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# European Seaport Systems in the early modern age - a comparative approach

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## FROM A NATURAL SAFE HAVEN TO A STRUCTURED SEAPORT – PORTO AND THE ATLANTIC SYSTEM\*

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### Abstract

During the 16th century, while, from Lisbon, the Portuguese Crown was concentrating its best efforts in exploring the Cape sea route (“The Indian Run”) as well as the East and Far East circuits, commercial shipping agents of other Portuguese seaports led their undertakings seeking for alternative ways. It’s mainly due to this fact, that is to say, to the existence of seaports like Porto, Viana do Castelo and Vila do Conde, classified for a long time as minor ones that the Portuguese Kingdom definitely participate in the creation of the first Atlantic system. Which means that I affiliate this paper to the studies produced by the so-call “new Atlantic History”, a historiography school that bring to the “grand history” the role performed by certain European maritime regions in the organisation of a widespread economic structure that shaped future achievements such as the articulated, international, and global economy.

Influenced by this modern historiography, I’ll try to discuss and analyse a particular case: that one of the evolution of the city of Porto, mainly the building and organisation of its seaport. Structures such as ports carried out a key role in the process, and thus worth the study of their evolution. Here we have a port that started to be no more than a natural safe haven for ships in the Early Middle Ages, and became a structured equipped artificial harbour between Late Middle Ages and Early Modern Times. In addition to the most important material changes meant to its transformation, I’ll also pay attention to its inclusion on a pervasive international port system, the mobility of its merchants within vast and articulated markets, fleet features up to the extent of their enterprises which projected themselves into the Atlantic world and helped increasing the European trade.

### Foreword

Knowledge about historical port infrastructures still is insufficient among scholars and researchers. Key subjects such as space organisation, engineering and hydraulic projects, construction techniques, and resources available to improve them are yet unknown. Often, we don’t even know for sure where the ancient structures were placed

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and located, and the shape of most of the port facilities. In addition, once they're often in the heart of the city's urban system, they were subjected to the effects of continuous and profound interventions on the urban frame. Traffic evolution and shipping, as well as relentless works of renewal of the waterfronts and extensive city areas, thwart the efforts to reconstruct the port's daily routine. To overtake these serious constraints, we must seek out an assertive interdisciplinary commitment between Archaeology and historical archive research, to compare results and to reflect upon them.

Research on archive manuscript records provides privileged information about the kind, size, and cost of major port works and their patronage, and also helps us to understand its function. We have to keep in mind that the organisation of trade – especially maritime trade – it's intimately connected to the seaports structure planning. If you take care of the development of a harbour, increase its volume of transactions, and draw to your marketplace well-heeled foreign traders, hosting conditions both for ships and merchants must be improve. Evidence about the establishment of landing spots for vessels, ramparts, storehouses, cellars, and other foremost port facilities, as well as hosting rules and trade privileges, can be traced in Porto since the Middle Ages. Such material and political initiatives are matched by similar ones approved and applied in some European maritime regions for centuries. They suggest interesting custumal practices, that can't be ignored<sup>2</sup>. In this paper, I'll pay attention to the first set of priorities: the building of the port<sup>3</sup>.

The focus of this paper is a case study; a local history viewpoint that, of course, by its nature has some limitations. Nevertheless this micro-analytic perspective could be useful for the comprehension of a widespread analysis. Especially when you contextualize, searching for pertinent conclusions to understand the general evolution. And I believe this is the most valid methodological option. In the history of Porto maritime action you'll find early developments of port's activity, dated from the Middle Ages, responding to the challenging demands of international navigation along the Portuguese coast, and specifically, involving the Northwest Portuguese harbours. Some kind of services – bar piloting service, sanitary inspections, shipwright organisation, etc. – not being invented here, were, however, quickly adopted and incited, becoming a powerful manner of development.

However, I must point out serious limitations on this research due to the almost non-existing useful archive documentation and the reduced knowledge we still have about port settlements and its physical evolution. These remarks done I'll carry on presenting the paper's structure.

On the first section I'll introduce the Porto's social frame: who were the agents involved and somehow their motivations. Second and third sections will be dedicated to the evolution of the medieval port structures; as we will see that's a time of outmost importance because it represents a process of internationalisation of the city's maritime

2. And give us fine clues about the level of early international maritime and economic contacts. (I'll mention a paper by Neil Middleton where tax and regulations in Early Middle Ages are mentioned.)

3. Although extremely important, in this text I'll not pay attention to the different meanings of words such as port, seaport, or harbour; I'll use them as synonym referring a place where maritime economic operations between land and water occur. Nevertheless I must point that we can observe all the acceptations of the word: we have a transshipment port, a port of destination, a port of call, a fishing harbour and a port of clearance with structures related to each one of them.

economy. After a brief approach of the dynamics displayed during the transition period, roughly between 1400 and mid-1500s, the last part of this essay focus the theme of the evolution of the port in close relation with the new Atlantic economy.

### 1.

Writers and novelists from the late 19<sup>th</sup> century on describe Porto as a prosperous town of merchants. Richness resulted from the Douro wine commerce, improved during the 18<sup>th</sup> century, and the Brazilian trade business in sugar and tobacco produced a thriving society of successful businessmen. Men of the world tidily related to the flourishing London trade and finance, to the brokers of the Royal Exchange and its extension of the effervescent Exchange Alley, and of course to their powerful trade companies that prevail over the world commerce. Back then Porto mattered: as recent studies prove, it was one of the most significant maritime centres for English merchantmen<sup>4</sup>. In the same line of thought scholars included the township in the category of “hegemonic seaports”, like Bordeaux<sup>5</sup>.

Of course merchants prevailed<sup>6</sup>; they were the elite, and showed political skill to rule the city and to determine its economic evolution. Besides, trade, in every form we can think of it, succeeded over the remaining activities. Nevertheless both opulent businessmen and modest brokers were not alone in the field. For centuries we come across a numerous maritime community, a satisfactory merchant fleet and a shipwright activity allowing alluring enterprises. This social, economical and logistic assemblage begun in the late Middle Ages and continued to the 16<sup>th</sup> and 17<sup>th</sup> centuries. Here’s a novelty to keep in mind: thanks to that kind of resources Porto immediately integrated an extensive group of ports responsible for the growth of the Atlantic economy.

