

NICARAGUA, PANAMA AND THE DREAM OF A CANAL

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ABSTRACT

With an estimated cost of US\$50 billion, the Nicaragua Canal will be one of the largest construction projects ever attempted—if, of course, work on it actually resumes following its suspension in late 2015.¹ It will stretch 172 miles through jungle, across Lake Nicaragua, connecting the Atlantic to the Pacific and providing a competitor to Panama.² While we may like to label it as a construction project, history tells us that major endeavours to tame nature generally demand extraordinary prices in political, financial and human terms.

Take the Panama Canal: by the time it was completed in 1914 it had resulted in revolution and the formation of a new republic. It had led to the fate of two nations being decided by a simple postage stamp, caused the nineteenth century's largest financial crash and changed the way we think about tropical disease. In human terms it cost more than 20,000 lives.³

While the problems faced in Nicaragua will no doubt be different, examining previous attempts to cut a ribbon of water between the Atlantic and Pacific gives context to what may lie ahead. It also tells us that what's currently taking place in Nicaragua is not a new story—it's simply the next chapter in a drama that's been played out in Central America since Spanish Explorer, Vasco Nunez de Balboa, crossed the isthmus in 1513 and became the first European to set eyes on the Pacific Ocean.

THE BIRTH OF AN IDEA

The completion of the Suez Canal in 1869 suddenly made a canal in the Americas appear possible. The rewards for successfully cutting a path through the isthmus would be immense. It would reduce the 14,000 mile sea journey from New

York to San Francisco to just 6,000 miles, avoiding the need to travel round treacherous Cape Horn. Nicaragua was the first choice of route, with Panama a close second, but as is often the case the attributes of the idea were less important than the man selling it.

Frenchman, Vicomte Ferdinand de Lesseps, certainly had the right attributes: charisma, conviction, and distinguished heritage. The family's wealth, however, was a fiction, and de Lesseps found himself, at age 43, a disgraced diplomat.⁴ He then attempted the most unlikely of endeavours, building the Suez Canal.

It was a remarkable decision: he was neither an engineer nor had a technical background, nor had he any experience in finance. At best he was only considered a mediocre administrator. But he had diplomatic skills, and he believed that a canal through the desert was possible, despite its critics. Even when the Rothschild banking house demanded a high commission for funding the project, he raised the money himself. He sold shares publically, generating 200 million francs from 25,000 small investors. His confidence was well placed, the canal was a success, its investors got rich, and he was hailed as Le Grand Francais.

In 1879, when talk in Paris turned to a canal in the Americas, the challenge was too tempting for de Lesseps to pass up. Immediately he discounted the Nicaraguan route—geography ruled out a sea level canal, which is what he'd built at Suez. But he believed such a canal was possible in Panama, without the need for locks. While critics disagreed with him, de Lesseps, now aged 74 and at the height of his fame, simply ignored them, saying 'science has declared that the canal is possible and I am the servant of science'.

He travelled to the isthmus, and with French flags flying was given a hero's welcome. Back in France he set up a private newspaper to promote the canal, went on a lecture tour, and bribed influential newspapers and politicians for coverage of his scheme. In December 1880, more than ten years after the completion of Suez, he formed the Compagnie Universelle du Canal Interocéanique. One hundred thousand people clamored for shares. Finance was now secured by public means, and he pronounced that in just seven years the canal would be complete.

THE FRENCH

The French attempt in Panama was a debacle. While one team began dredging Panama Bay on the Pacific side of the isthmus, a second began work on the Atlantic side in Limon Bay. A third team began in the mountains, the Cordilleras, excavating what would be known, notoriously, as the Culebra Cut. At Culebra, de Lesseps' engineers estimated 74 million cubic metres of material would require excavation from a nine mile long channel.

The project's true enemies, however, soon presented themselves: climate and disease. Workers struggled in conditions de Lesseps had never anticipated—he'd visited Panama in the dry season, missing the eight-month-long wet season. He hadn't seen the torrential downpours, nor the Chagres River burst its banks and flood to depths of 10m. This river crossed the proposed canal route several times and a solution to the flooding would have to be found. The rain made conditions intolerable for the workers. It swamped construction and washed spoil back into the Culebra Cut. The men had to cope with dense jungle, venomous snakes, spiders and big cats.

They were forced to live in filthy conditions, and almost every type of tropical disease attacked them: typhoid, cholera, smallpox, malaria, dysentery and yellow fever.

