

**Shipbuilding & early forms of modern management.  
Comparing Venice & the Ottomans after Lepanto (1571)**

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**Abstract**

This is the first paper in a broader research projects comparing the Venice & Ottoman shipbuilding at the turn of the 16<sup>th</sup> century, under the lenses of administrative history. We are interested in commonalities and differences in managing shipbuilding on the two sides of the sea, on the two sides of the “conflict”. Within the general research, this paper focuses on the afterward of Lepanto battle, seen from the Ottoman point of view. What was the impact of the Lepanto defeat in terms of production, organizational and accounting aspects? How was it possible to rebuild a complete fleet in a matter of months? How was the political crisis addressing the extraordinary production effort, and what were the main managerial and accounting conditions to make this possible? Moreover, to what extent this extraordinary effort was – at the same time – a consequence and a driver of a different pattern of organizing economic activities on the two sides of Mediterranean Sea?

"the power of this Exalted State is such that if a fleet  
were commanded with anchors of silver, ropes of silk  
thread and sails of velvet, it could easily be built"  
The Grand Vizier, Sokollu Mehmed Pasha, 1571

**1. From shipbuilding to administrative history**

This paper is a preliminary reflection on a broad research project that we are carrying out, looking at the Venice & Ottoman shipbuilding, looked at as events in administrative history. In this respect both Venice and Istanbul appear to be the heart of huge economic empires, to run which rather sophisticated administrative solutions had to be put in place, given the complexity of economic and administrative life, and, in different forms, problems of controlling “at distance” a large part of assets and settlements. More precisely, controlling the sea and its trade was an essential issue of both parties (and on opposite sides). For both of them, the capabilities in producing and maintaining a fleet of high standards have been crucial, for centuries.

The history of Venice and Ottoman history represent two well established research traditions. Both historiographies tend to look at history using one *or* the other points of view (the history seen by the Venetians, through documents in the Venetian Republic; or the history by the Ottoman and their documents). Moreover, perspectives usually adopted by historians in the field are social history, history of political systems, military history, architecture history etc. Very rarely scholars look at the area as an interesting example for management and accounting history, or broadly speaking *administrative history*, and much less so in comparative terms.

Coupling together these preliminary considerations – the opportunity to compare more directly two sets of historiography traditions and documents; the importance for both Venice and

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the Ottoman of administrative solutions and shipyards production – this research projects aims at look in comparative terms ways in which complex production sites as the Arsenals were “managed” on the two sides of the sea, on the two sides of the “conflict”. More explicitly, we are interested in the evolution of early forms of managerial discourse on the two sides of the Mediterranean sea. Well beyond an emphasis on wars and their ideological, religious, political and military justifications, we are interested in investigating how this element of “context” were shaping in similar or different ways solutions to managing problems (technical, organizational, resources etc.) which for a large extent were probably not so different on the two sides.

Similar elements have been taken into account by historians, often lacking adequate management and accounting knowledge, which is necessary to understand managing and accounting solutions even in old contexts. For instance, in the Venice historiography there is a precise reference to forms of organisational innovation in the turn of the 16<sup>th</sup> century, and the work by Drachio and Tadini (Lane misspells the name as “Taduri”). Unfortunately, on the interpretation of similar innovation Venice historians tend to largely disagree: Lane (1973) see it as “the” invention of modern management; Concina (1987) argue that indeed the mess that was still going on at the Arsenal is a sign of the lack of capability in dealing with production problems, in “managing”. An historian with a more in depth understanding of cognitive aspects in decision making processes, and with less superficial view of organisational change, would arrive at less simplistic interpretations indeed.

On the other hand, Ottoman shipyards have been object of a systematic investigation by Turkish scholar (see for all the books by Idris Bostan: 2006, 2007a, 2009). Unfortunately, with few exceptions (Shinder, 1971; Bostan, 2007b; Eyup et al 2006; Toraman et al, 2010) that are unable to report to the international arena the results of decades of archive research on the Ottoman Arsenals, a lack of publications in English can be pointed out. Beyond this additional problem of missing English publications, it is likely however that this research tradition too has not used in depth perspectives emerging from sophisticated management and accounting points of view. In any case, a more explicit comparison between these two potential analysis (managerial and accounting solutions and the evolution of management knowledge in itself over time in the Venice and Ottoman Arsenals) is surely missing.

## **2. Administrative history: general issues and the Venice/Istanbul case**

There are some general issues that need to be clarified to better position our research, both in general terms and with reference to the historiography on Venice and Istanbul.

*Economic history, business history and behind: a focus on micro activities in organizing*

The label "administrative history" is not common: usually reference is made to disciplinary traditions that are established at the institutional level, such as for instance economic history, business history, accounting history (on the other hand the field of management seems to lack any interest and tradition in history, a part from recent development in management and organizational history: see the journal MOH).

