

An Interactive Model of a Craft Specialization: Wooden Vessel Construction in Gujarat, India

For centuries the sailors and shipbuilders of the western Indian coast have appeared in the histories of the Red Sea and the Indian Ocean. Seafarers and merchants set sail from Gujarat and established markets throughout the Arabian Sea that competed successfully with the Turkish, Dutch and Portuguese (Pearson 1976; 1979, and Das Gupta 1979). A Gujarati sailor reportedly led Vasco de Gama to India (Subrahmanyam 1997); the British employed Parsi shipbuilders near Bombay, (Wadia 1957); and in the first century A.D. the author of the *Periplus of the Erythraean Sea* recorded busy markets that dotted the Indian coastline (Casson 1989). Yet, in spite of their reach and influence, little is known about the social and economic organization and boatbuilding technology of these sailors and shipbuilders.

The wooden ship is central in the ethnographic survey of modern maritime communities presented here. By emphasizing the technological aspects of shipbuilding a deeper understanding of life in a traditional port settlement emerges and the web of connections that hold a port settlement together is illuminated. Several studies of sailing and maritime societies in Northwest India have been published (Greenhill 1971; Ray and Salles 1996, DeLoche 1993, Varadarajan 1995). Each addresses a portion of the coastal activities, such as boatbuilding, navigation, traditional sailing routes and so forth. But, a fuller account is required to understand the interconnections between communities that are linked to the sea, and why seafaring and sea-going trade has been so successful over the centuries in Gujarat.

While a strong maritime tradition survives in this region, and reflects traditional forms of Indian social and economic organization, technological advances inevitably threaten the livelihoods derived from the sea. Customary ties are changing in the modern world. Trucks and buses traveling along highways built since Indian independence in 1947 have steadily captured much of the transportation of goods and people along the

western coast. Railroads have also contributed to the decline of the cargo sailing business. Wooden sailing vessels now motorized with large diesel engines, still ply the coastal waters, but their share of the transport business has been greatly reduced. Some sailors survive in this new world through fishing and provide a vigorous base for the Gujarat fisheries industry. Others participate in smuggling schemes between Indian and Persian Gulf ports. Some still carry sheep and goats to the Arab lands. In spite of these changes, a picture of the traditional sailor and shipbuilder can be pieced together through the observation of present-day practices and stories of the past. The interviews, oral histories, and local historical material cover customs of the past one hundred years.

The main impediment to this type of research is the ability to speak the language of the people being interviewed. Hindi is of little use because the seafarers speak Gujarati and Kutchhi. Kutchhi is a regional language, and unwritten. Dr. D.P. Agrawal, the esteemed archaeologist and radio-carbon specialist of the Physical Research Laboratories in Ahmedabad, and Dr. Jyotindra Jain and his wife, Jutta, eminent scholars in the folklore of Gujarat, introduced me to Mr. V.K. Dharamsey of Bombay, who agreed to serve as a translator for the project. His assistance proved invaluable. He is a native Kutchhi speaker and had interpreted for various European anthropologists working in Gujarat. We hopped onto crowded buses, took short journeys by sea in wooden vessels, bargained with taxi drivers, rode in horse-drawn wooden carts across barren, salty landscapes, begged for rooms in pilgrims' hostels, found accommodation in luxurious factory guesthouses, ate at all types of "restaurants," and met many shipbuilders, sailors, traders, fishermen, priests and mullahs, artisans, weavers, local historians and authors.

This work was facilitated by the unfailing support of the Gujarat State Department of Fisheries. Through their offices, they provided many introductions and contacts. The Indian Government and the Indian Department of the Navy approved the project. The proposal was funded by the Smithsonian Institution's Foreign Currency Program and administered through the American Institute of Indian Studies in New Delhi. I am indebted to everyone who helped track down and document the traditions surrounding the seafaring people of northwestern India

Research Design

The survey was restricted to towns and villages where wooden ships were being built. Wooden ship building yards were considered important for several reasons, most importantly because the construction and operation of a vessel is shaped by hundreds of people (Steffy: 1994:1). Traditional construction techniques could be observed, and patterns of social organization that hold a craft group together could begin to be understood. Wooden shipbuilding provided an introduction to others involved with the sea--the sailors, merchants, insurance brokers and religious men whose lives revolved around the craft. I found that everyone was very proud of the shipbuilding and sailing skills of their communities and all were eager to tell me about their crafts and expertise.