If one can’t do commerce – especially of long-distance range – without ships and sailors, one cannot do it either without a seaport. Not surprisingly there were traders, big and small, rich and not very wealthy, but each one of them fully interested in shipping: owning ships or parts of vessels in countless shipping societies, foreseeing good profits when connected with seamen, having them on their own pay roll, and organising major commercial projects on an international level, discussing dependable improve-

4. CARDOSO, António Barros – *Baco e Hermes. O Porto e o comércio interno e externo dos vinhos do Douro (1700-1756)*, 2 vols., Porto: GEHVID, 2003.

5. In both cases, because of the wine trade performance. See GUIMERÁ RAVINA, Agustín – *El vino y los puertos de la Europa atlántica: Burdeos y Oporto (siglos XVIII a XIX)*, in “Douro – Estudos & Documentos”, vol. VII (14) (Actas do II Simpósio Internacional de História e Civilização da Vinha e do Vinho “A vinha e o vinho na cultura da Europa”). Porto: Grupo de Estudos de História da Viticultura Duriense e do Vinho do Porto, 2002, p. 237-255.

6. We must put together the process of port’s transformation to another one that occurred in sequence, concerning the social and urban evolution of the city: the transfer of the best-heeled families from the seedy heart of the town to well off suburban neighbourhoods. From the old city centre to the new urban surroundings where they proudly displayed lavish residences, side by side with the households of their foreign neighbours and business associates. Besides, there’s a little more we can say about it: as recent studies such as the aforementioned prove, despite the noticeable decadence of the Portuguese economy, and its subordination to external interests, some of these men still remain in business, even if they can only survive within the sphere of English interests. By then – we’re still moving in the 18<sup>th</sup> and 19<sup>th</sup> centuries – the word “bourgeois” was definitely the one that in reality defines this social group. So here we have a scant inventory of consistent facts that justify that widespread interpretation of the city’s main feature: as I said, on the social, as well as economical basis, Porto has been regarded since then as a city of merchants rather than one of sailors. One of the intentions of this paper is to show that this was not always likewise; at least not with this kind of depth between the 14<sup>th</sup> and 17<sup>th</sup> centuries.

ments to be made in the port, in fact consistently shaping its own prosperity.

For those intents, in next to no time locals become conscious they needed an organised nautical room. The building/organisation of the seaport sounded like a very wise decision: after all, that basic equipment signified a reliable guarantee of prosperity, and, conceivably, of the city's wealth. That picture was entirely understood by the authorities: the city's economy depended on it. And they acted accordingly. At first, working over the fairly natural conditions existing, trying to organise the space. Quickly, they transformed this "natural" haven into a modern seaport. As I stated previously, this process went underway in the Middle Ages up to an extent that resulted in the total identification between the port and the city<sup>7</sup>. I here like to point out the foremost features of such a procedure.

## 2.

We know for a fact that the history of the seaport goes together with the history of the city. Economic, social and cultural progress as well as innovation and information exchange resulted and depended a great deal of port's dynamics. As far as we can figure out, the harbour had carried out since the 14<sup>th</sup> century an important role over both local and national economic dynamics, and (even) in the evolutionary process of Europe's trade and economy due to the fact that massive contacts and operations were performed by Porto's merchants and businessmen wherever they could. For what it's worth this paper addresses the following question: the role fulfilled by small Atlantic seaports in the process of creation of a consistent international market, offering a fresh perspective about the Medieval and Early Modern foundations of the European maritime trade.

One important fact, already mentioned here, must be kept in mind: the integration of the Portuguese coast in a context of maritime internationalisation; the significance of the scale, of the ports of call, in the medieval route between the Mediterranean and the Northern seas. For seaports such as Porto that meant opportunity and challenge: for once, the city cope with the requirements of the European expansion process contributing with its own modern fleet for the growth of maritime trade and benefiting from it; then, the market integration resulting from this context demanded new port facilities.

Heading their attention and dispatching their ships and merchandise to northern European regions, such as Brittany, Normandy, Flanders, Brabant, and British ports such as Bristol, Plymouth, Tenby, Cardiff, Galway, and, of course, the nearest harbours of Galicia and the Cantabrian Coast, Porto integrated, then, a "port system" in formation, with some interesting extensions to a few traditional Mediterranean cities.

That's why geographic, political and economic options adopted by local authorities and entrepreneurs must be taken in consideration because, as Jacob Price states for the 17<sup>th</sup> and 18<sup>th</sup> centuries, they "influenced or controlled decisions about where a particular commodity should be imported or exported"<sup>8</sup>. Back in the medieval times, Porto's merchant community had to make such decisions. After all they knew the market and its needs. And that explains all the measures taken to build up port conveniences

7. In fact, the name "Porto" says it all.

8. PRICE, Jacob M. – Competition between ports in British long distance trade, c. 1660-1800, in *Puertos y sistemas portuarios (siglos XVI-XX)*, Madrid: CSIC/CEHOPU, 1996, p. 19.

and, complementary, the approval of a legal jurisdictional board of trade.

The port appears, subsequently, as a public enterprise (since it demanded vigorous involvement of local rulers as well as the king's interference over a wide range of matters of general interest<sup>9</sup>) organised on behalf of the whole community.

In the early days Porto was probably a satisfactory port of scale. We always have that for granted, somehow influenced by classic scientific literature about the "discovery of the sea" and the initial role performed by the Iberian Peninsula ports, which functioned as support points for the ships involved in the Italy/Flanders route. I wrote "probably" because I think we can, or should, argue that some features – shared by many Portuguese ports – such as risky bar entries, shallow waters and narrow canals could be very dangerous for all of those who were unfamiliar with it, preventing that function. Anyway, been a scale or not, (in addition) Porto developed an interesting maritime activity of their own, and rapidly became a busiest harbour. From now on, facilities had to be expanded as a guarantee of good service and management.

