4.6 How to Turn Nothing into Something: Guano's Ephemeral Fortunes

This is the story of how hungry yet prosperous people in Europe turned mountains of excrement on remote, barren islands halfway around the world into piles of gold—and how that sudden wealth led to disaster.

The Chincha islands off of the coast of Peru are barren dots in the Pacific. Uninhabitable to humans because of their lack of rain, they became paradise to cormorants, pelicans, and other birds. The birds thrived on one of the world's richest fishing waters, refreshed by the cold Humboldt current. Feasting on anchovies and facing no natural predators, the cormorants stretched their land legs on the Chinchas where they created a virtual aviary carpet. As many as 5.6 million birds per square mile crowded onto the specks of land, making not only a tremendous racket, but mountains of excrements hundreds of feet deep. The lack of rain allowed the manure to pile higher and higher, generation after generation.

Although no humans lived on the islands, humans did know about the bird manure. Indeed, the Incas had a name for it: *huanu,* which meant dung. It was later corrupted into "guano," one of the few Quechua words still current in the English language.

The Incas, marvelous agriculturalists, used guano to fertilize fields in the coastal valleys to feed their dense populations. But its use fell into abeyance after the Spanish conquest. The dramatic fall of the Indian population because of disease, and the marginalization of survivors to the Andes mountains, where transporting guano was infeasible, virtually ended demand. The small Spanish population that commanded the best lands had no need for fertilizers beyond the cow manure they introduced along with cattle. But the cormorants kept working their magic and the islands' treasure grew.

Three centuries after the Spanish conquest, in the late 1830s, the world once again woke up to guano's wonders. Europe's burgeoning population put a strain on its agriculture. Urbanization, the end of the frontier and the spread to marginal lands, and increasing prosperity meant there was greater demand for food than ever, yet fewer natural resources to meet that demand.

Science, as well as hunger, led Europeans to look to guano. Only at the end of the eighteenth century did European scientists begin to understand plant nutrition; the first field experiments were undertaken in 1834 by Jean Baptiste Boussingault, and only in 1840 did Justus von Liebig disprove the theory that plants derived nutrition from humus. Agriculturalists began experimenting with soil supplements besides the age-old use of manure and lime.

Of course demand and knowledge needed their handmaiden: feasibility. To bring fertilizer economically from halfway around the world required a revolution in transportation. Great advances in sailing ships' size and speed, the steamship that began to be important in the 1840s, and more efficient port facilities combined with the new railroad to transport the landed guano all radically lowered carrying costs.

All of a sudden, Peru, driven by internecine fighting in the two decades since independence and reeling from the loss of most of its silver mines, found itself rich. The guano boom was literally like finding a pot of gold, for it required almost no investment.

Imagine the perfect employee: he does not need to be fed because he hunts his own food, needs no shelter because he gladly lives outdoors, is productive even while seeking food or at leisure. He never goes on vacation. The worker needs no tools or machines. Indeed, this employee is actually the factory himself. He finds the raw material, which he obtains for free, transports it, processes it, and delivers it, then steps aside while it is taken at no charge. Aside from the tens of millions of cormorant worker/factories, the guano trade needed only some 1,000 to 1,600 humans. Chinese and Polynesian indentured servants as well as Peruvian convicts shoveled the sweltering manure into the holds of awaiting ships. It was transferred, virtually untouched, to the fields of Europe.

Initially, Peruvians had little to do with the trade. The British house of Gibbs won the monopoly contract, contracted British ships, and marketed guano primarily in France, England, and the southern United States where it nurtured crops such as turnips, grains, and tobacco.

Surprisingly, in this age of empire the weak Peruvian state was able to maintain a monopoly over the guano trade and indeed, for a while, award the concession to a Peruvian company. Historian Shane Hunt has estimated that 65 to 70 percent of the final sales price reverted to the Peruvian government; that was more than 100 percent of the FOB (Free on board—price from the point of departure) price.

In the short run there were important gains for Peru. These revenues allowed the state to abolish barriers to capitalism such as the head tax, internal duties, and slavery, as well as pay off its debt. Some of the new wealth led to new sugar plantations on the north coast and drove up wages by 50 percent.

Unfortunately, the pot of gold also led to what is today known as the "Dutch Disease." A strengthened Peruvian currency led to massive imports, displacement of local artisans and manufacturers, and grandiose building programs. Aware that exports, which reached the herculean total of 50,000 tons in 1856, were far outstripping the cormorants' ability to eat and excrete, government officials sought to use the windfall (or perhaps "currentfall") to diversify and develop the economy for that not long-off day.

The government in Lima borrowed in Europe at a furious pace on the collateral of their guano deposits (one of history's most peculiar collaterals). Enormous railroad projects were undertaken. Historian Paul Gootenberg argues that these were far-sighted, if failed efforts, while others have accused them of being fraudulent and foolish. In either case, Peru's guano wealth led it to become Latin America's largest debtor and, in 1876, to declare what Gootenberg has called a "world-shattering default."

With easily mined guano deposits much depleted, Europeans turned to another source of nitrogen nitrates. Coincidentally, the greatest deposits were found in the area between Peru and Chile and what was then Bolivia. Although at first this appeared to be another windfall, in fact it proved to be another tragedy. Disputes over the nitrate lands led to the bloody War of the Pacific (1879–1883) between the three countries. Peru lost not only the war, but the southern part of the country and its nitrate fields.

Overmining of the guano islands, substitutes like nitrates, and eventually chemical fertilizers ended guano's golden age. Today, Peruvians have to work much harder at turning fish into gold; they catch and process fishmeal, not as a fertilizer as much as a dietary supplement for livestock. The cormorants, once the heroes of Peru's waste-to-wealth treasure chest, are unemployed.

The world economy, then, transformed waste into wealth. Unfortunately, to a considerable degree humans wasted the wealth.