The survey covers the entire Gujarat coastline. It begins in Koteswar in northwestern Kutch, and follows the shoreline around the Gulf of Kutch. It continues along the Arabian Sea on the western side of Saurashtra, and the Gulf of Cambay. For the locations of these shorelines, see the map of Gujarat in Figure 1. Fifteen coastal towns were visited that supported active maritime trade and shipbuilding, as shown in Figure 2. The shipyards and boatyards visited on this survey were engaged in the construction of wooden vessels only.

Material presented in a structured format clarifies how the ship and maritime communities intersect in a small port. A “knot of activity” (Weigend 1958:185) emerges at a port, where customs of land and sea unite. The diagram presented in Figure 3 may help visualize the ship at the center of a maritime system. This model outlines the dynamic interactions and complexity of activities inherent in shipbuilding, revealing patterns of interaction and behavior in a highly specialized craft

Six topics, categorized under two larger themes, are included in this discussion. The model has two sides, social and mechanical. The first theme presents the physical or mechanical limits imposed by aspects of engineering and the environment on 1) hull design, 2) technology and availability of natural resources, and 3) traditional construction techniques. The second theme concerns the fluidity of the social life that revolves around a ship and encompasses 4) economic ties that include trade and fishing, 5) a description of the communities of people who work in maritime occupations, and 6) ceremonies and religious practices concerned with the sea and sailing.

