Challenges of Polycentric Urban Systems in the New Planning Cycle: The Case of Portugal

Desafios dos Sistemas Urbanos Policêntricos no Novo Ciclo de Planeamento: O Caso de Portugal

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Abstract/ Resumo

In the middle of the new European investment cycle (2014-2020), major challenges still need to be overcome in terms of understanding and successfully implementing non-consensual polycentric models of territorial organization, particularly at sub-national scales. Therefore, first we identify what these challenges are through an extensive literature review. Then, considering the Portuguese experience, we analyse the process of creating polycentric systems within regional planning documents, and evaluate how this process has responded to such challenges. We conclude by discussing the multifaceted nature of polycentrism, and the importance of the local-scale in reinforcing institutional inter-relationships, thus assisting the upcoming generation of national/regional plans.

Em meados do novo ciclo de investimento comunitário (2014-2020), importantes desafios têm ainda de ser superados em termos de compreensão e implementação de modelos de organização territorial policêntrica, ainda não consensuais; principalmente à escala sub-nacional. Assim sendo, primeiro identificamos que desafios são esses através de uma aprofundada revisão da literatura. Depois, considerando o caso português, analisamos o processo de criação sistemas policêntricos na formulação de documentos de planeamento regionais, e avaliamos como este processo respondeu a esses desafios. Concluímos debatendo a natureza multifacetada do policentrismo, e a importância da escala local no reforço das inter-relações institucionais, suportando assim a nova geração de planos nacionais e regionais.

1. INTRODUCTION – LIFE AND TIMES OF THE POLYCENTRIC PERSPECTIVE

Today, more than ever, territorial organization and planning at an European scale is intrinsically related to the way urban systems function, both nationally and internationally. The major challenges to the development of public policies in these domains lie precisely in the understanding and managing of how cities/regions interact and find ways to jointly promote and develop their assets (and themselves) through cooperation networks, thus contributing to economic growth and social wellbeing.

Concepts like 'city-region', 'urban systems' or 'polycentric development' are far from new. They have become a crucial part of the debate concerning political and planning agendas in Europe for the past two decades, since important strategic European documents and development projects started to quote them more often (Burger et al., 2014a). The European Spatial Development Perspective (EC, 1999) and its complementary program ESPON (European Spatial Planning Observation Network, see Dühr, 2005) were initially instrumental in transforming the concept of 'polycentrism' (Hall, 2009) by encouraging a closer cooperation, through transnational networks, between structural policies and other facets of strategic development (Dühr, 2005). Later, the Leipzig Charter on Sustainable European Cities (EU, 2007) reinforced the goal to establish a 'balanced territorial organization based on a European polycentric urban structure' (EU, 2007: , pg. 1).

Consequently, from a descriptive analytical artifice, the concept of 'polycentrism' became progressively normative (Vandermotten et al., 2008), shaking the then still standing paradigm of hierarchical approaches more or less inspired by the proximity notions of Christaller's Central Place Theory (1933) (Burger et al., 2014a). For Parr (2004), this was a typically European concept, promoting competitiveness and economic development, but carefully aiming to avoid the consequences of sprawl, of car dependency, of

social polarization, and of the decline of urban centres. Thus it is unsurprising that the EU started to promote polycentrism 'tenaciously' (Vandermotten et al., 2008), as an instrument of policy that should be actively pursued and implemented by national planning strategies.

Indeed, authors and theorists supported this view, perceiving it as a decisive turning point (Meijers, 2007); a viable alternative to 'metropolisation' (Cattan, 2007) able to successfully promote a 'concentrated deconcentration' (Hall, 2009) and the 'spatial integration of particular regions' (Burger et al., 2014b), by reducing inter- and intra-regional disparities and increasing their economic competitiveness in the global market (Carmo, 2013), thus leading to greater levels of urban and regional development (Meijers and Romein, 2003). As a 'strange hybrid between two competing approaches for the future European space, i.e. regulationist versus neo-liberal' (Vandermotten et al., 2008) it could offer a viable solution to deal with the complexities of socio-spatial interactions (Marques, 2016), making them, in the process, the most promising guiding elements of the new paradigm of development in the European space (Cattan, 2007; Salvati and De Rosa, 2014). Namely, 'polycentrism' appeared suited to fulfill EU's cohesion policy within its social, economic and particularly, from the mid-2000s onwards, territorial domains (Faludi, 2007; Evers, 2008; Santinha and Marques, 2012).

In fact, the territorial cohesion principle reconceptualized the European planning policy by adding to it a social justice component (Davoudi, 2007b). But in a way, according to Schmitt (2013), the growing importance of this principle has led to a downgrade of the importance of polycentrism itself as a strategic concept, even though it is directly associated to cohesion and other important planning principles such as sustainable development, economic competitiveness or resource optimization (Salvati and De Rosa, 2014; Burger et al., 2014b; Schmitt, 2013). Or better yet, because polycentrism has been increasingly regarded as a regulating tool, now runs the risk of losing some of

its most precious analytical attributes. This is even more so because the literature has never really achieved a consensus regarding the straightforward definition, major goals and applicability of the 'polycentrism' concept (Dühr, 2005; Pain, 2007; Carmo, 2013).

From the start, the first ESPON report was criticized for being unclear, for basing its results on a reduced set of comparative data (Dühr, 2005), and for being somewhat biased in the measurement of polycentricity (Vandermotten et al., 2008). Since, authors have stressed that the concept is uncertain (Vandermotten et al., 2007), lacks conceptual clarity (Hoyler et al., 2008), and is complex and multifaceted (Schmitt, 2013), much more so than European policies have recognized (Pain, 2007; Carmo, 2013). It's not just the fact that polycentricism entails intricate levels of theoretical and practical conception. It also requires complex political and governance structures to help carry out the cooperation goals between territorial and actor networks. It is true that the discourses of public policies regarding polycentric territorial development and associated spatial dynamics have been slowly changing, from a polarized and pyramidal perspective to a more holistic, interconnected vision. However, this transition was not deemed clear (Cattan, 2007), governance mechanisms remained absent (Van Criekingen et al., 2007), and the implications of the concept's ambiguity to European planning policies have not seldom been the object of debate.

