THE PROJECT OF BUILDING A NEW TEA CLIPPER — THE *CUTTY SARK 2*

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Fig. 8.1. *Cutty Sark 2*
Source: courtesy of *Cutty Sark 2* Sail Foundation

INTRODUCTION

This paper's aim is to present the project of the construction of a new full-size sea-going cargo ship, a replica of the famous sailing tea clipper *Cutty Sark*. This vessel will serve several purposes, the main ones being:

Wind power: The first main purpose is to demonstrate to the world how, by harnessing the power of the wind, we could ferry various types of cargo across oceans

as our ancestors did 300 years ago, without using fossil fuels or engines — thus contributing to a cleaner, more sustainable world.

Training professional sailors in the use of wind power: The second purpose is to train sailors, to provide them with the necessary professional and technical tools to effectively operate sailing ships. By this we do not necessarily mean only historical sailing ships but, indeed, any type of sailing ship that could be used for the shipping goods in the future. The plan is to preserve, and then to develop the skills and experiences related to the running of large square-riggers, or any other future vessel types which have wind power as its power source.

Culture and maritime heritage: The third main purpose is more culture-related: to preserve part of the world's maritime heritage — the most advanced and splendid sailing ships that humankind has created after many centuries of evolution. While constructing the new ship, a large number of traditional crafts and skills related to woodworking and shipbuilding will be recorded, preserved, developed and passed on to future generations.

These are the project's three key purposes. Now we will enlighten the reader as to the origins of this project, and intended ways forward to achieve success in our endeavor:

Our story starts many years ago in Russia, when a group of students came together and decided to build a full-size replica of a frigate with the aim of reminding people of St. Petersburg and of important episodes of their own history. This endeavor was in particular inspired by the story of Peter the Great, the Russian Tsar, who wanted Russia to have a powerful navy. His desire was so overwhelmingly strong that he decided that he would personally travel to other countries to learn the crafts and obtain the skills related to naval architecture and shipbuilding. He was not content with merely observing the artisans go about their work, though — he took the hands-on approach to the matter, working as carpenter alongside other professionals for several months at a shipyard in the Netherlands. After these experiences, he returned to Russia and built his first ship, the *Shtandart*, along with other sailing ships and boats. That was the beginning of Russian Navy — the great maritime powerhouse, the Vision of the Russian brought to life.

In 1992, a small team of students decided to build a replica of that historical ship — the *Shtandart*.

Fig 8.2. Replica ship *Shtandart*
Source: courtesy of Swedish Coast Guard

Fig 8.3. *Shtandart* construtions team in St. Petersburg (1999)
Source: Evgeny Mokhorev

This endeavor was supported by a large number of volunteers and international sponsors. Finally, the ship was constructed by young people who were learning traditional crafts and skills. There were all sorts of crafts involved in this process: carpentry, rope-making, sail-making, carving, blacksmithing, block-cutting, welding — in essence, all types of traditional skills necessary to the building of a full-size wooden sailing ship. The shipbuilding process took roughly 6 years to complete. By the time the *Shtandart* was launched in 1999, about 60 young craftsmen who had worked on the vessel had become highly skilled artisans. They still continue to ply their trade and to hone their skills. Recently, a replica of the *Poltava*, a Russian ship of the line, was built in St. Petersburg by the team responsible for the *Shtandart*.

It is only logical to continue this effort of preserving maritime skills. Hence, it seems fitting to turn to a more ambitious enterprise — the building of a larger and more exquisite sailing ship: a tea clipper.

1. *CUTTY SARK* THE TEA CLIPPER, AND HER STORY

Fig 8.4. *Cutty Sark* (1869)
Source: from collection of *Cutty Sark 2* Sail Foundation