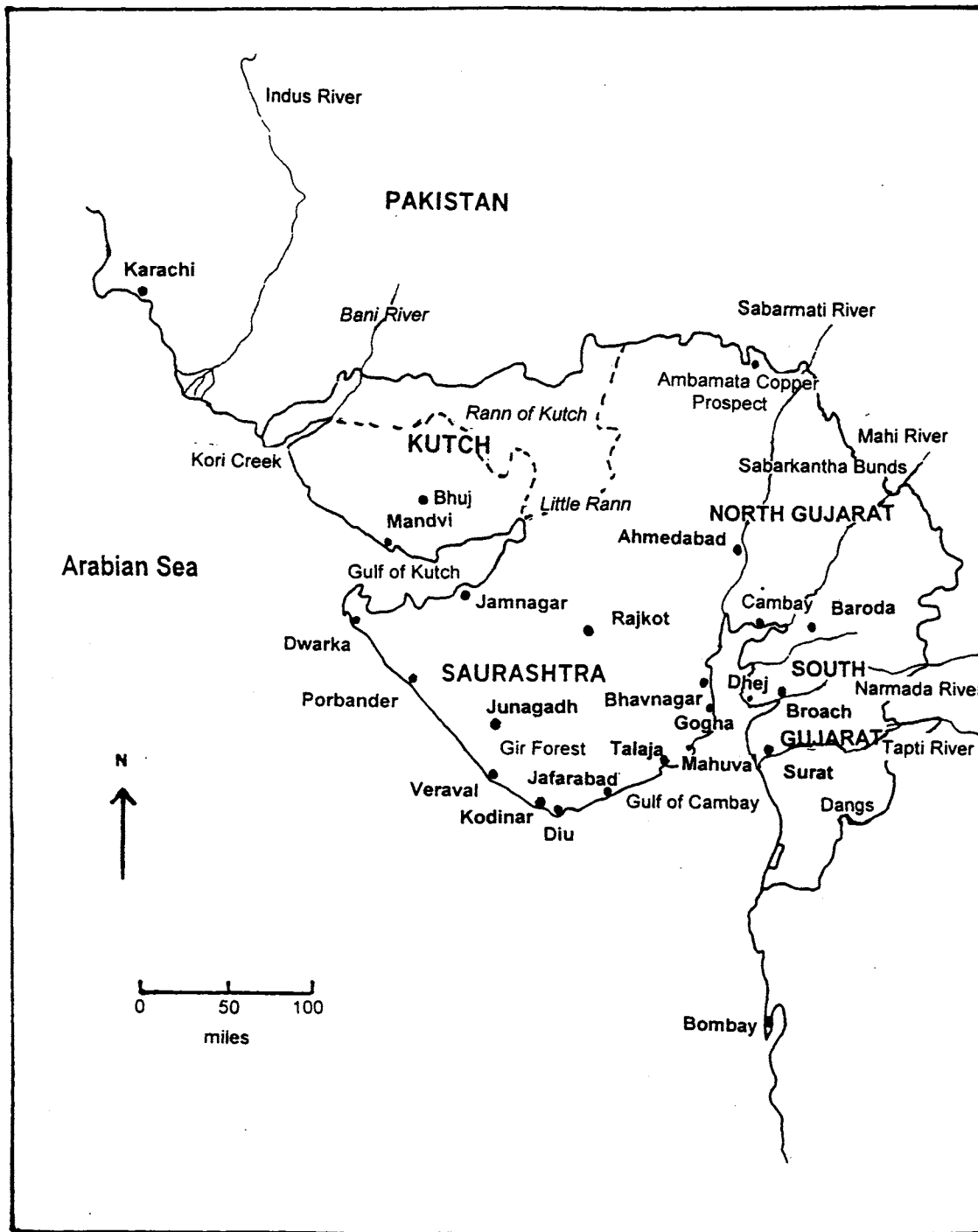


Figure 1: Gujarat, India: Major Regions, Towns and Rivers.