If one decade ago polycentric urban systems still had to prove their validity and utility in the context of development policies (Meijers, 2008), even though authors defended its essence and purpose (Baudelle, 2007), it is not clear that they have entirely overcome those critiques today. In the wake of a new cycle of European investment until 2020, when many national systems, such as the Portuguese, are steadily re-orienting their policies towards the EU polycentric vision, it is important to debate and clarify, once again, the various dimensions of polycentrism which are more prevalent or that are part of the political aspirations. The greater or lesser success of the transposition and implementation of the concept from the European to the sub-national and regional scales should be monitored, in order to re-frame and re-think the challenges national systems face, considering which normative objectives should be given priority and especially which practices should be adopted.

This paper wishes to contribute to this debate first by retaking the discussion on the theoretical and practical challenges polycentric systems still face (Section 2). Nine major challenges for the next decade are thus presented following the literature review. Then, this paper presents, analyses and discusses in more detail the case of Portugal (Section 3). In this country, the most important national planning document (the PNPOT), first presented a national approach to urban polycentrism in 2007. In the following years, from 2008 to 2011, each region, through their Regional Land Management Plans (the PROT), translated these guidelines into different polycentric urban models, demonstrating the multifaceted and multi-scaler character of the concept. Then, in Section 4, this research evaluates whether the Portuguese model, as a combination of the various regional models, has been able to respond to the nine major challenges the literature has conceptualized. This will allow learning relevant lessons for the continuing understanding and application of polycentric models in Europe, and aiding the upcoming new generation of national and regional plans. We debate these themes in the concluding Section 5.

2. DEBATING THEORY AND PRACTICE – URBAN SYSTEMS IN THE LAST DECADE

2.1. A complex and multifaceted concept

At the start of the previous Community Support Framework it still felt like an intangible ideal to find a consensual classification of the concept of urban system as well as the most adequate way to apply it to the European territorial contexts. Authors were still sceptical (Hall, 2009; Chorianopoulos et al., 2010) and lack of empirical evidence persisted (Hoyler et al., 2008). Davoudi (2007a) entitled his work 'Polycentricity: Panacea or pipedream', even though the author recognized that this ambiguity was not necessarily a weakness, whereas Vandermotten et al. (2008) entitled theirs 'European Planning and the Polycentric Consensus: Wishful Thinking?'. Much of the concern regarding polycentrism was (and still is) associated to the several dualities intrinsic to this concept that can occur as well-though process of institutional cooperation or much more spontaneously as the result of structural development (Cattan, 2007).

First, polycentrism can be interpreted either

in analytical terms (as a way to describe and explain territorial distribution and growth) or in normative terms (as an ultimate purpose of governmental policy) (Schmitt, 2013). The less intuitive normative perspective has always lacked focus (Dühr, 2005) as that would entail finding new perspectives for territorial governance, but even the analytical perspective seems to be reluctant to break with the patterns of the past (Marques, 2016). European territories are still mainly conceptualized in two models (the center-periphery and the hierarchical) (Cattan, 2007; Marques, 2016), an inevitable consequence of the logics of economic and political competition. Consequently, polycentrism seems to be still very much limited to economic efficiency and intrinsic interactions, although there may not necessarily be a correlation (Vandermotten et al., 2007). Thus, authors were keen to stress that economic competitiveness could not be the sole indicator of territorial competitiveness (Hall, 2009).

Second, polycentrism can be divided between its geographical or morphological perspective (associated to the physical geographies of proximity) and its functional perspective (associated to relational geographies of connectivity) (Dühr, 2005; Hall, 2009; Schmitt, 2013; Marques, 2016). The perspectives are not mutually exclusive, but authors suggest that they should be treated distinctly, as there does not seem to be a correlation between the degree of functional polycentrism and the degree of spatial interdependence (Burger et al., 2014b; Burger and Meijers, 2012). However, several constrains such as the difficulty in treating qualitative information regarding fluxes between urban centres, have led to the constant favoring of the physical approach in most planning systems (Hall, 2007; 2009; Marques, 2016).

But this approach has been steadily criticized for being associated to weaker inter-regional connections and territorial organizations that do not fit with the dynamic reality of territorial and social interdependencies (Marques, 2016). Authors argue that polycentrism is more rooted in institutional and historical culture than spatial patterns (Ghorra-Gobin, 2007) and proximity does not necessarily imply a strong functional connection (Burger et al., 2014b). Therefore, territorial partners should be chosen by relevance and not proximity (Groth and Smidt-Jensen, 2007) and the hierarchy of centres should be defined by function and not size (Gløersen, 2007), and be based on networks and not poles (Cattan, 2007). Consequently, one of the major challenges has been to identify governance models more suitable to the Functional Urban Regions (FURs) (see Meijers, 2007) and not to the political jurisdictions. Even if it is recognized that the most relevant stakeholders are inevitably conditioned by territorial logistics, institutional restrictions and the relatively short life cycles of political agendas (Schmitt, 2013).