All tea clippers were fast sailing ships, vessels that plied the tea-trading routes between China and Britain in the 1840s-1870s. There was large incentive to sail as fast as one possibly could: those who arrived in London with their cargo first were awarded

a high premium and could demand higher prices for their merchandise. So, captains felt encouraged to navigate their ships at the fastest possible speed. Tea harvesting in China only took place at specific times of the year. In other words, one could not speed the whole process up; thus, all ships started on equal footing — that is to say, the cargo--loading process would take about the same time for every ship. They then would leave China's ports and off they went, at top speed, bound for Britain. It was like to a race; in fact, it was known informally as «the tea race» in Britain, a widely reported affair that garnered a lot of public attention. And so, to be in these circumstances encouraged the development (and constant refinement of) top-tier sailing-related techniques and skills — which, in turn, entailed improving the designs of the vessels, their rigging, the materials to allow them to be faster, etc. Tea clippers were the fastest and most elegant, the most splendid ships created by humankind. There was even a larger type of sailing ship created, the windjammer, after the tea clipper fell out of use. But this larger vessel was built with «industrial» purposes in mind, i.e., this type of ship was used to ferry coal, fertilizer and other kinds of heavy cargo in large quantities across the ocean. However, the tea clipper far outclassed the windjammer in terms of speed and grace. To put it in perspective, tea clippers were akin to Formula One cars in terms of speed and elegance, while windjammers were more like bulky and rather slow trucks.

The idea behind the *Cutty Sark 2* Project is to bring one of those magnificent, fast sailing ships to life again. And, after its construction, the goal is to load it and have it transport cargo without using any fuels, without producing any CO_2 emissions.

The original *Cutty Sark* still exists. However, the vessel will never take to the sea again; it was placed onto the dry dock and repurposed as a museum exhibit. This modern restoration makes the original *Cutty Sark* more akin to a museum building than an actual vessel; it lacks that peculiar aura of a real sailing ship. Hence, it would be far more interesting and engaging to the public at large if this sailing ship — with such a storied life, of such size, of such majesty in appearance — were to be restored to its natural element once again.

There are several examples of large replicas of historical ships built to brave the seas. The largest so far are France's *Hermiona*, the *Gothenborg* from Sweden and the Russian *Shtandart*. These are exquisitely built sailing ships; they drew the attention of many an individual during their construction phase. The vessels were the object of the media's — and, consequently, the public's — profound interest, for they were symbols; they illustrate and embody their people's history, the history of their forebears and the manner in which their respective countries came to be maritime superpowers. This is a more engaging and fascinating way to tell people about their roots.

Fig 8.5. Visitors watching *L'Hermione* construtions (2013)
Source: courtesy of Association Hermione La Fayette, Rochefort

The aforementioned vessels are generating a lot of buzz. And hence, we arrive at the subject matter of the present paper: the *Cutty Sark*. The story of the original *Cutty Sark* is intrinsically linked to Portugal; the *Cutty Sark* was acquired by the Portuguese and sailed under Lusitanian colors for 27 years, being christened as «Ferreira» during her period of service. And this link between the vessel and the country naturally led us to the idea of building the vessel in Portugal. Another reason for choosing Portugal as its place of construction lies in the fact that the country still retains its many highly skilled and renowned craftsmen, artisans who, to this day, work with wood, building and repairing wooden ships. More than in any other country, these crafts are alive in Portugal, especially in Vila do Conde. This small town has a rich tradition intimately linked with the sea, a history of shipbuilding, of ocean-going men, of fishing and of ship repairing and maintenance. And, in fact, the skills of the craftsmen found here are so superb that they ought to attain the intangible cultural heritage status and be preserved for future generations. These reasons led us to consider developing our project — the construction of a replica of that famous British-Portuguese tea clipper, that is — in the city of Vila do Conde, in Portugal.

Fig 8.6. Vila do Conde
Source: collection of Museu da Construção Naval, Vila do Conde

We do have quite an extensive experience in operating replica ships: we have been sailing the *Shtandart* for 17 years and we also possess an additional 10 years of experience in sailing other replica ships. And so, we have developed a business model and the technical description of what we should have in a new vessel to make her sustainable and self-sufficient, to bring her to life in all her glory, while having her generate enough income to cover the cost of her general upkeeping, as well as constructing — and always maintaining — her in all her majestic exquisiteness. The general idea is: since the ship is a replica of a much-loved and well-known ship, it will draw the public's attention; this means that any time the vessel is anchored in any given port it will attract myriads of visitors.

On the other hand, we are speaking of a large cargo ship — so, naturally, we will be able to ferry goods, goods that would attain a special status indeed, for they would be transported by wind power alone, which would attract the patronage of environmentally conscious companies who are invested in being publicly viewed as more environmentally-friendly.

