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American Triumph

Explaining the Canal Project

When most of the Panama authors were writing their books and articles, the Canal had almost become a reality. But could the average American actually comprehend what had been achieved in the Isthmian jungle, thousands of miles away, employing technological and logistical innovations on a scale never seen before? For this task, the storytellers had to construct the Panama Canal all over again through their writings and images. They had to explain to the readers in the United States why it was relevant. Their writings, along with other travel accounts, photographs, and exhibitions at world's fairs depicting the new and often exotic dependencies of the United States, constituted what the historian Ricardo Salvatore has called the "soft machinery of empire."¹ President Roosevelt had envisioned the Canal as a national endeavor, charged with meanings far beyond the commercial benefits that an interoceanic waterway had promised for centuries. With Roosevelt's and the other expansionists' ideas in mind and well aware of the challenges facing the American middle class—their readership—at the beginning of the twentieth century, the Panama authors embarked on their mission. As a result, they interpreted the Canal project as a defining moment in the history of the nation, and as a utopian model for its future.

From Pest Hole to Health Resort: The Containment of Disease

In the early years of the Canal construction, tropical diseases were perhaps the most threatening aspect of life and work on the Isthmus and powerful enough to let the project fail. The resident poet James Stanley Gilbert expressed no doubts regarding the unhealthy nature of the Panamanian jungle. In one of his most frequently quoted works, he exclaimed:

Beyond the Chagres River
Are paths that lead to death—
To the fever's deadly breezes,
To malaria's poisonous breath!
Beyond the tropic foliage,
Where the alligator waits,
Are the mansions of the Devil—
His original estates!²

Only a few years later, historian Charles Francis Adams, brother of Brooks and Henry Adams, noted that the Canal Zone was “to all appearance an agreeable winter health-resort.”³ How was this radical change in perception possible? Adams continued: “Thus the Canal Zone is an object lesson, and the Canal itself a monument; for the last was, humanly speaking, made possible by a medical triumph, the like of which in importance to mankind has not been equalled since the discoveries of anæsthetics and antiseptics.”⁴ The defeat of yellow fever and, to a lesser extent, malaria became the opening chapter in the success story written by the Panama authors.

Throughout the nineteenth century, medical science made important advances, and yet the origin of many diseases remained a mystery. The most significant drop in death rates in the British military at home and around the world, historian Philip Curtin argues, occurred during the midcentury decades and was achieved by empirical measures (such as preventive medicine and improved water supply) unrelated to specific medical research.⁵ During the American Civil War, the centralized logistics of sanitation, applying everywhere the same kind of general measures, had proven successful. Faced with recurring health crises such as the yellow fever epidemic in Memphis in 1873 and in the Mississippi Valley in 1878, more and more cities decided to establish municipal health boards authorized to carry out vigorous measures.⁶ It was widely

believed that most infectious diseases were transmitted by filth, touch, and poisonous gases (miasmas, or bad air). Politicians were convinced that “massive cleanup campaigns” in the industrialized cities were the best response.⁷ From the 1880s on, the revolutionary but slow success of the germ theory, stating that infections such as cholera and typhoid fever were caused by bacteria, demonstrated the need for sewage systems and the regulation of food suppliers. Beyond disease containment, health propaganda also became part of the middle-class leaders’ attempt to control the life of the urban lower classes. The instructions regarding hygiene regulations given to immigrants from Europe upon arrival in the United States may serve as an example.⁸

“Miasmatism” continued to serve as an explanation for the spread of yellow fever and malaria, even though scientists had expressed doubts about the theory for many years. Mosquitoes had long been named as the possible transmitters: in 1848 by a physician from Alabama and again in 1882 by a professor of obstetrics in Washington, D.C.—the same doctor who had been present at Lincoln’s assassination.⁹ Historian Richard Evans, in his analysis of the cholera epidemic in Hamburg in 1892, shows that the acceptance of new medical theories also depended on social and political processes, not on scientific proof alone. As the construction of the Panama Canal commenced, the *Scientific American*—of all publications—still referred to “unhealthy gases and poisonous vapors” on the Isthmus as the sources of disease: “In the early days of the canal history, the white mist that rose from the disturbed soil of the isthmus was far more disastrous in its killing effects than the mist of the ocean. It rose from the soil like incense from a brazier. It carried with it from its underground prison all the poison of putrefaction and wherever it inclosed its victims, there fever and death followed.”¹⁰ The term “malaria” literally meant “bad air,” based on the miasma theory.

The French era in Panama brought back bad memories. On a hill near Ancon “stood for years a yellow fever memorial,”¹¹ the residence of the first director-general of the Canal project, named *La Folie Dingler*. His wife and two children had died of yellow fever. Ignorance of how the disease was spread had even transformed the French hospitals into dangerous places: In order to prevent ants from climbing up the beds, the legs were immersed into water-filled dishes—an ideal habitat for the mosquito larvae to breed in. Only inches away from their birthplace they had a good chance of finding a patient infected with the disease and then spreading it to other humans.¹²

William C. Gorgas, chief sanitary officer of the American force, arrived on the Isthmus in 1904.¹³ He was an army physician experienced in the battle against tropical diseases. While working in Fort Brown on the Rio Grande in 1882, he and his wife had been infected with yellow fever. Both survived and became therefore immune. At that time, Marie Gorgas reports in her memoir, even bananas and oranges were suspected of transmitting the disease.¹⁴ Gorgas himself was not a strong supporter of the mosquito theory until he was ordered to Cuba during the Spanish-American War. In the capital of Havana, which was later put under American administration, he applied the usual methods known from the United States against yellow fever—without any success. “All our cleaning up and expenditure not only had not bettered things, but had even made them worse,” he wrote later.¹⁵