Despite the conditions, workers continued to arrive from France, Jamaica, Colombia, Venezuela, Cuba and America. By May 1884 there were 19,000 people working on the canal. But the problems continued, particularly in Culebra. Philippe Bunau-Varilla, a 26 year old engineer battled with its excavation, with the work becoming paralysed by inefficient equipment and little room to remove spoil. Worse, the 74 million cubic metres of material that required excavation was an underestimate—it had to be revised to 120 million cubic metres.

Despite the increase, de Lesseps kept his original finish date of 1888, insisting all was well. But five years into the seven year project there was still no plan to deal with the Chagres River flooding and less than one quarter of the planned works was actually achieved. Yellow fever had been the real threat all along—at one point over 200 workers were dying every month, coughing up black blood.

News of the problems eventually reached France and de Lesseps couldn't keep it quiet any longer. In February 1889 the company went into liquidation and over 800,000 people lost their savings. It was the worst financial collapse of the nineteenth century and the resulting scandal brought down the French government. In seven long years, little inroad had been made on Culebra and there was only an eleven mile ditch dug inland from the Atlantic. It had cost \$280 million. The French simply walked away and the jungle reclaimed the isthmus. More than 20,000 perished in the attempt.

THE AMERICANS

When day broke on 2 November 1903, the Nashville, a United States warship, lay at anchor in Limon Bay. News of its arrival reached Amador Guerrero and he knew everything was in place for revolution. Over the course of the coming days Colombian control of the isthmus came to an end. The local Colombian garrison was overpowered, further United States warships arrived and the last Colombian troops departed.

The Republic of Panama was declared and on 6 November it was formally recognised by the United States. Over time, Amador Guerrero would be elected president, and Panama would appoint their 'confidential agent' or Envoy Extraordinaire and Minister Plenipotentiary to the United States. It would be none other than the engineer who'd worked so tirelessly on the Culebra Cut: Philippe Bunau-Varilla.

The events that led to Bunau-Varilla's appointment almost defy belief. In late 1900, when interest in building a canal was rekindled, Bunau-Varilla—who'd never given up on the dream—travelled to the United States. He discovered Nicaragua was the United States senate's preferred route, so he began canvassing for Panama. But the shadow of French failure was long. Nicaragua's opponents cited its seismic volatility as an issue—earlier that year there had been a number of eruptions in the region, one of which killed an estimated thirty thousand people. (When Bunau-Varilla heard the news he wrote: 'What an unexpected turn of the wheel of fortune!'). Then, just days before the Senate vote on selecting a route, Bunau-Varilla, ever resourceful, sent each of the senators a one-centavo Nicaraguan stamp showing Lake Managua with a volcano violently erupting in the background.

Panama was selected by a margin of just 42 to 34, and the United States acquired the French company for \$40 million.

Almost immediately there was an issue: the Columbians. They were reluctant to ratify the treaty with the United States. Bunau-Varilla again seized the initiative. He arranged to secretly meet the spokesman for the Panamanian rebels, Amador Guerrero, at the Waldorf-Astoria in New York. Guerrero said revolution was possible: the local Columbian garrison on the isthmus could be easily overpowered, but the issue was to prevent Columbia landing fresh troops. (An overland march from 'mainland' Columbia required crossing the Darien wilderness—an impassable swampland.)

So Bunau-Varilla travelled to Washington and met with the President, Theodore Roosevelt. Bunau-Varilla asked if United States warships could be used to prevent the Columbians landing fresh troops. If so Panamanian revolution could be successful and such a grateful new nation would no doubt ratify a canal treaty.

The idea appealed to Roosevelt, who was an advocate for the United States becoming a world power. Bunau-Varilla departed with what he believed was an unspoken 'understanding' that support would be forthcoming should the Panamanians rise. Bunau-Varilla passed on the assurance to Guerrero, along with funding, the wording for an independence declaration and the design for a flag very similar to the stars and stripes.

The revolution was a complete success and Bunau-Varilla, as 'confidential agent' in Washington, negotiated the Hay-Bunau-Varilla treaty on behalf of the Panamanians, securing the United States' right to build a canal and essentially giving it sovereign rights over the canal zone.

Almost immediately the United States faced the same challenges as the French, but they had one critical advantage: Colonel William Crawford Gorgas. He wasn't an engineer, but a doctor who'd worked extensively in Cuba and was an expert on tropical diseases. The prevailing wisdom at the time was that yellow fever was spread by the 'miasma'—the gas from decaying tropical vegetation. Gorgas, however, believed a different theory—the disease was spread by mosquitoes. He proposed a radical plan to control the disease by controlling the mosquito population.