Unfortunately, more than a question of a different level of analysis, what makes a difference between these traditions is often an issue of perspectives, i.e. ways in looking at similar phenomena and time periods. To some extent paradoxically, a management scholar could be closer to an economist historian (such as Forsellini, 1930, or Lane, 1934, with an in depth focus on the Venice administrative tradition) than to business historian (such as Chandler, 1973, which on the contrary ignored completely the research and position by Lane, his colleague at John Hopkins Baltimore), both in terms of period of interest and approach.

From a theoretical point of view our project shares the view that is taking place in recent management and accounting history debate. Though the importance of industrial revolution in the UK in the late eighteenth century and the managerial revolution in the US in the nineteenth century

are for sure crucial discontinuities as stated by economic and business history, more subtle processes of knowledge production which is necessary for managing complex entities seems to be located some centuries before (e.g. Carmona et al, 1997. see also Hopwood, 1987, 1992; Mephram, 1988; Fleischman and Parker, 1991; Edwards and Boyns, 1992; Bhimani, 1994; Scorgie, 1997). Early example of modern forms of management can be found in European Renaissance. It is not just the “old” issue of the development of double entry that have been addressed so radically decades ago, as for instance in the Sombart/Yamey controversy (Sombart, 1924; Yamey, 1964, 1977). There is much more in the Venetian archives about a sophisticated conversation on problems of running the Arsenal: a precise debate on the “*discorso del maneggio*” as Drachio puts it in 1586.

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What recent research on the management of the Venice Arsenal have shown (Zan, 2004; Zan, Rossi, Zambon, 2006; Zambon & Zan, 2008), is that compared to taken for granted views in business and economic history, the evolution of management knowledge – of modern forms of management indeed – seems to have taken place:

- before (toward the turn of the 16th century);
- elsewhere (non-in private business in the UK, but in the context of permanent productions inside State bureaucracies, surely in Venice, but probably in other bureaucracies as well);
- for reasons that are not related to economic imperatives for maximizing profit, or economies of scale, or competition, as usually alleged. Indeed, the documents discovered in Venice and the conversation about “managing” the Arsenal give a great emphasis to moral issues, and the question of “common goods” of the Republic.

Looking with a micro focus on similar proto-industrial context seriously questions mainstream views in economic history.<sup>2</sup> An important role in developing managerial knowledge is likely to have been developed by State bureaucracies, either or/and in managing at distance, and in direct manufacturing on a permanent base.

#### *Venice as proto-industrial settings and issues in organizing activities*

A summary of the major archival evidences about managing practices and Knowledge at the Venice Arsenal in the turn of the 16th century is here provided in this preliminary version of the paper (taken form Zan, 2005: 473-475).

[The] research has analyzed in considerable depth the contents and meanings of the strategic manufacturing reorganization, relating them to preceding conditions and attempting to assess their impact. To this end, I have reconstructed the evolution of a systematic stream of periodical reports presented by advisers (*savi*) and supervisors (*provveditori*) (for detailed information on the primary sources, see Zan, 2004a). What I am interested in are discursive regularities and changes, i.e. regularities and changes in the ways in which those documents refer to managing issues at the Arsenal, trying in this sense to infer how attention was addressed (according to the view by March, 1988, that management is essentially an issue of addressing attention). The developments in the contents of these reports in terms of appraisal, detailed examination and the identification of issues concerning the organization of the manufacturing processes undertaken at the Arsenal have been analyzed, while also the emergence of lines of argument of an economic-accounting nature can be analyzed. More precisely, discursive regularities and shifts traceable in these documents have been sought, carefully distinguishing between the early documents (1580), pre-dating the contributions

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<sup>1</sup> Curiously enough, very few MBA students have any perception of the etymology of the term itself management, coming from the Italian verb “*maneggiare*” – literally “handling”, a synonymous of management even in current English – which still have a similar meaning in the Spanish terms of “*manejo*”.

<sup>2</sup> If Venice “bureaucrats” were inventing modern forms of managing, hardly related to any notion of protestant religion, what is left of the famous explanation by Weber about the “ethic of capitalism” when reading documents in the Venice archives? Even stringer criticism toward the Weberian position could emerge when opening the picture to the Ottoman administrative tradition.

made by the two professionals, and the later ones (so far down to 1643). What one finds is a sophisticated awareness of manufacturing processes and issues relating to their organization. What stands out is a widespread ongoing discussion on managing problems relating, for example, to the sourcing of materials, the availability and discipline of the labor force (regarding both appropriations of materials and levels of attendance and industriousness or, in present-day terms, absenteeism and productivity), the conditions under which manufacturing processes were undertaken in terms of both production levels and organization (in particular, discussion on decisions on contracting-out and work discipline and control).

