

INNOVATION POLICY LESSONS OF THE VASA

bridges vol. 32, December 2011 / Pielke's Perspective

By Roger A. Pielke, Jr.



Roger A. Pielke, Jr.

On a chilly day in **Stockholm** last month, I visited the [Vasa museum](#). Situated on the waterfront, the museum holds a sailing ship that sank in the Stockholm harbor on its maiden voyage in 1628. The ship had barely made it a kilometer from the dock that fateful August day, when it began to roll, letting water into its open cannon ports and then quickly sinking to the bottom. The **Vasa** took with it the lives of about 40 people and only the top of its tallest mast was left above water. The ship was raised in 1961, and in 1990 was moved to its current location in a giant building that holds the restored ship in its entirety.

The **Vasa** was to be a technological marvel of its day, during a period when “**international competitiveness**” had a familiar meaning. Based on the perception that **Sweden** was losing ground in the race for naval technology, particularly to neighboring **Denmark**, Swedish [King Gustav II Adolph](#) (better known in English as **Gustavus Adolphus**) had commissioned the bigger and better-armed Vasa. As I explored the museum that day, I couldn’t help but think that the tragedy of the Vasa and its fate since that day more than 380 years ago hold lessons for how we think about contemporary innovation policies.

1. Politicians have a long history of meddling in technology implementation

According to the lore of the **Vasa**, the ship’s design had been altered by the King, who had proposed changes such as adding a second gun deck and bigger cannons. Yet the **Swedish** shipbuilders had little experience building such a vessel. The ship wound up being top-heavy, which contributed to its sinking. The King’s interference in the design and building of the ship was one factor that led to the disaster. ¹

This experience reminded me of a story told by [Edward David](#), science advisor to [Richard Nixon](#), when I interviewed him at a public forum in 2005. ² David recounted how President Nixon wanted to cancel several of the last **Apollo moon missions** out of concern that an accident might hurt his re-election chances in 1972. The moon mission was moved to December, 1972, a month after the election. No tragedy resulted, but both Vasa and Apollo show that technologies are often subject to the whims of larger political forces.

2. Institutional factors can inhibit effective decision making

Söfring Hansson, the **captain of the Vasa**, was well aware that the ship was not seaworthy. Prior to the maiden voyage, Captain Hansson had demonstrated to a vice admiral that the ship was unbalanced. He had 30 men run back and forth across the upper deck, causing the ship to roll. The demonstration was stopped after the third pass, out of fear that the Vasa would capsize right there at the dock. Despite this knowledge, the Vasa set sail soon thereafter.

The dynamics here are similar to those that preceded the loss of the **Space Shuttle Challenger** in 1986. Less than a year earlier, an engineer working for the **NASA** contractor had written a memo raising concerns about the performance of the shuttle's solid rocket boosters in cold conditions. This information never reached NASA decision makers on the freezing January day that Challenger was launched. Both experiences show that good information does not always lead to good decisions.

3. Performance is the ultimate test of technology

The short voyage of the **Vasa** showed clearly that the design of the ship was deeply flawed. It was a costly and embarrassing lesson that we are still discussing centuries later. The obvious lesson is that major **innovations** should be tested carefully before full-scale deployment. We are still learning these lessons today, of course, but there are far more positive lessons to take from Vasa as well.

The salvage and restoration of the ship has provided a fertile laboratory for the science of historical preservation, including advances in chemistry such as the removal of iron from Vasa's wood. The lessons of the **Vasa** are thus of broad relevance to historians and museums around the world who seek to preserve perishable historical artifacts. It is one thing to discuss and debate technologies of preservation, it is quite another to practice them. The Vasa has proved to be an unexpected and valuable laboratory for learning while doing.

4. We should celebrate and learn from failure as necessary for success

In the **United States**, much has been made of the bankruptcy of a solar company, **Solyndra**, which had received **loan guarantees** from the **Obama Administration**. The debate follows a predictable pattern with the failure of a single company used as evidence of a poor approach to **innovation policy** or even wrongdoing. But Solyndra aside, discrete failures in innovation need not indicate flawed innovation policies, as failures can be significant opportunities for learning and ultimately for success.

Indeed, the **Vasa museum** is a prominent celebration of a failure, with the experience used to understand why the ship foundered, the lessons of its recovery, and to take advantage of the opportunity to learn about the history of the 17th century. Famous failures often find a home in business school case studies, but they should also find a home in our technology policies. Successful innovation means taking risks, and taking risks means some successes but many failures as well. **Innovation policies** with the greatest chance for success will build in an expectation for failure, to help avoid the predictable politicization.

5. Life is different today

One fascinating part of the **Vasa museum** exhibits includes a presentation and discussion of some of the people whose remains were recovered along with the Vasa. All were small people, especially compared to the sturdy Swedes one sees today around **Stockholm**. Most had poorly healed injuries, bad teeth, and signs of malnutrition. Even **King Gustav II Adolf**, whose clothing can be seen at the Royal Armory in the basement of the **Swedish Royal Palace**, was a small fellow, although no doubt better fed than those whose remains were found at the bottom of the harbor. Just a quick glimpse into life in 17th century Stockholm provides revealing insights into how much **science**, **technology**, and **innovation** have transformed our lives.

It is difficult to imagine how people 380 years from now will look back on our time and what they will say about our lives and our technology. What will historical museums of the future reveal about us?

Roger Pielke, Jr. is the former director of the Center for Science and Technology Policy Research at the University of Colorado (2001-2007). He has been on the faculty of the University of Colorado since 2001 and is a professor in the Environmental Studies Program and a fellow of the Cooperative Institute for Research in the Environmental Sciences (CIRES).

References:

1. <http://www.vasamuseet.se/en/The-Ship/The-sinking/>
2. http://cstpr.colorado.edu/scienceadvisors/david_transcript.html