We can easily figure out from the title of this article, and for what it's been written so far, that in the beginning we have just a roughly whole natural haven with minimum coherence. This is hardly an entire novelty; comparable developments took place in multiple places, and it'll be enough to bear in mind the ancient *wicks* in Britain that took advantage of good natural conditions to become firstly mere settlements, and later interesting regulated commercial spots<sup>10</sup>. Here in Porto things went alike. And this is a good theme to reflect on. Look at the Douro River nowadays and you'll probably miss the fact that you are observing an entirely different reality vis-à-vis olden times<sup>11</sup>. In the past it used to have widespread sand beaches, rocky shores, bends and meanders; you just barely catch a glimpse of those today. The only similarity is the regime of the waters; Douro was, and still is a river of tidal movements. But again with a foremost distinction to make: back in historical times the tidal system was much more contrasting. In the summer it was not very different from today (except for the amount of water which was scarcer), but quite the opposite in the wintertime, when the stream became fast, furious and enlarged, bringing river navigation to a temporary close, and causing severe flooding, damaging the close by communities' property. Let alone this constraints, the river offered good conditions for the development of a maritime way of life, especially when you notice that it was easy to find places for shipbuilding, satisfactory accesses to the watercourse from the city and nearby neighbourhoods, and, from it, with no trouble reaching the open sea.

Just about the same can be said about the town. Although people soon approach the riverside and took advantage of the manifest potential of both river and maritime activities, there still remain a lot to go through until we see a consistent settlement by the river. The key area primary chosen for commercial purposes was the square that spreads just in front the "Ribeira" beach. But throughout the final stage of the Douro line, we could find places alike. Especially by the right shore, whenever you find a sand

9. One cannot forget Portugal's political frame in which the King prevail over every jurisdiction; is authority was never challenged by any city, institution or social group.

10. See the antiquity of such process in MIDDLETON, Neil – *Early medieval port customs, tolls and controls on foreign trade*, in "Early Medieval Europe", 2005, 13 (4), p. 313-358.

11. The river-level had been entirely change by the growth of modern dams throughout his course.

beach, a small bay, or some kind of indentations, you certainly stumble on modest clusters full with individuals that made up their life thanks to the river or dealing with the sea. Many had a small boat tied to the familiar river pillars and bollards; some dedicated themselves to cross people, while others became involved in fisheries, enlisted in the merchant navy, made small commerce on their own, hired their services, or get involved in smuggling.

Let's return to *Ribeira* and stay there for a little while longer. That's where the primitive seaport was organised, where the city approached the river, where the pressure on space was higher, as we can notice by observing the nearby quarters divided in narrow plots. On the beach the shipbuilding activity took place – the medieval arsenal –, which generally is immediately related to the existence of a port. In the beginning dominated the fabrication of galleys but later, when the shipyard was dislocated a little further down the river shore, the introduction of new technological solutions resulted in the emergence of modern ships like the “sea barge” (*barca*), the caravel (*caravela*) and cargo ships like the *nau* – at first further related to the well known big Mediterranean model rather than the future Portuguese *naus* that sail the seas throughout the 15<sup>th</sup> and 16<sup>th</sup> centuries, which, in every case, were about to be developed right here. These changes in the naval construction show a port very soon implicated in Atlantic dynamics; the old arsenal became out-of date and their structures were used for other port purpose. The arsenals couldn't respond to the needs of the new naval typologies and their stores, in the olden days used to build galleys and to keep them during the winter, served, from now-on as warehouses or commercial plants. That phenomenon occurs in Porto in the 14<sup>th</sup> century when the galley lodges were transfer for the left shore<sup>12</sup>. This was also the time when galley carpenters were replaced by the modern *ribeira* carpenters, a fact that have to be emphasise because some researches consider it the moment when the early modern times begin<sup>13</sup>.

Alongside with the carpenters labour, there's a lively activity going on: ships waiting for cargo, unloading operations, carts and stowers coming and going, in and out of the vessels through the planks furnished by the municipality, merchants looking after their merchandises, boxes, barrels and piles of goods spread all over the sand, waiting for the tax collectors. Medieval regulations confirmed this commercial rise. Which means moreover that by that time the Porto way of life was increasingly attached to the maritime commerce. This was the primitive centre of maritime action. In here, we could come with the way things changed. Although the beach remains for a long time, planks were placed, jetties were built, timber quays were hoisted, and other anchorage solutions were found.

By then, the urban policy – responding both to Crown's requirements and local needs – was directed to the welfare and protection of the growing population. And a

12. And the one that existed in the right shore was transform in the “weigh house”. In the 16th century the “houses of arches where in the old days galleys were kept” were reconverted in slaughter houses where the “meat for the armadas [of the Indian Run] were made”. This is what's been written in the memoirs of the king's representative in the city in mid-1500s. DIAS, Francisco – *Memórias quincentistas dum procurador del-rei no Pôrto*, (edição de Artur de Magalhães Basto). Porto: Câmara Municipal do Porto/Gabinete de História da Cidade, 1937.

13. GONZÁLEZ TASCÓN, Ignacio – *Tecnología naval portuaria hispana durante la Época Moderna, in Naves, puertos e itinerarios marítimos en la Época Moderna*, Luís Robot García e Luigi de Rosa (dir.). Nápoles: Istituto Italiano per gli Studi Filosofici, 2003, p. 71.

new wall was build. The riverain part of the gothic wall<sup>14</sup> was concluded before 1348<sup>15</sup>.

Building the wall had a profound effect over the seaport. It made clear the definition of economical spots: for the resting of fishermen boats, the docking of commercial ships, especially those “that carry out commerce with France”, according to contemporary records even if we know that they more and more took out successful operations in different zones such as the Flanders, Brabant, the British Isles, Northern Spain, Spanish Levant and the Mediterranean Sea. Same as other parts of Europe, “archaeological investigations have shown that basic port facilities were built when settlements begun to acquire urban features”<sup>16</sup>. If this movement towards the riverside had already been clearly perceptible before the existence of the walls, the process was particularly enhanced when they were completed.

