

THE CRAFT OF WOODEN SHIPBUILDING

I. Brief presentation of the element of Intangible Cultural Heritage (ICH)

1. Name: Wooden shipbuilding. **Other names:** Traditional shipbuilding.

2. Identification and definition

The handicraft construction of a vessel through the use of natural timber (conception, design, construction, equipment, decoration) and its relevant cultural practices and mentalities.

3. Domain of ICH

•Oral traditions and expressions: The techniques and knowledge that are applied in wooden shipbuilding are even nowadays transmitted from one generation to the next mainly through oral tradition.

Wooden shipbuilding is a craft with vast vernacular terminology used during the phases of construction, repair, conservation and even the mere description of a ship.

•Social practices, rituals and festive events: There are certain ritual practices that are enacted in the process of shipbuilding, including traditions and beliefs, so that the craft is to be fortunate, wholesome and seaworthy. Such events may take place during the various stages of building a ship and launching it into the sea.

•Knowledge and practice about nature and the universe: There are specific practices and knowledge for the acquisition of the most suitable timber for shipbuilding, usually from nearby forests and occasionally from remote mountainous areas. Shipbuilding timber woodcutters possess accurate knowledge on the particular properties that wood intended for shipbuilding should have. Special care is taken during wood cutting in order to ensure the appropriate shapes for the various parts of a vessel. Equally significant is the resin content of the wood, the graceful manipulation of its fibers and its proper drying after the cutting. Before logging, woodcutters locate the appropriate timber in the forest. There has also been documentation of mechanical interventions on woods (mainly bending based on traction with the use of weights and ropes) years before their cutting to ensure a natural curvature in some of their parts. Woodcutters also possess knowledge on the properties of each kind of shipbuilding timber (pine, oak, cypress, elm, mulberry, eucalyptus, kermes oak) and the differences among the various hybrids of the same tree (e.g. the differences between the Brutia pine, the Aleppo pine and other pine hybrids). In many instances, shipbuilding timber was cut by shipyard workers under the supervision of the shipwright.

Apart from timber, shipwrights process and utilize various other natural materials, such as metals (iron, copper, galvanized iron), products of plant materials (tar, resin, ropes, hemp, lint), animal products (animal fat) and earth metals (minium, pigment metals).

Each particular vessel and the techniques that are employed for its construction are inextricably associated with the environment in which it will sail. Sea vessels are vastly different (in typology, form and construction) from lake, river and lagoon crafts. Their differences mainly stem from the craftsmen's knowledge of local conditions (environment, raw materials, regional diversifications in the use of the boat).

- **Traditional craftsmanship:** Shipbuilding is among the most complex traditional crafts, since it is associated with and draws from broad and diverse fields of knowledge and techniques. The techniques and secrets of wooden shipbuilding are so wide-ranging that in the past there used to be several skilled craftsmen engaged only in certain tasks or construction phases. Accordingly, the *salatzis* specialized in designing the vessel's lines plan on the wooden lofting floor (*sala*); the *piskitzis* (sawyer) was solely responsible for cutting and processing wood; the *bourgountzis* (auger user) drilled holes for *tzavetes* (metal ring-bolts) and *kavilies* (wooden spigots), (squished the *tzavetes*, pushed them deeper than the surface of the wood) and hammered the nails. In addition, the *kalafatis* (caulker) fullered the ship's hull and deck, the *armadouras* (rigger) constructed the vessel's equipment and rigging, and the sailmaker designed, cut and sewed the sails. There were several other craftsmen that often worked under the authority of the master shipwright, the *mastoras* (master craftsman) of the shipyard. He was the one that had knowledge of each particular task, supervised their coordination and gave the necessary orders and directives to the specialized craftsmen and their apprentices.

The technical knowledge of wooden shipbuilding has always been influenced by the technical developments of each period. Even within a single generation of ship builders, the technical know-how can rapidly be modified owing to certain changes in available materials (importation of timber with different properties, new ring-bolt materials, new painting materials, etc.), the modernization of tools and mechanical equipment (electrical tools, digital technology) and the broader historical developments, whether they be social (immigration, labour market developments), economic (cost of materials, production cost, financial crises) or having to do with new energy resources (diesel fuel, electricity).

4. Place

Coastal, lakefront and riverside Greek areas.

