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PART TWO TRAINING FOR WAR,
WHILE WASTING NATURE

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Sowing Seeds of Protest

IN 1941, RADAMES TIRADO was eight years old and living on the island of Vieques, off the east coast of Puerto Rico. His father built and repaired ox-drawn carts used by the island's sugar companies to haul bundles of cane to local mills, where they were crushed for their juice. Radames, along with his seven brothers and four sisters, lived in the small village of Resolución, on the northern side of the island. The children often walked or rode horses to the beaches, where they would swim and dive for conch or lobster in the waters near shore, or search for land crabs.¹

The northern side of the island borders the Atlantic, while the Caribbean Sea lies to the south, just past beaches of fine white sand. On sunny days, the sea is a palette of shimmering blues and greens: turquoise over sands, aquamarine over shore seagrass beds, and emerald green to cobalt blue as waters deepen. Coral reefs protect many of the beaches from storm waves, and provide shelter to grouper, yellowtail, parrot fish, conch, and lobster. Tarpin, barracuda, mackerel, shark, dolphin, tuna, and manta rays swim in deeper waters, while manatees loll among the seagrass beds on the northwestern side of the island. Groves of palm trees anchor some of the beaches, standing guard over dense mangrove lagoons that lie behind dunes of sand. Great blue herons, frigate birds, pelicans, and hawks soar overhead in the steady trade winds. Several of these lagoons—those

with narrow openings to the sea—are filled with magical dinoflagellates, single-celled algae that glow when disturbed.

The Tirado family, like most others living on the island in the 1940s, worked for one of four sugarcane companies, earning only several dollars per week. Poverty, poor nutrition, an absence of health care facilities, poor quality water, crude sanitation, and an absence of electricity in some barrios made life difficult for many.² Despite the poverty, most Viequenses had the advantages of homes, jobs, rich land, productive seas, and a stunningly beautiful island on which to live and raise their families. Yet nearly 95 percent of the rural population owned no land.³ Nearly two thousand families held informal tenancy rights to build houses and farm plots—often several acres in size—large enough for fruit trees and vegetable gardens, and sufficient to graze goats and sometimes sheep and cattle. Some managed to buy small tracts of land to run shops and other small businesses that serviced the communities' needs. But the *centrales* never yielded land title to their workers.⁴

During the summer of 1941, Radames's father returned from work to tell the family that they were being forced from their home. The U.S. government had decided to construct a large military base that would include Vieques and the nearby island of Culebra, and in a dramatic first step, the U.S. Navy had purchased the sugar company lands, nearly 70 percent of the island. The two companies had little choice in the matter. If they had refused, the United States would have exercised its right to condemn private property for national security purposes.⁵ But they also were probably receptive to the proposal. The Great Depression had devastated the sugar industry in the Caribbean basin. One of the Vieques sugar processing companies had closed in 1927, and by 1935 nearly 64 percent of Vieques males were unemployed. The islanders' dependence on a single export crop made them especially vulnerable to fluctuations in international sugar markets, and falling sugar prices in the 1920s and 1930s had led to declining land values.

The remote location of Vieques—an island off of an island in the northeastern corner of the Caribbean—had discouraged more intense development, while increasing its appeal as a potential military base. The completion of the Panama Canal early in 1914 further increased the strategic importance of the Caribbean basin and especially Puerto Rico. Indeed, secure access to the canal immediately became a U.S. military

and economic priority, one that endures to this day. There were also very immediate national security issues at stake during the 1940s, when the Tirado family first learned it would be displaced. By 1940, the United States was facing the very likely scenario of involvement in the growing European conflict, and Puerto Rico could offer Great Britain a safe haven for its naval fleet if British bases were further damaged or captured. The Japanese attack on Pearl Harbor in 1941 underlined the dangers of concentrating troops, vessels, and other facilities in a single harbor. Vieques and Culebra would provide a remote theater in which to train troops for invasions and test new weapons systems.

