The Art of Building Gondolas
Will the Tradition Survive?
by Thomas Price

Gracefully elegant, complex in its simplicity, the gondola is an icon that for centuries has been immortalized by authors and artists. But print and paint are not enough to keep this craft alive. Skillful hands are required to work the wood with steel and fire, and perceptive minds are needed to understand the hull's form and function. Precious few have retained these skills through an era of modernization.

The essential elements that make a gondola perfectly suited to its use also make it a difficult boat to build. To achieve the gondola's delicate balance, the craftsman must attend to every curve and the proper weight and measure of every piece, or the boat won't sit properly in the water and the gondolier won't have the control he needs. Builders, called squararioli, have handed down designs and techniques from generation to generation. Innovations, new technologies, and new materials have become accepted, but traditions have also survived. Even though the whine of the power plane has replaced the steady rhythm of the dubbing adze, the use of many hand tools has not been forgotten.

At first glance, a boatbuilder familiar with flat-bottomed boat construction—dories, for example—may assume that a gondola would pose no great challenge. When a gondola is built, however, the bottom comes together last, just the opposite of many flat-bottomed boat construction methods. The sheerstrakes are among the first pieces fitted—and in the most traditional method, only a few of the frames are installed before the sheerstrakes are shaped and fastened into place.

Most gondolas are built exclusively of solid wood, although plywood has made some inroads, particularly in racing gondolas used by the city's many rowing clubs. Attempts to produce fiberglass gondolas have failed miserably. Some success has been achieved with plywood-and-epoxy construction, which has the advantage of overcoming the problem of finding huge oak planks. Because such boats are not easily repaired, however, they have relatively short working lives.

For traditional gondolas, the two prevailing construction sequences both involve starting right-side-up on a strongback. In the oldest method, three principal frames and the forward and after stems are attached to the strongback first, then the sheerstrakes are fitted to define the shape of the hull, and finally the remaining frames are installed to conform to this defined shape. This method dates back hundreds of years. In the second method, the shape of each frame is defined in advance. In this style, the sheerstrakes are hung after most of the frames are in place.

The sheerstrakes are made of single pieces of oak ¾" thick and up to 38' long and 2' wide. The hood ends are fire-heated and bent to the proper shape before being hung with galvanized nails. The section to be bent is wetted, then heated with a burning bundle of lagoon cane while torque is applied by a simple bending jig. Water is sprinkled on the piece while heating to maintain moisture content and avoid charring. The proper shape is determined by eye—the master builder knows the shape he wants and exactly how to get the right twist from a particular piece of wood. Lagoon cane is used because it is readily available and has a relatively slow burning speed, but torches using bottled propane are also commonly used today.

Once the frames, forward stem, after stem, and sheerstrakes are all fastened together on the strongback, the frame heads are cut to the proper height and bevel. The frames, once made in two naturally curved pieces overlapping on the bottom, are now made in three pieces: the side pieces are of elm ¾" thick notched into 14½" x 27½" oak floors. The stems are of elm ¾" thick, either naturally curved or end-glued with a spline. Next installed are oak caprails, ¾" x 5¼", covering the frame heads in the middle two-thirds of the boat, which is undecked. The framework is given further rigidity by additional inboard longitudinal members 5" below the caprails, notched to fit around the frames. Massive breasthooks are fitted at both the bow and the stern, shaped from

Thom Price holds burning lagoon cane under a wetted plank as his gondola-building mentor, Daniele Bonaldo, bends it and twists it in a simple jig. Such steambending techniques are traditional and effective, but they are giving way to more modern techniques.
For an apprentice, the moment of truth comes with the first boat. Here, Thom's traditionally crafted first gondola has its sheerstrakes, frames, caprails, and decks in place. Notice that at this phase the sheerstrakes are the only planks hung.

Above—Taken off its ladder-frame strongback, the gondola is inverted for the next phase of construction. Notice the degree of asymmetry represented by the strongback. Notice also the hole dug in the floor to give the stemhead clearance.