Fig 8.7. *Tres Hombres* loading cargo for transportation under sails
Source: courtesy of Fairtransport Shipping and Trading

So, if these companies want to further their environmentally conscious image while requiring the transportation of merchandise, the *Cutty Sark 2* would be the ideal choice. This would be a secondary source of income and, of course, the affreighting of the vessel by companies would entail the creation of another business platform for promoting businesses in other countries. The sponsors and participants of the project would have the opportunity to use the ship as a means to promote themselves, their products, their businesses in her visits to other countries.

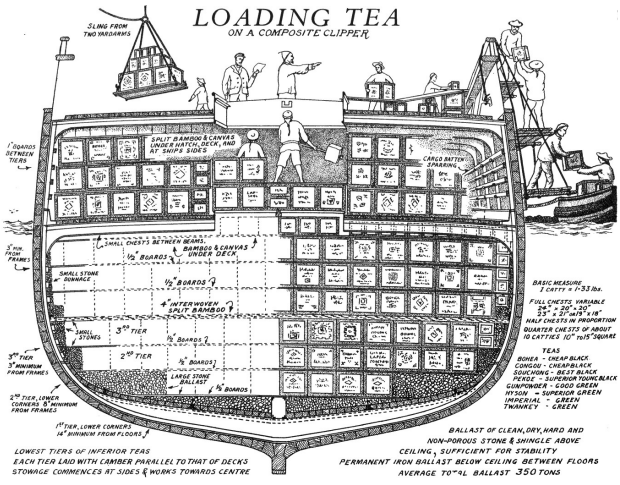

Fig 8.8. Loading tea in tea-chipper in China drawings of *Cutty Sark* sales and rigging
Source: CAMPELL, George F. (1974) — *China Tea Clippers*

The idea is to recreate historical journeys, *Cutty Sark*'s own historical routes from Europe, across the Atlantic Ocean and then around the Cape of Good Hope, bound for Sri Lanka or China or Australia, and the return journeys would be made either via the Indian Ocean or around Cape Horn. Every journey could be a round-the-world voyage. The project plan is for the ship to carry about 1000 tons of cargo. If the cargo happens to be tea or coffee or rum, it could be stored in the hold. The tweendeck would serve as living quarters for trainees. Our plan is to have up to 80 people on board: of these, up to 50 of these individuals would be trainees — young men and women (18-25 years old) —, tomorrow's sailors, who are to be instructed in the skills and techniques needed to become fine seamen.

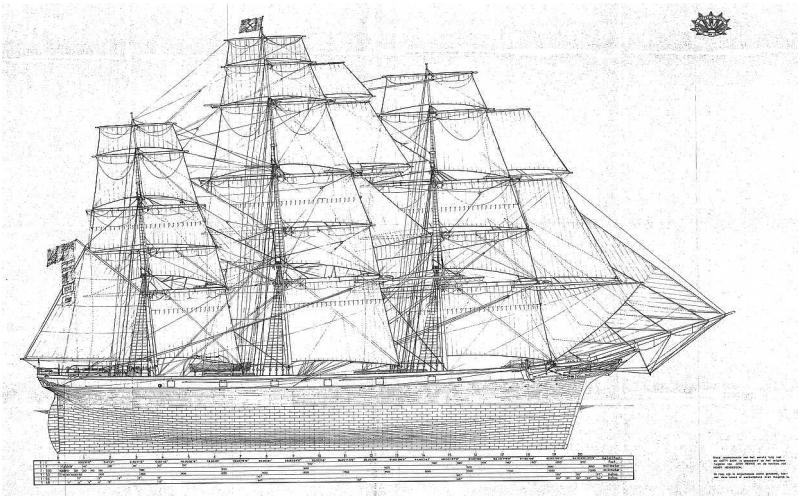

Fig 8.9. Drawings of *Cutty Sark* sails and rigging
Source: Drawing Nederlandse Vereniging van Modelbowers, 2010