The importance of this structure can in addition be evaluated by the amount of stores, cellars and warehouses in the new streets that, from the beginning, became commercial paths. These buildings meant a lot for the port organisation; letting aside the fact that a great amount of individual city households had (private) accommodation for goods on the ground floor (discovering the very nature of the city’s activity, founded on trade), the demand produced by the rapid extension of the commercial bonds, especially from the second half of the 16<sup>th</sup> century on, encouraged the construction of warehouses for storing salt, sugar, cotton, and brazil wood, cellars to keep the wine, and granaries to stock up cereal. Some merchants add to their own commercial trade activity profits, the revenues of storehouse rental. The municipality did pretty much the same.

Concentrating the commercial activity next to the wall revealed as well the need of infrastructures projected for traffic control. Here’s another important development in port facilities. By the central years of the 13<sup>th</sup> century the Church, back then the landlord of the city<sup>17</sup>, placed a toll collector next to a small chapel near the river, the *mordomo* of *S. Nicolau* (Saint Nicolas’s taxman), putted in charge to hoard the taxes payable by the ship-owners and merchants. After a period of jurisdictional dispute between the King and the Bishop, regarding the rights over these tax revenues, an agreement was reached and from now on (mid 13<sup>th</sup> century) they were shared between both of them. That’s the time when King’s interference over the maritime activity of Porto became manifest and, on his initiative, a customhouse was built in 1325; it contain quarters for the crown’s superintendent and a vast stow where the goods be kept until they were clear out. The king’s warehouse became the key-point of the whole harbour: it’s one of the most well-know buildings of the historical centre of Porto: the so-called “Casa do Infante” (House of Henri the Navigator)<sup>18</sup>, and, somehow, its existence expresses the desire of concentration of some port functions necessary to keep the port

14. The one people always name *muralha Fernandina* because it supposed to be finished during the reign of Fernando I (1367-1383).

15. This is confirm by an inscription that stayed on the wall and was removed for the city’s museum (which no longer exists and because of it we lost trace of that epigraphic piece). That inscription was very important because it registered the place where ships used to be tied to an iron chain.

16. SMOLAREK, P – “Ships and ports in Pomorze”, in *Waterfront Archaeology in Britain and Northern Europe*, Gustav Milner and Brian Hopley, ed. London: Council for British Archaeology, research report n° 41), 1981, p. 56.

17. The city was a Church domain (belonging to the Bishop’s) until 1406.

18. A popular tradition – still not fully proved – says that the Infant was born there, in 1394. Today it is the City’s Historical Archive.



working properly. Since that date complex custom regulations – precious elements to understand the port's evolution, especially in terms of jurisdictional manner – were approved and implemented. The Crown's interest visibly proves that maritime trade had become the key economic element. From now on, the port and the town emerged as centripetal over a vast region around them; an articulated economic market was definitely enacted.

### 3.

Planning the city's circuits in view of the port's development; arranging the river-side ways to easier the traffic<sup>19</sup>; building up lines of storehouses and commercial plots; organising the shipyards; establishing a tollhouse; that is to say, creating effective and functional links between different port economic segments. All of those appear to be the initial initiatives to get a structured seaport: not a very impressive one, presenting at first only rudimentary piers (some of them timber landing stages with mooring posts), and basic dock equipment such as stone pillars to moor ships, stairs, planks, and cranes, but still a planned compound. As I pointed earlier, it was organised just outside the city walls in order to profit from the existence of this defensive stone structure which, of course, will provide more firmness to the quay section. Everyone is familiar to the importance of the walls in city's organisation, about the way men took advantage of those bulky structures, arranging new commerce paths, streets, and boroughs, and inspiring new areas of activity from it<sup>20</sup>. The main gates and the riverain sally-ports became decisive points in the organisational process of the seaport. We must again evoke differences between the old river and the one we are familiar with: in olden days Douro flowed more or less seven feet down in comparison to what he does now. Access to the river and moored boats was through the alleys that linked the principal streets to the wall doors, allowing goods transportation. And so, from these gates one got a direct access to the sand, to the crossing rowboats, to the ships.

Facing the increasingly maritime action, the men in charge struggle for efficiency. Piers and rampages, together with stone pillars, were built just outer the wall; when possible they were placed directly outside the gates, to ease the anchorage and the load and unloading of all different kinds of cargo. Some passageways, such as the so-called "Charcoal Gate" (*Postigo do Carvão*), "Stowage Gate" (*Postigo da Arrecadação*), and the "Timber Gate" (*Postigo das Tábuas*) reminds us the purpose they were intended for, and almost certainly in the manner the cargo operations had been organised.

The first real quay, in solid rock material, was built in 1449 near the Custom House. Next to it there were other timber quays and jetties. It took a long time to expand the berthage line; the stone quay was only concluded in the late 16<sup>th</sup> century, when a long pier was putted through alongside the wall and almost definitively delineates the shape

19. For instance, in the late 14th century a new and wide street, made on the English way was open; she runs parallel the river (it still exists with the name of Infante D. Henrique Street) and close to the Royal Custom House. In 1558 the western end of the street, near the city wall, where a small stone quayside have been raised to ease cargo operations, was jammed with stockpile coopers woods and materials. In face of the insistent complaints, the city's authorities order the removal of the wood and barrels and started, then, a process of organization of the activity in there, for instance, defining the workshops place. AHMP (Porto's Historical Archive) – *Vereações (City's regulations)*, liv. 16, fls. 51v-52

20. See *City Walls. The urban enceinte in global perspective*, James D. TRACY, ed. Cambridge; Cambridge University Press, 2000.

of the one we can observe today<sup>21</sup>.

As I said before, the wall marked a major contribution to the seaport “zoning”<sup>22</sup>. I’ve already mentioned the doors, but in general we can say that areas for merchant ships and fish boats were clearly assigned; stations for passengers and posts for the barges<sup>23</sup> and ships were erected; the naval construction, no longer advisable or even possible in the heart of this active commercial site, was moved away to a more suitable location.

This last statement ought to be underline. Checking the scientific literature about European historic seaports we realise that for the most part the shipbuilding industry remain side by side with the commercial doings for a long period. As we can witness in Porto that intentional and functional separation occurs as early as the 14<sup>th</sup> and 15<sup>th</sup> centuries. This chronological framework suggests precocious care about accurate organisation on a seaport enjoying a context of expansion induced by a global request of sea transport.