By the order of George Sternberg, a leading bacteriologist and the surgeon general of the U.S. Army, a team of four researchers came to Havana in 1900, headed by Walter Reed. Their mission was to test the mosquito theory. Reed followed the lead of the Cuban physician Carlos Finlay, who assumed that the *Stegomyia* mosquito was responsible for the spread of yellow fever.¹⁶ He and his team worked with Spanish volunteers who would let themselves get stung for money. Later, Americans would do the same, allegedly for patriotic reasons. One of the doctors died during the experiments. The researchers discovered that an infected person would pass on the virus to a mosquito only after three days; in turn, the mosquito would infect another person only after a period of twelve days. In order to rule out miasmatism as a source of transmission, the physicians made their volunteers sleep in dirty houses, wearing the clothes of sick people. No one got infected from this treatment.¹⁷

Yellow fever proved lethal in one out of four cases. The first experiments had mostly produced only light cases of the disease. Encouraged by these results, the researchers considered a vaccination, a deliberate infection under medical supervision, but in the next series lethal cases abounded. Gorgas, who was still not completely convinced of the mosquito theory, suggested a solution everyone else branded as absurd: the eradication of the *Stegomyia* mosquito.¹⁸ His plan also required a scientific procedure, based on zoology instead of medicine. Observations showed that the mosquito rarely left the environment where it was born. Water in uncovered receptacles was its most popular breeding place. Gorgas started his campaign in February 1901. Employing the same methods later used in Panama, he managed to eradicate yellow fever

within six months. His force fumed houses and stores, covered all containers filled with water, and dripped oil into ponds to keep the larvae from breathing.

When Gorgas arrived on the Isthmus, all scientific doubt regarding the mosquito theory had disappeared. Meanwhile, the British doctor Ronald Ross had proven with his work in India that the *Anopheles* mosquito was responsible for the transmission of malaria. In 1902 he received the Nobel Prize for his work. These discoveries notwithstanding, long-held beliefs prevailed in the minds of the Canal officials. Gorgas's superior Admiral Walker, head of the Canal Commission, "was not famous for a keen sense of humor, but the idea that there was anything dangerous in the bite of a mosquito stirred him to uncontrollable mirth."¹⁹ In addition to this demurrer, Gorgas had to deal with an entire jungle, not just a city, and not only with yellow fever but also with malaria, the infamous "Chagres fever."

He knew that malaria was the bigger challenge.²⁰ Yellow fever came and went suddenly; epidemics were always related to the presence of Caucasian people since Panamanians and West Indians were immune.²¹ Those whites who survived were immune for the rest of their life, but other whites suffered a painful death. Malaria, on the other hand, was endemic on the Isthmus. Estimations based on hospital data suggest that three out of four of the inhabitants of Colon and Panama City were infected with the virus.²² Malaria had a long-term negative effect on physical fitness and caused depressions—a considerable economic threat for the Canal construction. Gorgas's team found out that the *Anopheles* mosquito, as opposed to its striped compatriot, was able to travel longer distances and was not very particular about the water quality. The only realistic goal the sanitary officer could reach for was a reduction of the infection rate—the eradication of the mosquito was out of the question.

Gorgas started fuming the living quarters of infected persons. In the end, every house in the Canal Zone was treated as many as three times. In a short time, he used up an entire year's supply of insect powder in the United States. The infected laborers were completely shut off from their environment. In Washington, D.C., Gorgas's requests for money were not received well. In June 1905, at the climax of a yellow fever epidemic, the new commission chairman Theodore Shonts and the governor of the Canal Zone, Charles Magoon, demanded Gorgas's resignation. At that time, the army officer still had to report to the governor. Only after

the abolishment of that position under the Goethals regime did he become a member of the commission (in spite of which the struggle for money continued). President Roosevelt refused to fire Gorgas and instead granted him greater powers on the Isthmus. Following the recommendations of the new chief engineer Stevens, he also agreed to increase the financial budget. While the previous annual budget for the sanitary work had amounted to \$50,000, Gorgas now had \$90,000 available for mosquito screens alone. In December 1905 the last case of yellow fever for the entire remainder of the construction period was registered. In June there had still been sixty-two cases, nineteen of which were fatal.²³ After decades of futile fights against yellow fever on the Isthmus, the problem was finally solved.

Gorgas also tackled malaria and the *Anopheles* mosquito. The sanitation workers dried out swamps, cut grass and bushes, and treated water surfaces with oil and larvicides. According to the chief sanitary officer, the quota of infected Canal laborers sank from 80 percent in 1906 to less than 10 percent in 1913.²⁴ Some illnesses, such as pneumonia, also decreased in case numbers, while others, such as tuberculosis, were on the rise. During the final year, the death rate for the American gold-roll employees sank to a record low of two per thousand, but the rate for the Caribbean workers was still four times as high.²⁵ According to official figures, 350 white Americans and more than 4,500 West Indians were killed by diseases, other illnesses, and accidents during the entire construction period. The historian Michael Conniff estimates that the latter number was in fact close to fifteen thousand which would mean that one tenth of the Caribbean workforce died on the Isthmus.²⁶

Gorgas divided the Canal Zone into twenty-five sanitary districts, each headed by an inspector and equipped with rest areas and first-aid stations. The hospitals in Ancon and Colon, built by the French, were renovated and expanded. American and West Indian workers were placed on different floors. According to the Hay-Bunau-Varilla Treaty, the American government was also responsible for public health and sanitation in the Panamanian cities of Colon and Panama. Gorgas's agency built sewage canals, cleaned and paved streets, and oversaw the garbage disposal.²⁷ In 1908 the work was basically completed. The improved water quality helped to reduce the number of cases of typhoid fever and dysentery considerably. In total costs, the sanitation measures amounted to \$20 million. About \$6 million of this sum was spent on actual health services, which amounted to 1.5 percent of the entire Canal

budget.²⁸ And yet sanitation efforts remained limited to the vital areas of the Canal Zone, often defined by race. To cover up this discrimination, malaria's persistence was blamed on the West Indians' presumed preference to live in the bush.²⁹ The sanitation workers took an excessive interest in the racial composition of the population. Beginning in 1910, the physician Herbert Clark, who took over the Canal Zone's medical laboratory after Gorgas's death, examined the skulls of dead Canal laborers and came up with results supporting his theory of the West Indians' mental inferiority.³⁰