Third, polycentrism is extremely sensitive to matters of scale (Governa and Salone, 2007; Hall, 2009; Schmitt, 2013). The ESPON report defined three scales: macro, meso and micro (Dühr, 2005). The macro level relates to polycentrism at European scale, i.e. the promotion of growth in areas of global economic integration outside central Europe (Burger et al., 2014b). The meso level relates to the development of urban complementarities and the reduction of urban-rural disparities at inter-regional scale. Finally, the micro level relates to clusters of cities at intra-regional scale; urban regions functionally interconnected that may, consequently, more easily compete with other monocentric regions (Kloosterman and Musterd, 2001; Dühr, 2005; Meijers et al., 2007; Schmitt, 2013; Burger et al., 2014b).

Although Carrière (2007) advocated that the proper scale to analyse and implement the spatial perspectives of polycentrism should be the meso, Hall (2009) suggested that all scales could be used, but only if the inherent paradoxes were taken into account. For example, the promotion of polycentrism at an European scale may result in monocentrism at a national scale, particularly because polycentrism at an inter-urban and regional level is still under development (Marques, 2016). Likewise, because regions closer to the centre of Europe have a greater potential than peripheral regions for integrated polycentric development, the promotion of polycentric policies can contribute to increase the contrast between countries, instead of promoting territorial balance, as was supposed.

In this framework, by defining as its two main objectives (i) improve the economic competitiveness of the EU in the global market and (ii) achieve greater social cohesion in the EU by reducing regional disparities; the ESPON could actually have been supporting two mutually exclusive goals.

2.2. Then and now – the road ahead

In the last decade, Europeans authors have converged on a polycentric vision for the European territory focused on functional specialization and concentration of services and sectors (Dühr, 2005; Hall, 2009; Cattan, 2007). According to Hall (2009), urban systems should not be regarded as physical and administrative structures, but as 'spaces of flows' (Castells, 2006) of people and information; knowledge networks where other facets of functional, social or cultural interaction come to light (Marques, 2016).

Particularly after the Territorial Agenda 2020 encouraged 'cities to form networks in an innovative manner, which may allow them to improve their performance in European and global competition and promote economic prosperity towards sustainable development' (EC, 2011: , pg. 6), polycentrism has become an hegemonic objective of the European policy (Salvati and De Rosa, 2014), with some authors even arguing that it could be a more resilient and resistant instrument to face the implications of the recent economic crisis (Schmitt, 2013).

However, as Schmitt (2013) also points out, both the scientific community and professionals raise more questions than answers, as many of the relationships of cause and consequence between the polycentric metropolitan networks and relevant, and wished for, planning goals (such as economic efficiency or spatial equity), are not yet entirely proved (Vandermotten et al., 2008). Therefore many of the previously debated uncertainties remain unsolved.

Some authors have recently asked if polycentric networks indeed offer better pre-conditions for regional competitiveness or a better capacity for economic restructuring when compared with monocentric and/or non-integrated regions of similar size (Schmitt, 2013; Burger et al., 2014b; Burger et al., 2014a). The attempt for 'more polycentricity' can actually reduce the potential of a given urban system for exploring the available critical mass in terms of clustering advantages; or have negative implication on sustainable development (e.g. by promoting home-work commuting by car between poles). It is also not necessarily true that quality of living and social equity increase when territorial development becomes more balanced (Chorianopoulos et al., 2010; Hall, 2009; Schmitt, 2013).

At the same time, authors agree that it is dangerous too conceive a single model of territorial development at the European scale. Moreover, in empirical terms, it is difficult to identify an European region in which models of governance corresponding to a polycentric geography are being applied unconditionally (Cattan, 2007; Hall, 2009; Carmo, 2013; Schmitt, 2013).

On one hand, implementation must consider the multifaceted nature of the concept itself. A region may be considered polycentric when analysed according to a certain type of functional linkage, but appear monocentric and less integrated according to another (Burger et al., 2014b). For example, Arribas-Bel and Sanz-Gracia's (2014) conclusion that there is no tendency displaying the evolution from mono to polycentrism in the United States between 1990 and 2010 is solely based on employment data. Actually, Salvati and De Rosa (2014) debate the fine line between 'hidden polycentrism' and 'subtle dispersion' resulting from residential decentralization, whereas Schmitt (2013) accuses the great theories differentiating mono from polycentrism to be somewhat unrealistic. Thus, some authors are not convinced if the polycentric regions' model reflects spatial reality, or if it can adapt to it (Carmo, 2013), whereas others argue that the number of studies that empirically determine precisely that is increasing (Burger et al., 2014b).

On the other hand, what appears to be consensual is that much depends on how the concept is interpreted and on the different evolutions and characteristics of the territories themselves. That is, implementation must be made through local-based interventions planned at sub-national levels, which should integrate not only the urban centres that are part of the networks, but the respective surrounding rural areas (Carmo, 2013). However, authors have complained that the instruments of policy and the dynamics of governance that would allow conceiving, discussing and promoting urban systems at these levels are still absent (Hall, 2009; Rivolin and Faludi, 2005; Schmitt, 2013).

A decade ago, Faludi (2006) advocated the creation of a political and institutional core that would coordinate the complex network of interests and the possibilities at stake. But the passage from a scenario of competitiveness to a scenario of functional complementarity hides a complex puzzle of territorial governance that is not yet entirely solved, particularly because this change goes against the intrinsic logistics of

markets and stakeholders (Meijers and Romein, 2003; Schmitt, 2013). Indeed, the acceptance of a polycentric local-based model depends on a series of reconfigurations, negotiations, compromises and transactions in terms of location and organization of the various actors that are very hard to articulate (Carmo, 2013; Hall, 2009; Schmitt, 2013).