If one considers plan and organizes a harbour, one should be aware of the size of their own fleet, the capacity and tonnage of the ships calling the port, and the volume of trade expected enter the harbour. We must not jump into conclusions that could be out of place, out of context; we cannot expect rational thought yet; however, and confirming the concept that ports are places of innovation, very soon people had to think seriously about those questions; for example, about the impact of different types of vessels arriving, or the kind of commerce performed in there. The merchant ships of the 14<sup>th</sup> and 15<sup>th</sup> centuries displayed a considerable tonnage. For what its worth, land reclamation was carried out with the construction of piers and docks further into the water, in order to offer safe mooring and handling berths for vessels with greater draughts. That solution required brawny wharves, usually rock-solid ones, and more complex and expensive (engineering) works, which were made at some stages between the 15<sup>th</sup> and 17<sup>th</sup> centuries. Once more we must not forget the technical difficulties to perform hydraulic works. That’s why some ships anchored in the canal and rowing boats had to be used for disembark, cargo and unloading operations or else, using the tidal movements to get the ships closer to land. Both new dockyards and handling solutions were related to the development of maritime trade and shipping industry in Porto. In fact, the increasing figures of ships entering the city’s port compelled the local authorities to act in order to define a safe way from the bar entry up to the city<sup>24</sup>.

Bar crossing was a serious problem since the access presented more than a few rocky points, shallow places, and sandbanks. Shipwrecks happened in many occasions and are documented. To avert distressing troubles, marks were positioned in strategic places meant to sign the entry way and point out a safe canal across the river. Keeping

21. Renewed in the 17th century and totally modernized in the next one. The actual shape is the one he had on the 18th century.

22. For a classic view of this subject see MUMFORD, Lewis – *The city in History – Its origins, its transformations and its prospects* (Portuguese Language Edition), S. Paulo: Martins Fontes, 1982

23. That incessantly crossed people and good between the two margins.

24. An eloquent case is the Brazil route (that I studied in my PhD thesis): between mid-16th century and 1600 more than 200 voyages are documented. This figure must be worked for better explanation because we don’t only have these vessels; we must also count the ones expecting them, prepared to receive the cargo they bring for distribution abroad; so, we have to add movement to movement.

up navigability was a permanent and most important concern for all of those implicated in trade; municipal rulers, merchants, and sailors actively involved themselves whenever problems came out, discussing and negotiating<sup>25</sup> what they thought were the best solutions to be implemented. That's the reason why the City Council held a meeting with tradesmen and "men of the sea" by the riverbank, to see if it was possible to build two towers holding iron chains crossing the river to avoid pirate invasions in the middle of the 14<sup>th</sup> century<sup>26</sup>; that's why the municipal chamber had to deal with the sailors complaints about the fishery traps (*pesqueiras*) that obstacle the maritime transit in the 15<sup>th</sup> and 16<sup>th</sup> centuries; and yet again, in the beginning of the 16<sup>th</sup> century, sailors and shipmasters were asked the best way of replacing the old pine tree used for fixing the route on the bar access<sup>27</sup>.

#### 4.

Late Middle Ages were crucial times in commerce history. The hub of the maritime trade transactions somehow shifted from the Mediterranean to the Atlantic ports. The traffic increase required other sort of port facilities. For once, more room for ships in the docks, and more sets of stores for cargo keeping; then, hospitals to host sailors in need of a place to stay on shore or convalescent from illness got on board; at last, chapels where they could express their spiritual feelings and pious practices, and shipyard services to repair damaged vessels passing through.

Together with the waterfront improvement, the reorganisation of the Porto's shipyard seem to be the biggest project going on. After a first transfer from *Ribeira* to the western neighbourhoods inside the wall, by the second half of the 15<sup>th</sup> century it was finally relocated outside the city limits, again on a river beach, just next to the *Miragaia* borough, where ships of all kind and size could be built and repaired. This process ended in a curious contract: the one signed<sup>28</sup> by the municipality, owner of the ground, and the men of the sea confraternity (of Saint Peter); the terms of the agreement were plain: the City Hall agreed to yield half of the revenues from the taxes (*assentos*) paid by everyone who wanted to use the shipyard on behalf of that institution, in exchange of the wax their affiliates spent in the *Corpus Christi's* feast. That was the best solution authorities came up to both to clear the commercial area and suitably place such a structure. One could figure out how it looked like: ramparts to hold ships and to get better access to them, possibly a wet-dock or, at least a water-dike<sup>29</sup> to hold the ships, a suitable ground to keep ships ashore, warehouses for materials and tools, woodyards filled with piles of different kinds of wood waiting for the carpenters, small furnaces for the

25. For example, requiring the king's financial support, a very well know scenario that happened more than once in this period.

26. *Corpus codicum...* collection of medieval and Early Modern documents about Porto, published by the City Hall, vol. VI, p. 69-72.

27. See BARROS, Amândio Jorge Morais – *Porto: a construção de um espaço marítimo nos alvares dos Tempos Modernos*. Volume 1. Porto: Faculdade de Letras, 2004, p. 87-89.

28. Around 1454; we don't know the exact date. See BARROS, Amândio Jorge Morais – *A confraria de S. Pedro de Miragaia do Porto, no século XV*, volume 1. Porto: Faculdade de Letras, 1991, p. 148 and next.

29. More exactly a tidal-dike, profiting from the river movement; the river tidal is still used today by the remaining shipyard in activity when a ship must be putted ashore to be repaired.

tar (pitch) and iron works; and an endless motion around the naval constructions. It's important to say that the shipyard transference went simultaneously with the coopers' change to the same place<sup>30</sup>; this transfer could be explained by the fact that cooperage was intimately connected with maritime trade and also because of the interesting role performed by coopers in tonnage measures, very helpful for the sake of the shipbuilding industry and general trade<sup>31</sup>.

Finally, the modernisation of the shipyard could have been motivated by the good conditions offered: from the 1430s documentary data talks about the existence, in Mira-gaia, of a “*ditch for fixing ships*” (that we could, maybe, identify with the above-mentioned rudimentary wet-dock), and also a “*mount*” that, as it has often been mentioned, was used for careening<sup>32</sup>.

