Port hierarchy and polarization of shipping in France on the eve of the French Revolution: a plea for a systemic approach

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The expansion of shipping and trade in early modern times led to the emergence of a few ports which traded worldwide and concentrated the bulk of international and intercontinental commerce. By the eve of the French Revolution, five ports in France – Bordeaux, Nantes, Marseille, Le Havre and Rouen – fitted out 90 per cent of total French colonial expeditions, whereas all vessels coming from the East Indies headed to Lorient. They have all received intensive scholarly attention[1]. A hierarchy among ports had emerged, based not only on the number of incoming and clearing ships and their tonnage or the extension of the areas to which they were connected, but also on their capacity to attract ships from a variety of other ports. Their accessibility for ships, and their connections to hinterland, markets and production areas, played a major role in their rise, together with political decisions granting specific privileges. This paper will not discuss the causes of the emergence of major ports, but rather explore their relations with smaller ports.

The hierarchy among ports implies a polarization of trade but does not determine a unique morphology. Seamen and fleets from smaller ports carried local products to one or more hubs and redistributed their imports. In doing so, they contributed to regional interconnected systems in which major ports dominated far-distant trades and smaller ports provided complementary transport services and trades in a dense web. If the mechanism has been described, the spatial dimension of such services and trade has not yet been analysed systematically[2], and scholars have at most tried to identify which minor ports served which major port. As a result, we cannot assess whether smaller ports answered simultaneously to the demand of other ports. Thus, we largely miss the spatial dimensions and interplay among ports.

This paper suggests the opportunity of switching from a linear perspective looking at connections from a single point of view – generally a big port – to a systemic approach taking the totality of ports simultaneously into account. In order to show the interest of such an approach, we will use data which we poured into the online database Navigocorpus in the course of a research program financed by the

We would like to thank Pierre-Yves Beaurepaire and Jean-Pierre Dedieu for their constructive comments.

[1] On the hierarchy of French ports in colonial trade, see Jean Tarrade, *Le commerce colonial de la France à la fin de l'Ancien Régime : l'évolution du régime de l'Exclusif de 1763 à 1789* (Paris, 1972), vol. II, 733-735. On these five ports, see Christian Huetz de Lemps, *Géographie du commerce de Bordeaux à la fin du règne de Louis XIV* (Paris and The Hague, 1975) ; Paul Butel, *Les négociants bordelais, l'Europe et les Iles au XVIII^e siècle* (Paris, 1974) ; Jean Meyer. *L'armement nantais dans la deuxième moitié du XVIII^e siècle (*Paris, 1969) ; Charles Carrière, *Négociants marseillais au XVIII^e siècle. Contribution à l'étude des économies maritimes*, 2 vols. (Marseille, 1973) ; Pierre Dardel, *Navires et marchandises dans les ports de Rouen et du Havre au XVIII^e siècle* (Paris, 1963) ; Gérard Le Bouëdec, *Les approvisionnements de la Compagnie des Indes (1737-1770)*, unpublished PhD thesis, Université de Paris IV-Sorbonne, 1982 and Gérard Le Bouëdec, *Le port et l'arsenal de Lorient de la Compagnie des Indes à la marine cuirassée ; une reconversion réussie, XVIII^e-XIX^e siècles* (Paris, 1994).

[2] See, however, the international conference organised by Navigocorpus on *Maritime transport and its actors in early-modern Europe: from the North Sea to the Mediterranean/ Le transport maritime et ses acteurs à l'époque moderne, de la mer du Nord à la Méditerranée*, Brest, 14-15 October 2010. The conference acts will be published in English in the *Vierteljahrschrift für Sozial- uns Wirtschaftsgeschichte*.

French Agence Nationale de la Recherche[3]. In presenting the aims of our project, we wrote that "Navigocorpus […] make[s] it possible to query the database without pre-determining the kind of questions or research goals of future users, who might be interested in very different aspects of maritime life"[4]. This paper will test the ability of Navigocorpus to analyse the polarization of maritime trade in France on the eve of the French Revolution.

In the course of the Navigocorpus project, we collected data on all existing *congés*, or clearance permits that eighteenth-century vessels, including small boats, had to carry, that were delivered to French ports in 1787[5]. Their delivery was subject to the payment of a duty, called *droit de congé*, to the Admiralty of France[6]. The duties were collected in the admiralty head offices and in secondary posts. By the end of the Old Regime, there were 37 head offices on the French Atlantic coast, 13 along the Mediterranean coast and two in Corsica[7]. A total of approximately 160 ports in France delivered *congés* and produced records (see appendices), both for their own accounts and for their superiors.

Most *congés* were delivered at clearance, but a few exceptions existed. Coastal fishermen could apply for a three-, six- or twelve-month *congé* depending on where they lived, whereas *caravane* traders in the Mediterranean obtained a two-year *congé* which allowed them to travel back and forth[8]. In some provinces, for instance in Brittany, Corsica and Bayonne, it was possible to apply for a six- or twelve-month clearance for coastal trade within the province, allowing an unlimited number of voyages. Finally, a ship making a direct return journey within the jurisdiction of the same admiralty head office needed to apply for a *congé* when departing, but not for the return journey[9].

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[3] Navigocorpus ("Corpus des itinéraires des navires de commerce, XVII^{e}-XIX^{e} siècles" ["Database on the Itineraries of Merchant Ships, 17th-19th Centuries"]) is a research programme financed from 2008 to 2011 by the French Agence Nationale de la Recherche (ANR-07-CORP-028). It was coordinated by Silvia Marzagalli (Centre de la Méditerranée Moderne et Contemporaine, Nice) in collaboration with Jean-Pierre Dedieu (then at the Laboratoire de Recherche Historique Rhône-Alpes, Lyon) and Pierrick Pourchasse (Centre de Recherche Bretonne et Celtique, Brest). The database is accessible online http://navigocorpus.org/ and the following website provides additional information: http://navigocorpus.hypotheses.org/?lang=fr_FR

[4] Jean-Pierre Dedieu, Silvia Marzagalli, Pierrick Pourchasse and Werner Scheltjens, "Navigocorpus, a database for shipping information. A methodological and technical introduction », *International Journal of Maritime History*, 23:2, December 2011, 241-262, here 242.