Revisiting the Drachio and Tadini documents - already familiar to economic historians - one is impressed by the marked air of understatement with which such documents are handled in literature on the Arsenal. The earliest case (Drachio, 1586) represents a clearly worked out and systematic reorganization proposal implicating different levels in a coordinated plan: the whole scheme is permeated by a performative principle that viewed an implicit notion of efficiency not as a tool for maximizing economic returns but as a moral imperative for the safety and prosperity of the Venetian Republic. Examination of the organization of production and logistics touched on a variety of different matters, including the best techniques and methods for cutting, shipping and storing timber. The crucial issue of component standardization was then discussed, with a call for the creation of a "common timber" to overcome the individual character of the component design and construction process (hitherto entrusted to each single craftsman), in order to move away from a workshop model of organization in shipbuilding. Attention also focused on redesigning the manufacturing plant's layout in order to make a more rational use of space, in line with the demands of production. The issue of labor organization, to use present-day terminology, was addressed, on the one hand, with a definition of task-specific work teams and, on the other, with detailed debate on procedures for monitoring work attendance and performance. Lastly, the overall organizational structure was discussed and a proposal for a single top-level structure, endowed with significant powers, was put forward.

In some respects, the proposals made by Tadini (1593, 1594), with their attempt to impose discipline on the workforce and render it governable, were even more far-reaching. Tadini argued that an effort should be made to eliminate unevenness in the day-to-day availability of workers, which undermined any attempt to manage production economically. In an effort to involve gang bosses, what was suggested is a sort of half-yearly productivity target with related incentives (corresponding to approximately 10% of normal wages). This was to be accompanied by a set of scheduling mechanisms covering the coming week, to be updated weekly after checking the extent to which the previous week's schedule had been fulfilled. While "middle-level workers" were offered the carrot, rather more repressive control regulations were suggested for disciplining the unskilled workforce, and a series of incentives for unbroken attendance, checks on attendance and devices for registering movements were proposed. Lastly, Tadini put forward a special ad hoc work-team structure, to which was, earmarked an annual budget setting out the savings to be achieved by the proposed structure.

The later period, so far investigated until approximately 1643, saw a further sophistication of discourse on *maneggio*, with organizational refinements, increasingly effective managing procedures and methods for governing the labor force. An example of this is the introduction of a method for measuring "work in progress" in man months. Also, forecasts and expenses relating to consumption materials became current, as did calculations bearing on the workforce. The type of general complaints made during the preceding period gave way to calculative practices of labor needs that were based on technical parameters, in a sense reifying it as a "factor" of production, for instance in terms of calculating the production made possible by the amount of man months available. Criteria were elaborated for reaching decisions on the restructuring of ships and on contracting out. To all of this was added a further new development: the systematic use of concepts and data regarding annual consumption and costs of materials, culminating with the astonishing document by Molin in 1633 (skilfully described by Forsellini, 1930), which presented the cost of manufacturing extra-large and light galleys. In substantive terms, comments about consumptions of material and waste of working time can be found (Molin, 1633). A more aware discourse on resources of the Arsenal makes it possible to question of feasibility of the 100 galleys goal, autonomously self-reducing the goal to 50. Curiously enough, the critique to the means/ends model finds here rather early empirical evidence.

### 3. Research focus and perspective

In trying to enlarge previous research findings on the Venice Arsenal organization, and looking for comparing similarities and differences with other (contemporary) experiences, shipyards activities seem an ideal candidate for the time (turn of the 16<sup>th</sup> century). It is a well know phenomenon that at that time Arsenals were largely using similar technologies, the language itself is to some extent similar (see the word *Arsenale*, *Terzane* etc. as argued by Bostan), sometime even using same skills and experts, “stealing” human resources to the other part. Sometime organisational solutions were radically different (for instance Venice internalising the production of a reserve of 100 galleys, while Genoa was opting for a much smaller reserve of 14 galleys, which in any case were bought by private shipyards; or again Barcelona seem to use private ships in case of war, with a complex accounting calculation for compensating the end of the war private owners).

Venice and Istanbul in particular are ideal candidates, for the broader administrative capabilities developed in the two States, and under the specific lenses of ways in which they were dealing with the issue of managing their shipyards. The richness of their respective archives provides a unique opportunity at the world-wide level (100 million documents in the Ottoman Archive in Istanbul; 65 kilometres of shelves in the State Archives in Venice). Finally, this kind of research is capable to add new micro foundation insights in one of the most intriguing debate in global history, i.e. the debate on the Great Divergence between East and West. (Indeed according to the research on the Venice archives, management knowledge in the West seems to developed much earlier than the Industrial revolution. It would be of a great importance investigating how at a similar micro level the research would find similarities and differences already at that time).

In short, the aim of the research project is to run a comparative historical analysis on primary sources in the *discourse about managing* Venice and Ottoman shipyards. Here a very important statement has to be pointed out: the perspective will be that of management as rhetoric or as discourse. While the “general” historian is interested in major events and decisions, for the management historian it is not just the outcome of the process what matters, but the process itself: how reality is socially constructed, how decisions are made, what are the arguments and the evolution in decisional fields, how actors make sense of the context and their wishes. What matters is the process of *organizing* in its dynamic becoming. If, according to March, management is basically an issue of addressing attention, our view as administrative/management historians is to reconstruct how attention was addressed.