## 5.

The Iberian expansion and the establishment of Atlantic routes encouraged fresh investments in port facilities. We're now facing a whole new complex of social-economic phenomena “that lead to a fundamental change in European shipping”<sup>33</sup>.

As I pointed above, Porto contributed for this change. The city oriented its economy in order to recover from the stagnation caused by her overthrow from the Indian trade, and the losses suffered by their merchant fleet in result of the attacks by French interlopers.

From mid-16<sup>th</sup> century, investments previously made in the Atlantic World (in order: Atlantic Islands, African gold and slave ports, Brazil, and the Spanish West Indies) begun to pay. Moreover, the rise of powerful Portuguese trade networks<sup>34</sup>, alerted European merchants for the role the city was then able to perform within this new context.

An excellent book by Nicholas Canny tell us about the “Europeans on the move”; that's precisely what we have in here; that's what's caused the global change in international shipping; that's the time we are allow to talk about trade networks, long-dis-

30. We can still observe the long line of arches (some of them of the 16th century) that were in front of the barrel-making plants.

31. The wine barrels were always used in Porto to evaluate the capacity of ships' cargo. That's why we can say, for sure, that a ton, here, in late Medieval Era and Early Modern Times was equivalent to 1 000kg (2 barrels). See BARROS, Amândio Jorge Morais – *Porto: a construção de um espaço marítimo...*, cit. Vol. I, p. 403 and Vol. II, p. 114, 147 (documents from 1568 and 1569).

32. For a long time Porto has been the most innovative shipbuilding centre in Portugal. By this time a Genoese careening master, Jacomo Lourenço, was in charge of that task, and was privileged both by the city and the king for that. In the 16th century (when *Ribeira das Naus* shipyard in Lisbon became the most important of the kingdom – although organized by carpenters and specialized workers from Porto and other North-west Portugal ports) another Genoese technician, Damião Brúcio, received the careening monopoly from the king; this one brought a cheaper solution to do the job creating a floating wood platform that allow the job to be done in the water. See BARROS, Amândio Jorge Morais – *Porto: a construção de um espaço marítimo...*, cit., vol. I, p. 387-8. About the careening works, and the problems they caused in the age of discovery, see BARKER, Richard – *Careening: art & anecdote*, in “*Mare Liberum*”, n° 2. Lisboa: Comissão Nacional para as Comemorações dos Descobrimentos Portugueses, 1991, p. 177-207. Although considering it an ancient practice, this expert points the fact that it wasn't much documented until 1500, a fact that demonstrate the importance of Porto in the shipbuilding and naval logistics since an early period, cit., p. 179.

33. SMOLAREK, cit., p. 60.

34. Particularly the ones incorporated by wealthy New-Christian members, that were present in every important harbour and marketplace that by then mattered.

tance sea lanes, and perhaps economies of scale which overcome a great market: the one of the Northern Europe, mainly the Brabant region. A major part of this evolution was due to the existence, inside the city limits, of active trade firms that performed an important role within this global economy<sup>35</sup>.

At that point in time, ports of Northwest Portugal – along with some Galician ones – generate appealing economic dynamics. Concentrating a good deal of significant business – salt from Aveiro, wine, dye, and colorant plants from Douro Valley, slaves from West Africa, sugar from Brasil, etc. – they manage to uphold their on fleets and attracted other European ships and traders.

Perhaps it would not be very wise to think things went different from elsewhere in Porto and in the Northwest Portuguese ports, but it seems so; the pursuit for exclusive policies, a characteristic of the mercantilist programme, appear to be not very profound here. Actually it looks quite the opposite; merchants were aware of the need for co-operation with a multitude of agents<sup>36</sup>. Maybe it's premature to consider economic systems or articulated economies. Or maybe not; looking at the extent of the contacts and exchange that had been settled between the Iberian northern ports and the northern Europe centres, along with the variety of the products exchanged<sup>37</sup>, it's likely we have to reassess some theoretical economical ideas accepted by scholars. This Early Modern pattern in trade and commercial relationships brought small ports to the spotlight, once they were able to launch and lead important and profitable projects. From now on, we came across a vast maritime shoreline, elongate from the Baltic Sea to the Iberian Peninsula, where maritime centres stay in close touch, reorganising, reconverting, and redirecting their business in order of what we currently describe "globalisation"<sup>38</sup>. It's also a phenomenon that put things in perspective; that displace the traditional, and narrow image of an international trade roughly solely achieved from the imperial ports of Lisbon and Seville. This said the role of the small ports, for a long time considered in the periphery of the structure, ought to be taking in consideration since they were key elements in the formation of the "Atlantic System"<sup>39</sup>.

Such a perception would have been reflected in the interest over port studies. Nevertheless again, tradition persisted; and research on infrastructures interested historians

35. See BARROS, Amândio Jorge Morais – *Porto: a construção de um espaço marítimo...*, cit; CURTO, Diogo Ramada e MOLHO, Anthony – *Les reseaux marchands à l'époque moderne*, in "Annales. Histoire, Sciences Sociales" (2003), n° 3, p. 569-579; CASADO ALONSO, Hilario – *El triunfo de Mercurio La presencia castellana en Europa (siglos XV y XVI)*. Burgos: Caja Círculo, 2003.

36. Need of Antwerp and their wide-range market; trade associations with Spanish and Flemish business companies; "Flemish" ships chartered to transport goods for north ports; "Flemish" ships (actually Dutch with Swedish flag) chartered by Porto traders to go directly to Brazil before the end of the 16th century. Without the Northern agents, the city's trade could have not survived; this is a good proof that official politics and maritime practices many times don't – didn't – go together.

37. You could get salt, furniture, timber, fish – remember the cod fish industry – wool, metallurgic merchandise, sugar, cotton, exotic hood, slaves, etc., from the Iberian ports; and from the Northern European ports, ships came full of a wide range of merchandise from textiles to raw materials. These commercial relations where improved in time and have their own mechanisms and rhythms.

38. And even more accurate when we think of the overseas ports and territories explored, that should be included in this dynamic.

