be met only with difficulty; if the political, economic, and social turmoil of the previous decade was not enough, two years earlier a devastating hurricane had added to the island's misery, compounding the residual problems left over from the war (Archivo Histórico de la Nación, hereafter *AHN*).

### The Vuelta Abajo Earthquake of 1880

Around 11:30 p.m. on 22 January 1880, the first shock waves rolled across Vuelta Abajo followed by a stronger wave of oscillations around 4:00 a.m. (*New York Times*, hereafter *NYT*, 25 Jan 1880). In Havana, already known as the playground of the Caribbean, nightly entertainment was in full swing (R. Schwartz). The casinos, brothels, and taverns were crowded with people from many different countries enjoying the fabled pleasures of the Cuban capital. Some less hearty visitors had already retired for the night when the first tremors hit the city. Hotel guests were jolted awake by the floors in their rooms swaying and buckling, cracks opening in the walls, and plaster raining down upon them. Survival instincts took over as terrified men and women rushed out of their hotels into Havana's many public squares. The majority were only partially clad in bed sheets or whatever they could grab to cover themselves, while more than a few were clothed in “little but the moonlight” (*NYT* 28 Jan 1880). In bars and gaming halls, bottles and glasses came crashing to the floor, interrupting the nightly work of Havana's prostitutes and

pickpockets as their clientele abandoned their merrymaking and joined the crowds in the streets. Fright, disorientation, various stages of inebriation, and a multitude of languages added to the confusion. One old reprobate knelt down to pray for his life, but he could only remember the first line of "Now I lay me down to sleep" (*Chicago Inter-American*, quoted in the *NYT* 28 Jan 1880). President Grant and his entourage were lodged in the captain general's palace, a sturdy building constructed in the late eighteenth century to house the ranking political and military officials in Cuba. According to the on-site correspondent for the *Chicago Inter-American*, the president and his group were unharmed, although the ladies in the party "were terribly frightened." The reporter assured his readers that Grant and General Sheridan "were not disturbed in the least" (*NYT* 28 Jan 1880). Daylight brought more aftershocks along with the good news that for the most part, Havana had escaped the worst of the destruction.



Image 1: *Recollections of a Cuban Earthquake*. Frank Hamilton Taylor. Sketches of Cuba, from the pamphlet "A Stately, Picturesque Dream"

The tremors from the earthquake were felt along the north coast of the island, from the bay of Mariel to Matanzas on the north coast and as far away as Cienfuegos to the southeast, a distance of approximately two hundred miles, or three hundred kilometers (AHN). While the initial reports stated that the earthquake had originated in the Florida Keys or the Bahamas, it became apparent that the epicenter was on land west of the capital (*NYT* 28 Jan 1880; AHN). The town closest to the epicenter, San Cristóbal, was the hardest hit. Early reports informed that the church, the town hall, the jail, the guardhouse, and the telegraph office, all made of mortar and stone, were destroyed. Houses of similar construction collapsed while, ironically, wooden houses and the wattle-and-daub huts of the tobacco farmers survived the quake with minor damage. Eyewitnesses reported that after the strong

shock at 4:30 in the morning, all of the clocks instantly stopped (*NYT* 6 Feb 1880; *BE* 6 Feb 1880). In the neighboring village, Candelaria, the mortar and stone church collapsed and other buildings were damaged, while in the village of San Diego de los Baños, known for its hot springs, the water in the mineral baths became cloudy and unfit for bathing. No lives were lost in Candelaria, San Diego, or San Cristóbal, but seventeen rural guards were injured, three seriously, prompting the government authorities to dispatch a corps of military engineers to survey the damage, to take over the police functions of the rural guard, and to prevent looting. Northward, across the line of hills near Cabañas Bay, one death was reported on a small sugar plantation, San Juan Bautista, when the boiling house collapsed around one worker, killing him instantly and seriously injuring his wife along with several men in his harvesting crew. The regional governor of the province rushed from his administrative office in Pinar del Río to San Cristóbal to supervise the situation and to inform the captain general in Havana of what was needed to recover from the disaster. The captain general promised to "respond with every resource that this government has to offer" (AHN).