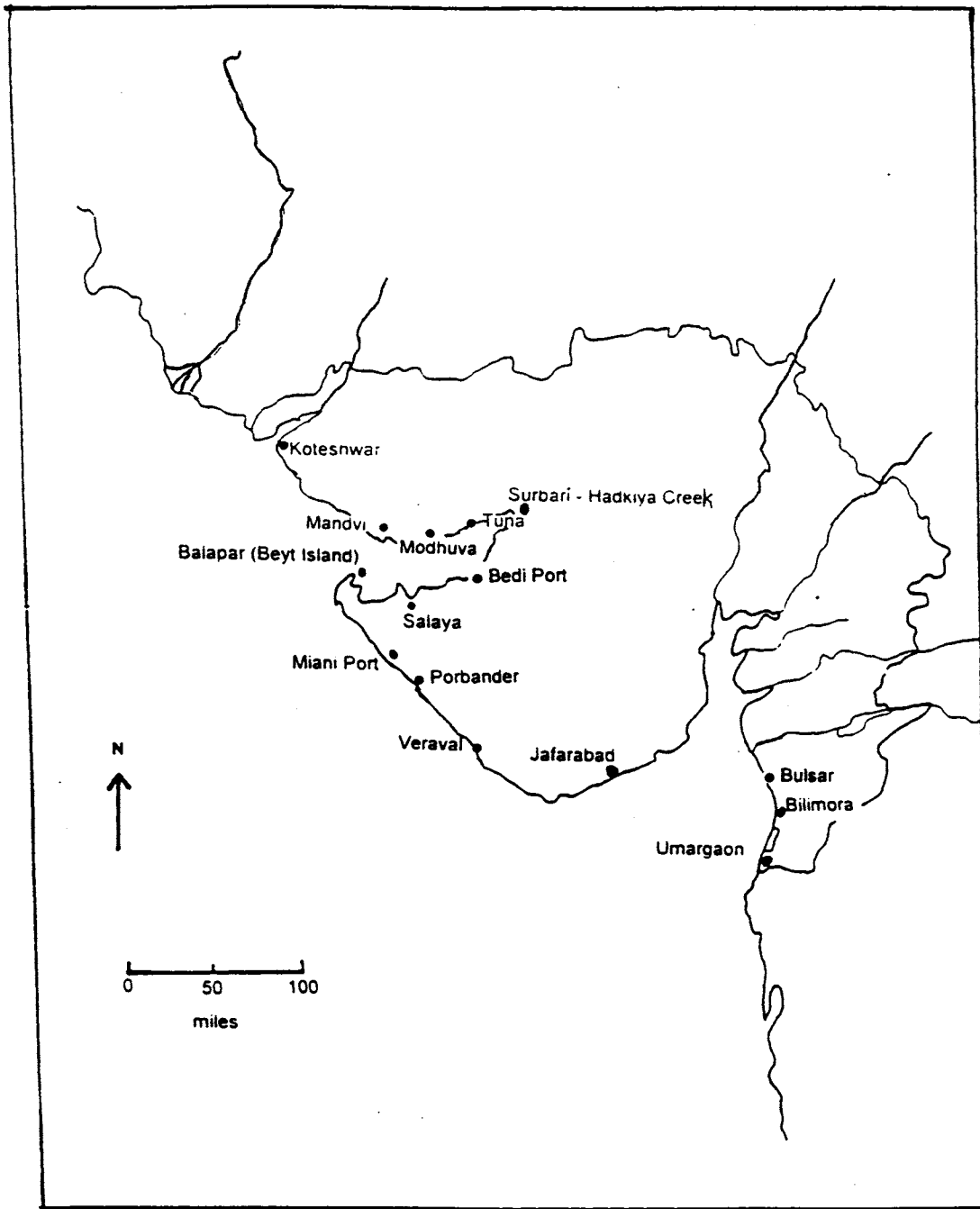


Figure 2: Shipbuilding Towns on Survey

On the mechanical side of the investigation, vessel designs and proportions solve the problems of sailing in the Arabian Sea, shallow water fishing, deep water fishing, as well as issues of cargo space in trading vessels. The designer and builder must find the most efficient design that will maximize cargo space yet maintain speed and agility in the water. Natural resources limit the choices of wood that are available for constructing a viable solution to the sea faring challenges. Customary construction traditions are also followed, and set limits on the way a vessel is built. A traditional tool kit comprised of hand operated tools solves the problem of an unreliable or non-existent supply of electricity at the coastal shipyards. These limits of tradition and environment constrain the choices available to the coastal communities.

On the cultural side of the study, one finds social organization having an impact on ship construction. Likewise, the ship has an influence on the social life in a port community. Among the social factors that influence the construction of a ship concern the communities who purchase, build and sail the vessels. Not just anyone can build a ship. In India, the builders come from the wood carpenter communities. Sailors are representatives of a distinct community of people. Merchants involved with the sea are from other communities. All of these subcastes cooperate to enable a ship's successful departure and return.

Religious beliefs and practices impact construction and sailing practices. Religious practices also influence the process of shipbuilding. Priests who conduct the ceremonies come from families who have been associated with ships for generations. Each step in the construction of a vessel has a ceremony to bless the ship in each of its many small units. Without this blessing, the vessel will not return profits to the owners. How much love is given to the vessel at the time of construction will be returned later in profits from successful fishing and trading ventures. Lastly, the ship integrates an economy into a larger system. It is a moving warehouse of commodities and ideas. The wooden ships that sail along the coast or across the Arabian Sea are representative of the life of the seafaring communities. The ship contains "the desire for profit ...victory ...exploration ...or conquest ... in the minds of its originators" (Steffy: 1994:1). Dreams can be realized either through trade or fishing. Manifestations of these dreams are formed

and constrained by the natural surroundings, such as the material available to build ships and boats. Gujarat offers great variety in its natural environment. The natural agricultural resources, mineral wealth and manufactured goods offered in trade, anchorages for ports, and reliable inland transportation systems also influence and direct successful outcomes.

A ship is not just a wonderfully complicated assortment of wooden pegs, iron nails, frames, planking, rigging and sails. It represents an idea that values and supports a lifestyle based on commercial adventures and profit. Through the examination of the craft specialization of wooden vessel construction, the social networks, religious beliefs, and economic life of maritime people emerge.