Few examples related to the Venice debate can be useful:

- The question of contracting out at the end of the 16<sup>th</sup> century: the general historian is probably interested to know whether or not, and to what extent, a decision to use contracting out was taken. For us, what is really interesting is how the decision was the outcome of a long debate, with arguments levelled by different parties in favour or against it, based on their subjective understanding that we can reconstruct by their documents. (See for instance the original document in the archives which is explicitly reporting the long-lasting debate about outsourcing toward the end of the 16<sup>th</sup> century).
- Another example is “the issue of the hundred galleys”. General Venetian historians are interested in the setting of that number, and finally in its reduction to 50. For us there is much more in the documents, which tell us how they were understanding the production process, inventing new notions in managerial and accounting terms (they were inventing the notion of work in progress and of costs). They were inventing new solutions for “counting”, new metrics. And the final proposal (not necessarily a decision) to reduce the goal to 50 is in itself the result of a very interesting discussion and arguments, developed over years, making sense of the relationship between outcomes and resources (that was not clear at the beginning), dealing with power relationships and hard-to-talk issues. The Ottoman government also focused on sailing galleys. This was not because of a cost-reducing measure, but to confront the Venice on the high seas with a similar size of navy.

- A final example on human resources. Venetian historians, given they purpose, are immediately interested in numbers, in their substantive meanings (were they increasing or decreasing workers?). For us the evolution of ways of talking about human resources is an element of interest in itself. Reading a document that defines several gangs is interesting even in its procedural rationality, looking at the arguments that were used, why and what the perceptions of the proposal were like to be.

The overall research will deal with archives documents that refer to issues of managing/running entities and resources in naval production, either revisiting already known documents using a “managing lenses”, or looking for other documents. The research will address in comparative terms the understanding of early forms of management and accounting in proto industrial contexts, while at the same time providing an important role for management and accounting lenses within a global history approach.

In principle, three periods will be investigated with great attention (possible variation can of course be taken into account, following suggestions from experts on the Ottoman side):

1571-1573: Following Lepanto battle, and having lost most of the ships in their navy, the Ottomans were shortly establishing a new navy, within 8 months (according to the Venetians).

Unrevealing discussions, conversation, calculation on resources and managerial issues related to this extraordinary effort would be one major goal. Possibly, this will represent an example of “crisis management” of an outstanding interest.

1580-1640: This is the period wherein Venetians were developing more sophisticated discourse on managing the Arsenal, triggered by the “surprise” of the new fleet of the Ottoman just 8 months after Lepanto battle (inventing the notion of work in progress, cost etc: see Zan, 2004). To what extent were the Ottoman establishing similar management and accounting innovations would be another major chapter in the research?

1640-1700: Later implications, and following evolutions of forms of managing shipyards by the Ottomans (in case similarities are not found in the previous period, trying to check if later diffusion of similar knowledge were taking place; or in any case, even in presence of similar evolution of the previous period, looking at longer term evolutions).

#### **4. Understanding Lepanto’s consequences in the Ottoman Empire**

The main focus of this paper is the first period, the after Lepanto situation in the Ottoman realm, based on a selection of documents at the Ottoman archives in the six months following the defeat. These archival materials are written by the Sultan’s chancery. However, all the *firmans* should be written as the Sultan’s own words. But they are negotiated and discussed by the viziers in the government. The orders were sent to the relevant authority, and a copy is registered to a notebook in the chancery. So, we have the chance to have copies of all communication. These communications contain both the letters written by the local authorities, and the replies by the government.

##### **4.1 Lepanto as a triggering event in administrative history**

The battle of Lepanto (1571) had a huge impact. Seen from the Venice point of view (and archives), despite the Venetians were confiscating and destroying the Ottoman fleet during the battle, it appeared largely as a useless victory. A few months later, the Ottoman showed up with a new fleet. Such a scaring event forced serious pressure in the shipbuilding production in Venice, characterizing a century that has been labelled as “the rise and fall of the 100 galleys” issue (Zan, 2004), wherein the obsession of Venetians was to build up a reserved fleet of 100 + 12 galleys ready for war. Very important organizational and accounting innovation were following this production imperative, including the establishment of notion of cost, work in progress, the use of budgets and so on (Zan 2004; Zan, Rossi & Zambon, 2006; Zambon & Zan, 2007).

Drawing on previous research done by the two authors in their respective areas (Venice & the Ottoman), this paper will try to investigate in depth the reactions “on the other side”. What was the impact of the Lepanto defeat in terms of production, organizational and accounting aspects? How was it possible to achieve such unexpected result in a very short period of time?