The truth is that planning practices have still not consensually accepted polycentrism, particularly in smaller areas. The reasons for that, according to various authors, include strong local identities (Kloosterman and Musterd, 2001); the perseverance of specific morphological, institutional and functional characteristics (Salvati and De Rosa, 2014); the existence of secular rivalries and different levels of trust between partners (Schmitt, 2013); or that which Hall (2009) calls 'local NIMBYsm'. The alternatives seem to have been the implementation of networks of institutional cooperation beyond the formal structure of planning, that include the local community along with the market's main actors but must manage the (often distinct) interests between them, particular through techniques of mutual communication. Therefore, top-down incentives may be required, so that complementarity is optimized and problems can be solved both strategically and locally at various levels of governance (Hall, 2009; Schmitt, 2013).

Based on the results of a project that included representatives from twelve European urban systems, Schmitt (2013) stresses that the key aspects to promote and use urban system as an adequate political response are still intrinsically related precisely to the development of institutional capacity and mechanisms of metropolitan governance. Although it is the hardest and most intangible point, it is necessary to understand the potentialities of each member of the network in order to manage their complementarities and define the functional division between urban centres. Namely, consider historical, geopolitical, institutional, socio-economic and scale specifications of each network, and what types and measures of intensity these inter-correlation functional linkages should entail.

Today there is no doubt that European agendas are explicitly polycentric (see 'The Pact of Amsterdam'; EU, 2016), even though some national agendas are still just so implicitly. The European polycentric pattern is now based on three criteria: i) the hierarchy of the urban structure; ii) the patterns of accessibility and connectivity and; iii) the structures and practices of territorial cooperation. Consequently, the success of the polycentric development is deemed to depend on the vitality of the urban areas and on the intensity of the interconnections, at the various levels they are established. Thus, most strategies revolve around the creation of more efficient transport networks between nucleus; the establishment of new urban poles to balance the networks; the intensification of certain types of land-use (industrial, residential, commercial) in pre-existing poles of greater or smaller dimension; or que requalification of derelict areas. However, the Schmitt (2013) points out, we are still far from having a concrete and positive evaluation on the effect of these practices, therefore much of the questions raised on the past decade are now challenges to overcome in the current planning cycle of 2014-2020.

2.3. Challenges for the current planning cycle (2014-2020)

Based on the review of the theoretical debate, nine major challenges for the successful application of polycentric models at European scale have been defined.

● Challenge 1: In a general sense, determine the validity, the utility and the potential of the concept of urban system in the context of polycentric development policies and with a view to strengthening Territorial Cohesion (Meijers, 2008; Schmitt, 2013).
● Challenge 2: Overcome the lack of uncertainty in the definition of a concept that by definition is multifaceted, dependent on scale and on territorial diversity, and therefore cannot be entirely homogenized throughout Europe (Cattan, 2007; Hall, 2009; Carmo, 2013; Schmitt, 2013).
● Challenge 3: Find a balance in the understanding and application of the various facets of polycentrism: between the analytical and the normative approach (Dühr, 2005; Schmitt, 2013); and between the physical and functional approach (Hall, 2009; Marques, 2016; Dühr, 2005; Schmitt, 2013).
● Challenge 4: Consider the historical, institutional, socioeconomic and geopolitical specifications of each territory (rather than just the interactions, the competitiveness and the economic efficiency), in the promotion or application of the urban system as a territorial policy

(Hall, 2009; Marques, 2016; Van Criekingen et al., 2007).

●   Challenge 5: Determine if the networks really offer better pre-conditions for regional competitiveness or a better capacity for economic restructuring when compared to monocentric regions of similar size (Burger et al., 2014a; Burger et al., 2014b; Schmitt, 2013)

●   Challenge 6: Create political, institutional and territorial governance structures at various levels that allow moving from a scenario of competitiveness to one of functional complementarity between actors and territories linked by networks (Carmo, 2013; Hall, 2009; Schmitt, 2013; Van Criekingen et al., 2007).

●   Challenge 7: Identify models of governance more suitable to the functional regions rather than to the political jurisdictions, even though recognizing that the most relevant stakeholders are hindered by territorial logistics, institutional restrictions and relatively short life cycles of the political agendas (Schmitt, 2013; Marques, 2016).

●   Challenge 8: Manage the compatibility of the ESPON report goals: can the improvement of economic competitiveness be achieved along with the improvement of social cohesion? (Governa and Salone, 2007; Hall, 2009; Schmitt, 2013).

●   Challenge 9: Prevent that the promotion of polycentrism at the European scale should lead to monocentrism at national scale, particularly because polycentrism at inter-urban or regional level is still under development and there is a lack of consensus in the planning of urban systems (Marques, 2016).

3.   URBAN SYSTEMS IN PORTUGAL: UNDERSTANDING THE POLYCENTRIC MODELS OF THE REGIONAL LAND MANAGEMENT PLANS (PROT)[1]

At the European scale, Portugal presents a relatively low level of polycentric development. Most of its territories don't possess the population density, the urban density and the size, at NUT III level, to be considered within the ESPON criteria (ESPON, 2016). In fact only the Metropolitan Area of Lisbon is catalogued as a 'potential MEGA', whilst the metropolitan Area of Porto is considered a 'weak MEGA'

and a few other locations are featured as transnational/national or regional/local FUA. This does not mean, however, that at a national scale, a relevant polycentric structure isn't being established (see Figure 1 illustrating urban size, home-work movements and levels of accessibility in the entire country for 2011, the last available Census data).

Portugal turned its policy of planning towards polycentrism in 2007 with the publication of the then new National Plan for Territorial Planning Policies (PNPOT). The PNPOT stemmed from the coherent system defined by the Portuguese Basic Law on Spatial Planning Policy and Urbanism approved in 1998, that also entailed lower-level regional (PROT), and municipal (PMOT) plans (Ferrão and Mourato, 2010). This national document "which was revuses between 2017 and 2019), aimed to promote a harmonious urban system that would support a territorial organization oriented towards cohesion and an integrated and competitive economy. It proposed an urban system model supported on four major urban structures of greater density, aided by a set of polarities and urban axes located in territories of lower density.