[5] We chose 1787 for Navigocorpus because the number of existing registers of *congés* for this year is higher than for any other year in the 1780s. Copies of the registers of duties issued in the 1780s were sent to Versailles for control. They are presently held at the Archives Nationales de France in Paris (hereafter ANP), sub-series G5. A new detailed finding aid for this sub-series G5 (Amirauté de France et Conseil des Prises) had been compiled by Christian Pfister-Langanay: http://navigocorpus.hypotheses.org/inventaire-anf-sous-serie-g5.

[6] The *Ordonnance* of 1681 stated, "Aucun vaisseau ne sortira des ports de notre Royaume pour aller en mer sans congé de l'Amiral enregistré au Greffe de l'Amirauté du lieu de son départ, à peine de confiscation". The Ordonnance in fact systematised older practices, duties and rights ; see René-Josué Valin, *Nouveau commentaire sur l'ordonnance de la Marine du mois d'août 1681* (La Rochelle, 1766): livre I, titre X : « Des congés et rapports ».

[7] The number of admiralty head offices evolved over time. These data are based on Chardon's survey in 1781-1785 (see footnote 10). On the French Admiralty, see Christian Schnakenbourg, *L'Amirauté de France à l'époque de la monarchie administrative, 1669-1792*, PhD thesis, Université de Paris-II, 1975. On individual admiralty head offices: Marcel Gouron, *L'amirauté de Guienne depuis le premier amiral anglais en Guienne jusqu'à la Révolution* (Paris, 1938); *L'Amirauté de Bretagne des origines à la Révolution. La politique maritime des ducs de Bretagne du XIIIe au XVIe siècle. Thèse de Joachim Darsel,* Gérard Le Bouëdec, ed. (Rennes, 2012). See also the articles « Amiral de France » and « Amirauté », by Michel Vergé-Franceschi and François Bluche, respectively, in *Dictionnaire du Grand Siècle,* François Bluche, ed. (Paris, 1990).

[8] On the biais of *congés,* notably for *caravane* trades, see Gilbert Buti, «Entre échanges de proximité et trafics lointains : le cabotage en Méditerranée aux XVII^{e} et XVIII^{e} siècles», in *Ricchezza del mare, Ricchezza dal mare, secc. XIII – XVIII*, Simonetta Cavaciocchi, ed. (Florence, 2006), 287-316.

[9] Valin, *Nouveau commentaire*, titre X : « Des congés et des rapports ».

It would be useless to expect uniform administrative practices and duties in Old Regime France, and historians are obliged to deal with data collected by administrations in different ports which present no absolute uniformity[10] and to cope with existing gaps. Whereas the registers of French Mediterranean *congés* are largely missing, those for Atlantic ports are quite well preserved for the 1780s[11]. Registers provide different kinds of information which are useful for our purpose. By counting clearances and computing total tonnage, it is possible to measure the concentration of shipping in ports. As captains stated the intended destination, *congés* provide information on the spatial dimensions of the connections ports had with the outside world. Similarly, as *congés* generally indicate the ship's flag and port of registry, they can provide data on the shipping services that one port provided to another[12]. Finally, even when individual registers of the *congés* are missing, we mostly have the so-called *compte rendus*, or summary surveys, recapitulating the total number of delivered *congés* and the amount of duties they produced[13].

There are different criteria for establishing a hierarchy among ports, pointing to different, complementary aspects of shipping and shipping services. When measuring port activities or their evolution over time, historians typically count the number of incoming or outgoing ships. Marcel Delafosse long ago explained the insufficiency of this sole criterion[14], but in their defense, historians do not often have any other data. According to the summary surveys produced by the French Admiralty[15], a total of 44,537 *congés* were delivered in 1787 in 148 metropolitan French ports (colonies excluded). Their distribution shows a strong concentration in eleven ports – which delivered almost half of the total *congés* — and a large dispersion of few clearances in a large number of minor ports – over three quarters of them totaling less than a quarter of total *congés*.

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[10] Precise information on the amount of the *droit de congé* in most (but not all) French admiralty head offices is recorded in the report of the enquiry made by Marc Antoine Daniel Chardon, *maître des requêtes*, councilor and prosecutor at the Prize Court. Between 1781 and 1785 Chardon visited all French admiralty head offices. The results of his enquiry are recorded in three volumes kept at the ANP, Marine, C^4 174 to 176. A preliminary presentation of this source is in Sylviane Llinares, « De Brest à Bayonne : l'enquête Chardon dans les ports français à la fin de l'Ancien Régime », in *Les ports du golfe de Gascogne de Concarneau à La Corogne (XVe – XXIe siècles),* Alexandre Fernandez and Bruno Marnot, eds. (Paris, 2013), 61-74.

[11] The source and its gaps were presented in Jean-Pierre Dedieu, Silvia Marzagalli, Pierrick Pourchasse and Werner Scheltjens, "Navigocorpus at Work. A Brief Overview of the Potentialities of a Database », *International Journal of Maritime History*, 24:1, June 2012, 331-59, in particular 334-7.

[12] Whereas the registers of the *droit de congé* state in general the date, the name of the ship and of her captain, her tonnage, and her destination (the latter for individual *congés* only, as those granted for a specific duration state only the nature of the *congé*), the port of registry of the ship is omitted in the Channel ports. As we identified ships in Navigocorpus, providing the same identifier to ships appearing in different sources, we could complete this missing information whenever the ship cleared at a different time of year in a port where her tonnage was recorded.

[13] The *comptes rendus* allow an almost exhaustive coverage of French ports for the 1780s. In some instances, as in most Mediterranean ports in Provence and Languedoc, they provide data since the 1730s. See Silvia Marzagalli and Christian Pfister-Langanay, « La navigation des ports français en Méditerranée au XVIIIe siècle: premiers aperçus à partir d'une source inexploitée », *Cahiers de la Méditerranée,* 83 (2011), 273-295, available at http://cdlm.revues.org/6284. All *comptes rendus* in ANP, G5, *passim*. Data were patiently collected by Christian Pfister-Langanay. *Comptes rendus* are preserved for most of the French colonies as well, with the major exception of Saint-Domingue. We intend to publish an atlas presenting in detail the statistics and the data provided by the *comptes rendus* and the registers of the *congés*, which we inserted into Navigocorpus.

[14] Marcel Delafosse, « Les sources de l'étude quantitative du trafic maritime à Bordeaux et à La Rochelle, principalement aux XVIIe et XVIIIe siècles », in *Les sources de l'histoire maritime en Europe, du moyen âge au XVIIIe siècle: actes du quatrième colloque international d'histoire maritime tenu à Paris du 20 au 23 mai 1959*, Michel Mollat ed., (Paris, 1962), p. 271.

