

APPENDIX

Professional Utopianism and Administrative Naiveté. Uncertainty and Archaeology in the Shipwrecks of Pisa (1998-20??)

Luca ZAN and Daniel SHOUP
GIOCA-RICERCA, University of Bologna

“In sum, the *Navi di Pisa* have represented, and continue to represent, a paragon of all the principle and complex problems that can arise... for those who are required to care for our archaeological heritage as part of their institutional duties” (Archaeological Superintendence of Tuscany, 2007).

INTRODUCTION

This paper is an appendix to our chapter of the same name, published in the *Oxford Handbook of Public Heritage Theory and Practice* (Neil Silberman and Angela Labrador, editors, Oxford, 2017). Our chapter examines the organizational dynamics that emerged from the 1998 discovery of a group of well-preserved Roman shipwrecks in Pisa, Italy. Known as the *Navi di Pisa* (‘ships of Pisa’), the shipwrecks are globally important finds, but also highly fragile, requiring costly conservation interventions and access to extensive technical expertise. The excavation, conservation, and museification of the finds have now stretched over 20 years and represent an extremely complex example of organizational activity.

Due to limitations of space, empirical data had to be kept to a minimum in our chapter. But as qualitative researchers with an interest in heritage organizations, our research has an ethnographic flavor, a sort of organizational ethnography (Brannan et al., 2012), in which interesting research questions tend to emerge during field research, or even after its completion (Zan 2013) – as is often the case with qualitative research. We disagree with frequently-heard critiques that such research constitutes mere “description”, as if reconstructing the sequence and contents events and complex processes were not fundamental to both theory *and* practice. We find that the process of ‘reconstructing’ the story of a complex project is valuable in itself, since we care about the empirical situation being examined – quite apart from the possibility of wider generalizations and implications.

We thought readers who share our view that empirical stories are inherently important might want to read more in depth about our case study, methodology, and sources. This Appendix therefore begins with a discussion of our sources and methods, and continues with a much more detailed presentation of the history of the *Navi di Pisa* than was possible in our chapter. The bibliography that concludes this Appendix includes references to many primary sources.

CONSTRUCTING THE CASE STUDY

We investigated the discrete but interconnected management phenomena behind the *Navi di Pisa* through field research, based on a systematic reading of the historical archives of the Archaeological Superintendence of Tuscany (*Soprintendenza per i Beni Archeologici della Toscana* or SBAT), plus a series of interviews with staff during 2012-2014.¹ The very ways in which the archives are structured offer an interesting view on administrative practices (shared by all the articulations of the Italian Ministry of Culture). On the one hand, due to the huge amount of red tape, almost everything must be written down (applications, authorizations, reporting on individual items): from this point of view, the over-bureaucratized context offers a very interesting data set for the analyst. On the other hand, the attention is on individual items and transactions, with an attention to formal control and a relative disinterest in the “big picture”. Since not even a simple timeline of the project existed – much less a report providing a synoptic view – the authors had to use primary and secondary sources to reconstruct the project’s chronology, budget, policy decisions, and organizational structures. Primary source material included 288 documents (including 62 financial spreadsheets) from the archives of the Soprintendenza in Florence, spanning the period 1997-2012 and totaling more than 1900 pages.² Documents before 2005 were organized chronologically in a paper archive; those from after 2005 were downloaded from the Ministry’s internal database through searches for keywords related to the project. Andrea Camilli, project director, also supplied a number of working documents from his own computer, in addition to helping us with data retrieval and interpretation.

The formats of the documents were eclectic, including faxes (it is hard to believe, but the Italian public administration continues to use fax machines extensively for official correspondence), email printouts, .doc, .pdf, and .xls files generated by Superintendence staff as well as the central ministry, the City of Pisa, private contractors, external experts, and other public bodies. The topics were equally wide-ranging, including correspondence, accounting documents (internal and external representations), working documents, reports (internal and external), funding applications, contracts, policy documents, consultant reports, and project proposals. An additional one linear meter of estimates, contracts, and receipts for goods and services related to the project exist, but were not examined in detail. Primary documents were supplemented by five interviews with project manager Andrea Camilli (June 18, October 16, November 27, and December 7, 2012; and January 21, 2014) and by 14 secondary documents (popular and academic publications on the project).

Analysis of the documents was primarily through close reading. Each document was organized by date and type, and summarized. Use of textual analysis software was not possible, since most primary source documents were scans of faxes or spreadsheets. They were then organized by themes: plans and administration, funding requests, accounting documents, internal reports and technical documents (including human resources), external reports (to the ministry and other government entities), and publications (popular and academic). The selection of these categories represents our sense-making rather than an *a priori* categorization system. The narrative presented here, then, is strongly ‘internal’, reflecting the organizational logics (or lack thereof) of the Superintendence in Florence and to some extent that of the Ministry of Culture (from whose internal databases many documents were retrieved). The picture is partial – in that other organizations, such as the Ministry, or the City of Pisa, might have data that tells a somewhat different story – but it is an accurate picture of what knowledge is available to the project manager and the routines imposed on him by the structure of the public administration. Thus the documentation of the project is in a sense a first conclusion in itself: it is strongly driven by professional values, but it also shows how professionals must interact with the constraints imposed on them by the public administration.

THE NAVI DI PISA: AN EXTRAORDINARY DISCOVERY WITHIN PREVENTIVE ARCHAEOLOGY

The shipwrecks of San Rossore were sunk by periodic tsunami-like flooding events on the river Serchio between the 5th century BC and 7th century AD; deposition of the ships in oxygen-free mud almost perfectly preserved the wood and other organic materials such as rope, cloth, and baskets (Table 1). Though this is the final understanding after 15 years, it is the result of a hyper-complex set of events and issues resulting from the discovery. From its beginnings as a routine preventive archaeology investigation, the project quickly transformed into an emergency excavation, then was institutionalized as a combination of excavation, conservation, and museum project (though with serious inconsistencies and problems along the way).