Consequently, the Portuguese Regional Land Management Plans (PROT) assumed a crucial role to carry out the development agenda of Portugal and support the creation of a system of integration and territorial cohesion. From the mid-2000s onwards, a nationwide process of writing and publishing the various regional PROT started, promoted by each region's Coordination and Regional Development Committee. The majority of the PROT were therefore published and implemented between 2008 and 2011. Three of them (North, Centre and Lisbon) were however never actually approved by the Council of Ministers of Portugal, although they have been (and still are) effectively used as a referential in planning for these regions.

This process originated an extended period of debate regarding mostly the role of urban systems in territorial organization and the implementation of regional territorial models. The PROT approach makes an analytical interpretation of territorial organization by promoting the regional polycentric potential. But at the same time it develops the normative structure, focusing on the need to further develop the
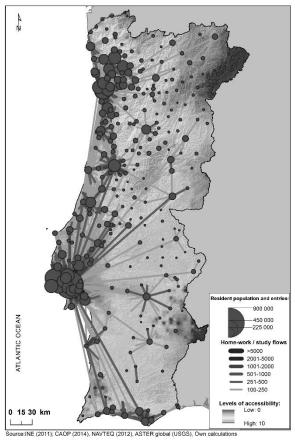
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[1] The first author Teresa Marques was responsible for conceiving the regional urban systems of four Regional Land Management

Plans (PROT) in Portugal: West and Tejo Valley Region; Alentejo Region; Centre Region; and, in co-authorship, North Region.

polycentric organization of the urban system. This vision is adopted as a goal of governmental policy.

Figure 1. Urban size, home-work movements and levels of accessibility, 2011

Source:INE (2011); CAOP (2014), NAVTEQ (2012), ASTER global (USGS), Own calculations

Within the Portugal 2020 program and concomitantly with the revision of the PNPOT, to continue this process would mean conceiving a funding program oriented towards specialization, solving urban problems and developing inter-urban and urban-rural complementarity networks. However, a critique that has been made to the urban policies in the Portugal 2020 horizon is that, instead of building on the policies debated with regional stakeholders within the PROT processes, they are simply operationalizing a series of sectorial guidelines covering different aspects of urban development.

Consequently, to study the Portuguese experience is to reflect on the pertinence of the various dimensions of polycentrism, and understand how the different structure of the territories has had important implications in each regional model's final design. For that, it is necessary to acknowledge and explore three main aspects intrinsic to their development. First, that the urban systems developed within the PROT have been conceived and structured according to regional characteristics, albeit framed by a common analytical methodology and a common political framework. Second, that the territorial models have been supported by territorial governance processes developed during the making of the PROT (a 3-year period), which included the establishment of a mixed coordination commission. And third, that the conceptual approach developed in these terms, which follows a set of general principles to territorial cohesion, was validated for most PROT. Each of these aspects is explored in the following sub-chapters.
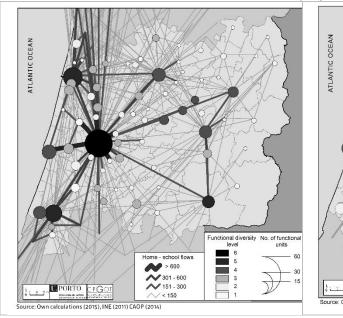
3.1. The common analytical methodology and political framework for creating regional urban systems
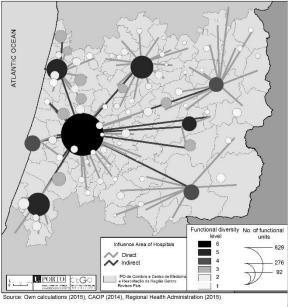
The Portuguese PROTs have assumed that the territorial models developed for the urban systems reflect different spatial realities and thus that the polycentric models should potentiate the individual regional characteristics. Consequently, the polycentric planning policies that have been developed within these plans integrate different forms of spatiality, which

include not only the urban centres that constitute the nodes and the networks, but also the surrounding rural territories. Both, urban and adjacent rural areas, have been perceived as distinct yet integrated realities. It becomes clear that the focus on polycentrism has been a way of contradicting the pre-existence of a bi-cephalous national urban system mostly centred around the metropolitan regions of Lisbon and Porto. By doing so, the country strived for building a territorial organization supportive of territorial cohesion.

The urban systems designed within the PROT have been based on two major approaches: the morphological and the functional-relational (see Figure 2). The first considers the size of the existing urban centres in a given territory and wishes to achieve a balanced territorial distribution between them. The second promotes the relationship between urban centres and aims to achieve, as much as possible, an equilibrium in the multi-directional connections that are established between them. Both approaches share the same basic principle; in a given territory they look for creating a greater balance in the importance of the urban centres, and a more balanced distribution of the inter-urban functional relationships.

Figure 2. A morphological and functional-relational approach in the Centre Region, regarding the offer of services in Education (left) and Health (right)

To perform the morphological approach, a reasonable amount of information was collected and analysed, including the number of inhabitants, the offer of employment and the diversity of functional offer (Figure 2). The importance of a given centre (or node) was, in this approach, given by an absolute value that refers to the size of the node in terms, for example, of population or number of services. The centrality was thus represented by the relative importance of the centre and the attracting capacity of its offer of services, commerce or employment.