For several days thereafter, the region experienced a series of aftershocks accompanied by a rumbling sound coming from deep within the earth (*NYT* 6 Feb 1880; *BE* 6 Feb 1880). In some areas, cracks opened in the ground, and toxic sulfurous gas poured into the air. Fissures over a foot wide appeared in the tobacco fields located in the bottomlands of the numerous rivers, while stones, rocks, and fossils carried by water from the subterranean layers poured out over the tobacco crop (*NYT* 6 Feb 1880; *BE* 6 Feb 1880). More tremors rolled across the region throughout the spring and into the summer of 1880, and as late as April of the following year, the ground under western Cuba continued to shake as the fault line adjusted in its movement northwestward (*NYT* 22 Aug 1880, 6 Apr 1881).

Unlike earlier times, by the late nineteenth century there was no shortage of reports about the earthquake, especially since former president Grant and his entourage had arrived in Cuba just that morning (see image 2 on next page). A correspondent and sketch artist for *Harper's Weekly*, Frank Hamilton Taylor, accompanied the Grant party as they travelled to the epicenter, San Cristóbal, to view the damage (Gustke). Taylor's pen-and-ink drawings of the conditions in San Cristóbal and Havana provide visual evidence of the aftermath.

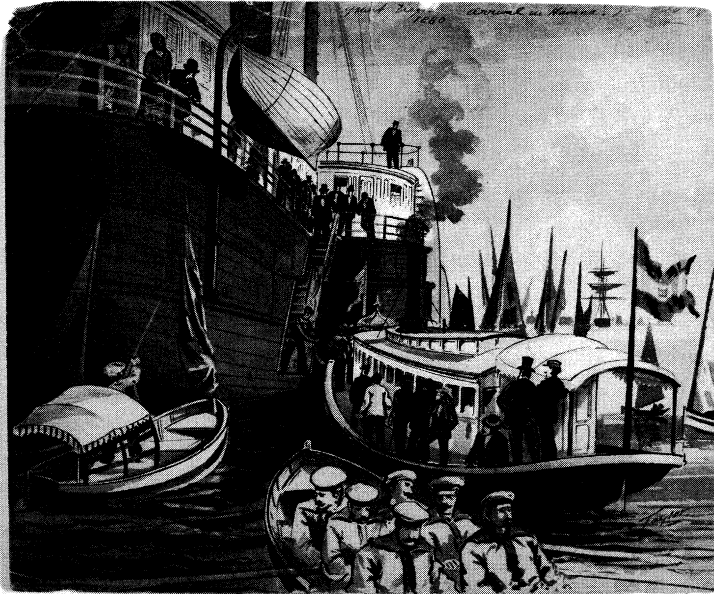


Image 2: *Grant's arrival*. Frank Hamilton Taylor. Sketches of Cuba, from the pamphlet "A Stately, Picturesque Dream"

Over the course of several months, his sketches were turned into woodcuttings and later into engravings that were published in *Mechanical News* in 1886. In addition, by 1880, several international newspapers had correspondents in Cuba, and the reports they sent home to their publishers arrived quickly thanks to the new transatlantic telegraph cable that linked Cuba to the outside world. When the earthquake struck, the correspondents were the first to be in the plazas gathering information from the frightened tourists and residents. Other eyewitness accounts came from workers on the Eastern Railroad that was under construction in Vuelta Abajo and from local officials in the region (*NYT* 6 Feb 1880; *BE* 6 Feb 1880). By all accounts, though, public opinion was unanimous in agreeing that the Vuelta Abajo earthquake took everybody by surprise. Even the most celebrated scientist of the day, Jesuit priest Fr. Benito Viñes of the Observatory of Belén in Havana (known for his work on hurricanes), was stunned that the western region of the island could be subject to earthquakes, as there was no mention of any earthquake ever hitting the region in the records that had been kept since the western part of the island was settled in 1519 (AHN).

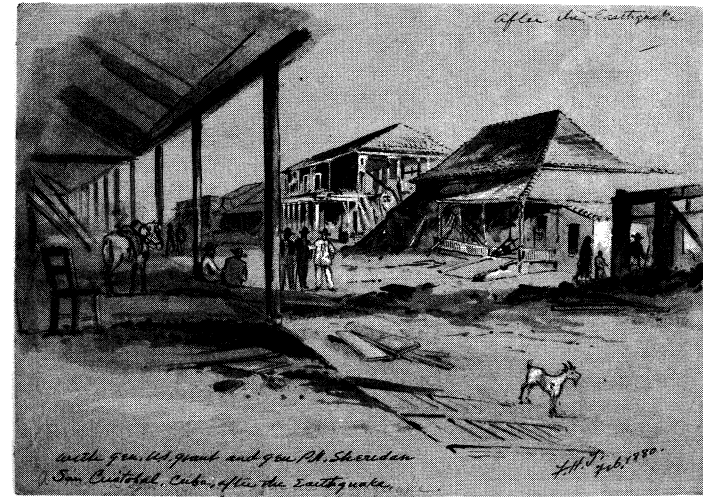


Image 3: Collapsed porch on one house, but note the surrounding wooden houses appear to show little damage. *After the Earthquake*. Frank Hamilton Taylor. Sketches of Cuba, from the pamphlet "A Stately, Picturesque Dream"