5. Key-words

Traditional craftsmanship, wooden shipbuilding, wooden shipbuilding yard, careenage, dockyard, *caïque*, hull, shipwright, ship carpenter.

II. Identification of the persons and institutions involved with the element of ICH

The foremost bearers of wooden shipbuilding heritage are shipwrights themselves, who live and work in islands and coastal or lakefront areas. Some of them still work in their shipyards, while several others have retired. There is no institution or organization that represents them, and up until now there hasn't been any reliable, extensive documentation of the people that are, or were in the past, engaged in the craft of wooden shipbuilding.

The following institutions are actively involved in the preservation of traditional boats and the promotion of the craft of wooden shipbuilding:

- Traditional Boat Association of Greece

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E-mail: info@traditionalboats.gr, Website: www.traditionalboats.gr

- “Proteus” – Nonprofit Organization for the Preservation of Traditional Shipbuilding & Heritage

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- Samos Cultural Foundation “Nikolaos Dimitriou”

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III . Description of the element of ICH

1. Short description

Wooden shipbuilding is a living traditional craft that has been practiced in Greece for centuries. It possesses unique technical, typological and cultural characteristics, some of which originate from the Middle Ages and the Byzantine Empire. The craft’s transmission from one generation to the next is accomplished through empirical apprenticeship, which entails younger people learning the craft by working side by side with a master craftsman.

2. Description

The craft of building wooden boats has been developed all over the Greek seas and in all historical periods. It has consistently been one of the foremost expressions of technical culture in maritime communities. The particular type of wooden shipbuilding that has survived to this day incorporates several pre-industrial characteristics, such as certain practical applications resembling those that have been documented in early 15th century shipbuilding manuals. Such applications include the employment of geometrical carving patterns and the use of moulds for the determination of the appropriate shapes for the

various parts of a vessel. In addition, the knowledge of timber (particularly of the shapes and properties that timber intended for shipbuilding should have, the appropriate manner and time for its cutting, its processing and preparation for construction) also originates from older times. Shipwrights know, from tradition and experience, of the vessel's static and dynamic fatigues or the timber's life cycle, and they accordingly adjust the construction's cross-sections and joints.

Another distinctive feature of the craft of wooden shipbuilding is the extensive typology of vessels, which usually reflects different kinds of use, local traditions, environmental conditions and, of course, aesthetics. There is a vast typological diversity of hulls and a respective typology of rigging. The correlation between the two is not however univocal, since two identical hulls could bear completely different sailage (meaning that they could be rigged in a different way), while on the other hand a particular type of rigging could be used in different kinds of hulls. Besides the general vessel typological differences, there are also certain morphological differences among vessels of the same type. Those morphological differences usually stem from the vernacular traditions of different shipyards or shipbuilding centers, such as the differences among the wherries of Syros, Samos and Plomari, Lesbos. They can also occur according to the specific use for which each vessel is destined. For example, merchant vessels differ morphologically from the fishing vessels (trawlers) that were massively constructed with the rise of the fishing industry after World War II.

The organization and division of labor in shipyards follows a predetermined framework of hierarchy and specialization. Advanced technical knowledge and mastery has always provided craftsmen with authority and prominence. It was also guarded in order not to leak to competitors and it was transmitted to apprentices in an utterly controlled manner. Design knowledge specifically, whether with the *monochnaro* (a moulding method similar to whole-moulding) or the *sala* (lofting floor) method, was one of the craft's most treasured secrets. The design of a vessel in a practical and directly realizable manner, without the utilization of modern design tools, is nowadays especially noteworthy for echoing the craft's distant past.

A significant stage in the research the shipbuilding tradition is that of its terminology and distinctive technical expressions, many of which have obvious archaic or medieval origins. Shipyard language has been the subject of academic researches who focused not only on the words' etymology, but also on their dissemination throughout the shipbuilding traditions of various other areas, thus constituting the lingua franca of the Mediterranean sailors and shipwrights.

3. Spaces and means of performance or implementation of the element of ICH

• Spaces that are associated with the enactment of the element of ICH

Wooden shipbuilding yards operate in various parts of Greece, usually in coastal and lakefront areas.

Shipbuilding timber may even be procured from mountainous or remote areas, far away from the sea. The securing and transportation of raw materials for shipbuilding creates business networks that extend to mountainous areas, urban centers and even other countries.