For the relational approach, the information was based on variables such as commuting fluxes (home-school or home-work, as represented on Figure 1); the mobility of university students; the movements related to the consumption of goods, culture and leisure; and the relationships within inter-institutional innovation networks. These multi-directional movements were translated into different types and levels of centrality. Available information in official data sources was used, complemented by a questionnaire targeting mayors, whose purpose was to identify urban strategies and particularly inter-urban and urban-regional relationship networks (such as those represented in Figure 3). Between 75% to 100% of all mayors in each region answered the survey.
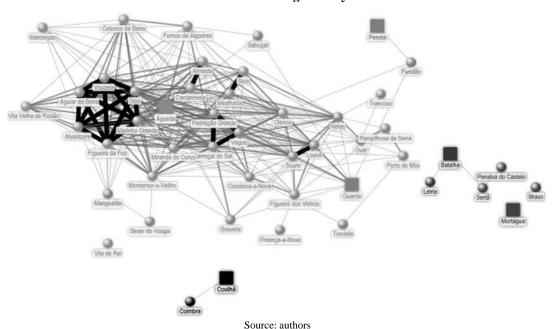
Figure 3. Classification of the urban relationships considering privileged territorial contexts. Each node is a Portuguese city

Source: authors

3.2. The processes for achieving Territorial Governance

As previously stated, the PROT have focused on the normative perspective as an attempt to create a new scale of territorial governance, following the assumption that a polycentric strategy could allow for a better territorial equilibrium (Schmitt, 2013). Furthermore, the territorial models that have been proposed for the development of polycentric planning policies also integrate the different and intrinsic territorial characteristics of each region, including not only the urban centres that polarize the networks, but also the surrounding rural territories.

Consequently, this acceptance of a local-based polycentric model and the subsequent generation of urban and regional synergies of complementarity/cooperation in several domains, depend on a series of negotiations and compromises between the various actors (Hall, 2009; Carmo, 2013; Schmitt, 2013). Therefore, to accompany the process of writing the PROT, and implicitly building the polycentric territorial models, a series of mix-coordination commissions (CMC) were created. These commissions were presided by the General-Director of Territorial Planning and Urban Development, and were composed of representatives from all sectors of the central administration, representatives of the municipalities and other relevant actors of each region.

In order to better coordinate the development of the PROT, the CMCs were divided into several sub-commissions, one of which was responsible for developing a regional diagnosis and building the territorial models for the regional urban systems. This organization was successful in a sense that it helped the flow of the work and allowed for the concertation of interests and ideas, thus creating a climate of confidence that minimized local or inter-sectorial rivalries. Even so, these processes had different degrees of intensity, and consequently different results, from region to region.
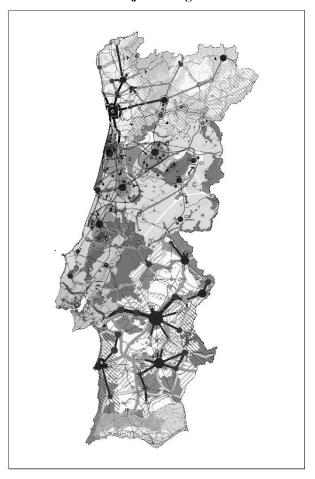
All in all, this model of coordination proved to be relatively effective in the creation of the regional territorial models. However, it did not continue into the future, and so a system of territorial governance that could promote the development of institutional cooperation networks and give continuity to the planning process was not conceived. The CMS actively participated in the development of a regional-based polycentric model, with the purpose of generating complementarity and cooperation synergies in various domains. However, the fulfilment of these goals was dependent on the negotiations and compromises between the actors, and these proved to be insufficiently articulated and little used to cooperation.

3.3. The establishment of urban systems supportive of Territorial Cohesion

3.3.1. The diversity of the national model

The consequence of the first two aspects was the establishment, in each region, of different territorial systems with different operational logics, that privilege and promote different processes of spatial, economic, environmental and social organization. Figure 4 displays a map of Portugal which merges the six urban systems defined separately by each of the six regional PROT. It is confirmed that the resulting polycentric policy encompasses different spatialities and differentiated regional realities.

Figure 4. Compilation, at the national scale, of the six territorial models produced by each of the six Portuguese Regional Land Management Plans (PROT): North, Centre, West and Tejo Valley, Lisbon, Alentejo and Algarve

Source: each respective PROT

In the North Region of the country, although the gravitational pull of the metropolitan area of Porto is undeniable, the urban system has been conceived in order to find a greater balance between this Metropolitan Arc in the Littoral Northwest (with a larger density of uses, infrastructures, and an entrepreneurial economic base), and the interior rural territory to the East (characterized by lower urban and infrastructural densities, and a strong environmental and touristic potential).

In the Centre region, the urban system has clearly been organized around two territorial units. The first is the metropolitan system of the Littoral Centre, of intermediate density and located between the two metropolitan areas of Lisbon and Porto (respectively to the North and to the South). The second is the contrasting Interior Centre, a rural territory with low density.

In the regions of Lisbon and West and Tejo Valley, the urban system has been organized, as the name implies, in two structures: around the Lisbon metropolis and within the West and Tejo Valley. The Lisbon metropolitan area is characterized, morphologically, by an extremely dense urban tissue, and functionally by the strong

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polarizing structure exerted by the capital. The West and Tejo Valley, to the North, is strongly connected to the Lisbon metropolis, and is characterized by a polynucleus urban structure.

To the South, the Alentejo region is characterized by a very extensive rural landscape of high environmental quality. The low demographic density and the concentrated population model, with urban areas apart from each other and regularly distributed throughout the territory, have been translated into an extremely well-defined polycentric structure, imprinted by a strong local character.

Finally, at the far South of Portugal, the Algarve region presents a context of great density and a very strong touristic seasonality. The proposed model contrasts the low rural density of the interior highlands to the North with a linear urban structure along the Southern coastline.