The U.S. Navy's task of removing seven hundred families from their homes to make way for weapons storage bunkers, radar facilities, docks, an airport, and housing facilities was not as difficult as it might have been. Only four sugarcane company owners controlled 19,000 of the 21,000 acres needed for the base, and these were acquired for an average \$50 per acre. Many of the tenant farmers considered legal action to prevent the appropriation, or to gain increased compensation, but their poverty, ambiguous tenancy rights, and common illiteracy all reduced their capacity to resist.⁶ Indeed, the cane companies had acted as both employers and landlords, providing the workers with few rights and the company with few obligations. Sugarcane was grown on the richest agricultural soils, preventing its use for growing locally consumed foods, even if the workers and their families had access to less desirable company lands to grow subsistence crops and graze their pigs, chickens, cattle, and goats. There was little that thousands of landless, impoverished, and powerless peasants could do to change the decision, or control the future of their island—even though the shift in landlord from the private sugar companies to the U.S. military was to be catastrophic to the island workers, most of whom lost both their jobs and their homes.⁷

The government chose to resettle the 4,600 displaced Viequense in the island's midsection, Santa Maria, on some purchased company land. The western end of the island would be used for weapons storage, docking, and radar facilities, while the eastern end would be transformed from grazing and palm plantations into a live-fire bombing and artillery range.

Radames Tirado's father told his family that they must move nearly seven miles to the east, and that a truck would arrive soon to carry their

belongings. They, like the other families, were given a piece of paper with a four-digit number on it corresponding to a rectangular plot of land fifty feet by ninety feet, laid out in a simple rectangular pattern that neglected the hilly terrain, seasonal streams, and low-lying swales that would flood with rushing runoff during tropical storms. Like other U.S. government settlement schemes such as the Homestead Act that encouraged settlement of the American West in the late nineteenth century, the plan completely ignored variations in terrain and ecology, which meant that some of the plotted area was uninhabitable. The U.S. Navy's plans also neglected to include any roads, water, electricity, sewerage, or storm drainage for the islanders. In addition, before their move the families had been free to plant or graze on open lands not under cane cultivation, but the tightly clustered settlement and hills of the new location made doing so much more difficult. Continuing to use the original areas, even surreptitiously, was also not an option. Soon after the resettlement, government workers constructed fences that prevented residents from returning to their homelands and even their cemeteries.

At the appointed time, the Tirados climbed on the back of a flatbed truck with whatever belongings they could carry, and were driven to Santa Maria. When they neared their assigned plot, they were told to get off the truck. They were left standing in the brushy field with no shelter, not even a tarp to protect them from the heat of the sun and tropical downpours; their modest piles of belongings lay beside them. They used palm fronds and poles from the forest to fashion a makeshift shelter, where the family lived for months until they were able to build a more permanent home on the site. The boys helped their father salvage wood from their demolished hacienda and carry it to their assigned plot. Each family dug pits for human waste and wells for water. The small plots assigned to each family were connected by crude pathways more suitable for horses than vehicles.

Thousands of other displaced islanders were similarly deposited at the new settlements and left outdoors to fend for themselves for months until they could construct modest shelters. Living outdoors, they faced additional threats. Human and animal wastes often polluted the water, and much of the island had neither electricity nor running water. In addition, Vieques, like most other Caribbean islands, has long harbored diseases such as malaria, yellow fever, and dengue fever, which because

they are carried by mosquitoes especially endangered refugees, military personnel, or others without shelter. No statistics were kept on malaria incidence on Vieques, but many still recall the recurrent fevers, a telltale sign of the illness. The nearest medical care for serious cases was on mainland Puerto Rico, easily a full day's journey.

Those who ignored the Navy's warnings to move were eventually given twenty-four hours to leave before bulldozers arrived. Ramón Rucci and his wife were among those forced to vacate their house in this way. The night they were trucked over to their new plot of land, his wife gave birth while lying on the ground in a makeshift shelter that Ramón had fashioned from sugarcane stalks and palm fronds. Radames recalled many other women who also gave birth in crude shelters during the rainy season following their moves. Several thousand Viequense eventually moved to nearby islands, including the main island of Puerto Rico and St. Croix.

The U.S. Constitution requires that "just compensation" be paid to U.S. private landowners if the government takes their property for public purposes such as a military base, highway, school, or park. But although the Navy compensated the plantation owners for their property, the Tirados and thousands of other tenant families were provided between \$5 and \$25 for their loss, while others received nothing. The governor of Puerto Rico wanted the Navy to pay for relocation expenses, but the military officials would only provide some of those who had been dislocated with wood and modest construction materials.⁸

Radames and his family lived outdoors for several months while his father found materials to build a new shelter and to feed the young family. Mangos, papayas, passion fruit, and coconut were plentiful, and many islanders were proficient at catching fish, shellfish, and land crabs.