There were many variations, or even different traditions, of shipbuilding that appeared in sea areas (Eastern and Western Aegean Sea, Ionian Sea), lakes (Pamvotida, Prespas,

Orestiada, etc.), rivers (Pineios, Evros, etc.) and lagoons (Ambracian Gulf, Messolongi, Aitoliko and Lefkada lagoons, etc.).

- **Facilities**

Wooden shipbuilding yards usually have an interior storage and protection space for valuable machinery, tools and accessories. They also have a sheltered space for the storage and drying of timber, and a sheltered and guarded space called *sala*, a wooden lofting floor intended for the design of the vessel (unless it is designed with the moulding method).

There is also an exterior open space where the construction of the vessel usually takes place. The size of the exterior space is directly dependent on the shipyard's capacity for carrying out more than one constructions at the same time. In the past all shipyards were alongshore and therefore had permanent facilities for hoisting and launching vessels. Over the past few decades, however, many shipyards have been established in areas that are far from the sea and the vessels are therefore transported with the use of other mechanical means. In the latter case, of course, the size of the vessel depends on the capacity for its transportation.

- **Equipment, modules and accessories (tools, vessels, uniforms, et al.) that are used for the preparation and enactment of the element of ICH**

A shipyard's equipment is diverse and can be classified into the following categories: **hand tools** (for splitting and cutting wood, for measurement, marking and design copying, for holding and gripping, for hole boring, hammering, carving, smoothing and caulking), **power tools** (for cutting, smoothing and generally processing wood, portable power tools, transportation machinery), **accessories for design and adjustment of geometrical characteristics** (moulds, templates, shipbuilding models) and **accessories for fastening, hoisting and launching**.

- **Products or material objects in general (handicrafts, tools, religious or secular vessels, goods, food, etc) that are developed as an outcome of the enactment of the element of ICH**

The wooden boats that are constructed in Greek shipyards possess distinctive typological and morphological features. Several of their names correspond to different types of vessels and entail different kinds of construction.

Two of the most fundamental typologies include those regarding the shape of the hull and the type of the rigging. The most known and characteristic surviving types of hull in the Greek seas are: the *thetrechtiri*, the *gatzao*, the *botis*, the *tserniki*, the *perama*, the *trata* (rowing boat), the *varkalas*, the *Hydriotvarkalas*, the *gaita of Chania*, the *karavoskaro* and the '*liberty*'. Some of these types, such as the *gatzao*, the *tserniki*, the *perama* and the *trata*, are extremely rare nowadays and are not constructed anymore. Other are still constructed, though in a different manner than before, such as the *botis*, the *varkalas*, the *Hydriotvarkalas* and the *gaita of Chania*. There were also some older types of hull that were constructed for specific uses in certain mainland regions or islands. Such an instance is the *skafi from Symi*, a sponge-fishing vessel that was primarily constructed in Symi. Another, though lesser-known, example is that of the *chilotissa*, a type of fishing boat that was constructed in Nea Chili (a part of Alexandroupoli) by refugees from Chili in the Black Sea.

Sailing boats also had typological differentiations depending on their rigging. Apart from small boats, all vessels had a particular combination of sails, which usually determined their type of rigging. For example, in the 19th century, brigs and hoys were two rigging types that, despite having the same kind of sailage, differed in the number and combination of their sails. The types of sails were classified according to their shape into main sails, such as the lateen sail (*latini*), the spritsail (*sakoleva*), the lug sail (*psatha*), the gaff sail (*bouma*) or spanker sail (*ranta*) and the square sail (*stavrosi*), and ancillary sails, which usually were square or triangular, like certain kinds of jibs (*flokos*) and forestays (*stantza*). Rigging was characterized by vast diversity and frequent vernacular variations and is nowadays studied mostly through old photographs and oral narratives.

Both hull and rigging typology is a complex process of classification that occasionally entails unforeseen overlapping and vernacular diversification. A distinctive example is that of the spritsail (*sakoleva*), whose name sometimes denoted the shape of a particular sail and at other times a type of rigging (the combination of a main *sakoleva* with ancillary sails). In addition, there was a particular type of hull that used to be referred to as *sakoleva* in Chios, Samos and Plomari. Finally, a similar type of hull in the Cyclades (mostly in Mykonos) was named *belou*.