¹ We would like to thank the Superintendence for extensive access to the data archive, and Dr. Andrea Camilli for several in-depth interviews.

² Quantification of documents is somewhat arbitrary, as many are chains of correspondence, emails with attachments, reports attached to meeting minutes, different working versions of the same document, and so on.

Table 1: the Navi di Pisa

Ship	Century	Type	Length	
Hellenistic	4th-3rd BC	Cargo Ship		(1)
A	1st-2nd AD	Cargo Ship	medium-large	(2)
B	1st-2nd AD	Oared transport ship		
C ('Alkedo')	1st AD	River boat	12m	(3)
D	after 5th AD	River boat		
F	end 2nd AD	Boat	9m	
G	2nd AD	Boat	9m	
H	1st AD	Small boat		
I	?	River boat		
P	2nd AD	River boat		

Notes

- (1) Little wood survived; more than 1000 cargo amphorae were found
(2) Probably from southern France
(3) The name 'Alkedo' was carved in the boat's prow

Here we outline the four main phases of the project, based on interviews and archival research at the entity in charge, the local branch of the Ministry of Culture for Archaeological affairs (*Soprintendenza ai Beni Archeologici della Toscana*, hereafter SBAT) in Florence. What emerges in the reconstruction is the huge amount of uncertainty characterizing the whole story, where predictions and forecasting appear totally misplaced when looking back at the end of the process. Though many academic publications have emerged from the project, none of them present a simple chronological description, which forced us to reconstruct the timelines of basic activities – such as the discovery, excavation, and removal of ships – from primary sources (Table 2 presents a timeline of the ships, but also illustrates gaps in our data). This is an interesting observation in itself: why was it outside researchers, and not the protagonists, who had to create a holistic view of the project?

Table 2: Excavating the ships

Date	Activity
1999-2001	Ships C and F excavated
2001	Ship F lifted, placed in tanks, taken to TESECO Warehouse
2002	Ship C lifted, placed in tanks, taken to TESECO Warehouse
2002-2004	Ships A and H + prows of Ships P and G excavated and lifted, taken to TESECO Warehouse
Dec-05	CRLB opened, Ships C and F moved there in early 2006
2005-2006	Excavation and lifting of Ship D, identification of ship I
2009	Ship I had not yet been lifted; part 2 of Ship A and Ship B awaited lifting
2011	Public bids issued for lifting Ship B and second part of Ship A

Phase 1 (1998-2000): The State of Emergency and Making Sense of the Discovery

In October 1997, Italian State Railways (hereafter FS, *Ferrovie dello Stato*) began routine preventive archaeology investigations for a new directional center at San Rossore, 1 km northwest of Pisa's city center. A private archaeological cooperative under the supervision of SBAT discovered a Roman-era archaeological deposit 2m below ground surface, which it excavated between November 1997 and December 1998 – far exceeding the initial time estimate of 3-4 months, even *before* the discoveries that made the site famous.

The first ship of the *navi di Pisa* was discovered 3m below ground surface on December 7, 1998, followed by further discoveries in January and March. By August 1999, nine well-preserved ships (referred to as Ships A-I, in order of their discovery) and fragments of eight more had been discovered and partially uncovered. After two years of work, the project had transformed from a routine preventive excavation to a site of international importance for Mediterranean maritime history.

But even before the scale of the finds was understood, a grand institutional vision was articulated for the ships of San Rossore. In January 1999, Superintendent Bottini (the officer in charge of archaeology for Tuscany) updated the Ministry of Cultural Goods & Environment (hereafter ‘the Ministry’) about the discovery of the first three ships and presented the concept of a ‘museum with three vertices’: the excavation site, a conservation laboratory, and a museum “dedicated to the history of Pisa on the sea”, all of which would open to the public. Bottini also suggested that the laboratory and museum be located in the *Arsenali Medicei* in Pisa, a dilapidated 17th century cavalry stables on the north side of the Arno, about 500m from the famous leaning tower and 800m from the excavation site.

The preparation of a facility for the definitive recovery and consolidation of the ligneous artifacts... could be designed as an worksite open to the public with a complete series of educational aids that illustrate the discovery and the type of work that will be performed on each of the finds... It doesn’t seem entirely out of place here to suggest the possible location of this ‘worksite-exhibition’ in the *Arsenali Medicei*... It should be underlined that this unexpected and extremely important discovery could be transformed into the central nucleus of a museum installation (which could be open to the public from the conservation phase onward) dedicated to the history of Pisa on the sea (Bottini, 1999a).

The three-fold museum, he underlined, could serve as an opportunity to leverage the discoveries to renovate an attractive, strategically located, but underused portion of Pisa’s cultural heritage.

Bottini’s complex vision belied the uncertainty of the project during 1999 – an unavoidable situation given the complexity and rapidly-expanding nature of the discovery. As he observed, “the excavation was intended to last six months, and instead we will be running it for who knows how long” (Bottini 1999c). SBAT budgeted €300,000 for excavation and €250,000 for conservation in a January 1999 letter to the Ministry – on top of the main excavation costs, which were still covered by FS.³ This budget was only partially accepted by the Ministry in February, requiring the work plan to be revised. At the same time, a temporary conservation laboratory had to be found, since the *Arsenali* structures also required extensive restoration before they could be used as a conservation laboratory in accordance with Bottini’s vision. In March 1999 the local company Teseco offered an industrial warehouse in the village of Ospidaletto (20km away) for one year, corresponding to the initial estimated timeline for lifting the ships (an overly optimistic assumption, as we see below).