Compared to Venetians, in a sense the Ottomans were “newcomers” in the business of shipbuilding. But from mid-XIV century onwards, Ottoman principality increasingly required fleets for their troops to cross the Dardanelles. Since the Byzantine Empire did not have a navy since 1258, Genoese and Venetians have dominated the Levant. The Straits together with Aegean and Black Sea trade were under those Italian states. With the conquest of Istanbul, and the control of Suez, the Ottoman naval and land forces totally controlled the Levant region. Ottoman Empire then required not accompanying little fleets, but huge number of ships to control the Mediterranean basin. Throughout XV and XVI centuries, Ottoman ship construction centers varied. We have limited number of registers from this period to evaluate the Ottoman arsenals in terms of management, labor force, costs and capabilities.

The Lepanto Naval battle in 1571 was a triggering event, though, with unprecedented efforts in terms of the Ottoman ship construction capacity. To complete the fleet in a short time, all the previous ship constructing centers were alarmed, in forms that were not seen before. The documents from the Ottoman government and the local rulers give us a portrait of the ship construction procedure in late XVI century. Among these documents are prices for wood, nails, sails, rows, and other materials. Labor force and rowers are also included in the documents. The analytical evaluation of whole register could provide us an overall understanding for a future comparison between the Ottoman and Venetian shipbuilding activities in terms of accounting history.

The documents we already collected – with serious problems of languishing understanding of the Ottoman – include information on the number of carpenters, other ship construction masters, necessary wood, timber, sails, linen, nails, lead, kalafati and iron for certain number of ships to be constructed. According to the series of documents, the time schedule for production of the skeleton of a ship, completion of the full body can be determined. The crew, other human sources, labor force and wages would be given under detected data from the documents. On the other hand, the organizational management of the whole construction in this case was carried out by local administrators, rather than professional authorities. However, the data and the analysis would rely on an alarming situation for rapid construction of the whole navy. Normal conditions base on standard arsenal activities will then follow in new forms.

#### **4.2 A preliminary analysis: the nature of archival sources**

This is a draft version of this ongoing research. We have collected relevant data, and at this stage, we are starting to make sense on their contexts. Of course, the final version of the **draft** that we are going to present in Ancona will include two additional sections:

- a) a theoretical & methodological part, providing an idea of the debates inside Turkish historians, with the prevailing attention on war affairs & diplomacy, maritime history, shipbuilding in its technological and military aspects, with marginal interest on all of these in terms of administrative history;
- b) an extended commentary section, based on the English translation of the Ottomans documents, seen as a unique event, a sort of “crisis management”: from the news of the defeat to a new fleet. Strictly based on archival sources that have not been use so far in systematic way with this purposes and perspective, we will reconstruct the incredible effort that was following the defeat, and which will lead to the construction of a new fleet in incredibly short period of time. We do hope to be able to devote the whole paper to a preliminary understanding of this first period.

What we are focusing on in this draft is a commentary on the archival sources that we have collected and investigated, after a huge effort of archival retrieval, transliteration, and translation of

the documents. The perspective used in the following is looking “from the other side”, issues and comments from the Ottoman point of view.

In the year 1571, Famagusta, the last resisting fortress in the island of Cyprus, fell after one year of siege. Then the Ottoman navy was ordered to sail to the western shores, to follow the Holy Christian navy. From 23 September to 24 October 1571, series of orders from Ottoman Court sent directives to the navy, and the commanders of the fortresses to take measures. Among these measures were to confront with the enemy, and to destroy it where and when possible. These *firman*s – royal mandate or decree issued by the sovereign – continued until 24 October 1571. On that day, the Sultan and the Sublime Porte learned about the heavy defeat at Lepanto. Only a portion of the navy, the fleet (30 galleys), commanded by Ouliccia (Kılıç/Sword) Ali Paşa could be saved. The whole remaining were either sunk or captured by the Holy allied navy.

As soon as the defeat was learned, a series of orders were sent to the countryside. It looks like that the Ottoman government immediately decided to rebuild the whole navy for the next season. Otherwise, every settlement on the Ottoman shores, from Adriatic to the Aegean, from Algeria to the Eastern Mediterranean would be open to naval attacks. The Ottoman government would even be unable to defend her towns and cities with land forces. Because there was no navy to transfer troops and military equipment.

There are hundreds of documents available in the Ottoman archives regarding the whole campaign over Cyprus and the emergency measures to recover the naval vessels lost in Lepanto. The documents are classified in chronological order from the second phase of the expedition to Cyprus onwards. Because the navy of the Holy League learned the fall of Famagusta and changed its direction from Cyprus. The strategy was to save the island from Ottoman attacks. The fortress of Famagusta was resisting for one year. However, the composition of the Holy League had taken long negotiations. In the meantime, Ottoman joint naval and infantry troops attacked continuously to capture the island.

As the Holy navy changed direction, the Ottoman government was sure that there would be an unexpected assault to one of the major locations. Since unaware of the intentions of the Holy League, they were given the orders to find the whereabouts of the enemy.