Safety is always a major concern; and people might think — and rightly so, at first glance, at least — «oh, but sailing ships cannot be safe». This could not be further from the truth. Equipped with modern weather forecasting, communication equipment, navigational equipment, the crew will be able to know their position at all times and will always be aware of any danger that may threaten their security. This may be a replica of a 149-year-old ship but we intend it to be equipped with modern navigation and communication systems; it is not like we are still in the 19th century, a time when skippers had to make a guess whether they were on this side of the rope or on the other. So, to sail on this ship would be quite a safe endeavor! And we have the engineless cargo ship called the *Tres Hombres* as an example of that. This schooner brig already has 5 years of active operation under her belt, making several journeys a year across the Atlantic Ocean to the Canaries, bringing wine to Copenhagen, dried cod from Norway to Portugal and rum from the Caribbean to Europe. These voyages are extremely successful, and, while

it is a tiny vessel, a reading of its profits and business model demonstrates that there is an interest and a demand for this sort of shipping. The *Cutty Sark 2* will be an even more successful venture. Presenting the story of the building of the ship and presenting the participants in foreign ports is another option. The *Cutty Sark 2* has a huge potential and, as it is a large, incredibly eye-catching vessel, it would make every visit to a port a really interesting and memorable affair for the local populations, for the media, for the audience — and we anticipate that our endeavor will attract a huge amount of publicity.

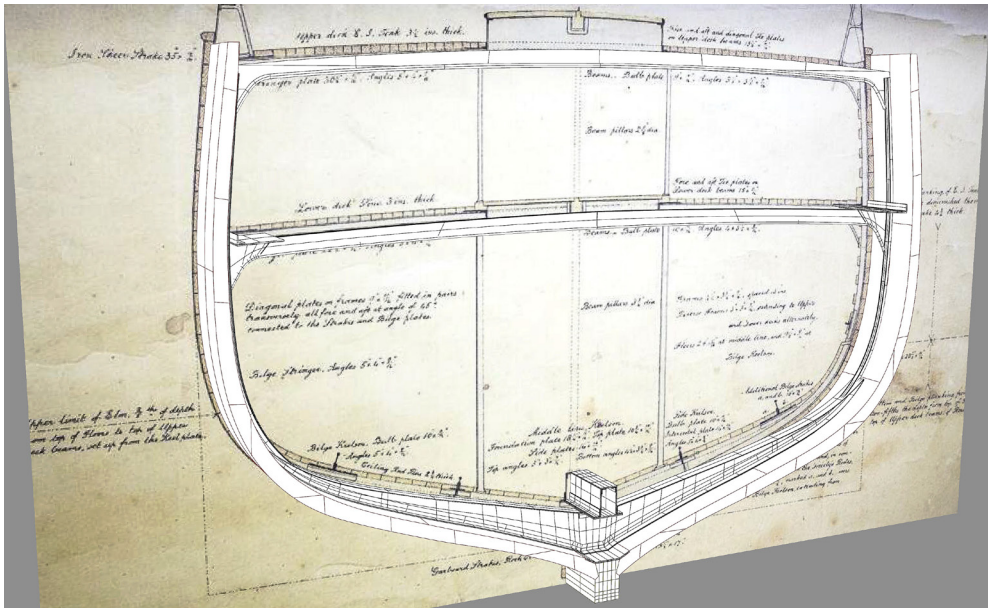

Fig 8.10. Centerframe of *Cutty Sark 2*
Source: *Cutty Sark 2* Sail Foudation

The planning and the construction of the ship would be made through composite construction — meaning the frames, the skeleton of the ship is made of steel, and be made first, and then the planking would be made from wood; this was a very efficient way of building a ship in the 19th century. It took only 11 months to build the original *Cutty Sark* 149 years ago. We hope that, with the aid of modern technologies, we will be able to build it within the same time limit; however, it will not be a problem if we are not able to accomplish this. There will be a demand for experienced woodworkers to make the wooden planking while also having the possibility to use modern technology in the creation of the steel structure. Our vision is the following: we produce the steel frames at the professional shipyard and then transport the vessel's skeleton to the construction site and assemble it. This will form the base for our idea of shipyard-museum; in other words, we would turn the shipbuilding process into a live, everchanging exhibition, open

to the public, so that they may have the opportunity of viewing the craftsmen plying their trade and learning how ships were built in the past. Hence, the shipyard would also serve as a cultural space for local communities (and especially to the younger generations) and as a tourist attraction.