The overall project timeline in March 1999 anticipated the completion of stratigraphic excavation of the first two or three ships by February 2000, transfer of the ships to the Teseco building for conservation by December 2000, and installation of the ships in a new museum in the *Arsenali Medicei* by December 2003 (Bottini, 1999b). The SBAT estimated a cost of €1 million for ship conservation, and the regional Superintendence for Architectural Resources (*Soprintendenza ai beni architettonici*, a sister organization within the Ministry) estimated €2.5 million for refurbishing the *Arsenali* building (Bottini, 1999c). Yet in December 2015 the museum was not yet open, and spending on both projects well exceeds €10 million. In retrospect, the naiveté of the early time and cost estimates prefigure the constant uncertainty that has characterized the project.

As these discussions were taking place within the Ministry, the period of preventive excavation was ending. The FS had hoped as late as February 1999 that the “archaeological problems” could be resolved on a “less than geological time scale”, but by August decided to cancel the directional center project, withdraw all funding, and formally cede the site to the SBAT. From now on, the site would be under the ownership of the Ministry of Culture.

FS had provided large-scale funding for emergency excavation of the ships, which led to rapid discoveries and the exposure of a large mass of ancient wood. But when waterlogged wood is allowed to dry, it may shrink by as much as 50% or simply disintegrate. The sudden slowdown in the pace of excavation thus caused major problems: archaeologists had to constantly irrigate the exposed wood, which in turn caused problems with fungal growth. The worksite, moreover, was over 6m deep and criss-crossed by a series of groundwater faults, requiring retaining walls and an elaborate pumping system to protect against the danger of collapse.

Plans to manage the complex and costly infrastructural needs of the site were developed in early 2000. In consultation with experts from Italy’s Central Institute for Conservation (*Istituto Centrale per il Restauro*, or ICR), it was decided to encase the ships in water-filled fiberglass caskets before lifting them from the site; in the laboratory they were later to be impregnated with a formaldehyde-melamine resin that

³ To make reading easier, we express all monetary values in Euro, though the currency was Italian Lira until 2001.

replaces the natural cellulose that degrades in waterlogged wood (ICR, 2000). To manage the geotechnical problems, an agreement was signed with the Public Works Agency of Tuscany (*Provveditorato delle Opere Pubbliche* or OOPP) to manage the safety and engineering issues for the excavation site. Finally, the design for the new (temporary) laboratory in the Teseco warehouse was completed.

On the needs and purpose of the laboratory, however, some differences of opinion emerged: experts from ICR noted the need for cost-effectiveness and immediate availability of a space for conservation work: In fact, the lack of an adequately equipped space for the different types of conservation interventions anticipated for the ancient ships, together with the unavoidable necessity of reducing recovery times (at the risk of losing the ships or significant parts of them), suggests different methodologies than that those that the Superintendence has followed to date... in sum it seems useful to consider executing projects that allow restoration and temporary conservation in a short time-frame, independently of the creation of a fully-equipped conservation laboratory (Istituto Centrale per il Restauro, 2000).

In the midst of stops and starts at the excavation site, now known as the *Cantiere delle navi* (“worksite of the ships”), cost estimates were constantly growing. In Bottini’s budget for 2000, €727,000 was budgeted for infrastructure out of a total of €1,813,000, which included removal of only three ships (C, D, E). However, the Ministry of Culture allocated only €1,033,000 for 2000, so the remainder of the spending had to be deferred to 2001 (Bottini, 2000).

In the midst of these emergency measures in Pisa, the Ministry began planning the “museum with three vertices”. The Ministry’s “Scientific Study Committee for the Museum of the Shipwrecks of Pisa” confirmed Bottini’s vision in its September 2000 report, which became the key conceptual document that guided the project for the next decade. The project would include a museum, a conservation lab, and the excavation site, all connected and all open to the public. The laboratory would function as a national training and consulting center for waterlogged archaeological materials, while the museum would focus not only on the discovery at San Rossore but would concern the whole history of Mediterranean navigation. The entire structure of the Arsenali Medicei (6,000 m²) was identified as necessary for these purposes, even though the University of Pisa was leasing part of the complex and the whole would require major investments in restoration. The report also included the suggestion of establishing an ad hoc administrative structure to run the whole threefold entity.

Not a single number accompanied this grand plan. Bottini himself, though more than sympathetic with the vision, made the point that crucial funding decisions had to be taken, and presented a €6.3 million budget for 2001-2003 – exclusive of the restoration of the Arsenali buildings. Bottini also sought funds from the Italian Lottery with a request of €1 million in October 2000, and asked for 32 additional staff posts for the Pisa project within the SBAT. Even as these grand plans were circulating, the operational needs of the project seem to have been both more urgent and more mundane: Bottini had to request €25,000 of emergency funds to deal with damage to the excavation site from a huge rainstorm in November 2000. The contrast is instructive: securing even small amounts to deal with emergencies was difficult, but the huge investments required by the larger vision were never budgeted at all – and the issue of operating costs was not even addressed.

Phase 2 (2001-2003): The “Dirty Job”, Professional Challenges and Solutions

By 2000, the San Rossore project had transformed from a short salvage excavation to an open-ended excavation organized around the visionary idea of an interconnected museum, excavation site, and conservation laboratory. The huge scale and technical complexity of the finds (on many levels: engineering, conservation, archaeological information) required human, organizational, and financial resources that had not yet been identified. As a result, and paradoxically, the end of the emergency excavations led to the emergence of an even greater crisis. The period 2001-2003 was characterized by modest progress at the *cantiere*, but little headway on institutional design; the first hints appear that the grand vision began to impede the management (understood as ‘getting things done’) of the excavation project itself.