Severina Guadalupe tells a similar story of her family's history. She recalled that before the U.S. military purchased the island, her father had grown sugarcane, plaintain, and yucca. Her extended family lived in a wooden farmhouse on twenty-seven acres. When she was thirteen, the family received notice that they must vacate within twenty-four hours. To the family, such a move was unthinkable. "We refused to leave our land, our farm, so when that machine came it destroyed everything—our cooking pots, our clothes—they left us with nothing. . . . They came up with this huge mechanical thing and came up to the porch and whup!

They just drove over our house.” Her father was compensated \$350, but lost his job as a farmer along with the house. He moved to the small village of Isabelle Segunda and sustained his family by taking on odd jobs. Severina eventually married, and remained on the island along with four brothers, each of whom contracted cancer. Nearly sixty years following their eviction, Severina still seethed with resentment and anger.⁹

Today, looking down from the air, almost no trace of the former villages remains. Once the Navy successfully emptied the islanders from their villages, the homes, stores, and offices were bulldozed into pits, burned, and covered with earth. Plant life has overgrown the streets, foundations, and even the former village plaza. The cane fields have since grown into a dense semitropical forest that shadows the brick ruins of the cane processing mills. Only the once graceful residence of a former island judge remains visible high on a ridge.

After the family’s displacement, Radames’s father used his carpentry skills to become an accomplished builder of fishing boats. Radames himself became an English teacher, and eventually served as mayor of Vieques between 1976 and 1980, when he worked to convince Governor Carlos Romero Barceló to sue the Navy for the environmental damage inflicted on the island. The federal district court found that the Navy’s release of weapons into coastal waters did constitute pollution, and so was a violation of the Federal Water Pollution Control Act, but it did not prohibit future training.¹⁰ It found that “appreciable harm” had not been caused by the Navy’s “technical violations” and that demanding a cessation in bombing “would cause grievous, and perhaps irreparable harm, not only to Defendant Navy, but to the general welfare of this Nation.”¹¹ The Court of Appeals for the First Circuit did not agree, ordering the Navy to obtain a permit before continuing to bomb.¹² But the U.S. Supreme Court overturned the appellate court’s reversal, so the bombing continued.

The lawsuit forced the Navy to disclose its activities to the court and the public, and to meet the requirements of the National Environmental Policy Act. To do so, the Navy prepared an environmental impact statement that explained its operations, weapons use, and history of polluting the island. In fact, under the provisions of the act, the Navy is required to prepare these statements for each of its sites in both draft and final form, although it never completed the final Vieques analysis. Governor Romero Barceló agreed to settle the lawsuit in 1983, if the Navy would provide

greater economic support for community development and compensate fishermen for the income lost during training exercises.

The governor of Puerto Rico created a Commission for the Island of Vieques to study the naval presence and make recommendations that would hopefully resolve conflicts between the islanders and the Navy. Radames was appointed as the assistant commissioner, in recognition of the community's trust in his leadership. In 1999, the commission recommended that the Navy immediately "cease and desist" their military activities. Finally, in 2002, President Bush decided that the weapons training range was no longer necessary in an age of electronic warfare, and that the Navy should leave the island.

More recently, Radames reflects that the Navy's legacy is not simply one of human rights abuse, environmental destruction, and the loss of health for the Vieques villagers, but also deliberate economic stagnation, despite the potential to grow a vibrant economy. As he contends, "The fundamental problem here is that the Navy never has had the intention of helping the people of Vieques." He believes that the Navy actively sought to block the municipality's search for development funds, and to discourage island tourism that would only intensify protest against the Navy's training and bombing. His claim is supported by the comments of Howard Hunt, a Navy captain who described his reaction to a proposed \$100 million federal investment in the Roosevelt Roads Naval Complex that was to include Vieques: "We're not going to throw away such an investment so that Vieques should be converted to a Mecca for tourism."¹³