Image 4: The cracks in the walls of the mortar structure made the entire building unstable. *The Prison after the Earthquake*. Frank Hamilton Taylor. Sketches of Cuba, from the pamphlet "A Stately, Picturesque Dream"



Image 5: Soldiers on the plaza keeping order. They seem to be making no effort to help civilian victims. *Plaza after the Earthquake*. Frank Hamilton Taylor. Sketches of Cuba, from the pamphlet "A Stately, Picturesque Dream"



Image 6: Victims coping with the aftermath. The family outside their ruined home is cooking a meal. *A Meal after the Earthquake*. Frank Hamilton Taylor. Sketches of Cuba, from the pamphlet "A Stately, Picturesque Dream"

In late January, Grant and his entourage left Havana to visit the mineral baths in San Diego. They planned to make the journey by railroad, but they were forced to transfer to a carriage, the characteristic transport of the Cuban countryside, because the earthquake had compromised the integrity of the bridges that spanned Vuelta

Abajo's many streams. Yet, in spite of the reports, the visual evidence, and Viñes' opinion that "it was an event unprecedented in the history of the island," the Vuelta Abajo earthquake had little impact beyond its immediate area (AHN). The flagship newspaper of the Americas, the *New York Times*, initially ran several stories, but in just a few short weeks, the event was all but forgotten. The last accounts of the earthquake appeared in United States newspapers on 6 February, contemporaneous with the former president's return to Havana. Unfazed by the earthquake, he and his party continued their grand tour by travelling eastward to Matanzas, where they visited local attractions such as the famed cave of Bellamar. By 15 February, Grant was back in Havana enjoying the sights and sounds of carnival, the pre-Lent celebration of excess common in Catholic countries (*DM* 15 Feb 1880), and by the end of the month, Grant and his companions had left Cuba and were en route to Mexico. The earthquake passed virtually unnoticed into the historical record, and even today, few *piñarenos* or *habaneros* realize that they live atop a major fault line that could generate another earthquake at any time.

### Comparing, Contrasting, and Integrating Theoretical Approaches to Disaster

Until Hurricane Andrew devastated South Florida in 1992, catastrophe received scant attention as a conceptual tool to establish and to evaluate historical processes. Andrew brought home to scholars the effect of a disaster and its aftermath in a most painful fashion. In the context of this study, earthquakes as catalytic events in and of themselves also contribute to a growing body of research that takes disasters as its starting point and examines the consequences of such events (cf. Buchenau and Johnson; Dauer; Mulcahy; Walker; Winder). Combined with works that establish the theoretical foundations of disaster studies, this scholarship permits an evaluation of the importance of the Cuban earthquake of 1880. For example, seminal works in political science demonstrate that disaster can be a force behind political change, but disasters do not necessarily have to become political (Drury and Olson; García Acosta 1996; Olson). The authorities' behavior in the aftermath of disaster determines whether the population will react in a positive or a negative way, thus making the disaster the trigger that causes a "critical juncture" in political events (Olson and Gawronski 2007). The concepts implicit in critical juncture theory rest upon the idea of contingency, that is, acknowledging that many potential paths could be chosen, most of which would lead to a different outcome—some positive, some negative (Capoccia and Keleman). Anthropology and sociology, especially studies of the social chaos after a crisis event, promise to lend yet additional conceptual tools (Kreps; Oliver-Smith; Peacock et al.). Especially useful are anthropological and sociological studies that examine the leveling effect of disas-



ter, the post disaster community self-organizing efforts, and their innate ability to recover (“resilience”) (Pérez). Although social boundaries would be restored as life returned to normal, one’s behavior during the emergency would remain in the community’s collective memory (Provenzo and Baker Provenzo). Bravery and decisive positive decisions were embedded in the community’s memory in the form of folk tales and stories, while cowardice, ineffectualness, and obstructionism would also be remembered by the stricken residents (Johnson).