By early 2001 €1 million in funding had been secured from the Italian state lottery (hereafter ‘Lotto’) to continue excavation and hire specialized firms to address the conservation threats to the exposed wood. Ships F and C (the ‘Alkedo’) were lifted and transferred to the Teseco laboratory in the second half of 2001. Another ship (the ‘Barsicci’) was covered with soil to protect it in October. Funding problems, however, caused excavation work to be suspended in late 2001 and early 2002, causing tensions with the contractors. In 2003 excavation work continued. Most of Ships A and H and the prows of P and G were excavated and lifted and taken to the Teseco laboratory by the end of 2004.

2002 saw a change in management and a new governance structure. Archaeologist Andrea Camilli was appointed director of the excavation site and the proposed restoration center at the beginning of the year. A staff archaeologist working for the Superintendance since 2001, Camilli remains director of the two institutions and was the central figure in the management of the whole project. About the same time as Camilli's appointment, in early 2002 the Ministry proposed to create an autonomous entity and governance structure, within a private law organization (in the form of an operating foundation, as was often the case in the Italian heritage field in this period: see Zan, 2006) to manage the project. Fani, then administrative director of the Superintendance, was concerned that the creation of this new institution would create delays and also lead to the Ministry withdrawing funding, which was urgently needed for retaining walls, water pumps, and rent on the Teseco laboratory building. As he noted in a memorandum to the Ministry:

The proposal to constitute a Foundation that would assume the management of the future Museum of the Ships of Pisa, as the Director General has proposed, does not allow us to put off the necessary decisions [regarding funding for excavation and conservation], no matter how rapidly it is possible to realize the plan (Fani, 2002).

Fani concludes by encouraging the Ministry to include activities at San Rossore as an ongoing project within its regular budget (a hope which went unrealized for another decade, as we shall see).

In response to ongoing funding problems, Camilli also produced an alternatives assessment for the *Cantiere* in early 2002 that presented three possible options: closing the *cantiere* to the public, only using it for visitors by appointment; stopping the excavations for 2 or 3 years; or closing the site forever. Though the existence of the document demonstrates the potential for an effective discussion around these alternatives, it seems to have been only *pro forma*: after a very opaque set of calculations (including very optimistic cost estimates) the report concludes by affirming that with only “€1,000,000 in the first three years and a minimal amount thereafter, it will be possible to recover all of the ships already found, conduct additional excavations, and discover the right bank of the [ancient] river bed.” A reassuring ending that also reinforced the preferences of professionals: the best option was to proceed with excavations.

The working group on the new museum met in parallel during 2002 and 2003 to discuss the organizational statute and communication strategy of the new entity (Proietti, 2004). However, no budget estimations nor commitments of resources can be found in these discussions. A special Ministerial commission Ministry for wet wood archaeology was established in September; the commission's November 2003 meeting noted the desirability of combining the laboratory and museum in a single visitor itinerary within the Arsenali Medicei; however it was also clear that the conservation laboratory could not be constructed at the Arsenali quickly enough to meet the immediate need to conserve the wood from the ships. The Arsenali plan was put on hold: the new national conservation center would be located inside the temporary Teseco warehouse while the Arsenali were being renovated.

Although the nature of the finds required long-term commitments to conservation, budgets for the work at San Rossore came from extraordinary funds. €6.6 million in Lotto funding was granted to the project from 2000-2003, but applications had to be made on a yearly basis and the totals granted changed each year. The Ministry, by contrast, made no allocations to the project from its ordinary budget.

Phase 3 (2004-2008): Instability and Improvisation: Digesting the Discovery

After 2004, the initial sense of discovery had faded, and the excavation was now understood as a long-term project – but was hampered by unstable funding, requiring innovative management solutions. The excavation area and laboratory were finally opened to the public after overcoming obstacles related to path dependence on the concept of “threefold museum”. Major themes of the period 2004-2008 include the construction of a semi-permanent conservation laboratory adjacent to the excavation area, major budget instability and resulting management improvisation, major academic publication efforts, and a revival of the stalled museum project.

Building the Centro di Restauro

The high rents at the TESECO warehouse, the continuing arrival of new finds, the long timelines required for conservation of wet wood, and the imminent arrival of equipment donated by ICR made a working conservation lab even more essential. The decision to abandon the Arsenali and build the Wet Wood Conservation Center (*Centro di Restauro del Legno Bagnato*, or CRLB) next to the *cantiere* required some logistical changes to the excavation site itself, including the abandonment of an area proposed for excavation. Once this decision was taken, the SBAT moved quickly: by January 2004 Camilli had prepared a

project for excavation work, construction of the laboratory, and general management of the cantiere (Camilli, 2004).

Construction of the CRLB then moved rapidly: by September 2005, it was open to visitors, and was functioning by that December (Camilli, 2007; Camilli, 2009), and ships C and F were moved to the new facility in early 2006 (Camilli et al. 2007). Between December 2005 and April 2009, the CRLB carried out conservation treatments on over 8000 artifacts.

Budget Fluctuation: Instability

The lack of a regular funding stream for the project resulted in radical budget cuts during this period that threatened the destruction of the finds (see Table 3). The first of these crises came in 2004. After consistent Lotto funding from 2000-2003 and despite the preparation of multi-year budgets that clearly expressed needs for substantial sustained funding (Camilli, 2004), Lotto funds were reduced from €2,580,000 in 2003 to €225,000 in 2004. In the end, an emergency allocation of leftover Lotto 2003 funds allowed the project to proceed without major disruption. Lotto funding fluctuated wildly again in 2005-2006, from €1,143,000 to €3,179,000 (and also included a new funding source). After 2006, however, Lotto funds were reduced permanently, with allocations of only €369,000 for 2007 and €290,000 for 2008. The unpredictability and fluctuations in the budget created serious operational problems: as Superintendent Fulvia Lo Schiavo reported in 2007, such low levels of funding would completely stop the activities at both the CNP and CRLB except for basic maintenance, and harm the international partnerships and conservation projects already underway (Lo Schiavo, 2007a). In the first eleven years of operation (2000-2010), and despite its vision of the CRLB as a 'national and international reference point' for the study of wet archaeological materials, the Ministry of Culture committed its own funds to the project in only one year: €600,000 in 2006.