CARLOS ZENÓN

Carlos Zenón was four years old when a U.S. Navy representative knocked on his family's door. Their house and land had been acquired by the Navy, and the representative was there to order them to pack and leave. In later years, Carlos's mother was often to repeat her protest: "But I didn't sell it to anyone. How could they take our homes against our will and without paying us?" Her resistance was met with a demand to leave within twenty-four hours. The next day, a truck and bulldozer arrived and waited outside the house while his mother ran to collect whatever belongings she could quickly throw into bags. Carlos recalls his fascination with the large and powerful machine as he watched their home crumble, even as his mother stood weeping. The Zenóns, like the Tirados, then piled what belongings

they could on the back of the government truck. They too were given a piece of paper with a number that designated what was to be their small assigned plot in the new area.¹⁴

A local barber heard about the Zenóns' plight and offered to give the family his one-room barbershop for shelter. The shop was dismantled, placed on the truck, and then rebuilt on their lot in Santa Maria. The windows and door of the shed were broken during the move, however, so the family was forced to use fertilizer bags to keep out the rain. The Zenóns, like most of the other displaced islanders, had no electricity, water, sanitary facilities, or roads when they arrived, nor did they have access to lands for grazing animals or planting crops. Their homes and jobs disappeared overnight, leaving them with little shelter or means to make a living—as well as deep resentment.

The relocated families, which never had held title to the land they were forced to leave, were also tenants with no legal property rights in the new settlement. The government wanted the option to displace the islanders again should it decide to expand the base at a later time. To a community disoriented by one move, the absence of “land security” generated even more distrust of the government's intentions. The lack of legal property rights had reinforced the power of sugar companies, and now the Navy.

The government wielded its power of land appropriation in 1941 and again in 1947–48. In 1961 the Defense Department secretly devised a plan to abolish the municipality of Vieques and remove all residents, so as to prevent any conflict between training activities and local residents. Puerto Rican Governor Muñoz Marin, however, appealed to President Kennedy, who eventually decided against the plan. In 1964, too, the Navy proposed that the military acquire all property along the southern Caribbean shore of Vieques. This plan was also met with overwhelming local opposition, and was abandoned.

Several years after moving to Santa Maria, Carlos Zenón's mother cut her leg. When the wound would not heal, and her condition worsened, she was unable to work. Carlos begged for sugar and rice from neighbors. He had no shoes or clothes for school and knew he needed to find a job. He spent many hours watching the fishermen, who would row their small, fourteen- to twenty-foot skiffs out to sea to set their traps. At one point, Carlos approached a fisherman he had long admired with a proposal. If

Carlos rowed the boat while its owner fished, could he receive some payment, even if only a small portion of the catch? The fisherman laughed at the twelve-year-old's youth and slight build, and asked why he thought he could row on the rough seas surrounding the island. Carlos thought for a moment and offered another idea. He commented that he had watched the fisherman return to the docks after a long day, only to spend several hours cleaning their catch in the hot sun before being able to sell it. What if Carlos cleaned the fish on the skiff as soon as they were caught, and in return received perhaps twenty-five cents a day and several fish? The fisherman could then deliver his catch to market before the others, and avoid the least pleasant chores of the trade. Carlos started the next day.

The 1950s were difficult years for Viequeses, both economically and socially. Most servicemen were stationed on the main island of Puerto Rico at the Roosevelt Roads base headquarters, where hundreds of millions of dollars were invested. By contrast, only several hundred servicemen were stationed on Vieques to maintain security at the island's modest facilities: Camp Garcia, an airfield, Mosquito Pier, weapons storage magazines, and several observation posts. Hardly any of the anticipated services and jobs on Vieques came about. Instead, dozens of bars and brothels opened to attract the tens of thousands of troops that temporarily trained on the island. Few of the islanders welcomed these enterprises. Elderly islanders today recall drunken sailors and marines drifting from bar to bar, sometimes bursting into private homes or relieving themselves late at night on the sides of buildings. Young girls would run and hide in ditches when they saw or heard groups of servicemen approaching, fearing abuse and sexual assault. Islanders' resentment, which had first flared from the 1940s evictions, only intensified with continued military presence.

Island teenagers, including Carlos, organized to protect the residents. When sailors wandered through his resettlement community of Santa Maria, the teens would attack, kicking and beating them with sticks, then sending them back to their base as a warning to others. Several years later, Carlos joined the Army, in part to better understand the foreign culture that had such an influence in shaping his life and island. The Army sent him to school to study English, building his capacity to understand, question, and confront those who had abused his community. The Army also taught Carlos the military strategy and tactics that he would use in later acts of civil disobedience.