Left—Before resuming planking after inverting the boat, short end pieces are fitted and fastened in place, then braced to the overhead, putting the boat under tension. The planks are wetted and scorched to help the boat hold its shape. Then, chine logs are installed, followed by the remaining side planks and then the bottom planking.
boatyards, called squire, in the Venetian Lagoon, and as many as 10,000 gondolas were estimated to be in use. Today, only three gondola-building squire operate in Venice proper and two on the nearby island of Giudecca, servicing a fleet of about 400. The few remaining master builders have a hard time finding young people to follow in their footsteps. The taxes these boatbuilders have to pay for apprentices are high, especially considering that apprentices aren’t as productive as journeymen, and the young generation lacks passion for tradition. Together, the principal boatyards produce as many as 15 gondolas a year for individual gondoliers. Unless more young people become interested in building gondolas before the remaining squarrioli retire, the art of building gondolas may fade away.

Having received a fellowship in 1996 to study abroad for my final year of college, I chose to go to Venice to study the impecriled art of building gondolas. I arrived in Italy not knowing any foreign language and ignorant of the Italian bureaucracy, but with pictures of some of the boats I had built and a grin from ear to ear. Had I known how difficult it would be to find a gondola builder who would be willing to take on a foreigner as an apprentice and then secure permission from the proper government agencies, I might have been discouraged from even trying. But finally, after five months of my year had passed, I started working with Daniele Bonaldo on my first gondola. In the meantime, I worked on my Italian and researched the history of Venice and its marvelous boats. When I finished my study with Maestro Bonaldo, the gondola I built was sold to a couple in Providence, Rhode Island. I, on the other hand, elected to stay in Venice. I ended up accepting an offer from Franco Crea’s boatshop, where I worked two years making many kinds of modern and traditional Venetian craft for our and sail, mostly gondolas planked in plywood.

I was amazed at the difference between the boatbuilders I had known in the United States and those I was getting to know in Venice. The Venetian boatbuilders consider themselves workmen rather than practitioners of a very beautiful form of art. They seldom have even a high school education; I had to hide the fact that I was a university graduate in order to be accepted as a serious worker. Like all of the older Venetians, they are disgruntled that no young Venetians seem interested in learning their craft, citing this as an example of how society is changing for the worse, going for easy money instead of doing work that needs to be done. At the same time, it seems strange to them that an American has come to Italy to be an ordinary blue-collar worker when so many Americans dream of living in the United States. When they see me taking pictures of my work, they really think I am crazy. Nevertheless, they each show a lot of pride and ego in being able to build gondolas. They are sharp competitors for their image, and you often hear one builder say of another, “Well, he doesn’t really know how to build a gondola.”

The remaining master gondola builders know they are in a line of prestigious craftsmen. They sometimes tire of having outsiders come to their yards to make documentary films or write articles, but they still put on a good show. Most gondola builders recognize the Tramontin yard as the finest. In recent years, Roberto Tramontin has taken over the management of the yard from his father Nedis, who officially retired but still helps maintain quality. Roberto has no sons of his own, and apprentices often leave after just a few years.

Maestro Bonaldo, my mentor, has a reputation as a talented boatbuilder, but one who believes no one should work more than is necessary to enjoy life. In my judgment, he doesn’t pay the same meticulous attention to decoration as most builders, but under the surface his gondolas are as good or better than any of them. His are among the most traditionally crafted gondolas in Venice, and he was the one who willing to take me in and show me the tricks of the trade—to pass on his skills to a younger boatbuilder—when I came to Venice. He builds four or five gondolas a year, and he doesn’t mind taking the time to do a job well to avoid having the boat come back in just a few years for repairs. Bonaldo is also without sons and will retire within a few years.