Table 3: Funding the Navi di Pisa, 2001-2011

Year	Funding Source						Total
	Lotto	CIPE 17/2003	FO cap 1321	FO Cap 7723	FO cap 7723 spec.	ARCUS	
2001	2,169,119						2,169,119
2002	1,807,599						1,807,599
2003	2,582,285						2,582,285
2004*	1,925,509						1,925,509
2005	1,143,101						1,143,101
2006	1,379,788	1,200,000	600,000				3,179,788
2007	368,640						368,640
2008	290,395						290,395
2009	129,766					964,000	1,093,766
2010	290,000						290,000
2011			210,000	200,000	2,000,000		2,410,000
	12,086,202	1,200,000	810,000	200,000	2,000,000	964,000	17,260,202

*Original Lotto allocation for 2004 was €224,829; after an emergency appeal an additional €1,700,680 was allocated from Lotto funds remaining from FY 2003

Managing the Cantiere: Improvisation

This climate of budget fluctuation and uncertainty led to a slower pace of work and a series of management improvisations by SBAT staff. A 2005 description of the San Rossore complex noted:

The excavation site currently occupies an area of 10,650 m², of which 3,500 is the excavation proper at depths from 5.5 to 9.5m below the surrounding ground level. The area covered with prefabricated facilities buildings (entrance, hostel, reception and management center, etc.) is about 500m², while the field conservation laboratory and the Centro di Restauro del Legno Bagnato occupy 1700m². Next to the site, to the west, lies an area with archaeological significance of approximately 10,000m², as yet unexplored (Camilli & Setari, 2005: 81).

By 2006, seven of the nine mostly intact ships had been removed, though Ships B, I, and a part of A remained in the excavation area until at least 2011 (10 years after the initial estimate for their removal). The technique for removing ships – uncovering a small piece then covering it with a thin layer of fiberglass and irrigating the area beneath with a small tube – was by this point well-developed and allowed up to 36 months of excavation time without damage to the wet wood (Camilli, 2007a).

At the end of 2004, SBAT renewed its agreement with OOPP for five years to manage “the management and worksite operations at the archaeological site” including hiring outside guards and cleaning staff, and maintaining the pumps, well-points, and retaining walls more generally – a move that represents a sort of informal outsourcing of some site management functions (Ministry of Infrastructure, 2008). In September 2005 the Cantiere opened to the public and was receiving circa 1000 visitors per month (Camilli et al., 2007), fulfilling, six years later, Bottini’s 1999 vision but ironically coming as the excavation was nearing its end.

A guest house for visiting students and scholars was begun in 2005 and completed in 2007 (Camilli & Setari, 2005:83; Camilli, 2009), as part of Camilli’s conscious strategy to reduce excavation to “zero budget” by inviting university researchers to work at the site. By 2007, 22 universities had participated in excavation or conservation at San Rossore (Camilli, 2009)⁴ – indeed, these teams proved essential for completing any work at all in 2007 and 2008, when the total budgets dropped to €369,000 and €290,000 respectively.

The Research Machine

Despite uncertain budgets and a slower pace of work, a torrent of academic activities emerged from the San Rossore project between 2004 and 2008, including a book-length academic guide, numerous papers, several major conferences, a traveling museum exhibit, and theatrical performances at the site (Camilli, 2007b). Beyond this, the CRLB began to fulfill the role of ‘national reference point’ for wet archaeological materials by providing consulting services to other Superintendencies and internationally. There is a surprising contrast between the instability of funding and the volume and importance of the academic materials issued in this period.

Reviving the Museum

Though the original plans to host the CRLB in the Arsenali were permanently cancelled in late 2003, the notion of a museum there did not die. The Assessor for Culture for the City of Pisa said that the city could support the project, but needed a feasibility study with definite times and costs for the whole project (Lolli Ghetti, 2003). To “overcome this impasse” in museum construction, the CaRiPi Foundation commissioned cultural management scholars at Bocconi University to create a feasibility study for the museum (ASK, 2005). The 2004 study proposed three phases: *adjustment* (2006-2008), *anchoring* (2009-2010), and *museification* (2011-2015). A central aspect of the report is how to coordinate restoration times of the Arsenali with the needed conservation times of the ships, work that obviously needed to proceed in parallel. The report suggested the *Fondazione di Partecipazione* as a governance structure (echoing the 2001 proposal of the Ministry), and estimated restoration costs at €12,295,000 for the buildings alone and €7,176,000 for the installation of the exhibits (ASK, 2005:45, 68). Compare this to the 1999 estimate that foresaw total costs for completing the excavation, conservation, and museum at less than €1 million!

The report also estimated running costs for the museum, which were at €2.6 million annually from 2013 onward, compared to estimated revenues of €500,000, an operating loss for the museum of €2.1 million per year (ASK Report p.98). Five years after the museum was first proposed, this is the first estimate of running costs in any of the project documents – and, notably, prepared by an external organization not directly connected to the project.

In February 2007 the official agreement on creating the museum was concluded between SBAT, City of Pisa, and OOPP. The SBAT had €2 million available between CIPE, Lotto 2006 and Lotto 2007; would design and install the museum and manage museum construction using staff from the SBAT; and would coordinate with the Superintendance of Architecture about the use of the building itself (Lo Schiavo, 2007b). This was followed by the preparation of an operating project (*progetto definitivo* and *progetto esecutivo* in the Italian administrative jargon) by early 2008.

⁴ This ‘management innovation’ represents another type of informal outsourcing by SBAT, a sort of managerial adaptation to ‘get things done’ despite funding problems.