The early documents available in the Ottoman archives are about the detection of the enemy. Because the island was completely occupied and adequate forces were located for defense. Now the enemy navy should be found and removed from Ottoman waters. These types of orders continued until 24 October. However, the naval clash had occurred in 7 October, and most of the Ottoman ships had been destroyed.

The documents we used here are composed of individual decrees by the Sultan. The Ottoman archival system is to register the copies of each document. The orders were the results of the consultation at the Imperial Chancery. Grand Vizier, other viziers, Finance Minister, and 2 Senior authorities of the kadis were the members of the Ottoman Chancery. The decisions were taken by them. The Sultan does not join the meetings. However, all the decrees/firman are written from the mouth of the Sultan. These copies of registers, starting from the date 1565 to late 17<sup>th</sup> Century compose 250 volumes, which are called *Mühimme Defteri* (Register of Important Issues). The previous dates' registers are missing. Some volumes are available and kept under the name of *Ahkam Defterleri*.

The registers we used are selected from among the *Mühimme Defteri*, which coincided 1571-72. There are some other irrelevant issues, which were discussed by the government authorities at the Chancery. So only the documents regarding the naval affairs and ship construction are selected from many volumes. Because the copies of individual documents did not follow a chronological order. To be sure, the volumes close to 1571 are scanned not to miss anyone.

Then the documents were put into chronological order to follow up the development of the time and the decisions taken by the *Divan* (Ottoman Chancery). To facilitate the study of future researchers, the volume of the register, page and document numbers are written to each document. The dates are also converted from Hijri /lunar calendar to Gregorian dates. Through this method,



the reader would easily follow the developments of the both parties – Ottoman Empire and the Holy League. The documents also give rich information on the decisions of the Ottoman government to rebuild a navy, in terms of organizational management. The newly revived shipyards, the function of the Arsenal in Istanbul, sources of raw materials, production processes, combination of naval utilities are among these.

Second step was to transliterate the documents. Each of them was transliterated from Ottoman (Classical Turkish with Arabic scripts) to Latin alphabet. Then each of them was summarized into English.

The third step was to locate the information in each document into a table. The tables will give detailed and classified information to the reader.

The documents are mostly the decisions about the emergency measures of the Ottoman government for the construction of a new navy. The government (from the mouth of the Sultan) send decrees to all possible locations to cut timber, prepare or produce raw materials and construct ships. Where the materials are in far distances, decrees were sent to collect them together. Sometimes the viceroys, sometimes the governors, sometimes the kadis/judges, but also the Imperial officers at the Imperial court were authorized to follow up the process of construction. The final phase in these documents was provision of human sources. Search for human source is actually started at the initial level: Carpenters, masters, and workers. In the final phase, attainment of crew was the focus of attention: Rowers, sailmen, komi, and warriors should be gathered from many locations. The government concentrated on this issue while the construction of the ships progressed. Because they knew that, the navy would unable to set sail without these personnel.

The content of the documents had another important aspect. Although letters by the local authorities, replying to or demanding something from the government are missing or difficult to find at the archive, they could be detected from the *Mühimme* registers. While the Sultan is ordering the local authorities, the previous letters of the local authorities are summarized at the introductory chapter. So, we get valuable information about the replies of former requests or excuses. In this manner, the sequence of the progress of each step can be followed from these series of documents.

#### **4.3 major contents of the original documents: a preliminary understanding (in progress)**

The paper will analyze eight different kinds of imperial *firman*s that we were able to collect so far (around 400). First, we tried to classify them according to their nature (table 1).

- 1) information available raw material
- 2) information on the available naval war vessels
- 3) orders to the commanders of the coastal fortresses
- 4) orders of constructing new warships
- 5) orders concerning secondary materials for the ships (sail clothes, hemp, ropes, iron works, nails, rows)
- 6) orders concerning manpower, and the acquisition and activities concerning various kinds of workers
- 7) recruitment of warriors and rowers for the ships
- 8) production of biscuits for the crew
- 9) the reiteration of all kinds of manufacturing, and attainment of manpower

Table 1: coding orders and firman

- 1) The first imperial *firman* on 24 October is the collection of information regarding the available raw material in the Arsenals. Inventory of timber stocks in the surrounding areas would be registered. The Sultan liked to learn the possibility of construction of huge number of galleys. The government was aware of the existence of wet timber. Nevertheless, there was no time to wait for attaining dried timber to be used in various arsenals throughout the Ottoman dominions. At the locations where pine trees are abundant, the government knew that the ancient shipyard could be revived and little numbers of ships could be constructed there. Because timber could be

cut and carried easily. So that the process of construction would be inaugurated immediately, before winter came.