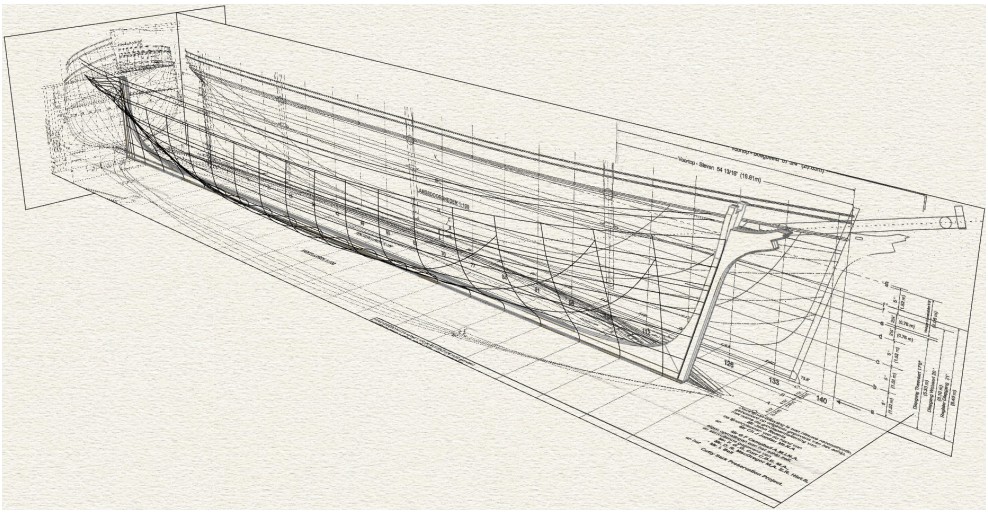

Fig 8.11. Drawings of *Cutty Sark 2*
Source: *Cutty Sark 2* Sail Foundation

A 3D model with all the steel structures and ship's equipment allocation is ready. We intend to have the vessel's interior design as historically accurate as possible: cabins and furniture that are faithful, detailed reproductions of those in use during the 1800s, so guests would feel as if they have just stepped into a time machine. A limited number of passengers would have a chance to join the crew in the travels, having the 19th century replica cabins as living quarters. The ship's crew would have access to modern-looking accommodations, which would enable them to relax and rest between watches in comfortable quarters.

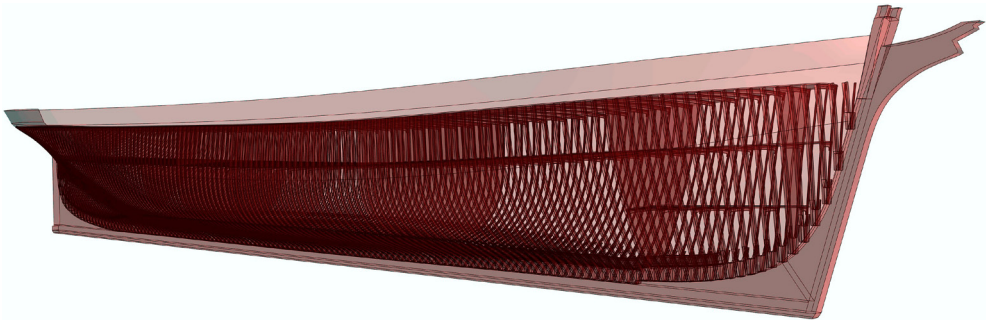

Fig 8.12. 3D drawings of *Cutty Sark 2*
Source: *Cutty Sark 2* Sail Foundation

The entire tweendeck would serve as the trainees' living space. It would be furbished with 50 hammocks, with the addition of, perhaps, canvas walls, to offer them some modicum of «personal space». While docked in a port, these walls would be dismantled, converting the vessel's deck into a large single space, suitable for receptions, dinners, promotional events for companies etc. This would be a venue big enough for corporate events, exhibitions and similar events wherever the ship went.

If we are successful, we will construct in the future other replicas of famous clippers (the *Thermopylae* comes, first and foremost, to mind; this ship was *Cutty Sark*'s opponent in the «tea race». The «Ambassador», which is now being restored in Chile, is also a candidate worth considering), all to be built in the same shipyard.

Fig 8.13. Design layout of *Cutty Sark 2*
Source: *Cutty Sark 2* Sail Foundation

We have still a long way to go but we already possess detailed historical information, a solid background and extensive experience, an extremely well-motivated team of volunteers and the potential interest from environmentally conscious organizations on a European and global level.

Now we only have to secure the support on the local level to finally decide where the ship will be constructed.