The edification of the regional urban systems in Portugal, supporting Territorial Cohesion, can then be summarized along three strategic vectors[2]: (i) regional corridors and polarities, that are be able to develop competitive and differentiated stances, and promote better relationships with surrounding regions; (ii) urban centres that structure the system of urban polarities and are able to differentiate them functionally; and (iii) urban subsystems that contribute to reinforce and balance the urban critical mass and improve spatial distribution. Each is shortly discussed forthwith.

3.3.2. Regional Corridors and Polarities

In the Portuguese PROT, the urban systems are supported by a set of corridors that require consolidation, both in transversal and longitudinal terms, in order to build an urban network highly related within itself, able to diffuse the services and the economies of knowledge and innovation, and increase international relationships.

The PROT Alentejo model, at the Centre-South of the country (see Figure 4) may be the prototype for such a distribution. The corridors house different territorial frameworks, different levels of accessibility and mobility, and different amounts of infrastructures (such as airports, seaports or train stations). Consequently, these specificities allow each urban structure to find a

differentiated strategic stance for innovation and internationalization. Thus, the main urban polarities are the anchors of regional development processes. Nationally, the strategies explore the proximities to the metropolis of Lisbon and Porto, whilst, facing East, also exploring the continuing relationship with the Spanish regions of Galicia, Castile and Leon, Extremadura and Andalusia.

3.3.3. The various types of Urban Centres

Urban centres with different sizes and functionalities (see Figures 4 and 5) consolidate the regional polycentric urban systems established in Portugal. These include metropolis, regional urban centres, structuring urban centres and complementary urban centres. Each of these types performs a specific mission within the urban system, and should develop a particular structure of inter-scalar relationships.

The metropolis should be able to create a favourable environment for innovation and international competitiveness, by having an efficient economic system and the capacity for external attraction. The efficiency and popularity of the infrastructures with a direct role in internationalization (such as airports and sea ports) are crucial, as is the capability to attract companies, foreign institutions and become part of international university networks. The capacity for innovation is directly connected to the levels of creativity and research in sectors focused on knowledge production. At the metropolitan level the capacity for accumulating wealth and fomenting relationships within the national system should be valued, whereas urban quality is seen as a key factor for external attractiveness.

The regional urban centres, in turn, have been defined by the concentration of resident population, the importance of their economic-base structure and by possessing a wide range of facilities and services. In order to reinforce their contributions to the polycentric structure it is expected that they should stand out as central poles for development within their respective regions. This means that it is up to these urban areas to lead and disseminate processes of innovation and social inclusion, supported by competitiveness and cohesion goals. Thus, they should perform functions of regional

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[2] This theorization in three vectors was initially constructed by the author Teresa Marques for the PROTs of the West and Tejo Valley; Alentejo and Centre, and has been adapted for the

specificities of each region. In PROT North this structure has only been partially applied.

articulation in strong multi-scalar networks, leading to innovation and economic development. By promoting institutional inter-relationships, with the participation of different social and economic agents (both public and private) and boosting multifunctional and thematic networks (such as heritage, intelligent or sportive cities), these centres can become integrated and motivated to pursue urban qualification and international affirmation goals, without the proximity or the contiguity between them being a necessary requisite.

The structuring urban centres have the purpose of developing a relatively diversified range of functions which include highly specialized functions. Like their name implies, they should stand out as structuring nodes for consolidating the regional urban system, by developing networks with a strong supra-municipal articulation with both the regional urban centres and the complementary urban centres. They should cooperate in the joint promotion of a socioeconomic space territorially articulated which fosters, likewise, territorial competitiveness and a productive and sociocultural cohesion. Institutional inter-relationships and multifunctional/thematic networks, eventually in complementarity with the regional urban systems, should also be developed.

Finally, a small group of complementary urban centres is needed. These include county seats; urban centres crucial to sustain low density territories and to promote urban-rural relationships. In order to perform their role in the support of Territorial Cohesion, they should have a minimum amount of basic urban services (related to retail, health, education or social support) as a way to improve quality of life in rural areas. Therefore, they should not only be local structuring nodes, and nodes of articulation with the regional urban system, but fundamental nodes of social-rural support. They should stand out as spaces for citizenship, resource optimization and meaningful life frameworks for local development.

3.3.4. Urban subsystems

Given the territorial dimension of the Portuguese regions and the distances that separate the various regional urban centres, it is at the sub-level, in the proximity relationships that are established between the urban centres, that the strongest functional and institutional relationships (both interurban and/or urban-rural) are registered. Consequently, urban subsystems constitute important elements to reinforce, morphologically, the balance of the regional urban system.
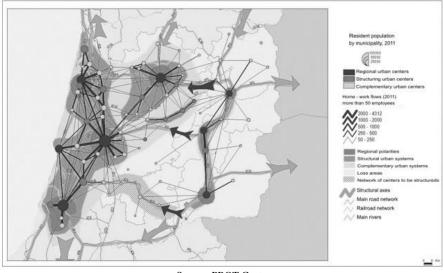
Figure 5. Urban subsystems and urban axes in the territorial organization of the Centre Region

Source: PROT Centre

The purpose is therefore to consolidate the polycentric urban system with a set of regional urban subsystems and urban axes of proximity, supported by mobility policies, interurban cooperation strategies and/or urban-rural partnerships. Thus, Central and Local Administration are expected to work together with Municipal Associations and other institutions to guarantee that these areas have a distribution of services and an offer of facilities which promote

multifunctionality, functional complementarity and territorial equity.