[15] *Comptes rendus* for 1787 are missing for only fifteen French ports mentioned at least once in the 1780s. However, none of them delivered more than 100 *congés* in the last known year before 1787, with the major exception of Caen (506 *congés* in 1786).

Table 1 – Distribution of *congés* delivered in 1787 in France (colonial ports excluded)

Number of *congés*	Number of ports	Number of *congés* in this class	Percentage of the total of *congés*
901 and more	11	21987	47.2
301 to 900	23	12965	29.1
101 to 300	38	7445	16.7
2 to 100	76	3125	7.0
Total	**148**	**44537**	**100**

Table 2 lists the ports delivering over 1,000 *congés* in 1787 and provides data for the year before and after[16].

Table 2 – *Congés* delivered in major French ports, 1786-1788

Port	**1786**	**1787**	**1788**
Marseille	4403	4557	4605
Le Havre	2069	2341	2233
Dunkirk	1964	2231	2190
Bordeaux	2425	2225	2666
Rouen	1874	1945	1806
Boulogne-sur-Mer	2259	1872	2011
Nantes	1652	1412	1493
La Rochelle	1406	1224	1140
Marennes	1136	1172	unknown

At the top of the hierarchy, the ranking did not evolve significantly between the end of the American War of Independence and the French Revolution, and the top nine ports remained remarkably stable (Table 3). Calais ranked eighth in 1785 and ninth in 1788, Marennes seventh in 1789, Lorient ninth in 1785, but otherwise the same nine ports delivered the highest number of *congés* throughout the 1780s.

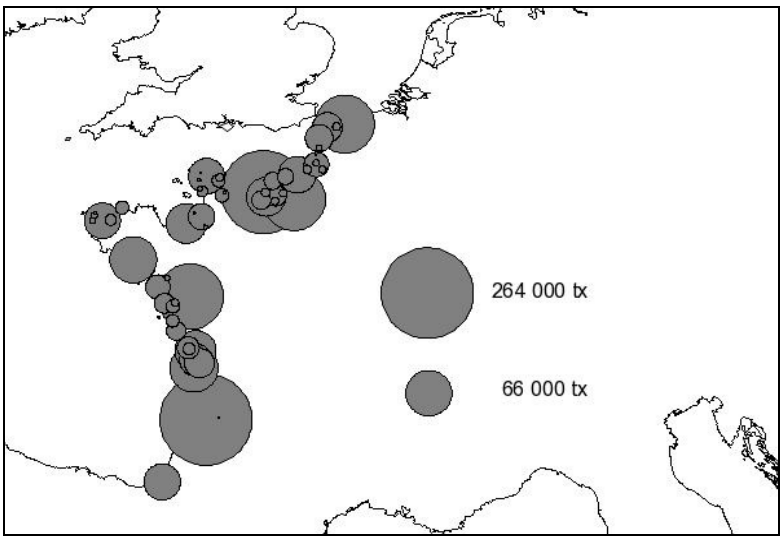
Table 3 – Evolution of the eight major ports (1784-1789) according to the number of *congés* (rank)

	1784	1785	1786	1787	1788	1789
Marseille	1	1	1	1	1	1
Le Havre	2	4	4	2	3	3
Dunkirk	3	6	5	3	4	2
Bordeaux	unknown	2	2	4	2	5
Rouen	5	5	6	5	6	4
Boulogne-sur-Mer	4	3	3	6	5	6
Nantes	6	7	7	7	7	8
La Rochelle	7	10	8	8	8	9
Marennes	8	11	9	9	10	7

[16] Saint-Malo delivered 1,020 *congés* in 1788. No other port delivered over one thousand *congés* in the 1780s.

The number of *congés* is obviously a very rough indicator of the importance of a port. For instance, whereas Bordeaux delivered double the *congés* as Marennes, total tonnage in Bordeaux was approximately four times greater. Both total tonnage and the extent and variety of the trade geography represent additional important criteria for determining the hierarchy of ports. Unfortunately, the total tonnage of the ships for which *congés* were delivered is unknown unless we have the registers providing details on each clearance. As data for all known 1787 registers were digitized in Navigocorpus, the database makes it possible to compute total tonnage for French Atlantic ports, with only a few gaps (Map 1). Data for Caen are missing – including the total in *comptes rendus* — and there are no *congé* registers for Libourne (where 650 *congés* were delivered, according to the *compte rendu*) and for some ports in Brittany, none of which, however, delivered more than 300 *congés,* Douarnenez excepted (338 *congés*). As noted, sources are lacking for almost all Mediterranean ports, which are omitted altogether in the map.

Map 1 – Total tonnage of ships clearing French Atlantic ports in 1787 (in French *tonneaux*[17])



Maritime trade in the Atlantic ports of France was clearly concentrated in five ports — Dunkirk[18], Rouen, Le Havre, Nantes and Bordeaux – which totaled over 100,000 *tonneaux* each, while four other ports ranked between 50,000 and 100,000 *tonneaux* (Table 4). When comparing this list with the most important ports in terms of the number of *congés* (Table 2) –after excluding Marseille for which no registers of *congés* have survived[19] — Lorient[20] and Saint-Malo emerge at the top and replace

[17] The French ordinance of 1681 made the *tonneau de mer* a unit equivalent to 1.44 cubic metres.

[18] Christian Pfister, *Ports, navires et négociants à Dunkerque (1662-1792*) (Dunkirk, 1985).

[19] Navigocorpus contains the data of ship entrances in Marseille for 1787 from the health office, but they do not state the tonnage.

[20] The sub-series ANP, G5 does not preserve the copy of the register of the *congés* for Lorient. The original was located at the Archives départementales du Morbihan, 10B19, and poured into Navigocorpus. There is however, a major discrepancy between the actual number of the *congés* we computed in the registers and the total provided by the *compte rendu*. Whereas the number of actual *congés* in the register mentioning the tonnage (the one we processed for this paper) is always inferior

Boulogne-sur-Mer and Calais, which rank only eighteenth and nineteenth with regard to total tonnage. These differences in hierarchy point to substantial disparities among ports as far as their average ship-tonnage is concerned. Average tonnage of ships clearing from Boulogne-sur-Mer and Calais was only 29 and 13 *tonneaux*, so the high number of clearances did not compensate for the low capacity of the vessels.