The Panama authors described Gorgas's battle against the insects in every detail, sometimes adding ironic comments. One writer pondered the question whether the holy water basin in front of the cathedral also offered breeding opportunities. "Perhaps holy water mosquitoes are innocuous," he concluded.³¹ Critic Poultney Bigelow jeered at the Canal Zone buildings with their characteristic mosquito screens, which made them look "like a string of wire meat-boxes behind the screens of which our tame and timid officials collapse into rocking chairs, marveling at the progress of science!"³² Others laughed at the order that any mosquito was to be reported to Gorgas's troops, with the intent that a sanitation worker could chloroform it and then arrest the convict in a test tube.³³ "She of the striped stockings and the shrill song," journalist Fred-eric Haskin tenderly called the dangerous *Stegomyia* female.³⁴

These comments may have expressed a disbelief in the mosquito theory still lingering in the back of the authors' minds, but they also pointed to another aspect of the sanitation work. While Gorgas's efforts were primarily aimed at eradicating diseases, they also assumed the social function of supervision: "Preserving order and preserving health became synonymous."³⁵ A search described by the author Ira Bennett illustrates the drastic measures taken to track down possibly infected persons:

Here was a man who was registered at a Panama Hotel. He was sick and some one feared he had yellow fever. When the authorities came to look him up, he had disappeared. The next day he was found in the streets intoxicated and suffering from yellow fever. He was taken to the hospital, where he died. Then they looked for his associates. Nobody seemed to know him. Finally it was heard that some of his countrymen frequented a certain bar room. Here again no one knew him, but several of them had heard him talking with an Italian. The Italians of the entire City of Panama were canvassed, and at last the man who had

talked with him was found, but the man knew him only slightly. However, he did know that the man was acquainted with the watchman at a certain theater. This watchman was hunted down and was found to be ill with yellow fever himself. Then a little girl who frequented the theater was found to have taken the disease. Every case was thus rigidly investigated and all sources of infection run down.³⁶

A number of other writers also printed a version of this story to demonstrate the success of disease control and did not seem to mind the almost brutal execution (“were canvassed,” “was hunted down”) of the search.³⁷ The commission came up with increasingly detailed orders, even after yellow fever had already been weeded out in the Canal Zone: special attention should be paid to rain water accumulating on machines that were no longer in use since “no precaution must be neglected at any time.”³⁸ Gorgas reminded the managers at the hotels, restaurants, and mess halls that “table linen sufficiently stained or soiled to attract flies will not be allowed” in order to prevent infections.³⁹ The authors regarded these precautions as part of the autocratic regime they had come to find and admire in the Canal Zone: “The methods of Panama were arbitrary, and had to be. They probably could not be enforced at all in a democratic community in ordinary times. The people would rebel against the severity of the regulations and against the incidental invasion of their privacy.”⁴⁰

For the Panama authors, Gorgas’s success was first of all a triumph of American civilization. “Something very like a marvel has been accomplished at Panama. A veritable valley of death has been converted into a land of health and comfort,” commission secretary Bishop wrote.⁴¹ Gorgas, “commander-in-chief of the forces of cleanliness and health,” had achieved a miracle, the journalist Abbot noted, “changing the Isthmus of Panama from a pest-hole into a spot as fit for human habitation as any spot on the globe.”⁴² The Panama authors usually devoted an entire chapter to the sanitation efforts. War metaphors such as Abbot’s were not unusual, suggesting victory after a strenuous battle against disease.⁴³ The writers emphasized that the death rate among the white Americans was eventually lower than in the United States. The Canal Zone became a model for the country as a whole, even though most of the workers were healthy young men. Gorgas received letters from government officials, businessmen, and doctors all over the world asking him for the secret of his success. A senator from Maryland, for instance,

wanted to protect his summerhouse on the Eastern Shore against mosquitoes. He “desires to know whether it would be practicable for him to take any individual measures to rid himself of the mosquitoes. He will be glad to furnish a map showing the location of the land and the situation of the house if same is desired,” Chief Engineer Goethals wrote to Gorgas when he forwarded the request.⁴⁴ A cotton plantation from Arkansas, a railroad company from Brazil, and the government of Australia also turned to Gorgas with similar inquiries.⁴⁵

According to the chief sanitary officer, the work achieved had implications reaching beyond the Canal project. Human civilization, he argued, had once originated in the tropics, but “the most vigorous and healthy races” eventually immigrated to the moderate zones. Deadly diseases had prevented a resettlement, “therefore the white man was permanently barred from building up any great civilization in these regions.”⁴⁶ The successful sanitation work would enable Europeans and North Americans to return to the tropics in great numbers over the next few centuries, Gorgas predicted. An author for the *National Geographic Magazine* shared this vision: “New blood is needed in the tropics. The suns of centuries have burned out much of the initiative, the easy methods of gaining a livelihood have taken out much of the thrift, and the lazy ways of the tropics have eliminated much of the natural love of cleanliness of the people. New blood coming in may change these things to a very appreciable degree, and an even newer and better era of public health may ensue.”⁴⁷

Gorgas’s theory, a racist perversion of the biblical expulsion from paradise, was closely linked to the social Darwinist doctrine of the expansionists. Turner’s frontier was open again, and the “civilization” of the tropics would take only a matter of years. At the same time, Gorgas and other observers interpreted the Western colonies—and their transformation—as mirrors of their own rapidly changing societies. In contemporary art and travel literature, the “jungles and deserts” of foreign continents also “mapped the landscapes of the Western psyche,” sometimes even in nostalgic ways.⁴⁸ On the Isthmus, the achievements of science and rigorous administration in the Canal Zone became a showcase for the United States—an interpretation to which the Panama authors would return again and again. “New blood”—or rather new methods of coping with the challenges of industrial society—was also needed at home, in the future America.

Passage and Network: Charting the Course of Empire

The Panama authors wrote about a range of topics regarding the work on the Isthmus, but naturally focused their attention on the seaway itself. “The Canal, after all, is the thing,” journalist Willis Johnson believed.⁴⁹ The storytellers turned the Panama Canal into a symbol signifying far more than the economic benefits of trade it was expected to deliver. “No material work of man since the creation of the world has had so deep and widespread an influence upon the affairs of mankind in general as that which may calculably be expected to ensue from the achievement of the Panama Canal. The results will be seen in commercial, political, social, and even religious, effects,” one author suggested.⁵⁰ Multidimensional interpretations such as these were not unusual for works of technology, especially if they were charged with metaphoric meanings. Despite this tradition and the historiographic attention it has deserved, the Panama Canal is curiously absent from most studies on the subject.