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Amélia Polónia is a Professor at the Department of History, Political and International Studies of the Faculty of Arts of the University of Porto and scientific coordinator of the CITCEM Research Centre. Her scientific interests include agent-based analysis applied to historical dynamics, social and economic networks and seaport communities. These topics are applied to her direct interests on the Portuguese Overseas Expansion and the European Colonization in the Early Modern Age. Seaports history, migrations, transfers and flows between different continents and oceans as well as the environmental impacts of the European colonization overseas are key-subjects of Amélia Polónia's recent research.

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Francisco Contente Domingues (Lisbon, 1959) is Full Professor of History of Portuguese and European Expansion and director of post-graduate studies in Maritime History at the Department of History of the University of Lisbon, and member of the Centre of History of the same University.

He authored about ten books and more than one hundred book chapters and articles mostly on the History of Navigation in 15th to 17th centuries. He is the Editor of the reference book *Dicionário da Expansão Portuguesa*, 2 vols., 2016 [*Dictionary of Portuguese Discoveries*], and a member of the Naval Academy (*emeritus*), Academy of Sciences and Academy of History.

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David Plouviez is a lecturer in Modern History at the University of Nantes, a member of the Centre for Research in International and Atlantic History (CRHIA EA 1163). His research focusses on the economics of naval warfare in Europe from the 17th century to the 19th century, in which he analyses the conditions for the construction of major navies, as well as technical transfers in the fields of shipbuilding and sea artillery during the same periods (*La Marine Française et ses réseaux économiques au XVIII^e siècle*, Paris, Les Indes savantes, 2014; *Les Corsaires nantais pendant la Révolution*, Rennes: PUR, 2016). In recent years, his work has specifically focussed on restoring working conditions in shipyards while trying to establish technical exchanges between Navy engineers and dockers, while at the same time drawing the outlines of the mobility of all these men.

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Eric Rieth was born in Algeria. He studied medieval archaeology and maritime history at the Sorbonne University of Paris. The subject of his Ph. D. submitted in 1978 to the Sorbonne University was the archaeology of the "flat bottom-based" shipbuilding tradition in north-west Europe from Ancient to Modern times. As nautical archaeologist and professional diver, he has directed excavation of wrecks at sea (Mediterranean, Atlantic, Channel), rivers and lakes since 1971. His speciality is inland and seagoing boat and ship archaeology. He has also a great interest in the ethnographical evidences as sources of comparison and interpretation of archaeological data. He is now Emeritus Director of Research at the National Centre of Scientific Research (CNRS). He teaches nautical archaeology at the Sorbonne University (Paris 1). He is chief of the Nautical archaeology department of the National Maritime Museum, Paris. His last book published is *Navires et construction navale au Moyen Age*, Editions Picard, Paris, 2016, 352 pages.

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Invited Professor of Nautical and Underwater Archaeology of the Faculdade de Ciências Sociais e Humanas of the Universidade Nova de Lisboa (FCSH-UNL) (2003-2012).
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She is a member of two international research *Networks in Early Modern History: the Cibeles Network*, based on Urban History, and the *Columnaria Network*, focused on the Iberian Monarchies in the Early Modern Age.

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Richard W. Unger is professor emeritus of history at the University of British Columbia. Trained as an economic historian, he has published extensively on shipbuilding and shipping in medieval and early modern Europe. He has written on the brewing industry in the same period as well as on Dutch brewing from the Middle Ages to the end of the nineteenth century. More recently he is the author a book on cartography in the Renaissance as well as co-author of a short outline of energy consumption in Canada in the last two centuries. He is now working on patterns of energy use in the late Middle Ages. He is the former president of the Medieval Academy of America.

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Vladimir Martus started his sailing career in 1980. He has raced for his country's National Sailing Team for 12 years. He is Yachtmaster Instructor (RYA).
Graduated from the St. Petersburg University of shipbuilding as a naval architect in 1990. As naval architect and master-builder, he has built two large wooden replica sailing ships: Schooner *St Peter* (80 feet, 1991) and frigate *Shtandart* (110 feet, 1999). As captain of the Shtandart, he has taken part in Tall Ship Races since 2001.
Vladimir was involved and has directed several large maritime events and festivals in St. Petersburg. He is president of the non-profit sail-training organization "Shtandart Project" and project director of the "Cutty Sark 2 Sail Foundation".

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