Phase 4 (2009-2020?): Managerialization and Urban Politics

By 2009, excavation was largely finished, while recovery of the final three ships proceeded slowly, concluding in 2011. This period also saw the proposed museum at the Arsenali subsumed into a larger urban redevelopment project led by the City of Pisa, with the introduction of managerial rhetoric and generic strategic planning tools in museum planning documents. Finally, the notion of running costs (including large forecasted operating losses) appears in a wide variety of project documents. The addition of an urban planning project led to an explosion of administrative complexity on a formal level, though in practice archaeologists seem to have remained in charge of the museum project, which began substantial construction efforts in 2011 but was not yet complete at the end of 2015.

Urban Politics Arrives at the Museum

The renovation of the Arsenali and construction of the Museo delle Navi gained momentum in early 2009. A coordination agreement for the project was concluded in March of 2009 under the rubric of PIUSS [Piani Integrati di Sviluppo Urbano, or 'Integrated Urban Development Plans'], a program to promote urban sustainability in Tuscany funded by European Regional Development Funds. Signatories included not only SBAT and Pisa, but 45 other entities (mostly government bodies and foundations) who were to work together under four different coordination plans, reflecting the change in project scope from constructing a museum to a redevelopment plan for the Arsenali complex and adjacent properties, which was to connect the area to the city center and its millions of annual visitors (Archaeological Superintendence of Tuscany, 2007).

From 2010 strategic management jargon emerges strongly in project documents, including strategic analyses, business plans, and management plans. In this period planning and budgeting for all three institutions were interconnected: planning for the *cantiere* and the museum are discussed in the same documents, and they were to share a management structure and revenues/costs. The phasing of activities at the *cantiere* were also structured according to the needs of the museum (Miccio et al., 2011). However, the plans overlap and sometimes contradict one another.

Continued Unpredictability at the Cantiere

Meanwhile, at the cantiere, unpredictability still stalked the *Cantiere* and CRLB. After a major redesign of the retaining wall system costing €330,000, the OOPP withdrew from management of the engineering aspects of site at the end of 2009, adding a new responsibility to SBAT staff (Gaddi & Puccetti, 2009). The withdrawal of the OOPP coincided, ironically, with major rainstorms in December 2009 that caused the pumps to fail and led to major flooding of the excavation area, causing €50,000 in damage to equipment.

The next month, the *Cantiere*/CRLB complex experienced another budget crisis: against the €1,000,000 budgeted for 2010, €290,000 was allocated from Lotto funds and €0 from the Arcus fund. Meanwhile, delays in construction at the museum created additional costs of €120,000, in addition to the costs of coping with the flood. Given this problem, Camilli threatened to close the cantiere and stop restoration work when the 2009 funding ran out in April 2010 (Camilli, 2010). Despite efforts by Camilli and Superintendent Ragni to secure emergency funds from the Ministry for the various active projects, none seems to have been forthcoming.

Following this year of virtual standstill, in 2011 the Ministry for the first time allocated significant sums from its Ordinary Funds (that is, its normal annual budget) to the project, totaling €2,410,000. In this period the CRLB was working to lift a series of piles and a ship from the Hellenistic period, while working to move Ships H and D to the museum after conservation.

Managerializing the Museum

The PIUSS agreement inserted the project into the urban politics of Pisa, adding elements outside the 'tre vertici', the increasing use of managerial language in project planning documents, and a new and sometimes politicized approach to budgeting. The first major PIUSS report, the "Executive Management Plan" (*Piano Esecutivo di Gestione*), issued March 2009, proposed a dual management structure for the Citadella area, which now would include not only the museum in the *Arsenali* but also three other buildings within the historic Citadel of Pisa. The report presents the project as part of a general redevelopment of Pisa north of the Arno, noting potential synergies:

Integration of the Museum of the Ships into the Citadel Area allows a series of functional, spatial, and economic synergies. In particular, one notes the possibility of creating economies of scale in the use of museum personnel, and for implementing a series of public services in the Citadel Area that – besides enhancing the enjoyment of the museum visit – could also constitute an 'efficient' source of revenue (City of Pisa, 2009:8).

The complex as a whole would have a managing director and a technical-scientific director working together with about 10 permanent staff, with outsourced services. The *Piano Esecutivo*, prepared by City staff, included work on the *Museo delle Navi* and surrounding buildings, but no funding for archaeology or conservation. It projected completion of all project elements by 2014, with annual operating costs of €1.5 million mostly offset by €1.3 million in projected annual income from tickets, gift shops, and restaurants, for an operating loss of less than €200,000 (City of Pisa, 2009). Four years after the Bocconi study, this report presents only the second mention of running costs in any project document.

This new managerial approach to planning and budgeting is also visible in the SBAT's "Strategic Analysis and Business Plan" (2010) for the excavation site, conservation laboratory, and museum. The document leans heavily on generic strategic management tools, including a mission statement, resource analysis, SWOT analysis, demand analysis, analysis of competitors, and critical success factors. The budget section estimates that the three institutions will require €3.4 million in investment, with an annual operating cost of €1.61 million, of which only 35% could be self-funded through restoration consulting services (though, curiously, museum tickets are not considered as an income source) (Camilli et al., 2010). The business plan makes for peculiar reading, given that this type of managerial language had never been used before over the 10 years of the project; some of the discussions, moreover, seem strangely artificial.⁵ It also shows a fundamentally different logic than the previous budgets of the SBAT: like the PIUSS report, the document moves beyond simple cost centers and attempts to distinguish between operating costs and investment costs over time and estimate the long-term (*a regime*) running costs of permanent institutions.