In the course of the nineteenth century, the building of bridges, canals, and railroads enabled Americans to reach their destinations more easily and faster. Connecting places, these engineering feats became symbols of the union of the young and expanding nation. Human technology triumphed over nature. The historian David Nye discusses and interprets this process using well-known examples—not the Panama Canal—in many of his works.⁵¹ Nye concludes that most of these civic projects invoked a sense of collective identity—bordering on religious feelings—and “fuse practical goals with political and spiritual regeneration.”⁵² Depending on the specific case, the collective identity could refer to a community, region, nation, or even the world. Since federal investment began to play an important role only in the twentieth century, many of the works were financed by the respective states or private investors, including so-called joint-stock companies.⁵³ Their impact was often extended beyond the local or regional sphere. To some observers, the 363-mile-long Erie Canal, crossing the state of New York from Albany to Buffalo and completed in 1825, held a significance reaching far beyond the Eastern United States. Twice as long as any canal in Europe at the time, “it must have an important bearing upon the destinies of this nation, and eventually upon the whole world,” a local newspaper commented.⁵⁴ In contrast to the endeavors of European monarchies, it was

seen as the achievement of American democracy, “of the capabilities of a free people.”⁵⁵ At the opening of the Brooklyn Bridge in 1883, Brooklyn mayor Seth Low exclaimed: “This great structure cannot be confined to the limits of local pride. The glory of it belongs to the race. . . . It is distinctly an American triumph. American genius designed it, American skill built it, and American workshops made it.”⁵⁶ In France, the Saint-Simonians, a group of social visionaries influential in promoting the Suez Canal, also believed that the construction of railroads and canals was necessary to lift the public spirit and, by implication, build utopian communities reaching across the world.⁵⁷ The creation and interpretation of the Panama Canal was strongly influenced by this tradition, yet it must also be seen in its own context. The Canal came to symbolize two important and in many ways interrelated concepts: the passage and the network.

The Isthmus of Panama was the location where Christopher Columbus and other explorers had searched for the passage to India. On his fourth and last voyage from 1502 to 1504, Columbus had entered the mouth of the Chagres. In effect, the Isthmus was “the birthplace of American history”⁵⁸ and the Canal “the realization of an idea four centuries old,”⁵⁹ the Panama authors concluded. Its purpose was “to fulfil the great designs of Columbus and Cortez,”⁶⁰ the conqueror of Mexico who had allegedly suggested the building of a waterway to the Habsburg emperor Charles V. The myth of the “discoverers,” the search for a passage to the Pacific Ocean, remained an important factor in the exploration of the American West. After the Louisiana Purchase, President Thomas Jefferson gathered an expedition force headed by Meriwether Lewis and William Clark, who were told to find “the most direct & practicable water communication across the continent for the purposes of commerce.”⁶¹ Encouraged by hearsay and the theory of symmetrical geography, Jefferson, himself a scientist, was hoping to find a navigable river flowing westward, located close to the source of the Missouri. He had pictured the western landscape as a kind of “garden,” similar to his home state Virginia, and expected the Rocky Mountains to be of comparable size to the Appalachian Mountains, allowing for a water route to the West.⁶² The Lewis and Clark Expedition would prove these preconceptions wrong, but the ideas of the passage and the garden, part of Jefferson’s utopian imagination of a communal society, lingered on. For decades, Congressman Thomas Hart Benton argued for

the development of the West to facilitate trade with Asian countries, later aided by New York merchant Asa Whitney, who proposed the building of a transcontinental railroad.⁶³

The Panama Canal was seen as the true realization of the passage, the continuation of westward expansion, and, therefore, the affirmation of Turner's frontier thesis. Navy admiral Harry Harwood Rousseau, a principal engineer on the project and member of the third Canal Commission, saw the seaway as an inevitable consequence of manifest destiny: "Since the first hardy adventurers, pushing westward from their native shores, landed on the American coast, there has been no more doubt that this project would not, as an indispensable factor in the future of the American continent, ultimately materialize, than that those pioneers would not continue their westward journey overland from the North Atlantic coast to the Mississippi River, thence over broad plains and rugged mountains, and finally, as has long since been seen, reach the Pacific Ocean, carrying with them and leaving in their trail the energy and spirit that have developed and now maintain the American nation."⁶⁴

Based on the concept of the passage, the building of the Canal—for many years a French endeavor, now made possible by the advances of science and technology—was interpreted as a distinctly American achievement, connecting the past and the future of the nation and the continent. And similar to earlier engineering works, the meaning of the Canal could be extended even further, encompassing the entire globe in the shape of a network.

The first railroad to the Pacific was eventually completed in 1869. Thrilled by this event as well as the opening of the Suez Canal in the same year and the first transatlantic telegraph cable realized only a few years earlier, the poet Walt Whitman praised the passage to India enthusiastically in his famous poem of the same title:

Passage to India!
 Lo, soul, seest thou not God's purpose from the first?
 The earth to be spanned, connected by network,
 The races, neighbors, to marry and be given in marriage,
 The oceans to be cross'd, the distant brought near,
 The lands to be welded together.