Table 4 – Total tonnage and average ship-tonnage according to *congé* registers, 1787

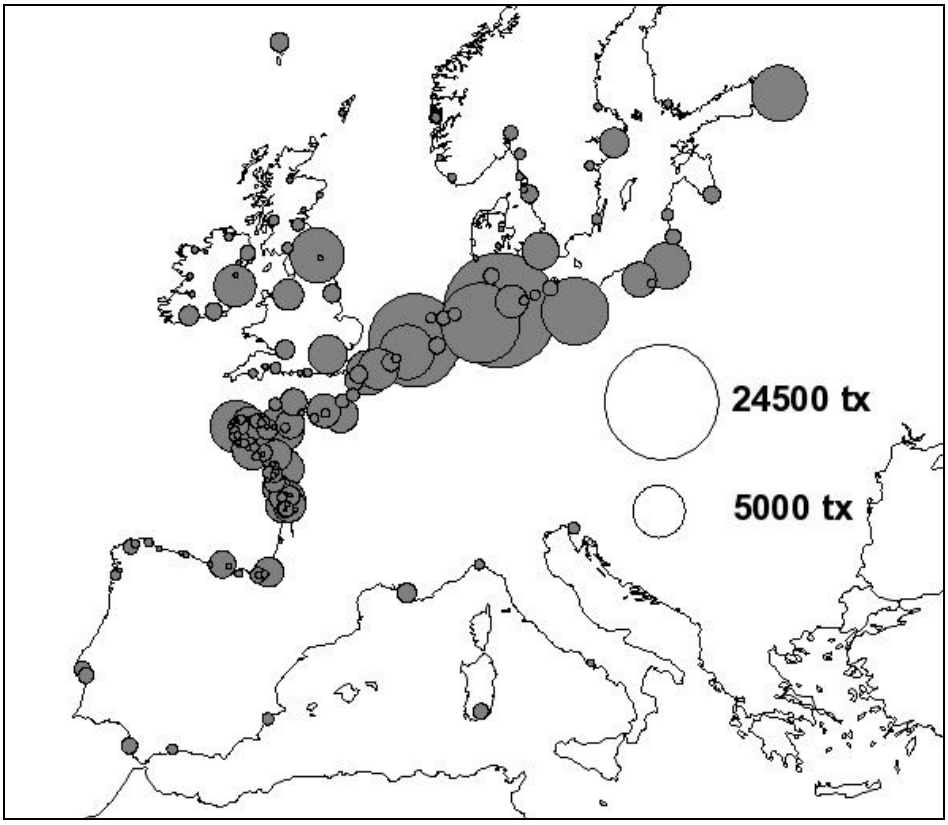
Port	Total tonnage	Average tonnage per ship
Bordeaux	260487	122
Le Havre	220075	94
Nantes	138285	100
Rouen	123256	64
Dunkirk	107984	49
Marennes	72808	63
Lorient	68300	51
La Rochelle	53064	49
Saint-Malo	50539	57

Compared to the number of clearances, tonnage provides a more substantial basis for quantifying and comparing trade in different ports, but this ranking does not tell us much about typology. Total and average tonnage of clearing ships was the result of the many categories of *congés* delivered both by French and foreign ships, ranging in Bordeaux from a four-*tonneaux* fishing boat to a 628-*tonneaux* slave ship bound for Mozambique. Lower average tonnage indicates the relevance and frequency of local and regional trade on small ships, whereas higher average tonnages point to long-distance trade. Averages, however, are an artificial construct, and other information is needed in order to take the geography of trade properly into account as a marker of hierarchy.

The geography of trade areas to which ports were connected varied enormously. In Bordeaux, for instance—with a total of 263,799 *tonneaux* cleared in 1787—French ports were the destination of half the clearing ships but of only 19.2 per cent of total tonnage, whereas a quarter of tonnage but less than 11 percent of ships were bound for the West Indies, and an additional 8.6 per cent of cleared tonnage sailed to North America, Africa or the East Indies. In other words, one-third of total tonnage was bound for non-European ports. Half the outward tonnage and one-third of the ships was bound for Europe, particularly to Northern Europe, as map 2 shows.

to the number of total *congés* stated by the *comptes rendus* – with differences ranging from a few units to several dozen – Lorient presents the opposite situation, with 1,123 recorded *congés* mentioning tonnage, whereas the *compte rendu* provides a total of only 908. As the *compte rendu* provides data per trimester, we realized that the last part of the year is severely underestimated in the *compte rendu* (stating 127 *congés* instead of 277).

Map 2 – Total tonnage to French and European destinations of ships clearing Bordeaux in 1787



Such a strong propensity for both European and extra-European ports is characteristic of very few ports. In Saint-Malo, which ranked ninth in relation to total tonnage and thirteenth in relation to the number of *congés* and cannot be disregarded as a minor or medium-sized port, over half the cleared tonnage was bound for other French ports, whereas a quarter was employed in Newfoundland fisheries. Europe accounted for only 4 per cent of cleared tonnage, and colonial and slave trade for an additional 12.5 per cent. In small ports, the bulk of trade was limited to French or to the nearest foreign ports. In Saint-Valéry-sur-Somme, for instance (284 *congés*, 240 of which had stated destinations, and a total of 19,130 *tonneaux*), 68 per cent of tonnage was bound for French ports, and there were no connections at all with extra-European ports. In Sables d'Olonne (280 clearances, 238 of which had stated destinations, for a total of 11,842 *tonneaux*), clearances to foreign ports –five in all – amount to less than 3 per cent of total cleared tonnage, whereas 30 Newfoundland fishing ships totaled 27 per cent of all cleared tonnage.

In pointing to differences, such elements stress the complexity of establishing a hierarchy among French ports. None of the approaches we presented permit us to look at polarization and its morphology. In most instances, they stick to a port-centered perspective, although we introduced comparison as a corrective against possible interpretative bias and to better evaluate the significance of our findings. Another possibility consists in simultaneously taking all data into account and putting relations at the core of the analysis, rather than simple data on clearances and tonnages or the percentage of their national and international components. It is suggested here that a relational, systemic approach might prove a more powerful instrument for analysing issues related to polarization.

One possible way of conceiving relations among ports consists of looking at their attractiveness for ships registered elsewhere. Whereas French and foreign flags are systematically distinguished in *congé* registers, the port of registry is not mentioned in some admiralty head offices. We will therefore first concentrate on attractiveness for foreign ships by taking into account all registers of clearances in 1787, and then proceed to a case study of regional attractiveness of shipping services on the west coast of the French Atlantic, an area where the ports of registry are systematically noted.

Whereas half the tonnage clearing Bordeaux was foreign-flagged, small and medium sized ports tended, as noted, to have a much stronger national or regional-oriented trade. This reflects their reduced capacity to attract foreign ships, whereas major ports concentrated important shares of foreign shipping. By looking at which French ports foreign captains and shipowners were interested in, we can obtain complementary information on their perceived attractiveness.

If we admit that connections with foreign countries and attractiveness to foreign ships represent a possible variable to determine the hierarchy of ports, we can use data in Navigocorpus and focus on the French Atlantic ports, which delivered 7,853 *congés* to non-French flagged ships in 1787. The first finding is that foreign captains completely ignored two-thirds of recorded French ports, but that their presence in the remaining forty-nine ports was far from negligible. Total foreign tonnage amounted to 527,000 *tonneaux*, or 30 per cent of total cleared tonnage. Table 5 lists data for those ports attracting over 20,000 *tonneaux*, representing over 4 per cent of total known foreign-flagged tonnage in 1787. The first three, namely Bordeaux, Le Havre and Dunkirk, attracted half the foreign shipping bound for French Atlantic ports. Compared to hierarchies based on total shipping, the variable represented by foreign flags introduces significant differences among the major ports, not so much as their ranking is concerned, but as to the nature of their trade and of the ships which frequented them.

Table 5 – Foreign-flagged clearances in the top five French Atlantic ports, 1787

Port of clearance	Total foreign clearances	Total foreign tonnage	Percentage of total foreign tonnage in France	Average tonnage per clearance (in *tonneaux*)
Bordeaux	737	130485	24.77	177
Le Havre	542	73799	14.01	136
Dunkirk	1593	60518	11.49	38
Nantes	280	37730	7.16	135
Calais	870	22854	4.34	26

Differences in average tonnage reveal radically different typologies of trade. Boulogne-sur-Mer recorded 1,474 foreign clearances, and came second only to Dunkirk in terms of number of foreign clearances, but ships averaged nine *tonneaux* only. As in Dunkirk and Calais, most were British boats smuggling across the Channel. British ships represented 94 per cent of foreign clearances in Calais and Boulogne-sur-Mer.

We can further refine the analysis by taking into account the different flags. Navigocorpus data for 1787 once again offer interesting insight. British ships represented 63 per cent of total foreign clearances but only 31 per cent of total tonnage. The distribution of foreign flags varied significantly from port to port (Table 6).

Table 6 – Foreign clearances from the top five French Atlantic ports in 1787

Flag	British		Dutch		Hanseatic[21]		Danish		Prussian		Swedish		USA		Imperial		Other[22]		Undetermined	
Port	N	Tx	N	Tx	N	Tx	N	Tx	N	Tx	N	Tx	N	Tx	N	Tx	N	Tx	N	Tx
Bordeaux	172	21958	138	24895	159	36341	46	6833	75	15613	39	5549	48	10683	15	2612	34	4308	11	1693
Le Havre	235	26598	72	8288	4	883	33	5194	2	478	26	4024	16	3069	54	7067	5	527	95	17671
Dunkirk	1270	35197	133	6584	15	2234	38	5296	13	1188	21	2449	11	2050	74	3604	9	1200	10	716
Nantes	28	2771	82	10987	42	6455	22	2959	17	2821	20	3451	3	439	36	4850	16	1202	14	1795
Calais	817	18482	15	292	1	210	28	2813	2	350	3	303	0	0	0	0	1	90	3	314
Total 5 ports	2522	105006	440	51046	221	46123	167	23095	109	20450	109	15776	78	16241	179	18133	65	7327	133	22189
Total French Atlantic ports	4973	167570	795	93367	296	58444	369	45030	171	31979	215	30571	139	24880	225	23852	274	18027	217	33095
Percentage of five top ports	50,7	62,7	55,3	54,7	74,7	78,9	45,3	51,3	63,7	63,9	50,7	51,6	56,1	65,3	79,6	76,0	23,7	40,6	61,3	67,0
Number of ports frequented per flag	39		31		23		30		22		26		14		22		22			

In grey: the port is among the top five French Atlantic ports for the flag

N = Number of congés

Tx = *tonneaux*

[21] Hamburg, Bremen and Lubeck.

[22] Ships registred in Russian, Spanish, Portuguese and Greek ports and in Danzig for the five top ports. Other ports also include ships registered in Venetian and Tuscan ports.

The five most important ports attracted two-thirds or more of total Hanseatic[23], Prussian and Imperial ships, but they were much less relevant for Scandinavians, Dutch and Americans. Only Bordeaux and Dunkirk were among the most important destinations for all foreign flags, although Prussian tonnage was higher in Brest than in Dunkirk. Boulogne-sur-Mer and Lorient were significantly much more relevant for British and United States shipping, respectively, than Nantes: smuggling and privileges — Lorient being a free port — explains this relevance. Calais played a role for British and Danish shipping only. Spanish shipping was altogether insignificant in French Atlantic ports, but two-thirds of it was in Bayonne. Otherwise "minor" ports might acquire a significant role for specific flags: with total foreign shipping of 16,225 *tonneaux*, Ars-en-Ré ranks ninth among all French Atlantic ports because Northerners went there to load salt. The analysis of foreign flags shows that foreign shipowners answered to specific markets and demands and that their hierarchy was partially independent from the one which emerges when looking at total tonnage or total number of clearances.

The attraction ports exerted as a market or for their demand for transport services can be observed also by focusing on the port of registry instead of on the flag. We will look here at three of the nine French hubs listed in tables 2, 3 and 4 to study how other French ports responded. As noted, most *congé* registers provide the name of the port where the ships were registered. Gaps almost exclusively concern shipping in the Channel ports, but we were able to complete part of this information by tracking ships in those ports where information is provided. Navigocorpus states the name of the port of registry for 81 per cent of French-flagged clearances in 1787. This makes it possible to analyse the capacity of most ports to attract ships from outside. Instead of working on the attraction exerted by a single major maritime trade center on surrounding ports, we chose here to reverse the perspective and to research whether small ports offered their transport services to one port in particular — an element pointing to strong dependency and polarization of shipping services — or whether they reached out to multiple markets.

The following case study is based upon French-flagged clearances in Nantes, La Rochelle and Bordeaux in 1787, ranging from 1,004 (La Rochelle) to 1,392 (Bordeaux). Data on the port of registry of cleared ships have been processed with Ucinet and are shown in Figure 1[24]. Each square represents a different port. Those at the center of the three main clusters are, from left to right, the three hubs of La Rochelle, Bordeaux and Nantes. The links departing from them indicate that at least one ship registered in the linked port cleared from this hub. The thickness of the arrows and of the link reflects the number of *congés*. At the center of the figure, we placed those ports of registry connected with all three hubs. Some ports of registry are linked to only one of the three hubs, whereas ships from other ports frequent two of them. Darker squares — identified with the corresponding geo-referenced code in Navigocorpus —designate the five ports of registry totaling 200 clearances or more from Bordeaux, La Rochelle and/or Nantes. These ports are Port d'Envaux (A0212986), Méan (A0194731), Saint-Malo (A0170819), Oléron (A0128573) and Noirmoutier (A0136403). Whereas ships from Méan and Noirmoutier did not frequent Bordeaux, those of Port d'Envaux, Saint-Malo and Oléron can be found, with different frequencies, in Bordeaux, Nantes and La Rochelle. Ships from Port d'Envaux, for instance, often cleared from La Rochelle, whereas those of Méan were frequently in Nantes.

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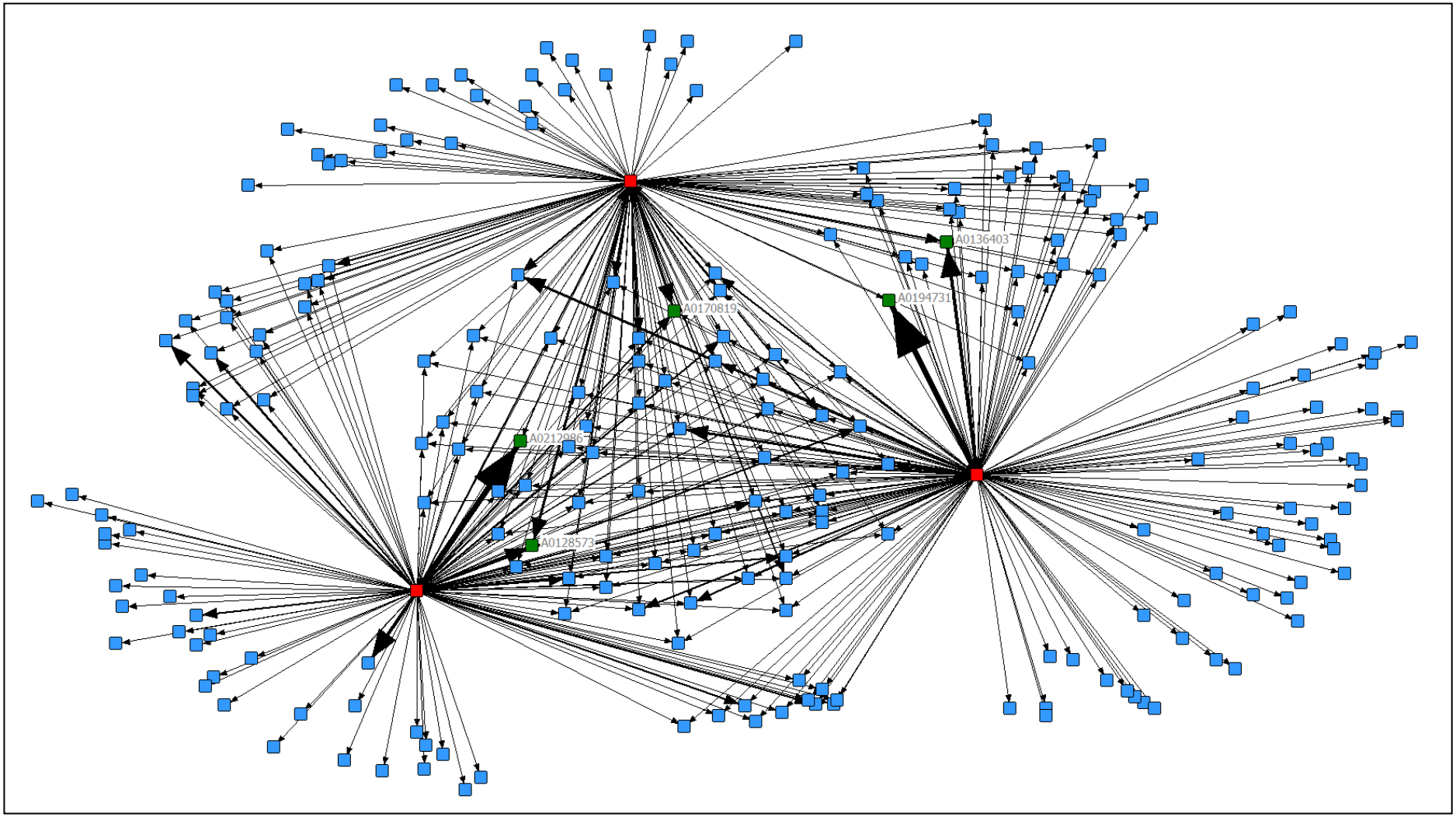
[23] Hanseatic shipping was strongly concentrated in Bordeaux, where the merchants bought wine and colonial goods: Butel, *Négociants*. See also *Hamburg – Bordeaux, Zwei Städte und ihre Geschichte / Bordeaux – Hambourg. Deux villes dans l'histoire*, Burghart Schmidt and Bernard Lachaise, eds. (Hamburg, 2007). Bordeaux in those years also was emerging as a major market for U.S. ships. On the rapidly evolving hierarchy among French ports for United States shipping, see Silvia Marzagalli, *Bordeaux et les États-Unis, 1776 – 1815: politique et stratégies négociantes dans la genèse d'un réseau commercial* (Geneva, 2015), 52-71.

[24] This network analysis and the graphs were produced by Álvaro Chaparro Sanchez under the direction of Silvia Marzagalli, and presented at the first meeting of RES-HIST (Réseaux&Histoire) in Nice, France, 26-28 September 2013 (http://reshist.hypotheses.org/135).

Figure 1 – Ports of registry of French ships clearing from La Rochelle, Bordeaux and Nantes, 1787



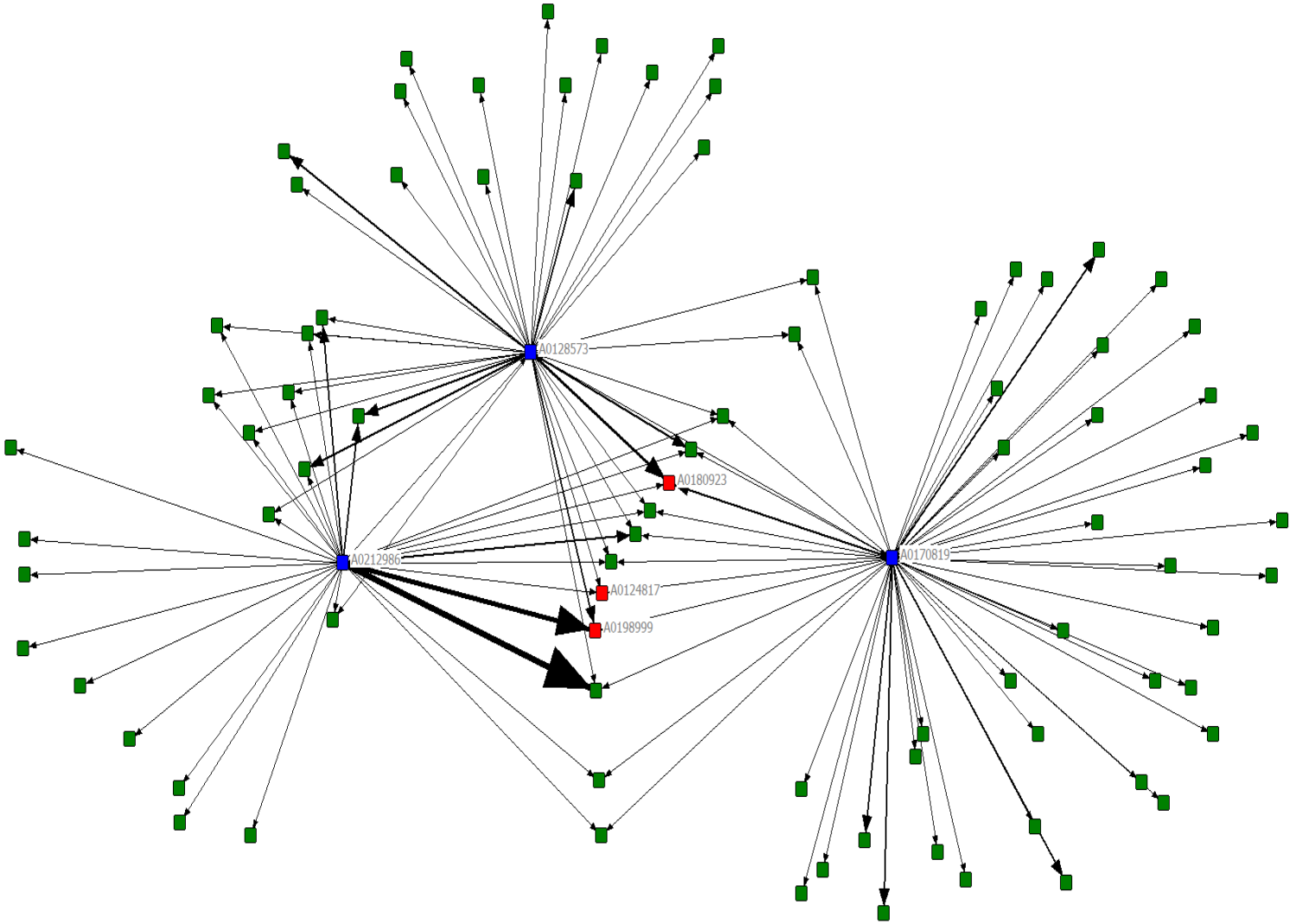
This does not imply, however, that the most important ports which provided shipping services to Bordeaux, La Rochelle and Nantes were strongly dependent on them. Ships of Saint-Malo, for instance — still an important trading center at the end of the Old Regime, as discussed above — are to be found in many other French ports. Table 7 lists the five most relevant French Atlantic ports (Saint-Malo itself excepted) which Saint-Malo's ships frequented. Nantes and La Rochelle were in eighth and fourteenth place, respectively, with regard to tonnage. By changing the point of view and not focusing on a single major port, and by looking at all ports where ships of a given registry port can be tracked, we avoid the bias of introducing the idea of subordination and dependency where in fact there was none.

Table 7 – Five top French Atlantic ports frequented by ships registered in Saint-Malo, 1787

Port	Number of clearances	Total tonnage
Marennes	107	11059
Bordeaux	65	5160
Honfleur	62	4663
Ars-en-Ré	58	4205
La Tremblade	56	4478

However, ships from smaller ports than Saint-Malo were also connected to dozens of different French ports. By looking at French ports frequented by ships of Port d'Envaux, Oléron and Saint-Malo (which appear at the center of the three clusters, from left to right, in Figure 2), we can better appreciate the vast web of ports to which they offered their shipping services. They shared nine ports in common (at the center of the figure), among which Bordeaux (A0180923), La Nantes (A0124817) and La Rochelle (A0198999) — namely the three hubs whose shipping services we have highlighted — are not necessarily the most important ones: almost half the clearances of ships from Port d'Envaux, for instance, occurred from nearby Tonnay-Charente.

Figure 2 – Ports frequented by the ships of the three major ports serving Bordeaux, La Rochelle and Nantes in 1787