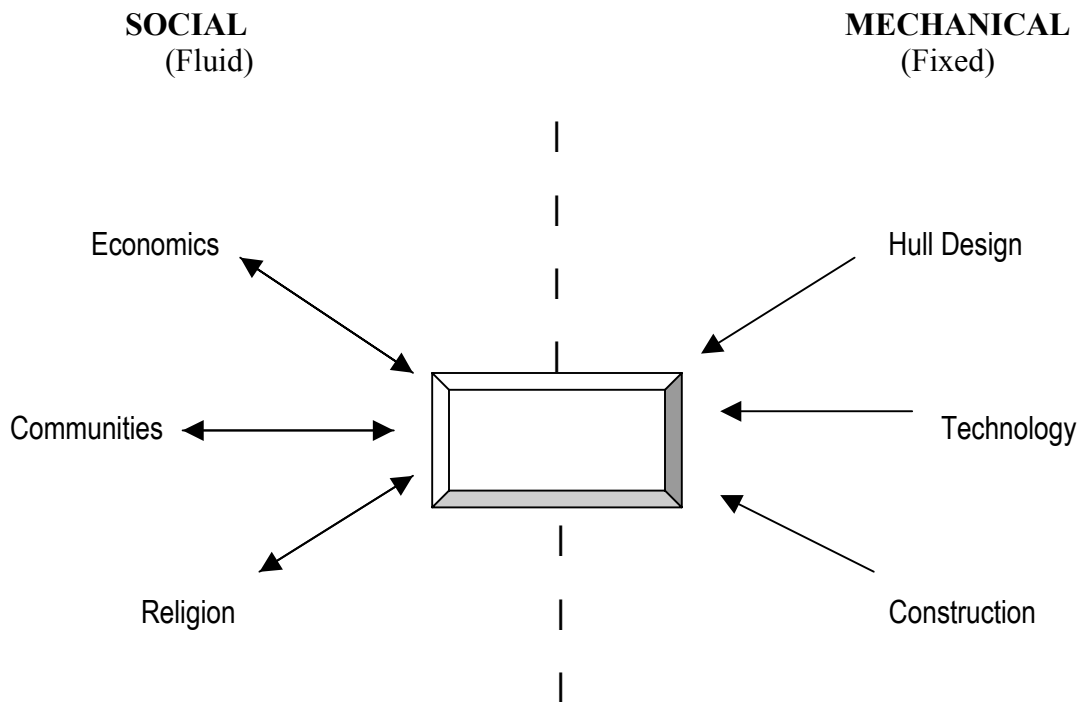


Figure 3: An interactive model of the craft specialization of wooden vessel construction in Gujarat, India.

Discussion Points

Mechanical Side of Model	Social Side of Model
<p>a. Hull Design</p> <p>Fishing Craft</p> <p>Flat-bottomed</p> <p><i>Tar</i></p> <p>Malabar <i>hodi</i></p> <p>Keeled</p> <p><i>Buut</i></p> <p>Tuna-type <i>hodi</i></p> <p><i>Hodka</i></p> <p><i>Macchwa</i></p> <ul style="list-style-type: none"> - Kutch - Balsar - Of <i>batela</i> style <p>Trawlers</p> <p>Cargo Vessels</p> <p><i>Padua</i></p> <p><i>Dhangi</i></p> <p><i>Kotia</i></p> <p><i>Batela</i></p> <p><i>Launch</i></p> <p>b. Technology</p> <p>Tools</p> <p>Hand tools</p> <p>Plank shaping – Keel Shape</p> <p>Woods</p> <p>c. Construction</p> <p>Joins - scarfs</p> <p>Frames</p> <p><i>Aado/pas</i></p> <p>Planking</p> <p><i>Vadhrai</i></p> <p><i>Ghuyro</i></p>	<p>a. Economics</p> <p>Other industries</p> <p>Traditional trading destinations</p> <p>b. Communities</p> <p>Fishermen</p> <p>Sailors</p> <p>Shipbuilders/Designers</p> <p>Carpenters</p> <p>Traders</p> <p>Shipowners</p> <p>Religious Personnel</p> <p>Pirates</p> <p>c. Religion</p> <p>Ceremonies</p> <p><i>Paliya</i></p> <p>Gods and Goddesses</p> <p>Temples</p>