A worship new I sing,
 You captains, voyagers, explorers, yours,
 You engineers, you architects, machinists, yours,

You, not for trade or transportation only,
But in God's name, and for thy sake O soul.⁶⁵

Whitman's dream was universal brotherhood, made possible by human passion and technological progress. The Panama authors expressed the same sense of exaltation regarding the waterway. It was "mankind's dream of the ages,"⁶⁶ an effort "to achieve at last the triumphant fulfillment of the world's age-long desire."⁶⁷ Abbot concluded that "in tearing away the most difficult barrier that nature has placed in the way of world-wide trade, acquaintance, friendship and peace, we have done a service to the cause of universal progress and civilization the worth of which the passage of time will never dim."⁶⁸ As literary historian Bill Brown points out, a "dialectic of the national and international" characterized the Canal interpretations, matching Roosevelt's "mandate from civilization."⁶⁹ The United States had taken on a special role in world affairs—not by means of its democratic tradition, as evoked in the building of the Erie Canal, but through the impetus of its expanding empire. Nationalism and internationalism were connected. Under the impression of the emerging war in Europe, the call for global friendship and peace was loudest at the Panama-Pacific International Exposition in San Francisco in 1915, even though the World's Fair shamelessly displayed the alleged superiority of the American nation and the white race: "Human endeavor has supplied no nobler motive for public rejoicing than the union of the Atlantic and Pacific Oceans. The Panama Canal has stirred and enlarged the imaginations of men as no other task has done, however enormous the conception, however huge the work. The Canal is one of the few achievements which may properly be called epoch-making. Its building is of such signal and far-reaching importance that it marks a point in history from which succeeding years and later progress will be counted. It is so variously significant that the future alone can determine the ways in which it will touch and modify the life of mankind."⁷⁰

The welding-together of space, "the union of the Atlantic and Pacific Oceans," the earth "connected by network," as Whitman had put it, also had a modern, technological aspect to it. Industrialization, through steam-powered railroads and ships, had created a "new sense of distance."⁷¹ While the ocean network promised fast and far-reaching access for purposes of trade, it also gave pivotal power to the one in charge. "Control of the sea, by maritime commerce and naval supremacy,

means predominant influence in the world,” Mahan had written, “because, however great the wealth product of the land, nothing facilitates the necessary exchanges as does the sea. The fundamental truth concerning the sea—perhaps we should rather say the water—is that it is Nature’s great medium of communication.”⁷² Thomas R. Marshall, vice president under Woodrow Wilson, took a similar view: “I believe that the Panama Canal is destined to be the Marconi system of commerce.”⁷³ Mahan and Marshall interpreted the seaway as a powerful, global *communication technology*, preceding twentieth-century inventions such as satellite navigation, mobile phones, and the Internet.⁷⁴ In a sense, they were paving the way for another expansion of the American empire, based not on physical coercion or superior engineering alone but on the exploitation of power relations embedded in networks. Historian Matt Matsuda detects a similar strategy in the French Canal project, destined to “make a ‘French Pacific’ through a masterstroke not of conquest or territorial expansion but by integrating, relaying, and connecting a set of disparate points into a tenuous web of empire.”⁷⁵

For the Panama authors, the Canal was a singular event in world history, representing both the past and the future America. Realizing Columbus’s and Jefferson’s dreams of the passage to India, it was seen as a uniquely American venture, the continuation and fulfillment of westward expansion, uniting the people in a common mission. The waterway proved American superiority, “forever a monument to the dauntless courage, infinite resourcefulness, ingenuity and administrative ability of the American people.”⁷⁶ Destined to lead the world into the twentieth century, the United States would promote universal peace and friendship through the Canal. The concepts of the passage and the network represented the evolution of “a new Empire with open, expanding frontiers,” a limitless America.⁷⁷ Unlike earlier engineering projects, the achievement of the Panama Canal occurred *outside* of the United States, literally paving the way for a globalization of American power in political and economic, as well as technological and moral, dimensions.

Pyramids on Broadway: Representing the Engineering Feat

The Panama Canal, almost fifty miles long, was a complex construction site, consisting of locks, cuts, dams, and a future lake. To keep their readers interested, the Panama authors had to choose for description

those elements of the work that would convey an impression of the entire effort. How could the Canal itself be represented, how would it be constructed for the public? The most useful section for this kind of interpretation proved to be Culebra Cut. For a distance of eight miles, the Canal actually had to be cut out of the Panamanian rock. The ravine was eventually more than forty feet deep and three hundred feet wide at the bottom. Frequent slides threatened to detain the operation of the Canal even after its opening. One of these, the Cucaracha Slide, became a celebrity in its own right. “The work of months and years might be blotted out by an avalanche of earth or the toppling over of a small mountain of rock,” Canal Commission secretary Bishop noted.⁷⁸ The cut was the ultimate challenge of the project and its biggest tourist attraction.⁷⁹ “Now stretches a man-made canyon across the backbone of the continent; now lies a channel for ships through the barrier; now is found what Columbus sought in vain—the gate through the west to the east. Men call it Culebra Cut,” the author Frederick Haskin wrote, employing the rhetorical figure of anaphora to support his argument: “It is majestic. It is awful. It is the Canal.”⁸⁰

Flanked by the railway, the Culebra Cut was located in the southeast of the Canal Zone, stretching across the continental divide from Pedro Miguel Locks to the junction with the old Chagres River. As opposed to the locks and dams, there was little engineering ingenuity involved in the digging of the cut. Instead, it was “within the range of the comprehension of the ordinary person”;⁸¹ it symbolized the struggle against nature’s forces and the achievement of the passage to India. The cut was also chosen as the background for the official seal of the Panama Canal, crafted by the famous jeweler Tiffany. The motive “consists of a shield, showing in base a Spanish galleon of the fifteenth century under full sail coming head on between two high banks, all purple, the sky yellow with the glow of the sunset,”⁸² invoking Columbus’s “discovery” of America and his voyage to the Isthmus. The seal had the inscription “The Land Divided—The World United.”⁸³ Images of technology were absent from the depiction. At the time of its design, it was still believed that a sea-level canal could be built.