Using historical documentation, scientific evidence, and interdisciplinary theory to explain historical processes is undeniably seductive, yet the temptation to attribute change over time to a catastrophe of any sort must be tempered with common sense (Olson and Gawronski 2007; S. Schwartz). As Virginia García Acosta has pointed out, not every natural hazard turns into a disaster (2010). To avoid the fallacy of assigning too much significance to disasters, this cautionary literature asks whether the catastrophe produced “legacies,” that is, if permanent change over time can be attributed wholly or in part to the event (Olson and Gawronski 2007).

The Vuelta Abajo earthquake was neither a critical juncture nor a trigger that changed government policy in any way. Except for one fatality, there were no casualties, minimal property damage, and no famine or food shortages as the earthquake occurred in the winter when there is usually plenty of food available. In short, there was no reason for Cuban people to remember it. Instead, it was, as Olson and Gawronski have pointed out, a “null event,” that is, a natural phenomenon that comes and goes just as quickly with few, if any, consequences (2007).

The real importance lies in the implications for the present of lessons *not learned* about the seismic potential of western Cuba; as such, the unprecedented earthquake of 1880 should be taken as a warning by the residents of the region. The fault line still lies underneath the cities and towns that house a majority of the Cuban population, and it continues to migrate northwestward at the rate of eleven centimeters per year. Such an observation is alarming when combined with an awareness of the “environmental legacy of socialism” in Cuba (Díaz-Briquets and Pérez-López). In the previous fifty years, the island has suffered deterioration in every aspect of its infrastructure: roads, bridges, wharves, buildings, homes, hospitals, and so on. Havana and its suburbs are notorious for their crumbling appearance and substandard living conditions. Even a minor summer storm can contribute to the collapse of a building. Torrential rains and high winds work together to abrade ancient mortar, and as pieces of deteriorating buildings fall to the ground, they sometimes pierce the exposed antiquated natural gas lines, which were put in place around 1900 during the first US occupation of the island. Spontaneous fires are sometimes the result (observed by the author personally in 1992, 1993, 1995). An antiquated potable water delivery network and an inadequate sewer system exacerbate daily living conditions for Havana’s residents. Even a minor earthquake could create a post-disaster situation much like that which occurred in Port au

Prince in January 2009. Cuban residents who might escape the destruction caused by the initial tremors would undoubtedly be faced with the sanitation crisis that ensued after the Haitian quake.

But even the massive loss of life that would occur should another earthquake happen along this fault line pales in comparison to the threat posed by a second aspect of socialism’s environmental legacy: the inadequate protection of nuclear materials. The line of hills south of Havana, formed by the uplifting of the land in the geological past, provides an ideal environment to store leftover nuclear waste from a variety of sources such as medical applications and military experimentation. The storage facility near the town of Managua, built during the time of cooperation with the Soviet Union, lacks the requisite safety features to contain escaping radiation in the event of a breach. A similar nuclear nightmare is possible if the epicenter of the next quake moves just one hundred kilometers to the east to Juraguá on the Bay of Cienfuegos, where an unfinished nuclear plant built with Soviet technology was ostensibly never activated. According to Cuban sources, the potential for disasters was taken into account when the plant was under construction, but at the time, engineers were thinking in terms of hurricanes. No provision was made for potential seismic activity (Díaz-Briquets and Pérez-López). Moreover, the Cuban government maintains that no nuclear material was ever brought to the plant, but no outside inspectors have ever been allowed to visit. If no nuclear material is present in the Juraguá plant, and if the fault line generates another earthquake, the only consequences would be to the residents of the closest city, Cienfuegos. But if any dangerous material is actually housed in the defunct nuclear plant, the loss of life could be unimaginable.

The residents of western Cuba, thus, face a potential catastrophe that combines the consequences of the Port-au-Prince earthquake of 2009 and the nuclear meltdown at the Fukushima Dai-ichi nuclear plant in Japan in 2011. Both scenarios, equally frightening, are the inescapable lessons that could be learned from the Vuelta Abajo earthquake of 1880. Critical juncture theory explains to us why this event was forgotten, lost to memory; and thus it is up to historians to tell these stories, both of iconic events such as the Lisbon earthquake and the San Francisco fire, and the forgotten disasters such as this, the Vuelta Abajo earthquake, in the hope that a culture of reintegrating our knowledge of catastrophes past might yet save us from the worst conjunctions of human forgetfulness and natural disaster.



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