From the Viequense perspective, the military presence was a cultural invasion. The residents were increasingly dispirited and impoverished. Nearly three thousand had left the island between the Navy's arrival in 1942 and 1960. Many had fled when the sugar companies closed their operations, having lost both their homes and jobs. But others had stayed, hoping to find work in construction, facility maintenance, or services, jobs promised by the Navy but normally filled by nonislanders. In fact, the Navy's activities on Vieques required little service-sector support, especially when compared to the facilities needed to house, feed, entertain, and educate the thousands of sailors and family members stationed at Roosevelt Roads only six miles across the strait.

The primary purpose of Vieques for the United States was to provide a physical theater for mock invasions and for weapons training. Given the scale of the exercises, it is hardly surprising that the islanders felt exploited, wasted, and contaminated by the troops—and during some seasons as though they were under near constant bombardment. Nearly two hundred different types of weapons were used or tested on the island during the last half of the twentieth century. And military training exercises on Vieques and nearby Culebra often involved tens of thousands of troops, predominantly those enlisted in the Navy and Marines, but sometimes including the Army and Air Force. Eventually other NATO nations, especially British, French, and German forces, were asked to practice and coordinate invasion tactics with the U.S. forces. Aircraft carriers, destroyers, and cruisers would launch attacks on the island, deploying thousands of troops in landing craft that would assault the powdered shell beaches, all with live fire. Once ashore, the troops would bury land mines on the beaches and move inland to join or engage those landing on the opposite side of the island. Simultaneous bombing and shelling of the island would occur in the designated live impact area.¹⁵

Since this was a "training" ground, errors in aim were common. Bombs, torpedoes, missiles, and rockets often missed their mark; some were undershot and sank in waters near the shore, while others landed miles outside the live impact area, closer to the residential community of Isabel Segunda that lies in the island's midsection. Hundreds of millions of pounds of ordnance have been dropped or exploded on Vieques and the surrounding waters since the military occupation began in 1941.¹⁶

Not only were the Viequense under siege; their livelihoods were often

carelessly put at risk. Naval captains and pilots paid little attention to the small bobbing buoys set by local fishermen, hardly noticing when their propellers sliced fishing and trap lines during maneuvers. The fishermen's loss in such cases was substantial and included not only the trapped fish, but more importantly, the cost and time required to replace the traps, lines, and buoys. Fishermen were rarely compensated for these losses, despite repeated protests over military exercises that were conducted 180–250 days per year.¹⁷

Beginning in 1975, following the Navy's decision to pull out of Culebra due to the intensity of local protest, military maneuvers on Vieques intensified—as did conflicts with local fishermen. In 1978, Carlos Zenón lost 131 traps due to severed lines. After repeated attempts to recover his costs, he sued the Navy in U.S. district court in San Juan. The Navy countered that it wanted evidence of the lost traps, including receipts for line, traps, traps, and buoys. Despite his inability to produce a full record of his losses, and the obvious difficulty he faced in producing evidence of the lost traps, the Puerto Rican judge awarded Zenón a reasonable estimate of the value of his loss. The Navy's lawyers decided to appeal, and were successful in relocating the case to a court in Norfolk, Virginia, where they believed the judge would react more favorably to the uncertain evidence. They also believed that the Zenóns would not have the resources to travel to Norfolk and testify.

Carlos chose to press ahead and fight the appeal. Relatives and friends sold baked goods for several months to help finance Carlos's travel costs to Virginia, as well as those of a few close supporters. At the beginning of the hearing, the judge summoned lawyers from both sides to the bench. The judge prefaced his statements with the comment: "I've never seen a fisherman who wasn't poor," then chastised Navy attorneys for forcing the fisherman to spend nearly \$1,000 for the trip to be present for his case, on the assumption that a court nearer Washington, D.C., would react more favorably to the Navy. He warned that the Navy should settle the Zenóns' claims, including travel expenses. An agreement quickly followed.¹⁸

The judge's decision surprised Carlos, and he left Virginia with a growing sense of confidence. For the first time in his life, he understood that the Navy could be held accountable to a set of principles other than its own. He returned to Vieques ready to convey to his fisherman's association that the Navy might be more vulnerable than they had assumed.