The six locks with their tremendous steel gates, the 110 feet wide by 1,000 feet long concrete chambers, and the giant Gatun Dam and its spillway also caught the authors’ attention, but not to the same degree.⁸⁴ Bullard tried to give an impression of the size of the dam, which was almost half a mile wide at its base, by calling it “a mountain range.” The

blocking of the Chagres created an artificial lake covering 164 square miles. “Never before has man dreamed of taking such liberties with nature, of making such sweeping changes in the geographical formation of a country.”⁸⁵ Once again, phrasings such as these, mirroring the social upheavals of the age, may also have expressed an underlying fear that American engineering skills would not live up to their promise. One writer even unfolded an apocalyptic vision for the age of technological achievements: “Panama is a world-feature, from this on to the end of time, or until that native New Zealander shall sit on a broken arch of Brooklyn Bridge and contemplate the ruins of a civilization dead and turned to dust.”⁸⁶

The Canal attracted thousands of tourists to the Isthmus. It was believed that 85 percent of transit passengers came for the purpose of seeing the waterway, or “Canal spotting,” as it was referred to. The number of these visitors climbed steadily during the final years of construction, from 15,790 in 1911 to 20,946 in 1912 and 18,972 in the first six months of 1913 alone, as reported by the *Canal Record*.⁸⁷ These masses could only be managed with strict organization: “The sightseeing business has therefore been systematized and its conduct is now a regular part of the work. There is no better way to see the Canal than the trips of the sightseeing train, and none that requires so little time. In any two consecutive week days it is possible to see the entire work. The train moves slowly through Culebra Cut, and about the locks and Gatun Dam, while the guide explains in clear and authoritative manner all phases of the work, and answers all questions.”⁸⁸

After the first half of the train ride, in Ancon, the tourists would listen to a lecture by the official guide William M. Baxter Jr., illustrated by models of the locks and dams and the Canal Zone that could be electrically illuminated at night. Baxter complained about the behavior of his listeners, some of whom would dress “as if for a trip through the jungle,”⁸⁹ and the quality of available information on the Canal: “The male fool is annoying only when he becomes excited. He has read a book, or perhaps two books, about the Canal on his way to the Isthmus. Books on Panama are probably no more inaccurate than books on Tibet; but there are more of them. And the inaccuracies are the most interesting points, therefore these lodge more firmly in the head of the fool.”⁹⁰

The Panama authors employed innumerable statistics and far-fetched analogies to relate the size of the Canal work, the “eighth wonder of the world,” to scales with which their readers at home were familiar.⁹¹



Figure 3. Pyramids along Broadway represent the “spoil” dug from the Panama Canal (reprinted from Willis John Abbot, *Panama and the Canal in Picture and Prose* [New York: Syndicate, 1913], 134).

The *Scientific American* noted that a wall reaching from New York to San Francisco could be built with the stones and sand from Panama, or sixty-three Cheops pyramids lined up on Broadway in New York from the Battery to Harlem.⁹² The drawing of this scenario looked like a futuristic vision of the city (fig. 3). “In generations to come, the canal, like the skyscrapers of our cities, will be viewed as a manifestation of the building genius of the American people, just as the pyramids of Egypt are not remembered so much as the work of a given Rameses as a manifestation of the big building instinct of the entire race,” Scott predicted.⁹³ Comparisons to the technical wonders of Manhattan—tunnels, subways, and bridges—abounded.⁹⁴ The new Grand Central Station was “a ‘baby’ Culebra Cut,” one author mused.⁹⁵ The German novelist Bernhard Kellermann drew on the Canal as a model to imagine a transatlantic tunnel that would be built within fifteen years under the supervision of an American engineer and allow for a twenty-four-hour train ride from New Jersey to the Biscaya coast.⁹⁶ The science fiction novel became a bestseller.

Apart from its portrayal in the books and magazine articles by the Panama authors, the Canal made its way into popular culture. In the year of its opening and the preceding years, the musicians of Tin Pan Alley recorded songs such as “Where the Oceans Meet in Panama (That’s Where I’ll Meet You),” “Coaling Up in Colon Town,” and “Sailing thru the Panama Canal.” At least three marches, including “Hero of the Isthmus,” were composed.⁹⁷ Adam Forepaugh & Sells



Figure 4. Historical advertisement for a modern fountain pen, 1914 (reprinted from *Town and Country*, May 16, 1914).

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Brothers conceived the patriotic circus spectacle “Panama; or, The Portals of the Sea; or, The Stars and Stripes.”⁹⁸ The Canal was also used in advertising. The Waterman Company praised the economical ink usage of its fountain pen by proclaiming “Great Time Savers: Waterman’s Ideal Fountain pen and the Panama Canal” (fig. 4).⁹⁹

All of these attempts at presentation and interpretation served to make sense of the Canal. Its meanings were shifting between simple, recognizable symbols—the digging of a big ditch, the gate to the West—and science fiction analogies of a future civilization, made possible by technology and engineering. Just like the tourists on the Isthmus depended on their guide, the middle-class readers and spectators at home needed the assistance of the Panama authors and other translators of culture in coping with the rapid, often frightening changes at the dawn of the modern age.

Moral Equivalent of War: The Big Job and American Society

Searching for metaphors representing the Canal effort, the Panama authors noticed similarities with another heroic, physical, and manly endeavor: war. The sensual experience on the Isthmus already suggested the analogy: “You will see the same thick, black clouds of smoke,” one author wrote. “Instead of the belching cannon, you will find a hundred times more deadly instrument in the giant dynamite blasts. The monster steam shovels, the great levellers and air-drillers are the weapons of warfare, and the opposing forces are the armies of man and Nature.”¹⁰⁰ In the foreign territory, the perilous powers of the tropical environment found their match in the tools of American civilization—human labor and ingenuity—resulting in a “gigantic battle against floods and torrents, pestilence and swamps, tropical rivers, jungles and rock-ribbed mountains.”¹⁰¹ It was this fight against the *other*, the unknown enemy, that found a convincing expression in the war metaphor. The deadly diseases were part of this scenario. The author Abbot called Gorgas “commander-in-chief of the forces of cleanliness and health” and his efforts the “war of science upon sickness.”¹⁰²