Despite their scepticism, with workers already dying, the United States backed his plan. Gorgas directed his team of several hundred to fumigate every private house in Panama. Mosquito screens were put up in the hospitals, and all standing water was sprayed with a film of oil to prevent mosquitoes depositing eggs and reproducing. It is considered to be the most expensive eradication program ever undertaken, but it was immensely successful. Within years of arriving in Panama, Gorgas had eradicated yellow fever.

With the disease under control, the work began in earnest. The chief engineer, John Stevens, was instructed by Washington 'to make the dirt fly'. And he did. He industrialised canal construction by using modern American earthmoving equipment and modifying the existing train system to transport spoil away from the Culebra Cut. By 1906, 24,000 workers were on the job. By 1907 there were 32,000. In 1910 there were almost 40,000.

Perhaps the most important technical decision Stevens made was that Panama would no longer have a sea level canal.

The canal would climb through a series of locks, being carried up through the Culebra Cut and reducing the amount of material necessitating excavation. The Chagres River would be dammed, creating Lake Gatun, the largest man-made lake in the world at 164 square miles. Damming the river would manage its flooding and the lake's water would gravity feed the locks, at the same time running turbines and generating electricity. Tucked away in this fledgling country—the canal would be self-sufficient.

By the time it was completed it had taken a total of 35 years, cost \$639 million, and would become known as the longest 50 miles in history. The total volume excavated was 200 million cubic metres—enough to build a wall 10m high by 5m wide that would stretch for 4,000 km. It opened on 15 August 1914 and what should have been a day of triumph, however, went largely unnoticed. Thirteen days previously, the world had gone to war.

PANAMA TODAY

Fast forward 100 years and the canal's saviour is its very Achilles heel. There are only two sets of locks at each entrance, and they can't cope with the number of vessels wishing to use them. Congestion results, with commercial shipping experiencing delays of up to seven days in high season.

To address the bottleneck the Panama Canal expansion project commenced in 2007. It will deliver a third set of locks, which is expected to double the canal's throughput. The winning consortium, Grupo Unidos por el Canal (GUPC), were awarded the tender with a price of \$3.1 billion, more than \$1 billion lower than the next highest tender. With allegations it was a 'low-ball' bid, inevitable disputes have arisen.⁵

At the time of writing claims are currently in ICC arbitration in Miami. Time will tell how much the expansion will cost overall.

This expansion, however, won't tackle Panama's big issue, the vessel size limitations of its existing locks. While massive when constructed—big enough for the Titanic—they are small compared to modern vessels, many of which are three times the size. And this is where Nicaragua comes in—it will have substantially bigger locks.

NICARAGUA CANAL

Throughout its history the Nicaraguan route has been shut down repeatedly. It was overruled by de Lesseps and canvassed out of consideration by Bunau-Varilla. Its burial was ensured in 1914 when Nicaragua, during Panama's closing stages, signed a pact with the United States giving it the exclusive right, in perpetuity, to build a canal.⁶

Whether or not the United States seriously intended doing so is debatable, but the pact ensured no one else could either—Panama would retain a monopoly.

The treaty was finally abolished in 1970, but no-one was leaping at the opportunity to build a canal. Then enter Hong Kong billionaire, Wang Jing, and the Hong Kong Nicaragua Development Group (HKDG) in 2013.⁷ Wang Jing is an enigmatic figure, believed to have close ties to Beijing—many speculate this is, in fact, a Chinese canal.

He has a strong supporter in Nicaraguan President Daniel Ortega, who views the canal as the economic saviour of Nicaragua—currently the second poorest country in the western hemisphere after Haiti. The arrangement is similar to what occurred in Panama—the HKDG will essentially have sovereign land rights over the canal's route.

With allegations that Ortega is selling off parts of the country, numerous street protests have turned violent.⁸

The canal itself will be 172 miles long, 65 miles of which will pass through Lake Nicaragua. Its locks will be considerably larger than Panama's (even taking into account the expansion), and they will accommodate the world's newest cargo supertankers.

The route will cut through virgin rainforest and ancient tribal areas, and while many political concerns have been raised, some of them constitutional, environmental concerns are dominating the debate. Ironically, in Panama it was the environment that posed a serious threat to the project's completion, in Nicaragua the project's completion poses a serious threat to the environment.

The potential environmental damage to Lake Nicaragua is taking centre stage. The lake is a 3,191 square mile expanse of water that plays a critical role in providing drinking water and agricultural water to many Nicaraguans.⁹ Disturbance of this ecosystem will have serious consequences.