The PIUSS *Progetto Esecutivo* and the SBAT Business Plan were apparently prepared separately, without coordination. Both provide cost estimates for the Museo delle Navi, but they are organized in fundamentally different ways, with different categories, numbers, and organizational logics (Table 4). Moreover, both conflict with the estimates in the ASK Bocconi report of 2004, as well as with the 2010-2012 and 2011-2013 budgets of SBAT itself. Perhaps to deal with this situation, Salvatore Settis, chair of the Ministry's Scientific Commission for the Navi di Pisa, convened a meeting of PIUSS participants in March 2010 to compare the economic estimates of the City with those of the ASK report of 2005. The report of the meeting notes that the ASK estimates are much less optimistic, showing a operating deficit of €2 million per year for the Museum, Cantiere, and CRLB.⁶

Table 4: Comparative Estimates of Operating Costs (€)

	Studio ASK, Bocconi University		City of Pisa	
	2010	2015	Start Up	Regime
Costi di esercizio della struttura	277,300	508,700	314,060	402,220
Personnel	969,199	1,281,558	668,000	1,132,000
Exhibit maintenance	10,000	150,000	0	60,000
Ordinary and extraordinary maintenance, Citadel Area			0	80,000
Ordinary and extraordinary maintenance, Arsenali Medicei			0	80,000
Promotion and Marketing	200,000	100,000	120,000	80,000
General Costs	50,000	75,000	25,000	30,000
Contingencies	500,000	500,000	50,000	105,000
Total Annual Cost	2,006,499	2,615,258	1,177,060	1,969,220

The report's appendices outline the cost estimates for the PIUSS project for 2010-2015. These costs are also much higher than previous funding for the San Rossore project, estimating €5.9-9.1 million per year in 2010-2014 and a running cost of €4.8 million in the regime phase – more than 50% more than the previous highest funding that the three-fold project had received in any year and almost 20 times the lowest funding year. Strikingly, the estimated cost *a regime* for the 'three vertices' of the museum significantly exceeds the maximum allocation during the period of excavation and conservation. The notion that the excavation would have a steady funding stream only *after* its completion is particularly strange.

⁵ E.g. what does it mean to do an 'analysis of competitors' when your service is artifact restoration, a highly specialized scientific task subsidized by the public sector?

⁶ Note the use of budget estimates to politically justify the project ex post facto (e.g. Pisa wants to build it, so comes up with numbers that are 'cheaper').

Building the Museum

Despite the contradictions in the various plans prepared by PIUSS and SBAT, the new money allocated to the SBAT for 2011 seems to have made it possible to proceed with substantial museum construction. By January 2011 over €1 million of restoration work had been completed at the museum, including light and heating systems, the courtyard, entrance hall, bathrooms and ticket area (Ferretti, 2011). In 2011, a €2 million tender was prepared (Miccio et al., 2011) to cover removal of the final ships from the excavation site (A and B) and restoration of the removed ships and their installation in the museum (C, D, F, H). In 2012 Camilli was actively seeking private sponsors for individual sections of the project, and estimated costs for individual ships.⁷ Throughout this period, and despite the increased role of managerial rhetoric and extensive involvement of the City of Pisa and its PIUSS partners, it appears that the SBAT archaeologists stayed in firm control of museum programming, development, and active management – likely due to the City’s insistence that the State fund the museum project (City of Pisa, 2009:2-3).

It was not until the end of 2016 that the first two halls of the museum were completed. The Ministry’s total investment in the project was then reported to be €14 million (Fabiani, 2016) – almost all of which appears to have been spent on the museum. In late 2017 the museum was still under construction, and open only to limited groups of visitors by reservation.

BIBLIOGRAPHY

Note: With a few exceptions, sources cited in this Appendix are primary sources, in Italian, from the archives of the Archaeological Superintendence of Tuscany in Florence. Works cited with an English title only had no name or header in Italian. Titles presented in quotations are short documents, or sections of other documents, with a header or other obvious title. Titles presented in italics are reports, studies, or dossiers similar in length to a monograph or a book. Most of these sources are unpublished (and indeed, inaccessible). Readers interested in a particular source should feel free to contact the authors for more information.

- Archaeological Superintendence of Tuscany. 2007. *Dossier museo e parco archeologico delle navi antiche di pisa* [Dossier on the museum and archaeological park for the ancient ships of Pisa]. Report on file, Archaeological Superintendence of Tuscany.
- ASK – Laboratory for economics and management of artistic and cultural institutions and initiatives. 2005. *Progetto di musealizzazione delle navi romane rinvenute negli scavi di San Rossore, Pisa*. [Museum construction project for the Roman ships discovered in the excavations at San Rossore, Pisa.] Consultant report, Bocconi University, Milan. On file, Archaeological Superintendence of Tuscany.
- Bottini, A. 1999a. “Pisa San Rossore – Ritrovamento di navi romane.” [Pisa San Rossore – Discovery of Roman ships.] Letter from SBAT to Ministry of Culture, January 18, 1999. On file, Archaeological Superintendence of Tuscany.
- Bottini, A. 1999b. “Piano di spesa – Anno 1999 – Proposta di variazione.” [1999 spending plan – proposed changes.] Letter from SBAT to Ministry of Culture, March 17, 1999. On file, Archaeological Superintendence of Tuscany.
- Bottini, A. 1999c. Minutes of meeting between representatives of the Archaeological Superintendence of Tuscany and the Central Institute for Conservation, October 20, 1999. On file, Archaeological Superintendence of Tuscany.
- Bottini, A. 2000. Letter to Ministry of Culture accounting office detailing the accounting situation and expected spending at San Rossore as of May 29, 2000. On file, Archaeological Superintendence of Tuscany.
- Brannan M., Rowe M., Worthington F., 2012, "Editorial for the JoOE: time for a new journal, a journal for new times", *Journal of Organizational Ethnography*, 1 (1), 5-14.
- Camilli, A. 2004. Pisa – San Rossore. Cantiere delle navi romane. “Progettazione sulla base del finanziamento aggiuntivo 2003, e programmazione triennale 2004-2006, proposta di ripartizione del finanziamento.” [Planning on the basis of additional 2003 financing, triennial planning for 2004-2006, and proposal for allocation of financing.] Letter from A. Camilli to Superintendent A. Bottini, January 22, 2004. On file, Archaeological Superintendence of Tuscany.
- Camilli, A. 2007a. “L’esperienza delle navi antiche di Pisa: attività e programmi futuri.” [The experience of the ancient ships of Pisa: activity and future program.] In F. Gravina, ed., *Comunicare la memoria*

⁷ Individual budgets included €174,765 for Ship F (the ‘pirogue’), €384.750 for Ship A, and €487.620 for Ship C (the ‘Alkedo’).