- 2) Another initial group of imperial *firman*s contain getting information on the available naval war vessels. The Ottoman government is aware of the existence of many ships all around the shores. But many of them were out of use or needed thorough repair. The orders at this initial step required immediate information on the number of ships plus their conditions. This information is necessary, because the main coordinator at Istanbul would send additional orders according to the general inventory of the ships at the arsenals and the ports along the shores. If the number of the ships were adequate for the composition of the future navy, they would be repaired. Anyway, the government know that they were not in good condition. Thus, they did not join the Cyprus expedition, neither the naval battle at Lepanto. Now the time is very little to build a whole fleet. So even the old and wounded vessels would be necessary for the next season. These orders are to get a wide information about the real condition of the remaining ships to put them on the sea as soon as possible.
- 3) The third group of orders are composed of imperial *firman*s to the commanders of the coastal fortresses. Since there was no Ottoman navy any more, these fortresses are in great danger. The commanders were ordered to complete any lack of war materials, gun powders, all kinds of weapons and troops to defend themselves. They should not expect any naval assistance for the time being. Until the spring time, all the coastal areas might be under great danger because of a possible enemy attack. Women and children in the coastal areas should be sent to the mountainous places. If the walls of the cities and towns needed any repair, they should be strengthened immediately. The sea also should be surveilled day and night for the movement of enemy ships. So, in case of any attack, they should defend themselves, through collecting additional man power from surrounding villages and towns. If there is any observation of enemy ships or fleets, the government should be written immediately. They might seek not any naval, but military aid from the surrounding troops. Nevertheless, this might not be possible in the winter time.
- 4) The fourth group of imperial *firman*s are about the orders of constructing new warships. These orders were sent to the old arsenals on the Ottoman shores who were used as ship construction centers. Many of them were historical arsenals from Roman times. When Constantinople was conquered, they remained as local shipyards. However, they were nearby the forests and easy to attain timber and other raw materials. Thus, these old shipyards could be easily mobilized for the construction of naval vessels. Orders were sent to such centers such as Black Sea, Aegean Sea, Mediterranean coasts. The judges (*kadis*) of these centers would be responsible from all kinds of construction affairs. Attaining carpenters, workers, artisans and manufacturing process would be carried out by the central *kadis*. In case of any arising problem, the *kadis* would have the power to enforce them. The *kadis* were sent budget or they would spend from local revenues. All materials would be purchased from the local merchants with current prices. No one would be oppressed to work for free, nothing would be purchased for free and by force. The orders emphasize that the government had enough budget for the construction of those ships.
- 5) The fifth group of orders are about the attainment of secondary materials for the ships. Among these are sail clothes, hemp, ropes, iron works, nails, rows and kalafati. This kind of materials should be produced in due time by the local artisans and villagers. Their production should be completed fastly, so that when the ships are put on the sea, these materials should ready. Otherwise the navy would not be able to set sail in the spring time. The merchants also should not sell these naval materials to other people. Trading of these materials to the foreigners and especially to the enemy is strictly forbidden. The local *kadis* are responsible for purchasing these materials. Only after the attainment of the local arsenal, other people could buy them. These materials would be purchased by the local authorities at the current prices. The local subjects and peasants would not be oppressed to deliver them by force.

- 6) The sixth group of archival material is about manpower, and the acquisition and activities concerning various kinds of workers (Kalafati, hemp workers etc).
- 7) The seventh group of archival material is about the recruitment of warriors and rowers for the ships. Since most of the warriors were dead, and thousands of the slave *forsas* (rowers) were captured and enfranchised from the ships by the Holy Alliance, there were almost no rower. For nearly 200 ships, new rowers should be located. Also, the navy needed new warriors to replace the previous ones. Thus, thousands of crews at all level should be collected from the countryside and recruited in the navy. This group of orders targeted to fulfill the manpower required for the navy. Rowers would be collected from among the subjects in return for their tax. In addition, heavy criminals would be chained and sent from all over the Ottoman dominions to be recruited at the navy.
- 8) The eighth group of archival material refers to the production of biscuits for the crew. On the sea, no fresh food is available. So, the crew needed biscuits at the ships' depots. Only when the ships are at the land for small intervals, the crew had the chance to get fresh food and water. So, the production of adequate biscuits is very important.
- 9) The ninth and last group of orders is the reiteration of all kinds of manufacturing, and attainment of manpower. Because, although the spring is over, in many places most of the production is not achieved. In some places, lack of carpenters, in others, lack of artisans, the ships are not completed. In some other places, the secondary materials, such as iron Works, nails, sail cloth, hemp or kalafati is not attained. Even in certain locations there was not special expert to produce and curve rope from hemp wires. So, this group of orders intensify after mid-March 1572 to reinforce and reiterate the local authorities to fulfill their responsibilities in due time.