That same year, the Navy announced its intention to hold maneuvers for a twenty-eight-day period and issued a notice that fishing would be prohibited during the exercises. The fishermen were enraged, and Carlos as leader of their association made the short trip across Vieques Strait to the office of the Roosevelt Roads commander. Carlos asked, "Why can't we be allowed to fish from dawn to 10 A.M.? This would allow us time to bring our catch back to the island without significant loss, and you would have the remainder of the day to hold your exercises." But the commander held firm, arguing that the complex exercises involving several NATO nations and dozens of ships and planes had already scheduled their war games from dawn until dusk each day. Nothing would be changed.¹⁹

Carlos returned to Isabelle Segunda and quickly gathered those in his fishing association. After the group had debated the issue for hours, Zenón concluded that negotiations were futile, and their only recourse was civil disobedience. The fishermen were afraid that they might be shot or imprisoned, and that their boats might be destroyed. Still, nearly forty of the fifty members agreed that the time had come to make their stand. They stayed up all night planning nonviolent tactics to disrupt the maneuvers scheduled to begin the next morning. At dawn their modest armada of brightly colored fishing skiffs left port.

As the war games began, the small fishing boats swerved into the paths of landing craft filled with troops. Instead of ramming the small boats, the commander ordered that the fishermen be captured unharmed. The protesters had been given an unexpected opportunity to capitalize on their detailed knowledge of the shoals and reefs surrounding the island. A chaotic game of cat and mouse followed, with the fishermen luring the naval vessels into shallow and often invisible reefs from which only the fishermen knew escape routes. The fishermen also attached lengths of rope to heavy chains as a way of stopping the fleet. When the Naval craft approached a fleeing skiff, the fishermen would throw a rope beneath the Navy hull. As the rope became entangled in the propeller, the chain would also be pulled into the craft's propellers, causing in some cases serious damage. Although several fishing boats were harmed, so too were several naval craft. No gunfire was exchanged, no one was seriously injured, and the Navy chose to stop its operations. The shallow coastal waters had become a play within a play, a mock battle between unarmed fishermen and the most powerful Navy in the world.²⁰

During the next several years, similar encounters occurred regularly between the fishermen and the Navy. As the fishermen became more experienced in civil disobedience, their tactics grew increasingly sophisticated. Advance notice was normally provided to islanders by the Navy before holding maneuvers that closed their fishing grounds. These warnings provided Zenón and others with ample time to alert news networks, which increasingly came to document the mismatch in power between the antagonists. Film soon became an unexpected ally of the protesters, giving them a powerful counternarrative to the U.S. military's projected calm. Each confrontation became a public relations nightmare for the Navy, as high-powered landing craft with machine gun turrets chased yellow and pink fishing skiffs through turquoise and royal blue tropical reefs, all while destroyers, cruisers, and aircraft carriers stayed nearby. The fishermen would stand at the bow of their skiffs, hurling rocks from slingshots at the pursuing craft. The islanders' bravado and the Navy's frustration were instantly telecast around the world via satellite on international networks including CNN and BBC.

Local activists were often sons or grandsons of those who had been forced to leave their homes and resettle. For some their anger and resentment grew from their parents' or grandparents' forced relocation; for others the closure of fishing grounds and ensuing economic hardship were the most compelling issues. And many of the islanders were frustrated by the Navy's relentless bombing and shelling, which hindered the development of a tourist economy. Consequently the protesters had one target—the U.S. military—but various objectives. Some groups fought for fishing rights or compensation. Others sought property rights to Navy lands. And still others favored complete political independence, meaning they argued for closure of the base, as well as severance of Puerto Rico from U.S. territorial claims.

The protests intensified when in 1999 David Sanes Rodríguez was killed by a Navy bomb that was accidentally dropped on the Navy's observation post adjacent to the live impact area.

MILIVY ADAMS

José Adams is a baker and a fisherman who lived on Vieques when his daughter Milivy, a two-year-old, developed a lump on her skull. Milivy's condition worsened and was eventually diagnosed as neuroblastoma, a

form of cancer that ravages very young children by sending malignant tumors to different parts of the body. If diagnosed early, and proper medical treatment is received, there is a 90 percent survival rate when identified in one-year-olds. Survival rates decline rapidly with later diagnoses, however. In Milivy's case, the cancer spread quickly to her lung, kidney, leg, and hand. She fought bravely, as did her parents José and Zulayka, and the family moved to New Jersey so that Milivy could receive treatment at the nearby Children's Hospital of Philadelphia. She received two bone marrow transplants before her doctors concluded that her frail body could not sustain additional treatment. She passed away on November 17, 2002.