- del Mediterraneo. Strumenti, esperienze e progetti di valorizzazione del patrimonio culturale marittimo. Atto del Convegno Internazionale organizzato dalla Regione Toscana nell'ambito del progetto europeo Antiche rotte marittime del Mediterraneo (ANSER). Pisa, 29-30 October 2004.* Naples: Centre Jean Bérard/Centre Camille Jullian, pp. 217-224.
- Camilli, A. 2007b. "Pisa: cantiere delle navi antiche e centro di restauro del legno bagnato. Resoconto delle attività 2007-2008." [Pisa: worksite of the ships and wet wood conservation center.] *Notiziario della Soprintendenza per I Beni Archeologici della Toscana* 3/2007: 285-292.
- Camilli, A. 2009. Funding application for Project ARCUS, April 2009. On file, Archaeological Superintendence of Tuscany.
- Camilli, A. 2010. "Appunto sui finanziamenti 2010 per i navi di Pisa." [Points on 2010 financing for the ships of Pisa.] Email to M. Ragni, March 19, 2010. On file, Archaeological Superintendence of Tuscany.
- Camilli, A. 2012. Sponsorship budgets for ship conservation and museum installation. On file, Archaeological Superintendence of Tuscany.
- Camilli, A., & Setari, E. eds. 2005. *Le navi antiche di Pisa. Guida archeologica.* [The ancient ships of Pisa: Archaeological guide.] Milano: Electa.
- Camilli, A., Cesa Bianchi A., Fani A. 2010. *Business plan for the Cantiere delle navi antiche di Pisa, Centro di restauro del legno bagnato, and Museo delle navi antichi di Pisa.* On file, Archaeological Superintendence of Tuscany.
- Camilli, A., De Laurenzi, A., Mileti, M.C., Remotti, E., & Setari, E. 2007. "Diario di bordo." [Diary on board.] *Archeo*, 23(10): 58-67.
- City of Pisa. 2009. *Piano esecutivo di gestione – progetto di recupero di aree per servizi al pubblico del museo delle navi.* [Executive management plan – rehabilitation project of public services areas at the museum of the ships.] Report on file, Archaeological Superintendence of Tuscany.
- Fani, A. 2002. "Il project financing nel settore dei beni culturali: una proposta di progetto." [Project financing in the cultural heritage sector: a planning proposal.] Internal memorandum on file, Archaeological Superintendence of Tuscany.
- Ferretti, M. 2011. Memorandum on projected costs and budget for museum construction at the Arsenali Medicei. 31 January 2011. On file, Archaeological Superintendence of Tuscany.
- Gaddi, S. & Puccetti R. 2009. "Relazione tecnica descrittiva degli interventi straordinari per la messa in sicurezza del palancolato." [Descriptive technical report on the extraordinary interventions for securing the retaining wall.] Technical Memorandum on file, Archaeological Superintendence of Tuscany.
- Istituto Centrale per il Restauro. 2000. "Navi romane di Pisa S. Rossore. Stato di conservazione e progetto di ricupero conservativo." [Roman ships of Pisa San Rossore: state of conservation and plan for conservation.] Letter from ICR to Archaeological Superintendence of Tuscany, February 17, 2000. On file, Archaeological Superintendence of Tuscany.
- Lo Schiavo, F. 2007a. "Cantiere delle navi antiche di Pisa e centro di restauro del legno bagnato: Finanziamenti Lotto 2007-2009." [Worksite of the ancient ships of Pisa and wet wood restoration center: Lotto financing 2007-2009.] Letter to Ministry of Culture March 20, 2007. On file, Archaeological Superintendence of Tuscany.
- Lo Schiavo, F. 2007b. Memorandum on agreement for the creation of the Museum of Ancient Ships of Pisa, 22 February 2007. On file, Archaeological Superintendence of Tuscany.
- Lolli Ghatti, M. 2003. Minutes of meeting on the progress of excavations at San Rossore, April 11, 2003. On file, Archaeological Superintendence of Tuscany.
- Miccio, G., Camilli, A., & Mollica, E. 2011. "Progetto preliminare per il completamento scavi per il Museo delle Navi Antiche a Pisa e allestimento Museo." [Preliminary plan for the completion of excavations for the Museum of the Ancient Ships of Pisa and setting up of the museum.] On file, Archaeological Superintendence of Tuscany.
- Ministry of Infrastructure. 2008. Agreement between the Interregional Department of Public Works for Tuscany and Umbria, and the Archaeological Superintendence of Tuscany for work at the excavation site of the 'Roman ships', 25 February 2008. On file, Archaeological Superintendence of Tuscany.
- Zan, L., Bonini Baraldi, Gordon, C., 2007 "Cultural Heritage between Centralisation and Decentralisation: Insights from the Italian context", *International Journal of Cultural Policy* 13 (1), pp.49–70
- Zan, L., 2013. Economic discourse and heritage conservation. Towards an ethnography of administrations. *Heritage & Society*, 6 (2), pp.167–184.