To boost morale after the slow start of the project, Roosevelt, during his visit to the Canal Zone, compared the task before the Canal workers with the fighting of the Civil War, in which many of their fathers had

participated. “I am weighing my words when I say that you here who do your work well in bringing to completion this great enterprise will stand exactly as the soldiers of a few, and only a few, of the most famous armies of all the nations stand in history.”¹⁰³ The fact that the Canal construction—like most actual wars—was a limited “conflict” may also have contributed to the ease with which the comparison was used. “In view of these facts, shall we be stretching the point too far when we say that the conquest of the Isthmus of Panama is a feat of the arms of peace as brilliant and as difficult as any ever accomplished by the arms of war?” asked an author in the *Scientific American*.¹⁰⁴ When Goethals was put in charge of the project, the analogy became even more compelling. Although the Canal construction was not officially a project of the U.S. Army or the Army Corps of Engineers, as many contemporary observers believed, former soldiers suddenly played a crucial role in its execution. “I now consider I am commanding the Army of Panama, and that the enemy we are going to combat is the Culebra Cut and the locks and dams at both ends of the canal,” Goethals remarked shortly after his appointment.¹⁰⁵

The Canal had always played a role in actual military considerations, especially with regard to its fortification. The topic turned into a heated debate when American involvement in World War I became imminent.¹⁰⁶ In spite of this strategic role, the Panama authors as well as government officials never considered the Canal Zone a military state. Goethals was not a friend of army rituals and attire, and he emphasized the civil character of his regime on the Isthmus. “There will be no more militarism in the future than in the past,” he reassured the workers. “Every man who does his duty will never have any cause to complain on account of militarism.”¹⁰⁷ Nevertheless, the writers approvingly interpreted his rule as a dictatorship and discovered manifold parallels between the organization of an army and the mini-state erected in the Canal Zone, as is discussed in a later chapter. The war analogy was always used as an abstract concept, allowing the authors to give their readers a better sense of the spirit of the work and, going further, to turn the Canal project into a model for American society as a whole.

William James’s (1842–1910) influential essay “The Moral Equivalence of War,” published in 1910 shortly before his death, served as a basis for these arguments. The pragmatist philosopher, a former professor at Harvard, had been the teacher of many students who continued on to careers in politics and journalism, including Theodore Roosevelt and

members of the New Intellectuals such as Walter Lippmann. Although an anti-imperialist opposing war and denouncing TR's call for the "strenuous life" as too vehement,¹⁰⁸ James still reached the conclusion that "martial virtues" resembling his former pupil's agenda for a moral rejuvenation of the country "are absolute and permanent goods."¹⁰⁹ The passion for war had to be replaced by something else, an equivalent: "If now—and this is my idea—there were, instead of military conscription a conscription of the whole youthful population to form for a certain number of years a part of the army, enlisted against *Nature*, the injustice would tend to be evened out, and numerous other benefits to the commonwealth would follow. The military ideals of hardihood and discipline would be wrought into the growing fibre of the people; no one would remain blind, as the luxurious classes now are blind, to man's real relations to the globe he lives on, and to the permanently solid and hard foundations of his higher life."¹¹⁰

James's suggestion of an army "enlisted against *Nature*" would be brought up again during the New Deal—for instance, with regard to the Civilian Conservation Corps¹¹¹—but the building of the Panama Canal was an obvious demonstration of what the philosopher had in mind. Similar to the American workforce on the Isthmus, James's conscripts seemed exclusively male.¹¹² According to historian Athena Devlin, James believed that martial training caused "intense feelings" related to mystical or even hysterical experiences rooted in the subconscious, changing "the self-indulgent and effeminate 'insignificant individual' into a fighter."¹¹³ A war-like effort such as the Panama Canal was the modern cure for a society threatened by excessive individualism and lacking manly resolve. It was precisely this image of the weakened, over-civilized element in American society that the Panama authors assigned to the French failure on the Isthmus.

The French project, abandoned in 1889, had left visible traces in Panama. Defunct machines, rusting in the swamps of the Isthmus, symbolized the tragic defeat of a nation overtaken by progress. Canal Commission secretary Bishop wrote: "The little locomotives and cars, almost toy-like in appearance when compared with those in use by the Americans, bore eloquent testimony to the irresistible onward march of mechanical invention. Time had retired them from active service as completely as if they had never existed, leaving them stranded as mere 'junk' along the wayside of progress. Covered with the softening mantle of vine and leaf and flower, and overshadowed by waving palms, they

stood, in silent dignity, as the fitting monuments of a 'lost cause,' making a spectacle so eloquent with the sadness of failure, the pathos of defeat, that few beholders could contemplate it unmoved, and no Frenchman could look upon it with eyes undimmed."¹¹⁴

Depicting the romance of ruins, Bishop created the impression as if the French had retreated from Panama centuries ago, forgoing an entire civilization with them. "There is no richer digging in the ruins of ancient Rome or Pompeii than along the deserted route of the canal," an author for the *Scientific American* wrote.¹¹⁵ The Americans' subconscious fear of their own failure may have played a part in inducing such sentimental observations.

But the authors went further. Most of them described the French efforts as an "opera-bouffe"¹¹⁶ characterized by stupidity—supposedly, the Europeans had brought twenty thousand snowplows to Panama, "stored away in a territory where the average temperature is 110 degrees"¹¹⁷—as well as corruption and decadence. They showed little hesitation to repeat every national stereotype imaginable. "Champagne, especially, was comparatively so low in price that it 'flowed like water,' and other wines were to be had in scarcely less profusion and cheapness. The lack of a pure water supply was doubtless the moving cause for this abundance, which was justified on the ground of health preservation, but the consequences were as deplorable as they were inevitable. The ingredients for a genuine bacchanalian orgy being supplied, the orgy naturally followed," Bishop continued.¹¹⁸ Panama author Haskin believed that "the whole course of the project was marred by an orgy of graft and corruption."¹¹⁹ His colleague Abbot confirmed: "Wine, was-sail and, I fear, women, were much in evidence during the hectic period of the French activities."¹²⁰ At the time, the waste of public or private money for alcohol, gambling, or luxury items—the French director-general had reportedly ordered the construction of a bathhouse worth \$40,000—was denoted by the term "graft," a popular keyword in the writings of the muckrakers. Sometimes the debacle was linked to simple incompetence: "French clinical assistance, as it is called, has never been good; it is not good even in Paris, and much less so in the Provinces."¹²¹ Another author compared the failed Canal project to Napoleon's retreat from Russia, since there was "much of the same exquisite French dash about the two enterprises."¹²²