39. According to this point of view, modest harbours such as these ones should be put in the charts and maps of international trade, alongside the imperial ports that commanded the world economy and the world economic system, to use the expressions of Braudel and Wallerstein. We can look at a good example on PRI-OTTI, Jean-Philippe Jean-Philippe – *Bilbao et ses marchands au XVIIe siècle. Genèse d'une croissance*. Lille: Presses Universitaires du Septentrion, 2004.

and economists less than shipping and ships. That's why I'd like to call the attention for an innovative project such as *Hisportos*, focused in the study of port facilities and the technical thought that goes along with it, keeping in mind, though, the importance of shipping dynamics and port regulations/jurisdiction<sup>40</sup>.

On the second half of the 16<sup>th</sup> century Porto needed to adapt its harbour conveniences. Improvements done by the City's Council and merchants got underway all through the years resulted into a suitable haven for all type of ships, and an important transshipment point. Colonial and metropolitan products were very attractive for northern European merchants, and the level of business operations (of commercial and financial type) stimulated the influx of new customers and the strengthening of old bonds with key European entrepreneurial elements.

One can estimate the level of the port activity by looking after the ships registration; that's a hard task to accomplish due to the non-existence of continuous series of records. Nevertheless some files from the sanitary department – in charge of the ships inspection –, some books from notary sources, and a few references collected from the municipal archives, are enough to enlighten us about the number, model/size, and origin of the ships. First of all we must be aware that the tonnage of the Portuguese merchant ships of the 16<sup>th</sup> century diminished<sup>41</sup> when compared with the ones of late Middle Ages; the large medieval European merchantmen of 250, 300 tons was replaced by vessels dislocating 90 to 180 tons<sup>42</sup>; more than *naus*, the documentation makes reference now to "ships". And where do they come from? Outside the Portuguese coast, they arrive from Galicia, Cantabrian Coast, Basque region, Brittany, Normandy, England, Scotland, Ireland, the provinces of Flanders, Brabant, and Holland, Germany, Sweden, Denmark, and from the Mediterranean ports such as Seville, Alicante, Valencia, Genoa, etc<sup>43</sup>.

What's the meaning of these changes, starting by the tonnage and especially the massive arrival of foreign vessels? First of all, that the dimension and type of the 16<sup>th</sup> century local fleet had been irrelevant to the motivation lying behind the set-up of the port. Secondly, that these new arrangements had everything to do with the desire of internationalisation of the local business, creating a centre of commerce well enough to attract more and more foreign traffic. Thirdly, it has to do with port systems, their enlargement and progress. We must assess the meaning of the role performed by Porto during the early modern times in the rise of the Atlantic System. Brazil, the Spanish Indies, the Atlantic Isles and their high rotational economy were understood as meanings of fortune. Once again it would be easy to interpret this process in the context of

40. Visit this project in [www.ihm-up.pt](http://www.ihm-up.pt)

41. Except, of course, for those which were involved in the Indian Run.

42. Of course there were big ships serving that exceeded, by far, that tonnage. Nevertheless they were used only in specific routes, such as the "Cape Run". The Atlantic world, except for a few galleons, "was built" and was always pretty much dependable on smaller ships.

43. Notarial records of the 16th century mentioned ships from Galicia transporting fish and coopers wood, others from Andalusia and Valencia with salt, agriculture goods and natural fibre for the rope industry, Baltic and Scandinavian ships with cereals and staple products (mainly for the shipwright industry), French and British vessels with textiles, glass and metal products, Flemish and Brabant ships with textiles. Since the 1570s these last ones were the most noticeable and they used to stay in the port for some time, waiting the "sugar fleet" arriving from Brazil and also loading on board wine and dye products (*sumagre*) from the Douro valley. See BARROS, Amândio Jorge Morais – *Porto: a construção de um espaço marítimo...*cit.

a competition between ports. But for what the record data suggests us, I believe that we should talk about collaboration rather than rivalry or competition. First of all, the city integrated, from the beginning, a complex of ports of the Northwest Portuguese coast (from Viana to Aveiro) where functions were plainly assigned; for instance, Porto's vessels returning from Brazil transfer their cargo to Vila do Conde ships – operation that was likely to occur in a Galician port, mainly Pontevedra or La Coruña<sup>44</sup> – in charge of transporting it to Antwerp. In parallel, and with more expression by the end of the century and ahead<sup>45</sup>, Portuguese ports receive northern Europe ships, especially merchantmen from “Flanders”, offering cheap and prompt shipping services. These bulk ships (“urcas”) perfectly adapted to the low depths of the ports, quickly became valuable partners in this business and, in addition to colonial goods, they also carried merchandise produced both on the umland and the hinterland (dye and leather products, pottery and ceramic<sup>46</sup>, wine and salt).

Sometime in the 16<sup>th</sup> and 17<sup>th</sup> centuries, colonies of foreign merchant were established in Porto<sup>47</sup>. They were, of course, not so numerous as the ones settled in Lisbon, but even so noticeable and reason for other nature of new port structures: the host houses built by the riverside which the documentation refers as “estaos”.

The traffic expansion elucidates us how rulers faced retail facilities and port regulations. On the other hand, functional thought has evolved from the Middle Ages to Early Modern Times; from fishing, transport, regional and inter-regional traffic, to international commerce and, sometimes, even some sort of staple market<sup>48</sup>. New, modern, suitable infrastructures for those purposes were needed, including the surveillance and defensive ones, by building fortifications such as a castle of the “modern way” (what specialists like Geoffrey Parker entitle *trace italienne*<sup>49</sup>) right in front of the bar entry (in the 1530s), and a tower (built in 1589) close to the city wall, turned to the river. In addition, to the above mentioned changes in naval industry infrastructures, during the last third of the 16<sup>th</sup> century a new shipyard was organised next to the bar entry: the “Ouro (Gold) Shipyard”, a structure specialised in the construction of galleons for the Crown when a navy modernisation programme was introduced<sup>50</sup>; we can furthermore point out the creation of an official and organised bar piloting service over an existent ad-hoc pilot corporation documented since the first half of the 15<sup>th</sup> century. And things went further; new investments were made in this area, amplifying and mod-

44. Mainly due to tax policies, until 1573 Porto merchants order their ships to return to these ports.

45. Decadence of the Vila do Conde merchant fleet. About Vila do Conde and its port see POLÓNIA, Amélia – *Vila do Conde um porto nortenho na expansão ultramarina quinhentista*, 2 volumes. Porto: Faculdade de Letras, 1999

46. Both extremely important to support sugar trade.

47. There were, of course, foreign traders in the city in the Middle Ages; however, their number was insignificant – on the contrary, their activity was much significant.