Morphological differences occurred even within the same type of hull, depending on the local maritime tradition it derived from or the use for which it was destined. For example, some of the perama's of Plomari morphological characteristics differ from those from Syros or Samos. Moreover, the trechantiri fishing boat also differed in its geometrical properties from the merchant or sponge-fishing trechantiri that was named *achtarmas* and was primarily constructed in Kalymnos, Hydra, Piraeus and Symi.

4. Transmission process of the element of ICH from one generation to the next

- **Description:** The transmission of the craft of wooden shipbuilding, as far as traditional techniques are concerned, is still accomplished through apprenticeship. Knowledge is usually acquired through various stages, according to the apprentice's receptiveness and the craftsman's intentions, since the latter has the option of revealing all or some of his craft's secrets. Eventually, the apprentice seeks further acquisition of knowledge in the particular field of expertise that he has chosen to practice professionally.

- **Modes and duration of learning / apprenticeship / initiation:** Apprenticeship takes place in the workplace, usually face to face or in small groups of two or three apprentices. The apprentice is often assigned to subsidiary, unskilled or ancillary tasks (cleaning spaces, carrying wood and tools, etc.) in order to be able to partake in the process of shipbuilding. He has to demonstrate determination and discipline before being allowed to participate in more specialized tasks.

Apprenticeship can last a long time, even three or five years for someone that is unaccustomed to the craft of shipbuilding. Shipwrights generally prefer younger apprentices, because they are more disciplined, less demanding and constantly available for ancillary tasks. Shipbuilding is no longer an attractive career choice for young people because of the hard work of the shipyard, the long duration of apprenticeship and the little remuneration for the work.

- **Institutions that are involved in the transmission of the element:** The transmission of the craft of wooden shipbuilding is almost exclusively carried out by shipwrights themselves, who impart knowledge to young learners through the apprenticeship system.

In the past, shipbuilding knowledge was mostly transmitted from father to son. In the past decades, after the crisis that was mainly caused by the introduction of new materials for the building of smaller vessels, any person interested could apprentice with a master craftsman in order to learn the craft. Unfortunately, nowadays there aren't many young people interested in learning the craft, thus making its perpetuation much more difficult.

Some of the reasons that explain the absence of other modes of transmitting the craft of wooden shipbuilding besides apprenticeship include the craft's complexity, the constant introduction of new materials and modern technology, the low social status of the shipwright's profession and the job's small earnings.

IV. History and genealogy of the element of ICH

1. Historical information or regional narratives about the emergence, continuity, presence and adjustments or modifications of the element of ICH

Shipbuilding has been practiced in Greek seas since prehistoric times. The transportation of goods presupposed a form of shipbuilding and sea navigation since the Mesolithic Age. Excavation findings prove that shipbuilding had reached a notable technical level since at least the 14th and 13th century BC. From the beginning of recorded human history to the Roman and the Byzantine era, shipbuilding constituted one of the foremost forms of technological expression, both for peaceful (merchant vessels) and wartime purposes (with the *trireme* being the most significant achievement during the archaic and classical period).

Until the early and middle Byzantine era (4th-9th century AD), shipbuilding techniques and production line were much different than today's. Ancient shipbuilding involved *shell first construction*, initially with multiple joints on the shell and then with internal reinforcements. However, that method did not create a strong and supportive skeleton. The transition to Medieval shipbuilding, which gradually prevailed all over the Mediterranean Sea, was documented through the study of 9th-10th century shipwrecks. The earliest written shipbuilding manuals, which originated in Venice and are dated to the early 15th century, refer exclusively to Medieval shipbuilding (also known as *skeleton first construction*). Traditional wooden shipbuilding that is still practiced today has incorporated several of the Medieval techniques' elements.

During the time of Ottoman rule and up until the mid-18th century, Greek shipwrights constructed small and mostly private vessels due to certain economical and political restrictions. That situation started changing in the second half of the 18th century. By the end of the 1800s, shipbuilding had been among the most significant of the subjugated islanders' technical activities. The extraordinary boost in shipbuilding during that time is obviously due to the further development of merchant shipping.

