

BLOG ESSAY

For

The Maintainers: A Conference

“Maintaining Innovators or Innovating Maintainers?: Revolutionaries vs. Reactionaries in the 19th Century Maritime World”

By

John Laurence Busch

In 1807, the American Robert Fulton created—in New York City—the first commercially successful “steamboat” in history, proving that it was possible for humans to use an artificial power to alter a person’s location to practical effect faster than by natural means. As such, steam-powered vessels may be considered the first “high technology” in history, and the beginning of the time-and-space-altering High Technology Revolution.

Of course, Fulton’s first successful steamboat wasn’t the end of innovation, but just the beginning. In short order, Colonel John Stevens of Hoboken, New Jersey, as well as other mechanically-minded entrepreneurs, began building their own successful “steamers,” innovating as they went. Unquestionably, Fulton, Stevens et al were “innovators” as well as revolutionaries.

Within just a few years, the basic functionality of steamboats was proven. Were the entrepreneurs and mechanics building these contraptions then, perhaps, merely “maintainers” of the technology?

Hardly. These steamboats were still noisy, clanky, throbbing things, which, by the way, broke down a lot. Furthermore, the entrepreneurs risking their hard-earned money on steamers were compelled to test different ways of convincing the public to patronize them to profitable effect.

The natural result was an imperative to continue to innovate, experimenting with and improving upon the steam engine placement, the drive train, the paddlewheel design, the boilers, the passenger accommodations, and on and on. It therefore was necessary for designers—in order to remain competitive—to work hard to improve the efficiency and reduce the cost of operating this expensive new technology. Accordingly, from circa 1813 onward, steamboat builders became “maintaining innovators.” They simply had to maintain a level of innovation with each new steamer they built, or they would fall behind, and risk losing the bulk of their business to a more efficient steam competitor.

By 1815, steamboats were operating on rivers, lakes and bays in the United States (and were just being introduced upon the same in Britain). But there was another realm left to conquer, and that was the deep sea. Taking up the challenge was one of the first steamboat captains in history, Moses Rogers (who initially had worked for John Stevens before striking out on his own). Recognizing that no one would accept the idea of a fragile “steamboat” attempting to cross the ocean, Rogers became an “innovator,” by creating the first “steamship” in history. This vessel, the *Savannah*, successfully crossed the Atlantic Ocean in 1819.

So then, did those steam-at-sea proponents who followed in the wake of Rogers and the *Savannah* immediately become “maintaining innovators”?

Well, arguably, no, not exactly. While Rogers and the *Savannah* unquestionably broke the psychological barrier, proving that steam-powered vessels would be global in their reach, the vastness of the world’s oceans, as well as their brute power, meant that many years of test and trial by ocean steam “innovators” lay ahead.

That era of steam-at-sea “innovators” clearly came to an absolute end in 1838, when two British-built steam vessels, the *Sirius* and the *Great Western*, raced each other to become the first to steam continuously across the Atlantic Ocean. The subsequent regular cross-Atlantic service of the *Great Western* meant that once again—just as with steamboats a quarter of a century before—the steamship “innovators” became “maintaining innovators.”

And what about the ocean sailing industry? What did these “maintainers” of the “old mode of transport” (as sail was sometimes called) do while the steam-at-sea innovators pushed their unnaturally-powered craft further and further during the 1820s and 1830s?

Well, many of them became reactionaries. Some of these sailing reactionaries chose to badmouth steam, while others tried to imitate it indirectly, employing set departure dates for trans-Atlantic crossings, or building animal-powered “teamboats” for short inland routes.

But in the wake of the *Great Western*’s inaugural trans-Atlantic steam service in 1838, some other builders of sail reacted in a different way: they decided to compete. And they did so by innovating. Bigger, stronger hulls gave sail an increased advantage in the cargo trade. Four masts instead of the traditional three for a “ship” gave them more canvas area with which to harness the wind. And even longer yards, and more of them, provided still larger and even more numerous sails to deploy.

The result—by the late 1840s—was the appearance of the greatest sailing vessels the world had ever seen, called clipper ships: big, beautiful and fast, and clearly more effective in many respects than the first generation of regular service trans-Atlantic steamships.

What had those particular “maintainers” of sail done?

The answer is simple: they had become “innovating maintainers.” Recognizing that their dominant position in the maritime world was under direct threat from steam, the maintainers of traditional sailing vessels knew that they had to innovate or die.

Thus, by the 1850s, the ocean steaming industry had become “maintaining innovators” and the ocean sailing industry had become “innovating maintainers,” locked in competitive combat for most of the rest of the century. Such a dynamic as this has existed for many other technologies, “high” and otherwise.

Without a doubt, there are indeed points in time when the practitioners of technologies can be considered true “innovators” or “maintainers.” But as this example from the maritime world shows, there are also periods of “maintaining innovators” and “innovating maintainers,” which often intersect and interact in ways that should be recognized as part of a much more complex—and most interesting—technological tapestry.