Crea is the most experimental of the builders. He could not be more different from Bonaldo. A large, imposing bear of a man, he never stops working. He considers himself the redeemer of the gondola, and he believes plywood planking will keep the gondola alive well into the future. His boatyard has about 50 times as much space as Bonaldo’s, and he employs 11 workers. At the time I started with the yard, I was one of only two traditional boatbuilders working there. The other, Matteo Tamassio, moved to Venice at age 19 from Tuscany in northwestern Italy—which Venetians consider just as foreign as the United States. After nine years in the yard, Matteo, who was Crea’s primary gondola builder, resigned late in 1998. The other workers included five painters, two mechanics, a modern boatbuilder, and a general woodworker. The Crea yard today produces about four new gondolas a year and half as many other traditional boats, in addition to maintenance and repair work. The shop also produces new motorboats and repairs large transport boats and water taxis. Crea has no sons, and he also has difficulty keeping workers.

Early in my time in Venice, I also met two young women from the Netherlands—Leenje Visser and Tirza Mol—who had studied in the Tramontin yard for several months, painstakingly recording every step in the construction method, then returning to Amsterdam to build their own gondola as part of their formal study of boatbuilding at their college. At the time, a young Venetian man was also starting to learn the art at the Tramontin yard. With about 400 gondolas in each, with a working life of 20 to 30 years, Venice’s gondoliers need about 15 to 20 new gondolas per year. That demand is being met by the current gondola builders—but how well, and for how much longer?

Thomas Price is a traditional boatbuilder who received a Thomas J. Watson Fellowship, during which he studied the art of building gondolas. He began building boats in 1991 at The Carpenter’s Boatshop, Pemaquid, Maine (see WB No. 130). He hopes to make a career to carry on Daniele Bonaldo’s yard after the maestro retires, and he hopes to establish a school for traditional Venetian boatbuilding. For more information, write him at Dorsoduro 3167, 30123 Venezia, Italy; phone 041-521-1570; e-mail thom@squero.com; or visit his website at www.squero.com.

A notice in the newspaper reported the death of Venetian boatbuilding great Antonio Cima, who had been building boats at his yard on the Giudecca for more than 50 years.
A Balance of Forces

At the peak of its development, the gondola perfectly unites the oarsman, the Venetian rowing style, and the boat. Outside Venice, the usual motion of rowing has the oarsman facing aft and using two oars, applying equal thrust to each side of the boat. Gondola rowing more closely resembles solo paddling a canoe, in which the paddle thrust’s tendency to push the boat’s bow off to one side has to be countered with a steering motion: the J-stroke, in the case of the canoe. What makes the modern gondola go straight is that the asymmetrical force of the oar is counteracted by the asymmetrical resistance of the hull: the imbalance of one cancels out the imbalance of the other. Single-oar rowing is essential in narrow canals crowded with traffic, moored boats, and low bridges. Two boats can pass each other with their oars in the water—with the blades often extending under the bottom of other boats—so that they can still be easily maneuvered as they pass.

In Venetian gondola rowing, the forward stroke of the oar, whose blade is to starboard, tends to push the bow to port. But instead of taking the oar out of the water to return it to its original position, the gondolier almost always keeps the blade in the water, rotating it about 90 degrees and dragging it back to the initial position, applying a sideways steering force as he does so. Leaving the oar in the water also provides more maneuvering ability in tight quarters. Naturally, the oar creates some drag on the return stroke. But with an asymmetrical boat, the gondolier’s course corrections are simple and subtle, requiring less force on the return stroke than required in a symmetrical boat. To turn to the left in a gondola, the corrective return stroke is omitted by lifting the oar blade clear of the water while returning to the initial position; to turn right, the oar’s drag is increased. A person used to rowing the Northern European style would find the gondola awkward to row, especially in wind and waves. The gondolier’s balance has to be that of a tightrope walker—but he can take his boat through tight turns with almost no effort.

Venetian rowing calls for balance and skill. In the hands of a master, a gondola can make the most difficult turns effortlessly within inches of canal walls, or it can hold a straight course without any apparent deviation. Ample rocker to the hull aids maneuverability, asymmetry allows a solo operator a great range of control, and the sculptural oarpost called a forcola allows eight different control positions—not one of which locks the long oar in place.