One issue is the shallowness of the lake—in places it's only 10m to 15m deep. The canal will require a 28m deep channel to be dredged in order for the canal to traverse it. This process alone has set environmental alarm bells ringing.

Then there are concerns once it becomes operational. Sea water will inevitably flow into the canal from the oceans and increase the salinity of Lake Nicaragua. New species of flora and fauna will be introduced in a similar manner.¹⁰ And then there are the spills: pollution from minor diesel spills from vessels will inevitably occur, while the consequences of a major spill could be catastrophic.

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Environmental experts allege a glaring lack of planning regarding these questions and are calling for a more thorough environmental review of the canal, both during construction and for its lifetime. They call for an assurance that world best practice standards will be applied to ensure an environmental disaster is averted.

CLOSURE

Interestingly the Nicaragua Canal construction is occurring at a time of great change in global shipping. The Panama Canal is completing its expansion and there is exploration of the potential for a Northern route above Canada—a route that may only be possible because of global warming and the receding icecaps, but this may be decades away. And then there's the view that China's exports are at an unsustainable level and that growth in shipping is declining.

Add to this the question of whether construction on the Canal, which is currently suspended, will ever resume.

The geopolitical circumstances and the power of individual personalities involved in Nicaragua are reminiscent of Panama more than 100 years ago. In de Lesseps day they had an amusing palindrome: a man, a plan, a canal, Panama. Of course de Lesseps didn't have much of a plan, but there was no way of planning for the amount of material they would have to excavate, the climate they would face, and the diseases that would destroy them.

The United States didn't have much of a plan either—it's doubtful if congress would have approved the project in the first place if they had known what it would actually cost in the end. And the United States had to change the fundamental nature of their canal by introducing locks in order to complete it.

History tells us that in such projects there is no plan that can anticipate the magnitude or indeed the nature of the problems that await us when we try and reshape the world. While we may label the Nicaragua Canal simply as a construction project, it is much more and the challenges in successfully completing it without irreparably damaging the environment will be immense.

REFERENCES

1. Watts J. (2015) \$50bn Nicaragua canal postponed as Chinese tycoon's fortunes falter [Online] Available at: <http://www.theguardian.com/world/2015/nov/27/nicaragua-canal-postponed-chinese-tycoon> (Accessed: April 2016)
2. Fonseca P. (2015) Nicaragua constructions enormous canal, blind to its environmental costs [Online] Available at: <http://www.scientificamerican.com/article/nicaragua-constructs-enormous-canal-blind-to-its-environmental-cost> (Accessed: April 2016)
3. Cadbury D. (2004) *Seven Wonders of the Industrial World*, London, UK: HarperCollins Publishers
4. McCullough D. G. (1977) *The Path Between the Seas: The Creation of the Panama Canal, 1870–1914*, New York, USA: Simon & Schuster
5. Webber J. (2014) Panama Canal dispute throws \$5.2bn expansion project into disarray [Online] Available at: <http://www.ft.com/cms/s/0/406bdeb4-8e34-11e3-98c6-00144feab7de.html#axzz4514FPJbq> (Accessed: April 2016)
6. Anderson J. (2015) Breaking ground on the Nicaragua canal [Online] Available at: <http://www.newyorker.com/news/news-desk/breaking-ground-nicaragua-canal> (Accessed: April 2016)
7. Gross M. (2014) Will the Nicaragua canal connect or divide [Online] Available at: [http://www.cell.com/current-biology/abstract/S0960-9822\(14\)01355-4?_returnURL=http%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0960982214013554%3Fshowall%3Dtrue](http://www.cell.com/current-biology/abstract/S0960-9822(14)01355-4?_returnURL=http%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0960982214013554%3Fshowall%3Dtrue) (Accessed: April 2016)
8. Otis J. (2015) Nicaragua canal plan riles landholders [Online] Available at: <http://www.wsj.com/articles/nicaraguan-canal-plan-riles-landholders-1433410202> (Accessed: April 2016)
9. Shaer M. (2014) A new canal through central America could have devastating consequences [Online] Available at: <http://www.smithsonianmag.com/science-nature/new-canal-through-central-america-could-have-devastating-consequences-180953394/?no-ist> (Accessed: April 2016)
10. Romaniuk S. (2015) Nicaragua canal: China's strategic presence in central America [Online] Available at: <http://thediplomat.com/2015/06/nicaragua-canal-chinas-strategic-presence-in-central-america> (Accessed: April 2016)