In the last quarter of the 18th century, a series of shifts in the Eastern Mediterranean trade regime led to the growth of Greek merchant shipping through the registration of ships under flags of convenience (primarily Russian). Those developments, along with the abolition of local restrictive measures for large vessel construction, resulted in an impressive expansion

of shipbuilding activities and contributed to their modernization by the introduction of innovations that are still applied today.

The most important among those innovations was the introduction of the lofting floor (*sala*), which the shipwright used to design profiles of the main parts of a vessel's skeleton. Those profiles provided the basis for the creation of special templates that were used to copy the lines on to the wood from which the corresponding parts of the vessel were to be cut. The *sala* method eventually replaced the older moulding methods (especially *monochnaro*) in several Aegean and Ionian shipyards. This particular development made it possible for shipwrights to construct even larger vessels with better symmetry, while it also enriched the typology of merchant ships with new forms and designs. The *sala* method is even today considered to be the most advanced design method in traditional Greek shipyards. Nevertheless, the older empirical moulding methods were not completely abandoned and are still applied in the construction of small boats.

In the 19th century, shipbuilding was one of the foremost technical production activities of the new Greek state. Many shipyards operated in several islands and coastal areas during that time. The most important shipbuilding center of that period was Syros, with Galaxidi, Hydra, Piraeus, Skiathos, Skopelos and smaller islands following. In the late 19th and early 20th century, there was a decline in the construction of large wooden vessels, mainly due to the emergence of steam-powered and iron ships.

In the entire 20th century, the construction of fishing vessels remained the principal activity of wooden shipbuilding yards. The fishing orientation of shipbuilding production was subverted in the late 1980s with the application of the European Community regulation for the reduction of its overall fishing fleet. Furthermore, the EU's common fisheries policies context paved the way for the extinction of several unique samples of Greek shipbuilding tradition with no consideration for their cultural value, thus inducing a devastating blow to maritime cultural heritage. In the first decade of the 21st century, in addition to several new problems, the decline in construction and the subsidized destruction of fishing vessels continues and, as a result, the craft of building wooden boats in Greece is for the first time facing extinction.

2. Data update (at least once every five years)

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V. Element's importance for Intangible Cultural Heritage

1. Enhancement

The primary goal for the enhancement of wooden shipbuilding heritage is training young people to the craft, young people with express interest in it and convinced about the value of its preservation. That, however, presupposes the re-establishment of the economical and social recognition of the shipbuilding. There need to be permanent and institutionalized forms of apprenticeship, or extended training with good professional prospects.

Another significant goal is the promotion of wooden shipbuilding and the creation of institutions for quality control and evaluation of wooden vessels from a technical and aesthetic perspective. Moreover, the shipbuilding market ought to expand into neighbouring countries. New types of vessels should also be developed (e.g. pleasure crafts and yachts).

The establishment of a connection between the tourism industry and shipbuilding production ought to be a definite priority.

As far as technical support is concerned, there could be a probe into the optimal uses of modern techniques and materials that would be in perfect harmonization with the morphology and typology of vernacular Greek vessels.

2. Safeguarding measures

Law No. 3028/2002 “On the Protection of Antiquities and Cultural Heritage in General” constitutes the legal framework for the protection and promotion of intangible cultural elements, including the craft of wooden shipbuilding. The Ministry of Culture has listed several vessels and shipyards as historic monuments. The Ministry of Maritime and the Aegean has specified a particular category of vernacular vessels in order to assist their preservation.

Nevertheless, there are still many difficulties in preserving the craft of wooden shipbuilding. For this reason, several institutions and organizations, whether governmental or not, have expressed their intention of contributing to the creation of a single protection, restoration and promotion system for landmarks of maritime cultural heritage. The institutional support of wooden shipbuilding should especially be based on intersectoral policies (culture, tourism, shipping, local development).

The awareness of the maritime community, the expression of interest from public benefit foundations and the mobilisation of educational institutions are of utmost importance for the preservation of the craft of vernacular wooden shipbuilding.

Appendix 1

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TO BE COMPLETED BY THE AGENCY:

Preexisting documentation

Available bibliography

Available data

Agency:

Type of research:

Type of data:

Element's registration in other inventories

National Inventory – Element's fact sheet

Date and place: 30.05.2013, Athens

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Additional documentation material

Bibliographic-archival research:

Field research-interviews:

Audio record:

Photographic record:

Film record: