

Problem analysis and research framework

1.1 INTRODUCTION

This thesis is about the untold. The presence of the invisible but clearly present. It is about knowledge that is not clearly expressed but omnipresent. It is about relational structures that are articulated formally and informally. It is about embeddedness in an environment that sets constraints or opportunities. It is about an infrastructure and a deeply ingrained supra-structure,¹ the ‘fluid’ that flows within a port’s society, that influences one of the most massive, heavyweight artificial structures ever made by man: it is about ports and their port cities.

Traditionally, port cities were places where bulk was broken and stored, processed, and transported (Piraeus was already the port of Athens when Homer wrote his *Iliad*) and ships were built. The dominant modalities changed from seagoing and coastal shipping to inland shipping, railways, and roads. Tugs and vessels were needed for other nautical services, for example pilots and shipbrokers. Cranes, terminals, and quays shaped the face of these cities, sometimes located directly on the sea, sometimes upstream on a river that often ended in an estuary. For Suykens and Van de Voorde (2006, p.252), a port is: “a chain of interlinking functions while the port as a whole is in turn a link in the overall logistics chain.” This definition defines a port mainly as a logistical phenomenon; but a port is more than that.

Industries based on these activities flourished, such as shipyards and oil refineries. Wholesalers were the first to handle goods for import or export and therefore were quite dominant in the further expansion of port-based activities (Vance, 1970). Port cities thrived from the ports; all their activities were intertwined, and the port was the accelerator for its city. Both benefitted from each other’s presence (Hayuth, 1982). The direct environment of the port was closely tied to the city with its manufacturing and other port-related activities. Direct and indirect employment such as insurance brokers, lawyers, but also red-light districts created a mixed and vibrant society that often acquired worldwide reputations (Reeperbahn is as much associated with Hamburg as the Champs Elysée is with Paris). Rotterdam, London, Hamburg, Amsterdam, Liverpool, Marseille, Naples, Lisbon, Shanghai, Honk Kong, Singapore, New York are names that immediately evoke the idea of a port city.

Nowadays however, things have changed dramatically. Ports often have hardly any connection with city-based activities. Walking in London does not exactly give one

¹ In port literature, the supra-structure concept has a very different meaning: port hardware (cranes, etc.) (Bird, 1971) In this thesis, it refers to the broader societal construct about how things are done.

the feeling that one is in a port, and many citizens of Rotterdam hardly have a clue what is happening in Europe's largest logistical and industrial hub, which was once (1962–2004) the largest in the world. This development is not a phenomenon of the last decades, but already started decades ago, as Hayuth remarked when paraphrasing Bird (Hayuth, 1982, p. 219). He identified three developments that fostered the weakening relationship between the spatial and functional relationship of cities and their ports, which, in his study, had a profound and visible effect on the urban waterfront. These three influential developments are the technological changes in the shipping industry, the modernization of port operations, and the increasing public concern over coastal areas. They had an effect not only on the port–urban interface, but also far beyond: the recognition that a fruitful port–port city relationship can bring prosperity to, and enhance the performance of, both. The extent to which this has happened in three ports – Rotterdam, Antwerp, and Hamburg – and the way in which both ports and port cities cope with this nowadays is the subject of this thesis.

Ports used to be, or are, related to port cities. This made port cities attractive places as “centers of knowledge, talent, innovation and specialization of production and services” (Jacobsen et al., 2019, p. 4). The increased speed of developments in the maritime world has had an impact on seaports and their port cities. The traditional ties between ports and their port cities have become weaker and weaker (Kuipers & Manshanden, 2010; Merk & Notteboom, 2013; Hayuth, 1982). This has had a significant effect on the wellbeing of the port city in terms of employment, prosperity, urban development, and, consequently, “the license to operate” (Blomme, 1998, p. 61). Thus, the historical source of cities' attractiveness has been under strain because of the developments in the maritime industry that have affected the spatial connection between port and city. However, not only the visible, spatial effects of these developments have been influential; the mental connection between port and city was also under strain. Therefore, one cannot fully understand the spatial outcome without researching this supra-structure.

1.2 MOTIVATION

In Europe, seaports and port cities, besides being industrial regions in their own right, are vital for some of the most important industrial regions. Vast areas of industry, trade, and population concentrations are located inland and need raw materials, energy, and goods to be transported to and from their destinations or places of origin. Ports were seen as national economic engines. This view has changed

nowadays. The diversity of economic development in countries and regions has changed a lot over the last three decades in such a way that the situation is almost reversed: regions themselves can be the motors of national development, with the seaports facilitating these developments, often interlinked with other logistical nodes of activity like airports and inland ports (Kuipers & Manshanden, 2010).

Port competition in Western Europe, especially in the Le Havre–Gdansk Range, has increased significantly during the last two decades, because of developments such as globalization, the rise of the container as a unit for shipment, the increasing sizes of container vessels, and new economic developments in hinterlands. Sea-ports respond to this increasing competition by diversifying (Thorez & Joly, 2006): Le Havre and Rotterdam focus on operational excellence in handling: fast transit; Antwerp concentrates on logistics and storage; and Hamburg, taking advantage of the economic developments since the collapse of the communist system, promotes itself as a hub for Central and Eastern Europe. This does not mean that they engage only in activities that fit this specialization, but policymakers focus their attention on strengthening their position in these target areas.

This thesis assumes that the abovementioned past and current developments affect the relation of seaports with their related port city. These effects can be positive or negative and have distinct spatial and socioeconomic impacts related to the port city. The way in which companies, local city councils, and non-governmental municipal organizations interact can increase or mitigate these effects. The distancing of port activities from the port cities has put these interactions under pressure. This distancing is not beneficial for the port city, because this process affects the extent to which firms within the port feel responsible for the city and care about urban development, and, conversely, the way in which citizens have positive feelings about activities engaged in by port firms – activities that often have negative externalities such as congestion and sound, air, and water pollution that people within the region, often citizens of the port city, will accept to a certain extent, or withstand. So, firms' license to operate can be at stake.

1.3 THE APPROACH

The assumption in this thesis is that this distancing will be more present in some ports than in others. The character of port-related high value services in Rotterdam is different from that in Antwerp or Hamburg. These interactions are governed differently because of the ports' different approaches to dealing with industry–society

relationships. Although Suykens (1998) states that the ports of Antwerp, Hamburg, and Rotterdam are all seen as representative of the Hanseatic tradition (as distinct from the Latin tradition and the Anglo-Saxon tradition), this thesis posits that they have different cultures in terms of management and even of meta-governance: the management of management (Klijn & Koppenjan, 2012). Verhoeven en Vanoutrive also remark that related to port governance the subdivision in Latin, Hanseatic and Anglo-Saxon, “is a valuable one” (Verhoeven & Vanoutrive, 2012, p. 200). The assertion that The Netherlands, Germany, and Belgium belong to one and the same tradition is a widespread idea that does not take into account the recent developments in economic cultural behavior and basic attitudes towards communities (Amable, 2003).

These differences in governance in ports can have an effect on performance as well as shown by Kuipers who mentioned the Anglo-Saxon character of the port of Rotterdam, illustrated by the observation that Anglo-Saxon oriented companies performed better (Kuipers, 1999). But apart from the company level, these differences in governance have an effect on port–port city relations and consequently on the presence and visibility of the port within the port city. These relations and this presence are the central theme of this study.

1.3.1 Locus

Within the Le Havre–Gdansk Range, three ports stand out in terms of competing with one another: Antwerp, Rotterdam, and Hamburg (Deloitte, 2009; Kuipers, Nijdam, & Jacobs, 2011). The relationships between these ports and their respective port city have developed in different ways and consequently the bonds between these cities and their ports vary (Merk & Notteboom, 2013). Governance can be viewed from various perspectives. It can be seen as the exponent of an attitude towards relationships between firms and their stakeholders. It can also be viewed as policymakers’ attitude towards economic development in general and how policymakers behave towards firms in particular. Governance is a perspective that can be used to explain different developments in the port–port city relationship. The observation that differences in culture are reflected in governance makes these three cases very interesting. As touched upon above, it is often assumed that the three ports belong to the same economic system (Suykens, 1998), but categorizing these three together is an example of underestimating subtle differences that may influence approaches to governing/managing port–port city relationships.

These three ports belong to different economic systems that have an impact on their performance. Studying these three ports – at first glance culturally and from a governance perspective completely the same – might produce relevant findings.

1.3.2 Focus

The loci of this study – Antwerp, Rotterdam, and Hamburg – having been established, the scope of this thesis must be defined to narrow the themes to be investigated. The object of this research is to look at the way in which port policy was made and accepted by the different actors in the port–port city arena: firms, citizens, organized stakeholder groups. The way in which ports “fund various ‘economic development’ initiatives, the ongoing and supported program by policymakers and communities to promote help and make better a general level of health, economy, security and business in a community or region – usually requiring public funding, subsidies and collaboration between government and private sector entities” (Pigna, 2014, p. 86) is an especially interesting item that indicates willingness to acknowledge the bonds that exist between the port and its port city. In terms of physical presence (visibility), it is interesting to add a fourth aspect: the extent to which attempts are made to re-introduce new port functions in the city, especially in the old declining docklands (Charlier, 1992).

1.4 RELATIONSHIPS AND INFLUENCES: CREATING A RESEARCH FRAMEWORK

Port–port city relationships are often researched on the basis of the benefits or the negative effects for the city attributable to the presence of the port. It is done by reflecting on these relationships by researching stakeholder relations in terms of the economic sectors (transport, energy, industry) that interact with public territories (Debrie & Raimbault, 2016). Demographic size and port traffic developments are measured as well as the interrelationship with the hinterland to come to distinctive port functions (Ducruet, 2006, 2007). The benefits for the city in terms of the nature of direct and indirect employment and value added are also a field of interest for maritime scholars (Kuipers, 2018c; Kuipers & Vanelslander, 2015; Jacobs et al., 2011). Various scholars from different disciplines have studied the effect of the retreat of port functions on the visible structure of the city and the need for redevelopment, or the need for the port cluster to establish new relationships with the hinterland (Hein, 2016; Hayuth & Hilling, 1992; Hoyle & Pinder, 1992; De Langen, 2004; Charlier, 1992). Attractiveness in the competitive maritime world was another beloved subject for scholars who looked at the port and city together as a cluster (Merk, 2014;

Merk & Notteboom, 2013). So the port-port city relationship is studied extensively and new topics are of interest that have an impact on port and city, like CCS (Carbon Capture and Storage), energy transition with hydrogen, LNG and digitalization (Acciaro, Ghiara & Cusano, 2014). But these topics are not the subject of this thesis.

These approaches all look at the measurable and visible aspects of the port as an object for research. Only a few have addressed the forces that influence and sometimes determine the phenomena for ports and their respective cities and how they interact. Of course, governance is a well-studied subject, including in port studies (Baltazar & Brooks, 2007; Brooks, 2004; Brooks & Cullinane, 2007b) but, to get beyond this, a field studied by scholars that dare to take another approach is not that well represented in port city studies. They can, for example, be found in organization studies, sociology, and geography. Scholars in these fields pay attention to interpersonal relationships that characterize formal structures between institutions (Granovetter, 1973, 2005), the mechanisms that can shape these relationships (Lam, 2000), or the spatial impact of these relationships (Gertler, 2003). Some take these tacit, untouchable phenomena as their explanatory base to describe and explain large spatial phenomena like whole cities (Glaeser, 2011). In port studies, Williamson's (1981) model, which describes several layers that influence organizational structures, is taken as the basis for a conceptual model to understand maritime performances (Geerlings, van der Horst, Kort, & Kuipers, 2012), although the supra-structure described in that model as informal institution, norms, and religions is hardly dealt with (Geerlings et al., 2012, p. 17).

The objective of this thesis is to investigate what is going on in the development of these port-port city relationships that is not immediately revealed in statistics or day-to-day actions of the actors within their clusters. The empirical part of this thesis starts with the history of the ports and shows that phenomena in physical appearance, but also in non-physical appearance like organizational structure, originate in history. In this thesis, the theoretical part is researched by elaborating on the concepts created in the theoretical framework of Chapters 2,3 and 4. In terms of Williamson's (2000) four-level model of social analysis (Figure 1.1), this is level 1.1.

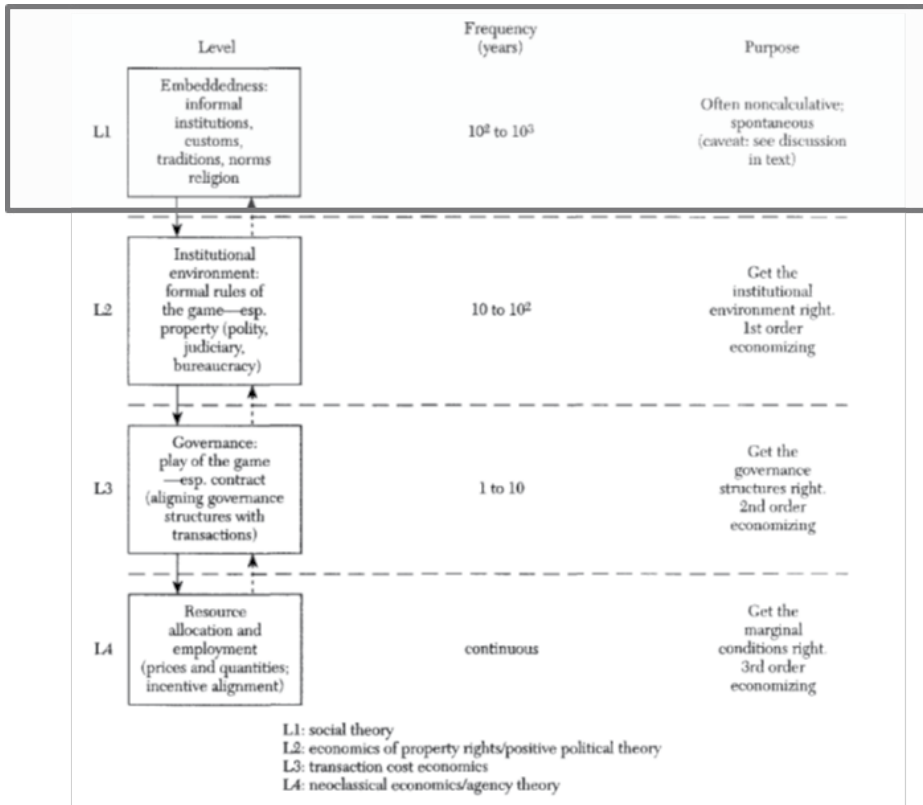


Figure 1.1 Levels of social analysis (Source: Williamson, 2000)

Changes take place over many years (100–1000), and their purposes are created spontaneously. Williamson (2000, p. 596) acknowledges that this level is not the focus of most economic scholars as they take it for given. He mentions the types of embeddedness, Granovetter’s work on researching strong and weak ties, and the scholars researching culture. In this thesis, this level is the focal point of research as demonstrated in the conceptual model. Levels 1.2, 1.3, and 1.4 of Williamson’s social analysis levels represent the structured, codified world, whereas level 1.1 is the supra-structure in which the later levels are immersed. It is this level that the empirical part aims to describe and explain. The actions taken on levels 1.2, 1.3, and 1.4 are determined, whether consciously or subconsciously, whether acknowledged or denied, by the structures in level 1.1.

The relationship between the port and the port city is the subject of many studies. Numerous scholars have researched these topics from different points of view. Therefore, a distinction can be made in terms of subjects studied (as categorized

by Pallis, Vitsounis, De Langen, & Notteboom, 2011) and of how these ports can be categorized according to the methodological approach adopted (as done by Woo, Pettit, Kwak, & Beresford, 2011). In these studies, different models are presented to describe and understand the relation between the port and the city.

In this literature a variety of dynamics are presented that influence these relationships, showing a physical, functional, and mental separation between the port and the city. This separation has had negative influences in all port cities. Many of them are suffering from the outcome of this process in terms of underdeveloped city districts, unemployment, and low incomes. A wide range of activities are initiated to stimulate dynamics in the city center in order to mitigate these negative outcomes. Some port cities are more successful than others in this. In this thesis, an alternative approach to studying the outcome of the situation in Rotterdam, Antwerp, and Hamburg is suggested. For that, in this thesis three bodies of knowledge are used to derive concepts that can be used to conduct the empirical research. The first body of knowledge is covering cluster theory, as the subject researched is the port-port city relationship that expresses itself spatially. The review of theory from the body of knowledge on cluster development includes concepts that can be defined as cluster characteristics. In the empirical part of this thesis they will be used to describe the development of the three port clusters under study, from a historical perspective to the present situation. The second body of knowledge is governance. Governance is a factor that manifests itself in the cluster in a way that it influences the relationships between the actors within the cluster. Governance itself is influenced by an institutional structure. Therefore, a third body of knowledge was needed that is defined as institutional arrangements. The review of governance and institutional arrangements will lead to sensitizing concepts that will be used in the empirical part to guide the analysis of annual reports of port authorities and the interviews with port-port city experts. Special attention is given to a theory about the political economic structure of societies. This is not seen as a body of knowledge but will have to be reviewed because it creates the embeddedness in which the concepts manifest themselves.

1.5 SETTING THE SCENE: RELATIONSHIPS BETWEEN PORTS AND CITIES

For ages, ports and port cities have been intertwined. Cities like Rotterdam and Hamburg in Europe, but also New York in the United States of America and Shanghai in China, were initially better known for their ports than for city development.

Port were essential for city development because ports functioned as a nodal point within a network of flows (Verhetsel & Sel, 2009). Looking at port cities worldwide or, as this thesis restricts itself to, in Europe, reveals a great diversity in development.

This diversity is due to:

1. Geographical position: the location at the seaside that made it an obvious place to land goods from overseas, or the inland port city with a river connecting it to the sea and to a hinterland (Suykens, 1998);
2. Historical developments: the port city itself that developed as a place mainly for transferring goods, or the port city as a mercantile place where (wholesale) trade was the principal activity and everything was traded as long as it was profitable (Vance, 1970; Ducruet, 2006). In fact, this has influenced the development of port cities from a space of places (determined by geographical position) to a place of flows: nodes where economic sectors meet (Verhetsel & Sel, 2009);
3. The governance structure, and related to that, the culture in which this was embedded, that partly determined the implementation of the effects of economic dynamics (see for instance the development of factor conditions in Germany as described by Porter (1990a, p. 368).

This diversity, however, did not prevent a rather common phenomenon: the spatial separation of port functions (Merk, 2014) and the city as the place where these functions had their spatial expression (Bird, 1963). This spatial separation resulted, on the one hand, in a continuous search for new port extension areas to facilitate new activities and, on the other hand, in cities that were abandoned. How these cities were able to cope with this loss has been the subject of a wide range of studies (Charlier, 1992; Merk & Dang, 2013; Hoyle & Pinder, 1992; Hayuth, 1982). Merk (2014), in particular, pays a lot of attention to the spill-over effects, both negative and positive, and concludes that the negative externalities were long felt in the port region and the city, whereas the positive effects were felt in the hinterland. The results of these policies for handling the dynamic of the separation of the port's function from the city are profoundly diverse, but the dynamics that led to the diverse outcomes can be seen as universal.

This thesis aims to contribute to a better understanding of these outcome differences. The enormous growth in cargo handling and logistics services in ports like Rotterdam made a substantial contribution to national GNP, but the parent port city "leads the wrong lists",² so such cities can be regarded as rather poor. Other ports

2 Alderman Dominic Schrijer of Rotterdam in *Nederlands Dagblad*, 23 March 2007.

whose growth was of a more modest magnitude are located close to (or in) a city that has profited from these maritime activities and are characterized by substantial wealth, like for instance Hamburg (Läpple, 1998). The effects of these negative and positive externalities of port activities have been studied thoroughly (Merk 2014; Nijdam, 2010). So, the way in which the dynamics were absorbed by the various port cities is of continuous interest to scholars (Pallis et al., 2011). However, a study trying to describe and understand the diversity in outcomes regarding port–port city relationships from the perspective of differences in relationships between port actors – and especially a difference rooted in other structures and manifestations of governance – has not been performed before. In this thesis, these manifestations of governance are called determinants, are responsible for the port–port city relationships, and have led to different outcomes from the dynamics affecting these relationships.

The objective of this thesis is to explore the dynamics that led to this phenomenon and the functional and spatial outcomes. It aims to find an explanation not only in these distinguished dynamics, but also in the way in which these dynamics were governed. To focus on the relationships between port and city actors, regarding the port, special attention is focused on a particular port actor: container terminal operators. These operators were chosen partly because of their representation of an important dynamic – influencing port–port city relationships –, partly because of their strategic value for the port, and partly because of their spatial behavior consequent to the need for new large port areas. However, port companies are also included in the research. So, the object of research is the port–port city relationships as expressed in Figure 1.2. As stated in the first part of this introduction, the cases of Rotterdam, Antwerp, and Hamburg are the locus for this study, on the premise that differences in governance are apparent in these three different geographical locations.

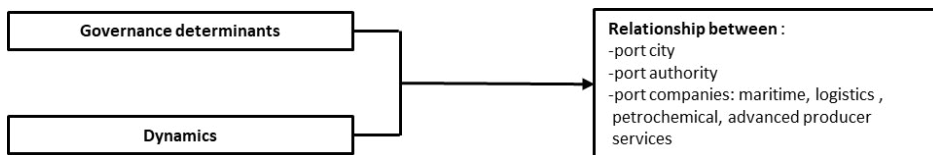


Figure 1.2 The basis of the research model

1.6 PROBLEM ANALYSIS

The current relationships between the actors in the port and its (former location) port city are a result of dynamics and determinants that gave rise to various outcomes. These various outcomes are expressed in the city's welfare, (un)employment, abandoned former port areas, the relationship between port actors and between the port community and representatives of the city's government, and the extent to which the port as an activity is still making a contribution to the port city's economic activity. To describe and understand these differences, the dynamics and determinants need to be explored. The dynamics are related to developments in the maritime world, the determinants are related to the culture and its interaction with governance within and between the private and public actors in the port–port city relationship.

1.7 DYNAMICS INFLUENCING PORT–PORT CITY RELATIONSHIPS

The development of the relation between ports and cities and in particular their loosening relationship is, according to a variety of scholars, influenced by four main dynamics that affect port–port city relationships:

1. Increase in scale of maritime and logistics operations;
2. Containerization;
3. Globalization as the driver of global trade;
4. Agglomeration economies (urbanization externalities) as an important characteristic of the urban economy.

1.7.1 Increase in scale

The scale increase in port handling and port-related industrial operations forced ports to look for sites better equipped for handling more cargo. Especially after the Second World War, the increase in volume was unprecedented because of the rebuilding of Europe. In addition, the rise in car ownership, the rise of the petrochemical industry, and the derived demand for natural resources and fuels impeded the growth of the ports. The docks needed more and more space, and the creation of specialized infrastructures to handle these larger volumes of more various cargo required new sites – sites that could not be found within the port city's environment (Hoyle & Pinder, 1992).

1.7.2 Containerization

The rise of the container as a transportation unit had a profound effect on how ships could be handled and was also a factor that contributed to a loosening of the ties between ports and port cities (Notteboom, 2007). Vast new areas were needed to accommodate the more and more advanced and automated container terminal operators, and thus the container was an accelerator for the dynamic described above – the scale increase in port basins.

1.7.3 Globalization

Globalization has made the world smaller. Production and consumption locations have shifted (Baltazar & Brooks, 2007), and more and more trade has become intercontinental in addition to international (intracontinental). This international/intercontinental trade was further eased by the application of the container as a transport mode. In fact, this relationship became two sided: globalization enhanced the volumes of shipped cargo, and the cost reduction achieved by using containers enhanced world trade (Merk, 2014).

1.7.4 Agglomeration economies

As an effect of globalization, companies with a worldwide customer base established their offices near their customers, and consequently they wanted to locate themselves in an urban environment that provided the legal, financial, and employment services that they needed. These agglomeration economies gave rise to advanced producer services (APS). It made cities, especially world cities, service centers in specialized assistance in finance, market research, accountancy, legal counsel, insurance, advertising, and so on (Verhetsel & Sel, 2009). Merk (2014) and Jacobs et al. (2011) have studied this dynamic extensively for port cities. The maritime sector, known as maritime advanced producer services (MAPS), had to fill the gap left in port cities in terms of viability, employment, and urban dynamics (Merk, 2014; Jacobs, Koster, & Hall, 2011). It became a place for the execution of support services (Kuipers & Vanelslander, 2015).

In summary, we see that the dynamics are interactive and enhance one another. Globalization influenced the increase in cargo shipped by containers that was responsible for an increase in scale and a spatial rearrangement of port activities in port cities. Therefore, globalization can be seen as a driving force behind these dynamics. This created a port city that was left behind and in search of new opportunities for urban development, which was partly realized by the location of MAPS. The extent to which these port cities succeeded in doing that has contributed to the welfare of the port city, but the success had different outcomes in different cities.

1.8 DYNAMICS AND THEIR SPATIAL IMPACT

These dynamics that affect the spatial development of port cities have been described with the help of different concepts: a. Bird's (1963) Anyport model; b. Notteboom and Rodrigue's (2005) regionalization model, and c. the port city dynamics/maritime center development model (Jacobs et al., 2011).

1.8.1 Increase in scale and Bird's Anyport model

Bird (1963) starts his analysis by describing the port's origin as a natural site on a river or seafront; but then he sees an abandonment of the original site. The traditional quays could not handle the growth in cargo volume. Furthermore, port-related industrial activities needed large areas of land to accommodate their sites, and these sites, because of their negative spillovers (traffic, air pollution, noise), needed to be located further away from the old port city. Bird's Anyport model describes the first-mentioned dynamic: the change in scale. It describes pure maritime activities, bound to a port's location, and indirect industrial activities. The port industrial complex is the striking example of this phase.

1.8.2 Containerization and the regionalization model

Notteboom and Rodrigue's (2005) regionalization model illustrates how, because of the breakup of cargo, specialized inland ports and logistics regions with port-related distribution centers emerged, close to customers' locations. So, activities formerly performed within the port area were redistributed to several smaller dispersed locations. This dispersal was facilitated by the emergence of the container as a transportation unit; so, this model describes the second dynamic of containerization and thus elaborates on Bird's Anyport model, still describing maritime port activities, but no longer tied to the original port.

1.8.3 Globalization, agglomeration, and port city dynamics

The globalization and agglomeration dynamics have had a tremendous impact on the development and the choice of location for APS, and the rise of MAPS has attracted the attention of authors (Jacobs et al., 2011; Merk, 2014). These authors found that a MAPS firm's decision to locate in a city is influenced by urbanization externalities and proximity to other (also non-maritime) firms in general. So, if a port city wants to attract port-related activities, it must also provide service activities that are not port-related to be an attractive site in which to locate. Spatially, four phases that result from these dynamics can be identified:

1. The historical site;

2. The extension outside the original city boundaries but still connected to the city, often via the municipal boundaries and often towards coastal areas (Rotterdam, Antwerp);
3. The inland extension towards the customers who need to import or export and need facilities to handle the cargo: breakup, storage, value-adding activities;
4. The rise of service centers as clusters of maritime assistance activities in search of attractive sites that create a situation that favors their activities in terms of true Porterian clusters. This includes enhancing differential knowledge, enlarging value chains, tapping into skilled labor, the presence of the right infrastructure: transportation, communication, housing stock, cultural institutions (hence: quality of life) (Porter, 1990a, p. 75).

The effect of these dynamics is visualized in Figure 1.3 and might be seen as an elaboration of Bird's Anyport model and Notteboom and Rodrigue's regionalization model:

1. The historical site;
2. The extension consequent to scale resulting in extensive port activities and the port industrial complex: moving downstream;
3. The regionalization phase: moving upstream (hinterland);
4. APS, commodity traders, and companies' headquarters.

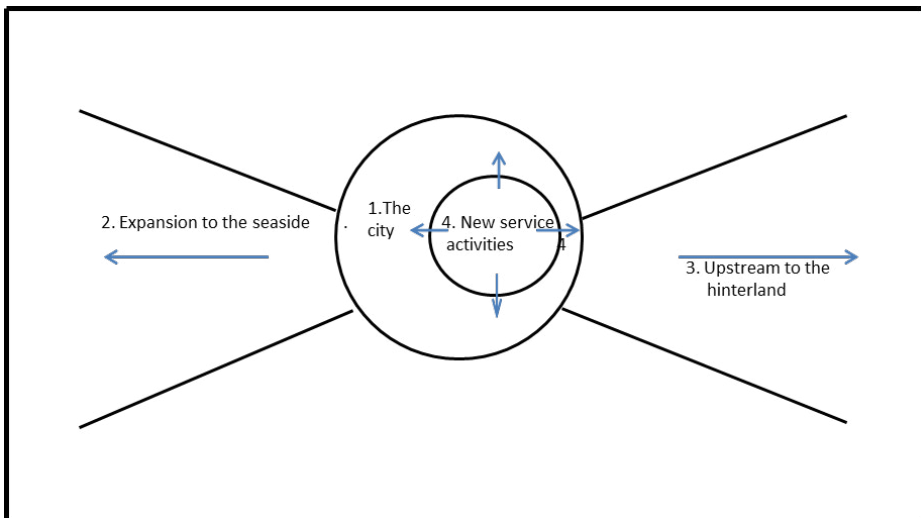


Figure 1.3 Opposite dynamics leading to new functions for the port city's center (Source: author)

As an example, for a port like Rotterdam, this can be spatially translated into:

1. The city;
2. Botlek, Europoort, the Maasvlakte I and II;
3. Moerdijk, the city row in the province Noord-Brabant, Venlo;
4. Weena, Westblaak, Scheepvaartkwartier, Rhoon, Rotterdam Alexander, and other scattered locations in the urban environment.

For Antwerp, extension 2 was directed downstream to the north in the early years of the 20th century along the Scheldt. In recent times, this meant a 'jump' over the river Scheldt towards the west. Upstream, the inland ports of Ghent, Brussels, and La Louvière illustrate extension 3, the expression of regionalization. For phenomenon 4, the old city quays now accommodate all kinds of small-scale activities and leisure. For a port like Hamburg, extension 2 has a completely different position towards 1, and so does the incorporated port industrial cluster. This is particularly because the Free and Hanseatic City of Hamburg sets political limits on the extent to which port activities may be expanded. It simply cannot go outside its municipal borders and for Hamburg – this is an interesting phenomenon – state boundaries. Regionalization 3 is probably more related to activities in 1, illustrated by Hamburg's high loco quote (Merk, 2014), so the bonding between port and customer might have another character. Regarding MAPS in 4, Hamburg has the highest concentration of leading maritime services in Europe (number two in the world, Verhetsel & Sel, 2009), partly thanks to German shipping concerns (based on an analysis of interrelations in these cities between shipping companies and container terminals) that made the city their home base, so paving the path for other services. Because of that, it is also the location center for a number of headquarters and regional headquarters of financial and legal service providers.

Hoyle and Pinder (1992) focused especially on the impact of the separation of port functions and port city. They identified five phases in the evolution of the European port city that had a significant effect on its visible presentation (Figure 1.4) (Hoyle, 1989; Hoyle & Pinder, 1992):

1. The primitive ancient and medieval city port;
2. The expanding port city of the 19th century;
3. The modern industrial port city that started the spatial separation between port and city;
4. The emergence of the maritime industrial development areas (reinforcing the retreat of port functions from the city);
5. The waterfront redevelopment (to overcome the problems that resulted from phases 3 and 4) (Hoyle & Pinder, 1992, p. 8).

STAGE	SYMBOL	PERIOD	CHARACTERISTICS
	○ city ● port		
I Primitive port / city		Ancient / medieval to 19th century	Close spatial and functional association between city and port
II Expanding port / city		19th-early 20th century	Rapid commercial / industrial growth forces port to develop beyond city confines, with linear quays and break-bulk industries
III Modern industrial port / city		mid-20th century	Industrial growth (especially oil refining) and introduction of containers / ro-ro require separation / space.
IV Retreat from the waterfront		1960 s-1980 s	Changes in maritime technology induce growth of separate maritime industrial development areas
V Redevelopment of the waterfront		1970 s-1990 s	Large-scale modern port consumes large areas of land / water space, urban renewal of original core

Figure 1.4 Evolution of the port city interface (Source: Hoyle, 1989)

The retreat of the waterfront results from four factors: technological (maritime technology), spatial (the scale of the maritime activities requiring vast areas of land and water), socioeconomic (the decline in port-related employment), and environmental (noise, air, and surface pollution) (Hoyle, 1989, p. 430). How did this work out in the present situation of the ports under study? As visualized in Figure 1.3, the 'butterfly' expresses the moving away of functions from the port in both ways: to the sea and inland as an outcome of regionalization. Hoyle's model especially concentrates on the left wing of the butterfly, the typical seaward-directed functions that needed other types of land use as the finger-shaped old piers were no longer capable of handling large vessels.

To summarize, dynamics as described have been influencing the port-port city relationship. The relationship is loosened in such a way that the traditional bond between a port and its port city is affected by these dynamics. This has led to an abandoned port city in terms of traditional port functions. This situation is coped with in various ways, with more or less success. For port cities, this has long been a challenging situation. In Western Europe, port cities have followed different paths with different results. These aspects constitute the first part of the central research model as shown in Figure 1.5.

Dynamics:

- increase in scale
- containerization
- globalization/agglomeration (urbanization externalities)

Figure 1.5 Dynamics influencing port-port city relationships

1.9 THE RESEARCH QUESTIONS

Given the problem analysis as described in section 1.6, this thesis describes and explains how various port cities have coped with the forces that took form in the dynamics as described above and the effect that this had on the development and the welfare of the ports and their respective port cities and stakeholders. This description and explanation are performed by using three case studies: Rotterdam, Antwerp, and Hamburg. These three ports are the largest ports in the Le Havre–Gdansk Range in terms of cargo and container handling capacity and are also representative of Western Europe’s industrialization and economic development. However, these ports had different outcomes in their development, and the explanation can be found in disciplines that are not always used in the mainstream research concerning port studies. To find an explanation that goes beyond the previous research undertaken, this thesis uses concepts borrowed from different disciplines.

For this, the following research question has been devised and is answered in this thesis:

How can we understand the relationship between port and port city in response to international, port business-related, developments?

To operationalize this question, five subsidiary questions have been formulated. In this research, it is assumed that the factors that need to be addressed in studying port–port city relationships derive partly from different cultural embeddedness, especially articulated in political-economic structures. This embeddedness is the result of the supra-structure that forms the social fabric of the port city community. This leads to the first question:

1. What are the dynamics that play a role in the shaping of spatial and port-port city relationships?

The problem analysis is dealing with this sub question. As the developments in the three port cities under study might take another direction spatially and social economically, the way these outcomes manifested, is described. This leads to question 2.

2. What are the differences between various port cities in response to these dynamics influencing port-port city relationships and how can this be explained?

Differences are spatially rooted but also social political economic processes play a role. To operationalize this, concepts are needed that act as an anchor for the empirical research.

3. Which concepts can be of any support to explain the responses to the dynamics influencing port port-city relationships?

For this, three different Bodies of Knowledge are used that lay the foundation for these new concepts. In the concepts is explicitly acknowledged that a phenomenon named suprastructure plays an important role; it refers to the political economic structure in which a port and its port city has developed in past and present. This leads to question 4.

4. What different political economic structures can be distinguished that influence the port city communities in Rotterdam, Antwerp and Hamburg?

The recognition of different structures form cultures that can be seen as relevant for port-port city relationships as they may help to explain and understand different outcomes. This leads to question 5.

5. How do these political economic structures manifest themselves in port-port city relationships?

The political economic structures are studied from the perspectives of these concepts and explain the different responses.

1.10 VARIETIES IN PORT-PORT CITY RELATIONSHIPS

The dynamics – increase in scale, containerization, and globalization – have an impact on port cities regarding issues with which the cities have to cope. To do so, diverse actors interact to match the possibilities of the port region with the demands that evolve from the dynamics. These diverse actors are port firms (e.g. container terminal operators), customers of port firms, port authorities, city councils, and public organizations. These actors have different demands such as a quest for space and the need for skilled employment, subsidies, available technology, and existing and promising port or port-related clusters. These demands are sometimes complementary and sometimes conflicting. In a liberalized environment, Adam Smith's invisible hand was supposed to result in perfect competition for these elements and as a result a perfect situation for the actors involved (Smith, 2012), but Adam Smith's invisible hand does not exist, as he himself acknowledged.³ As history shows, port cities have, more or less, been suffering from the negative externalities of these dynamics, and, although many abandoned sites have been rejuvenated with other activities, this has been a socioeconomic and political issue for port city councils. They had the task of binding the positive outcomes of these dynamics to

3 Smith remarks that the invisible hand is sometimes helped by deliberate but unnoticed influence: "Masters are always and everywhere in a sort of tacit, but constant and uniform, combination not to raise the wages of labour above their actual rate" (Smith, 1776, p. 71).

the port city and mitigating or withstanding their negative effects. Cities handled this more or less successfully, and so the port–port city relationship developed in different ways. For this thesis, the situation in Hamburg, Rotterdam, and Antwerp is researched, on the assumption that the way in which these forces are handled differs between these cities. This thesis considers these differences as outcomes of different balances between public and private forces in combination with given geographical circumstances. The balancing act of public and private governance has its roots in cultural environments that might have led to different types of governance. This is the case for public as well as private (firm) governance. Its roots lie in differences in culture, and the political economic environment. They define customs, norms, and behavior, and this situation leads to another interplay among actors.

1.10.1 Cluster development

The development of a port region can be studied from the cluster perspective. The structure of “...groups of interconnected firms, suppliers, related industries and specialized institutions” (Porter, 1990b, p. xii). Porter states that clusters can enhance the performance of individual players and consequently be beneficial for the whole region (Porter, 1990b). Therefore, the cluster concept is useful in that actors within the cluster feel that they play a role in the wellbeing of the cluster and that they can be of influence. Studying clusters from the perspective of their life cycle and their different outcomes is especially fruitful for looking for path dependencies and events that enhance or threaten clusters’ continuity (Chapman, 2005; Menzel & Fornahl, 2009). So, the cluster as a concept needs to be included for understanding possible varieties in relationships between the port and its port city. This will be the first body of knowledge to be explored.

1.10.2 Governance

Governance is an important topic in port–port city relationships. The devolution of responsibilities articulated in a more or less independent port authority that operates on a distance of the public (read: municipal) sector, is a process that has been of interest for many studies (Brooks, 2004; Brooks & Cullinane 2007; Van der Lugt 2015). Corporate governance can be seen as a system that provides rules and control mechanisms to enable monitoring and motivation of partners in a system. This system should initiate and support R&D activities and build human and cultural capital (Ungureanu, 2012). Studying the governance within the three ports with their own cultural and political embeddedness might shed light on the development of the port–port city relationships.

1.10.3 Institutional arrangements

So studying the effect of variations in governance on port-port city relationships, one must also take into account the results of institutional arrangements⁴ that make up governance. The definition of the UNDP (see footnote 4) defines these arrangements on the organizational level. Logically, as they are institutional based. They define the way governance is employed. But these institutional arrangements are manifested on different aggregated levels. Not only on the organizational level, but also based in the behavior of individuals. The review of this body of knowledge will take this into account.

So there are three bodies of knowledge that are needed to conduct the research which is visualized as in Figure 1.6. They will be the basis for the coming chapters to review literature.

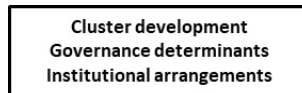


Figure 1.6 Bodies of knowledge used to study port-port city relationships

1.11 POLITICAL ECONOMIC STRUCTURES AS THE EMBEDDEDNESS

As stated in section 1.9, governance and institutional arrangements take place within a political economic embeddedness. They are influenced by the presence of a political economic system. These systems differ throughout the world as well as throughout Europe. Studying the three port cities of Rotterdam, Antwerp and Hamburg will show the differences in this embeddedness. It can be used as a factor that shape the outcomes of variations in the manifestation of cluster development, governance and the institutional arrangements. As such it must be reviewed as the context in which the sensitizing concepts, generated by the three bodies of knowledge, manifest themselves.

⁴ Policies, systems, and processes that organizations use to legislate, plan, and manage their activities efficiently and to effectively coordinate with others to fulfill their mandate (website UNDP, consulted 13 June 2016).

1.12 A VISUALIZATION OF THE RESEARCH MODEL

The relationship under study and the dynamics as presented in Chapter 1 are visualized in figure 1.7. The bodies of knowledge present the sensitizing concepts that will conduct the research of how the relationship between port and city has developed. These sensitizing concepts must be studied with the acknowledgement that they are manifested within a political economic context. The empirical research will consist of the three case studies Rotterdam, Antwerp and Hamburg of which the data will inductively be analyzed by using these sensitizing concepts. This will generate a description and an explanation of different outcomes of the port-port city relationships between the three port regions under study.

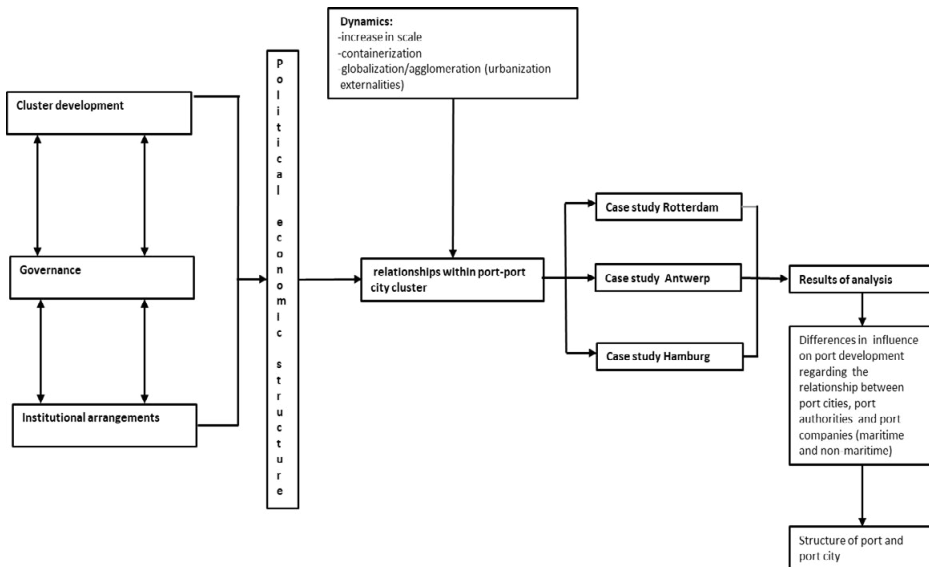


Figure 1.7 The research model

1.13 SCIENTIFIC RELEVANCE

The influencing forces that occur rather universally in the maritime industry and how they relate to possibly influencing factors based on cultural differences have not been studied before from a governance perspective. Ports are very often seen as places of activity that are more or less the same but whose geographical circumstances have defined their development. This study provides insight into the fact that culture as manifested in governance plays an important role in how these port cities have developed. It can provide tools to improve the relationship between two

entities that have grown apart and that still have bonds that can be exploited to enhance a beneficial relationship between them.

1.14 SOCIETAL RELEVANCE (VALORIZATION)

Over the past two decades, Western European politics has been heavily influenced by a neo-liberal style of governance. Globalization has embraced this thanks to the opportunities that this created for multinational companies. The outcome has created winners and losers in terms of economic possibilities (employment) and the welfare of port cities' citizens. Understanding the way in which different policies, based on nuances in handling the same dynamics, have led to possible different outcomes for a city's population, might facilitate re-evaluation of the way in which port policy, made by the municipality, addresses the city's port function. Chapter 10 reflects on that.

1.15 OVERVIEW

This thesis is constructed in three parts. Part A, the introduction, states the problem analysis and introduced the bodies of knowledge needed to establish a research framework along which the way the research is conducted. It introduces three perspectives, the bodies of knowledge, along which research has been conducted to get a hold on the subject. It ends with a visualization of these bodies of knowledge as a base to conduct research.

Part B, the theoretical part, elaborates on the three perspectives chosen: cluster development (Chapter 2), governance (Chapter 3), and institutional arrangements (Chapter 4), as articulated by the bodies of knowledge. Each perspective deals with insights from various bodies of knowledge. The review of the bodies of knowledge ends with the concepts seen as important and derived from literature. The chapter covering cluster development will generate concepts characteristic for clusters to describe and explain differences in the composition and the spatial outcome of the three port clusters under study (the empirical part will use secondary literature and data on economic development and give brief histories of these developments within the clusters and the current situation as an outcome. The chapters covering governance and institutional arrangements will generate sensitizing concepts. These sensitizing concepts are used inductively to analyze the data used in Part C to research the three port communities. Chapter 5 describes perspectives of the

context in which the clusters have been developed and the related governance and in which institutional arrangements are embedded. This is the variety in political economic structures. The sensitizing concepts and the perspectives within which they were created are wrapped up in Chapter 6 in a research model.

Much of the literature dates from before 2010. The reason for this is that the development of this theoretical part dates back to between 2014 to 2017. So, from that perspective, 2010 is not that long ago, and the literature applied is appropriate to describe or help to explain current phenomena, as will be shown. Furthermore, this literature, thanks to its quality, can withstand the passage of time. The review of the literature is quite extended. It was a kind of journey in bodies of knowledge that were not always well known to the researcher. The journey was needed to get a hold on the various disciplines. Part B ends with the methodology in Chapter 7. This is quite extensive because the method used is often interpreted in various ways and it is necessary to clarify how the interpretation of the method chosen for this thesis was established.

Part C, the empirical part, is divided into three segments. The first one (Chapter 8) consists of brief histories of the three port cities to establish an understanding of how they developed before the maritime world became even more globalized, and how they responded to that at the end of the 20th century. The second one (Chapter 9) presents the findings of the researched conducted for the three ports along the chosen sensitizing concepts. The third one (Chapter 10) brings the theory and the empirical findings together to create new insights that provide the input for conclusions and reflections.

The structure of the thesis is visualized in Figure 1.8.

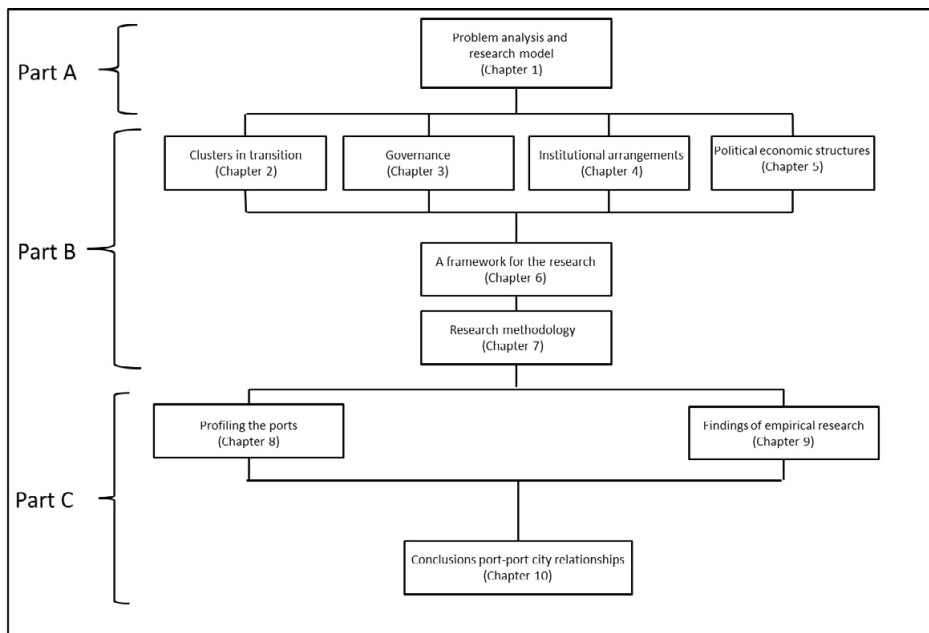


Figure 1.8 Structure of the study