Tears welled in José's eyes as he recalled his daughter's brief, traumatic life and his family's desperate search for a cure. He resents the difficulty they faced in obtaining quality medical care on Vieques, especially their inability to receive an early and accurate diagnosis, and afterward more specialized advice and treatment. Vieques, with its population of nearly 10,000, has never had a pediatrician, let alone an oncologist. José's very first trip off of the island was to obtain specialized medical advice and treatment for his daughter. The early misdiagnosis, search for specialized care beyond Vieques, and insurance problems delayed the prompt treatment that Milivy needed to survive. Her courage and hope inspired all who heard her story, and she quickly became a symbol of the island's future. Her face is painted on the wall of the island's school, in a colorful mural facing the village square.

José has the sense that somehow the environment of Vieques caused the death of his daughter, and he worried especially about the family's habit of eating fish that he regularly caught and brought home. Fearful that his one-year-old son might experience the same fate as Milivy, he clipped a lock of the little boy's hair to be sent to a medical laboratory and examined for heavy metals and explosives. José grew to blame himself for his daughter's cancer.²¹ But many other friends, family, and community members are quick to blame the Navy, given its chemical and physical abuse of the island's environment. It is obvious to all that the Navy created an enormously hazardous environment in Vieques, dropping or firing bombs, artillery, and nearly two hundred different types of ordnance on the island for nearly half a century. Some of the chemicals that make up munitions are lead, mercury, cadmium, and explosives, which are recognized to be persistent carcinogens, neurotoxins, and endocrine disruptors.

The Navy readily acknowledges that it has fired weapons and released chemicals into the area, but it consistently argues that these compounds are stable, and that their distance from the community has prevented significant hazard to the islanders. The government's strategy—admitting contamination, but denying human exposure—has been effective given the constraints of tort law, which requires, as a first step toward any award of compensatory damage, strong evidence that the activity is responsible for the defendants' loss of health.

One such compelling case may involve neuroblastoma, a kind of cancer that produces within immature nerve cells malignant tumors that tend to metastasize rapidly. Children are most prone to the disease; human susceptibility to nervous system tumors, including neuroblastomas, appears to decline with age. The only known environmental cause of pediatric nervous system tumors is ionizing radiation. Perhaps other environmental carcinogens, or mixtures of these carcinogens, are successful in inducing the disease, but these have not been tested experimentally in animal studies.²²

Neuroblastoma is rare among infants: in the United States, three cases are normally discovered among 100,000 children younger than one year, and this incidence drops to one case per million children by the time the children are ten years old.²³ Since Milivy's diagnosis, two additional cases of childhood neuroblastoma have been diagnosed among Vieques's 3,000 children. Three cases among a population of fewer than 3,000, roughly a rate of one in 1,000, is a risk significantly higher than the national average of 3.5 among 100,000. The rarity of the cancer, however, makes the statistical significance of this rate difficult to judge. Should this be considered a cancer cluster? The extremely small number of cases makes it possible that the group of cases arose by chance, rather than resulting from environmental exposures that occurred on the island. Many believe that the Navy is responsible for Milivy's death and the high prevalence rates of many other illnesses among the Viequense, but proof remains elusive. For now, Viequense residents have the burden of producing a preponderance of evidence to demonstrate that their illnesses are related to exposures caused by the Navy. Until the burden of proof is switched to the Navy to demonstrate that their chemicals played no role in the prevalence of illness, the islanders face an uphill scientific and legal battle.

ZAIDA TORRES

Zaida Torres raised a daughter and two sons on Vieques. She practiced nursing for nearly eighteen years, eventually becoming the emergency room supervisor at the local hospital, where she often was the first health professional to have contact with seriously ill islanders. The absence of physicians, and generally poor recordkeeping, meant that for nearly two decades she probably had one of the best perspectives on Viequense health trends.

