

The Swedish Ship *Vasa*

In the 1620s, Sweden and Poland were at war. The king of Sweden, Gustavus Adolphus, was determined to put a swift end to it and commissioned a new warship the likes of which had never been seen before. The *Vasa*, shown in Figure 1.1, was to be the world's most formidable instrument of war: 70 meters long, able to carry 300 soldiers, and with an astonishing 64 heavy guns mounted on two gun decks. Seeking to add overwhelming firepower to his navy to strike a decisive blow, the king insisted on stretching the *Vasa's* armaments to the limits. Her architect, Henrik Hybertsson, was a seasoned Dutch shipbuilder with an impeccable reputation, but the *Vasa* was beyond even his broad experience. Two-gun-deck ships were rare, and none had been built of the *Vasa's* size and armament.



Figure 1.1. The warship *Vasa*.

Like all architects of systems that push the envelope of experience, Hybertsson had to balance many concerns. Swift time to deployment was critical, but so were performance, functionality, safety, reliability, and cost. He was also responsible to a variety of stakeholders. In this case, the primary customer was the king, but Hybertsson also was responsible to the crew that would sail his creation. Also like all architects, Hybertsson brought his experience with him to the task. In this case, his experience told him to design the *Vasa* as though it were a single-gun-deck ship and then extrapolate, which was in accordance with the technical environment of the day. Faced with an impossible task, Hybertsson had the good sense to die about a year before the ship was finished.

The project was completed to his specifications, however, and on Sunday morning, August 10, 1628, the mighty ship was ready. She set her sails, waddled out into Stockholm's deep-water harbor, fired her guns in salute, and promptly rolled over. Water poured in through the open gun ports, and the *Vasa* plummeted. A few minutes later her first and only voyage ended 30 meters beneath the surface. Dozens among her 150-man crew drowned.