48. Especially when we check the massive imports of rough materials from the Basque region, Northern Europe, and Baltic Sea in the late 16th century, to fulfil the shipbuilding contracts (mainly for the construction of galleons) with the Crown.

49. *The military revolution. Military innovation and the rise of the West. 1500-1800*, 2nd. ed., Cambridge: Cambridge University Press, 1999.

50. And was extremely important for the recovering of the Iberian navy after 1588; for instance, in 1598 eight galleons were built in this shipyard. See BARROS, Amândio Jorge Morais – *Porto: a construção de um espaço marítimo...*, cit., vol. I, p. 312.

ernising the existent port facilities, and introducing new ones: placing buoys in the canal, building up a lighthouse, organising specialised shipbuilding services, for example a crane to install masts on ships, or a new and modern shipyard, creating a planned and controlled service for ships quarantine and maritime health..., etc. We can figure out how important they were by checking the huge capital investments in order to build a new-fangled solid rock quay<sup>51</sup> whose length and foundations were much more substantial than those of its predecessor (a task that took some years to be concluded in the late 16<sup>th</sup> century<sup>52</sup>), and the continuous boost of money and inventive solutions applied during the endless process geared up in order to remove the bar reefs<sup>53</sup>.

Finally, another step up to rationalisation was done. Along with the new quay and a wide range of port services – for instance, translators were hired to deal with foreign merchants – the activity was regulated: authorities kept separated the sea traffic from the river bustle, assigning specific areas for each one, and reasonable entry and exit duties and storage fees for merchandise arriving from sea were rated, in order not to chase the traffic away from the city<sup>54</sup>.

## Conclusion

Talking about the progress of maritime regulations in the medieval Iberian Peninsula, Jennifer Green indicates the fact that “Southern Iberia became a stopover for ships travelling between the Mediterranean ports of Sicily, Catalonia, and North Africa, and the Atlantic ports of England and Gascony”<sup>55</sup>. That’s exactly how many Portuguese seaports, such as Porto started: as a stopover, a port of call. As we approached the decline of the Middle Ages this process was improved. The trade lines were much more extensive and the west coast of the Peninsula was impelled to participate in the process; so its ports had to be adapted to respond the demand of new commercial dynamics.

The very nature of the city allows the development of local profitable activities direct or indirectly related to maritime traffic. During late Middle Ages and Early Modern Times there were a lot of schemes and ongoing business that correspond to a strong stimulation for the shipbuilding industry and the maritime trade. Of course we must analyse things in context: the opening of overall European maritime trade lines had profound effect in this region. That was the ideal period for port works. Roughly situated where nature allows it, where topographical suitability was favourable, the port was, until then, no more than a shelter protecting ships from the elements, nearby the city,

51. Filling the shore-line and conquering space over the river to get deeper berth places for ships.

52. See BARROS, Amândio Jorge Morais. *Organização portuária da cidade do Porto nos séculos XV e XVI* (where the book of the accounts of the quay is analysed), Coimbra, 2003 (paper presented at the meeting of the Portuguese Economic and Social Association)

53. Not to mention the construction of the castle of the bar and its military equipment. Regarding the works over the reefs, the money spent and the solutions found during the 17th century, see H. Osswald.

54. For instance, the grain commerce was excused to pay and the city council took care of every single charge regarding unloading and storage taxes. Only in exceptional years of good harvest things went otherwise.

55. GREEN, Jennifer L. – *The development of maritime law in medieval Spain: the case of Castile and the Siete Partidas*, in “The Historian”, 3, number 22, 1996, text available in [www.highbeam.com/browse/Academic+and+Education-History-The+Historian/March-1996-p1](http://www.highbeam.com/browse/Academic+and+Education-History-The+Historian/March-1996-p1)



where simple commercial operations could have been performed. The arrival of big cargo ships and the building of some local ones, the integration on that extensive picture and the desire of big profits from the trade, presented a primary objective for all-embracing changes on the infrastructures complex; and improvements were launched and evolved; from local initiative, political argumentation was essential for the port consolidation, a fact that must be underline, and sometimes supported by the crown's approval – no more than that<sup>56</sup>. Important and wholly new solutions were about to be found and improved. A real seaport was built. A harbour was organised. Especially the separation between shipbuilding and cargo operations – done as early as the 14<sup>th</sup> century – appears to have constituted an effective means of arrange the nautical space; but also the existence of a wet-dock; the bar piloting or the health politics, as well as evidence of planning in the domestic organisation of roads and plots within the urban compound, connecting them with the port manners.

And then, the discovery of the Atlantic world and its richness; the brazilian wood, the sugar, cotton, slaves, silver... elements that fast and sturdily bring generally ignored small ports into the limelight. From the standpoint of those in charge, that was the time for business upgrading: the new arrivals from the North, the financial support of European dealing companies, the profitable operations, the requirement of means of transport, and the establishment of good port services. By this time the Porto's harbour functions fulfilled different needs of different agents; it reflected the economy of their immediate *umland* and their nearby hinterland; it responds the requirements of a broader commercial activity and, finally, the requests of the State.

From a safe haven to an artificial harbour, from a local small port to an international organised waterfront, Porto authorities, merchants and seamen had to walk a long road. The 16<sup>th</sup> and 17<sup>th</sup> centuries represented the commencement of a process which resulted in housing consolidated merchant communities, and "nations", that were about to prepare the future: in next to no time the period when Porto started to reveal itself as a city of merchants more than a city of sailors will begin.:::

56. Crown's financial support was difficult to get; from time to time the revenues of a tax rent or a temporary exemption of payment were the most significant king's contributions.