By 1975, Torres believed that the islanders were suffering from a higher than normal rate of cancer. Within the next decade, she had come to believe that her community also had an abnormally high incidence of neurological, endocrine, cardiovascular, and respiratory diseases—although no disease registry for these conditions existed on Vieques or in Puerto Rico, so comparisons of Viequense health to that of other communities were not possible. Her own daughter was diagnosed with cancer in 1985, leading to a tragic and desperate struggle that ended with death at the age of fifteen. When her daughter lost all of her hair during chemotherapy, Torres shaved her own head to make her daughter feel less self-conscious. In 1993, Torres herself developed cancer, a battle that continues today. This collection of experiences has led her to believe that somehow the Vieques environment, which had been steeped in hazardous substances during the Navy's half-century of weapons testing and training, must be playing a role in the islanders' illnesses. Although she did not have proof, the severity of both contamination and disease were sufficient for her to believe that a causal relation existed. To her the conclusion is simply common sense.

In 1998 Torres created the Alliance for Women and Children, or *Allianca*. Its purpose is to define and promote women's and children's rights, to establish registries for illnesses that afflict them, to pursue research that explores relations between environmental contamination and illness, and to educate women—especially young teenagers—about birth control and abortion rights.

The statistics compiled by *Allianca* are grim. Nearly 54 percent of women on the island are unemployed, and most are single parents. Vieques now has the highest teenage pregnancy rate among the seventy-five municipalities in Puerto Rico (34 percent). These pregnancies often result in the preterm birth of infants with low birth weights, a condition

that increases the risk of other serious health problems later in life. Teen pregnancies also elevate the school dropout rate, and increase reliance on government welfare and Medicaid.

Torres has a plan to break Vieques women and children from this cycle of poverty, poor health care, minimal education, poor nutrition, and associated health problems. The Viequense face so many challenges, she argues, that they should not have to worry about the metals, pesticides, solvents, explosives, and other chemicals that she believes pose special threats to island women and children. The high incidence of numerous health problems, together with the islanders' limited capacity to manage both economic and health risks, have led her to conclude that Viequenses should not have to bear additional hazards posed by the Navy's chemical contamination. By tracking and publicizing disease prevalence and the sluggish pace of government cleanup efforts, she hopes to attract public and private funds to the island.

When asked about the future of Vieques, Torres reflected for a moment before articulating her vision. Her ideal society would be transparent and democratic, conditions absent for most Viequenses during the twentieth century, when they were dominated first by sugar farm owners and then the Navy. The islanders would become economically self-reliant, breaking their dependence on welfare or other forms of government support. They would be well-educated, and have access to excellent health care at a reasonable cost. Their environment would be restored to its pre-Navy condition, and the people would be free from fear of environmentally induced disease. She knows that the community has a long way to go.

In August 2004, Johnny Rullan, former secretary of public health in Puerto Rico, published a comparison of the incidence of various illnesses on Vieques to that in the entire Puerto Rican population. Rullan's staff had conducted a door-to-door investigation of Vieques and found a cancer rate 27 percent higher than among those living on the main island. The prevalence of other illnesses was also higher: hypertension rates were elevated 34 percent; asthma, 16 percent; diabetes, 28 percent; epilepsy, 116 percent; and cardiovascular disease, 130 percent. The same study found no significant differences between the two groups in health-related behaviors such as smoking habits, levels of physical activity, numerous demographic characteristics, and vitamin intake.²⁴

Other indicators suggest that the Vieques islanders are living under extremely stressful conditions. In 2000, a full 81 percent of Vieques children were living beneath the U.S. poverty line, with most being raised by a single female. In 2002, 18 percent of island babies were born with “low birth weight,” meaning they face a greater risk of asthma, diabetes, and abnormal neurological development. In 2003, the pregnancy rate among Vieques girls between the ages of twelve and eighteen was 34 percent. The risk of infant death during the first year of life was 25 percent higher for those babies born to Vieques women than for those born in Puerto Rico at large.²⁵

Many have challenged islanders’ claims that the Navy is responsible for these health conditions. They argue that there is little evidence of human exposure to toxic chemicals, and that even if exposures were demonstrated, their association with disease would remain unproven. Yet there can be little debate that the Navy is responsible for Vieques’s depressed economic conditions, and that the poorest in society normally suffer from the highest burden of disease. The islanders’ poverty and remoteness also prevent them from obtaining quality medical care and insurance. Underlying this community under stress is an environment bearing an enormously complex mixture of toxic substances released by the Navy during its tenure. What were these chemicals, and how and where were they introduced to the island’s environment?