In contrast to these colorful accusations, the American engineers refrained from criticism and instead praised the French for what they had achieved. "Much that was of inestimable value had been learned from

the French and from their experience, and that they builded well so far as they went is the consensus of opinion of all those who know,” Goethals concluded. He assigned the French fiasco not to inadequate technology or health care but to “poor and maladministration.”¹²³ In another comment, he stated that the French “would have carried the project through to completion had their financial situation been satisfactory.”¹²⁴ Gorgas denied reports on the extravagant lifestyle of the French,¹²⁵ and Pepperman, who had conceived his book largely as a revisionist study, chided his fellow authors: “The general tendency seems to be to endeavor to cast additional luster on the achievement of our own engineers by ignoring the remarkable work done by the French. This is neither necessary nor just.”¹²⁶

Most of the authors did not pay any attention to the official evaluations by Goethals and others. They based their conclusions mainly on two sources from the French era: the British historian James Anthony Froude—who had apparently never visited Panama¹²⁷—and the American Tracy Robinson, an employee of the Panama Railroad.¹²⁸ A witness of American acts of corruption as well, Robinson had also been cited as a source in Poultney Bigelow’s articles. He was passionately opposed to alcohol consumption—“for it induces, by its derangement of the vital forces, every ill to which flesh is heir”—and similar vices, no matter who indulged in them, so his remarks on the “carnival of depravity” in Panama were the result of these personal convictions.¹²⁹ The Panama authors referred to him solely to denounce the French.

The writers chose to depict the French in accordance with Thorstein Veblen’s observations of “conspicuous consumption” in the American upper classes. The description of European overcivilization reinforced Roosevelt’s propaganda against the effeminate and morally corrupt capitalists at home. These projections were inherently gendered: words such as “sissy,” “pussyfoot,” or “cold feet” came into use around the turn of the century to sneer at unmanly behavior.¹³⁰ When Chief Engineer Stevens arrived on the Isthmus in 1905, he already had an explanation for the Canal crisis: “There are three diseases in Panama. They are yellow fever, malaria, and cold feet; and the greatest is cold feet.”¹³¹ The real objects of the authors’ disdain were not the French in Panama but everyone in the United States who lacked the manliness and moral courage to revitalize the nation.

The fact that the French project had been privately funded was viewed as another reason for failure. “Most emphatically, if the desire for profit was to be the sole animating force the canal should never be

built at all,” wrote Abbot.¹³² According to his fellow writer Haskin, the American Canal succeeded because “it was to be constructed not in the hope of making money, but, rather, as a great national and popular undertaking.”¹³³ Again, the scolding matched the critique the Progressives voiced against big business in the United States and the individualistic “desire for profit.” The authors associated corruption—which was indeed a problem for the French—not only with other immoral activities summarized under the term “graft,” but also with private funding. This argument would play a large part in their utopian interpretation of the Canal Zone, where government control had eliminated the profit motive in favor of a collectivist state.

The French organizers of the Canal project would not have agreed with this view. Their venture was in fact heavily publicized as a “national and popular undertaking” in Haskin’s sense, and not as a mere business opportunity. As in the case of the Suez Canal Company, the stocks of the *Compagnie Universelle du Canal Interocéanique* were distributed widely to the French public. Tens of thousands of small investors purchased shares, often mortgaging their real estate in order to raise the money.¹³⁴ This joint-stock company was interpreted as the “nation-state translated into capital.”¹³⁵ This was precisely the reason why its bankruptcy catapulted the entire country into a moral crisis. While the American authors depicted French graft in order to point out what was wrong with the capitalist class in their own country, French critics such as Edouard Drumont mobilized a latent anti-Semitism in their search for an easy scapegoat. In both cases, meanings were assigned and shifted without much consideration of what had actually happened on the Isthmus.

Summing Up: The Dialectic Meanings of the Canal

In their success stories of the Canal, the Panama authors celebrated the unexpected turnaround of the events on the Isthmus. Once the work was on track, the “big job” was interpreted as a singular event in history, a miracle achieved by scientific and technological progress, social control, and manly resolve. The sanitation of the Canal Zone, containing the deadly diseases of yellow fever and malaria, became part of a national epic. In order to convince their readers at home, the authors had to construct meanings and metaphors along with the engineering

feat; they had to translate the lessons of Panama into patterns that were recognizable and relevant at home. Culebra Cut became the synecdoche of the project, the digging of a ditch, the literal and long-sought passage to India. Like earlier public works, the seaway was assigned a significance far beyond its physical reach. According to the writers, the idea of the Canal was rooted in the American past, in the myth of discovery, and at the same time it paved the way into a utopian future. The Panama Canal was the arch of the American empire. In the new century, continuing expansion meant racial dominance—expressed in Gorgas’s vision of the white man’s “return” to the sanitized tropics—and control over “communication media” such as the oceans rather than old-style territorial conquest. American civilization expressed itself in a network of social power.

We encounter a threefold dichotomy in the authors’ interpretations: past and future, national and international, war and peace. Although the Canal was described as a uniquely American achievement, it was also seen as a harbinger of global peace. This desired state, which may be characterized as “a perpetual and universal peace outside of history,”¹³⁶ was interpreted as the final order of empire, a web of power relations ensuring Western dominance. War was not needed any longer, and similar to the philosopher William James, the Panama authors turned the concept of war into an abstraction, the triumph of human skill over nature, disease, and the tropical *other*, the model for an efficient and autocratic state, and finally the recovery of manliness through Roosevelt’s “strenuous life.” On this level, the apparent contradictions of what the Canal stood for disappeared, and it came to represent all of these modernized concepts at once.

Many of the storytellers’ constructs were rooted in the uncertainties within American society and the problems of industrialization. For demonstration purposes, the Panama authors imagined the French, who had pursued a national agenda not so different from the American objectives in Panama, as a mirror of the effeminate, morally corrupt capitalists at home. In their view, individualistic indulgence and the desire for profit had caused the French project to fail, while government control, a collective spirit, and manly virtues made the American triumph inevitable. Between the lines, however, the fascination with the French ruins on the Isthmus and other sentimental comments can also be read as expressions of self-doubt that the Canal and American society would ever live up to their promises.