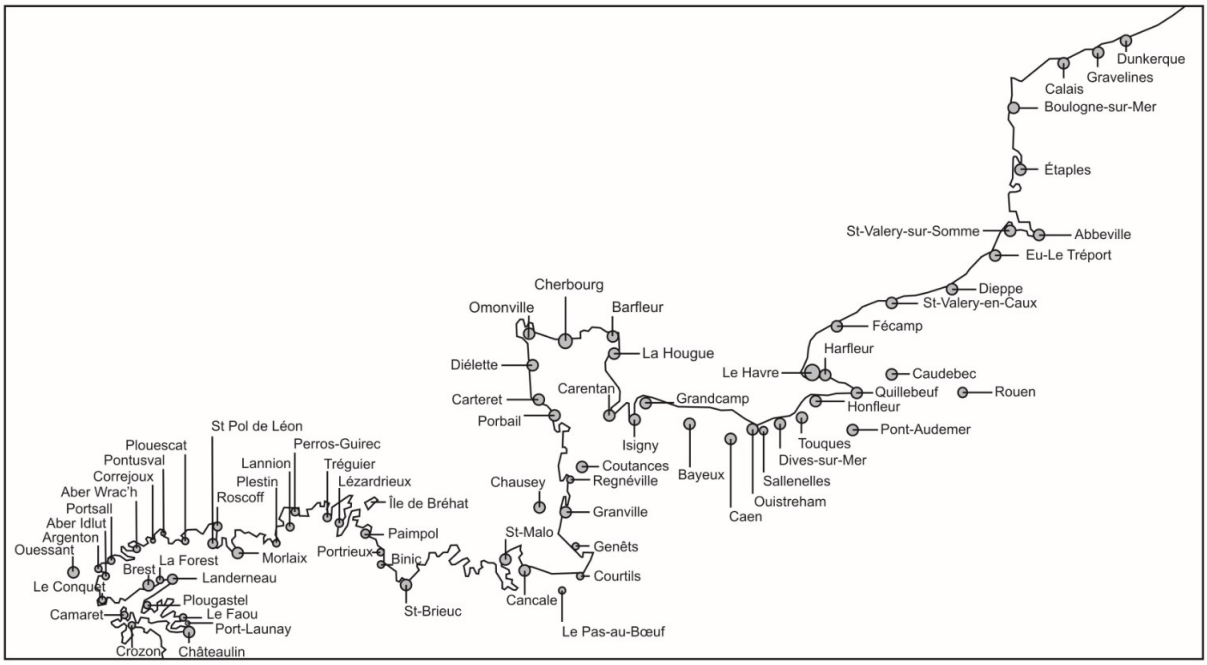
Conclusion

Collaborative databases like Navigocorpus make it possible to undertake complex analyses of shipping and to shift from a port-centered perspective to a systemic approach. The aim of this paper is to prove the importance of such a shift for drawing a more accurate picture of past realities. We have first stressed that the adoption of different criteria to define hierarchies among ports leads to slightly different or multifaceted results. We then adopted a multi-scalar and multi-centered approach to stress how the perspective from which we observe the past radically changes the picture we are able to outline. We are conscious that this shift might at first appear to lose the clear-cut certitudes of a linear perspective, replacing it with a cubistic picture in which it becomes difficult to delineate hierarchies and relations among the different elements composing the whole. Yet, as in a cubistic picture, such an approach prevents the observer from adopting a static point of view, which overemphasizes the importance of those elements which are closer and conceals those which cannot be perceived from a linear perspective, as they are hidden behind the visible façade – such as the links of ships registered in a port with other ports. We have just begun to explore the potential of such an approach, and we hope in short to demonstrate more.

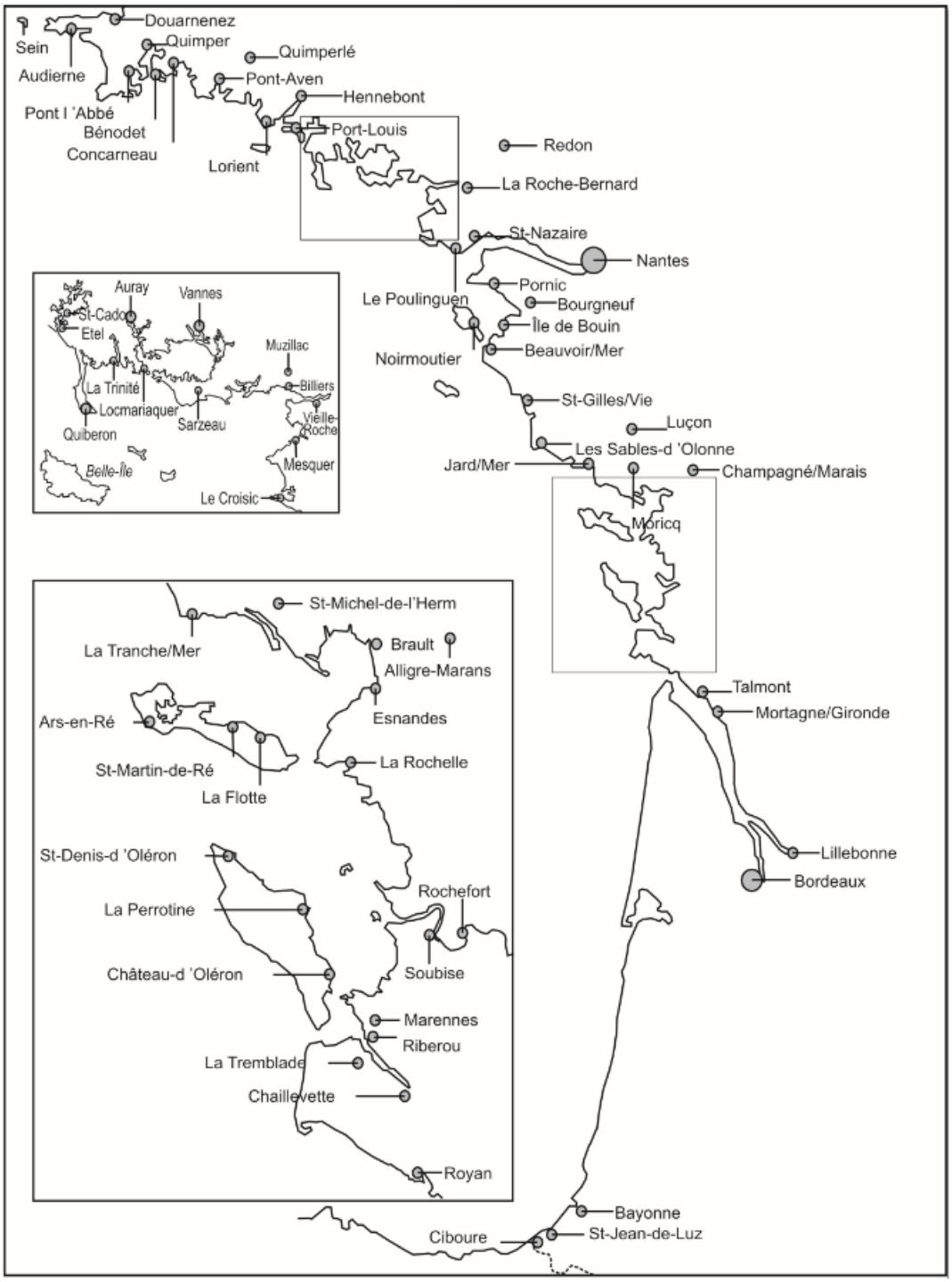
Appendices.

French ports with existing *comptes rendus* at the French National Archives in Paris, sub-series G[5].

a. Channel



b. Atlantic coast



c. Mediterranean