|                  | < 24.10.1571 | 24-31.10.1571 | November 1571 | December 1571 | January 1572 | February 1572 | March 1572 | total |
|------------------|--------------|---------------|---------------|---------------|--------------|---------------|------------|-------|
| 1a InfoMaterial  | 0            | 3             | 0             | 2             | 0            | 0             | 0          | 5     |
| 2b InfoShips     | 0            | 1             | 0             | 0             | 0            | 0             | 0          | 1     |
| 3c OrdMilitar    | 6            | 12            | 1             | 24            | 0            | 26            | 15         | 84    |
| 4d OrdBuildShips | 1            | 8             | 5             | 23            | 0            | 13            | 3          | 53    |
| 5e OrdMaterials  | 0            | 8             | 7             | 7             | 0            | 13            | 7          | 42    |
| 6f OrdManpower   | 0            | 3             | 1             | 3             | 2            | 11            | 2          | 22    |
| 7g OrdCrew       | 0            | 1             | 2             | 7             | 2            | 34            | 20         | 66    |
| 8h OrdBiscuits   | 0            | 0             | 0             | 0             | 0            | 2             | 1          | 3     |
| 9i Re-Orders     | 0            | 0             | 0             | 0             | 0            | 0             | 0          | 0     |
| total            | 7            | 36            | 16            | 66            | 4            | 99            | 48         | 276   |

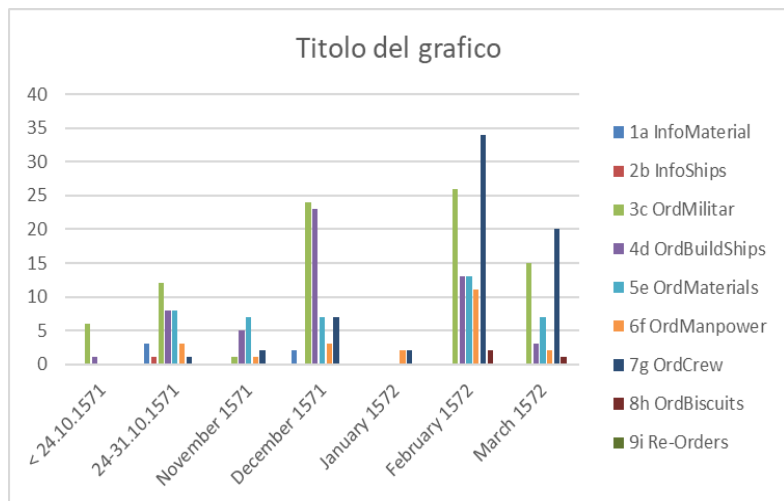


Table 2: Document's nature and their evolution over the six months period following Lepanto

Second, a way to make sense of the whole set of documents is to see changes over time. Indeed (table 2) a precise pattern emerge from the data (at present made on 246 documents, though).

- First, different from what normally alleged in the Venetian literature, it took 6 rather than 18 months to rebuild the fleet.
- A huge concentration of orders is the day itself of October 24, when the Ottoman realized the defeat. Note than many of relevant decision are already made in that day (a more detail comment will be developed in the final version of the paper). Then further concentrations can be seen in December, February and March.
- Quite surprisingly, very soon the issue of the 100 galley emerges also in the Ottoman context, as was in paper already emerged in Venice, and as it would be reinforced in Venice after the

reconstruction of the Ottoman fleet in such a short period of time. The obsession of the 100-galley production is thus a common issue in the following period on both sides of the Mediterranean Sea. Addressed in Istanbul already the same day of realizing the defeat.

- In terms of composition, the constant presence of military orders of different kinds (surveillance, prepare for attack etc.) show the double nature of info and orders involved.<sup>3</sup> It is not merely a technical/professional discussion on shipbuilding, but a set of communication within a military context (should this sound obvious, one could think that the same dialogue would have been completely different inside the Venation context, with a more developed separation between shipbuilding and the management of war issues.)
- What is also interesting is that orders to build ships are not so prevalent, in a sense. To build up a new fleet (and to be ready to use it), additional worries were addressing the attention of the Ottomans: recruiting crew and warriors, and preparing biscuits in adequate quantity. If this again shows the different nature of shipbuilding in the Ottoman context and its embeddedness in the overall military logistics (no info of similar kind would be found in the Venice Arsenal, specialize din shipbuilding solely), it seems to prove indirectly a kind of “unproblematic” situation in terms of building ships. In other words, the worries seem to have been to have a “usable” fleet on the sea for war purposes, more than produce ships on its own.
- However, here things are dealt differently: involving a huge number of shipyards in the country (around 22), with a goal of 10-20 maximum for the biggest ones (Sinop, Samsun, Gallipoli, Kemer, Biga, Vize, Varna, Antalya), yet involving a variety of small shipyards with a goal of a few unit each (a detailed reconstruction of this central aspect is underway).
- Also, very few (if any) info emerge in these documents about shipbuilding in itself. Only orders are sent, and sometimes repeated and checked for the center (double check). It seems that knowledge is available. An important issue deserving further reflection is that these documents represent a dialogue between non-experts (not shipbuilding officers) directly. They are sent by central governors, mainly to judges and kadis. The line of authority is formal power, more than professional knowledge. Again, a more precise mapping of senders/receivers will be tented later on.

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<sup>3</sup> We are still considering whether the categories identified by table 1 are relevant or should be articulated differently. A preliminary careful reading of all documents is a prerequisite for this step.

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