In this context of inter-urban cooperation, the available types of services should be organized as a function of the mobility policy to implement (physical or digital mobility) and of the infrastructures to use (fixed or itinerant services) as a way to ensure a high-quality offer of services and satisfy the needs of the population. Urban centres that are also county seats should possess a vast range of fundamental and necessary services to ensure quality of life and the sustainability of low density territories. At the same time, some public services of supra-municipal importance can be located according to a logic of inter-urban concertation, particularly in these low-density territories.

Lastly, like the complementary urban centres, they should stand out as spaces for citizenship, living, resource optimization and meaningful life frameworks for urban-rural local development.

4. EVALUATING THE PORTUGUESE PROT URBAN MODELS IN RELATION TO THE NINE EUROPEAN CHALLENGES

Considering the nine major challenges for the successful application of polycentric models at European scale, defined in Section 2.3, it can be argued, through the analysis performed on the implementation processes and the content of the polycentric urban systems in Portugal, that the country has only partially responded to these.

The Portuguese PROT have completely adopted the concept of urban system, accepting it as a cornerstone of the polycentric development policies and a valid element for strengthening Territorial Cohesion (Challenge 1). However, the uncertainty in the concept's definition (Challenge 2) has not been entirely overcome. All PROT followed the guidelines of the national PNPOT, hence their polycentric urban models share common directives, but each PROT also developed its own specific approach, so the ensuing final models are somewhat different. The way the specificities of each territory have been included in the models (Challenge 4) constitute a further proof that this is a multifaceted concept, that needs to be developed at different scales. In this particular case, the geographical and historical diversity of the Portuguese regions has dominated the design of the models, reflecting organizations and territorial identities built over centuries.

Consequently, the Portuguese approach has been focused enough to develop polycentrism at inter-urban or regional level (Challenge 9) and specific enough to balance the various facets of polycentrism (Challenge 3). The analytical approach has been vastly developed, in physical and functional terms; and there have been noticeable advances in the normative approach. Even so, there still appears to be a need to further analyse the intensities of the existing multidirectional and multi-scaler fluxes, as well as the functional correlations in the polycentric configurations. Although different relational dimensions (such as multi-level networks of home-work, home-school and research and innovation) have been introduced in the analysis, available statistical information is still insufficient to fulfil the required goals.

Furthermore, in analytical terms, no research has been developed to compare if the polycentric networks under study effectively offer better pre-conditions for regional competitiveness or a better capacity for economic restructuring when compared to monocentric regions of similar size (Challenge 5). Besides, in terms of economic competitiveness, the two metropolitan regions of Lisbon and Porto concentrate a large share of the exports and the GDP at national level. This means that Portugal has actually, in territorial terms, a bipolar economic model. The PROT have presented an economic polycentric model with the purpose of increasing the territorial scope of the national competitiveness. However, these polycentric development models have not yet been taken into account in economic governmental policies, and thus have not yet been able to constitute an alternative to the dominating model.

Indeed, the PROT have defined polycentric regional urban systems but have not explored models of regional governance that would allow a better transition from a competitive functional model to a complementary functional model (Challenge 6). During the making of the plans, the central administration displayed difficulties in becoming part of the collaborative partnerships, seldom involved in the actual processes and receding into a final control and approval position. On the contrary, the processes of writing the PROT were strongly participated by institutions of sectorial domains, regional and local administrations, and diverse organizations representative of several sectors of society.

However, a great difficulty in building consensus relative to the organization of urban systems was noted. These have been lengthy processes (between to 2 to 3 years of duration), which regarded the planning process as a space of construction of consensus and for sharing responsibilities. Each functional region actually displayed different modes of governance more suitable to them rather than the political jurisdictions (Challenge 7). Nevertheless, the intrinsic territorial, institutional and political restrains remain, and have been shown in very different forms from region to region. Therefore, it is necessary to continue the collaborative process with the purpose of building models of governance more suited to each region.

Indeed, the most striking fact is that all the collaborative processes that were initiated during the making of the polycentric models were not further promoted, and so have since been lost. Therefore, for the Portuguese case, it is still necessary to identify and discuss the potentialities of the cooperation processes, as well as the need to develop technical and institutional skills for cooperation. The concept of inter-institutional governance, focusing on promoting and managing complementarities between members of different networks, builds on the principle of decentralization of competences and the construction of changeable geometries of cooperation, which so far have not been accomplished and are only now being debated, with the ongoing processes of political decentralization.

Regardless, when designing the PROT, all regions tried to improve economic competitiveness along with the improvement of social cohesion (Challenge 8), even though only some actually achieved that goal. In some PROT the articulation between these different goals was worked out in territorial terms, whilst other regions approached distinctly the issues of competitiveness and territorial cohesion.

5. FINAL DISCUSSION AND CONCLUSIONS

A decade ago, Davoudi (2007a) asked if the concept of polycentrism was a 'panacea' or a 'dream'. Today, it does not seem to be one thing or another. It is a concept that has necessarily to be worked out at different territorial scales, involving several layers of actors. However, one thing seems to be less debatable: it has demonstrated the capacity to contribute to the major goal of Territorial Cohesion, thus overcoming critiques of being just 'wishful thinking' (Vandermotten et al., 2008) or a 'catchphrase' (Burger et al., 2014a).

Pursuing a political and planning agenda focusing on Territorial Cohesion, Portugal has clearly made a bet on polycentrism and polycentric models of development. The Regional Land Management Plans (PROT) are undoubtedly explicitly polycentric, having adopted the directives of the main strategic European documents of the last two decades, namely the ESDP, the ESPON reports and the Leipzig Charter on Sustainable European Cities. Yet although the PROT gave important contributions to the design of models of territorial development supported in polycentric urban systems, there were no further advances in the definition and implementation of models of regional governance capable of fulfilling, promoting and sustaining these strategic options.

Therefore, with the new Community Support Framework in operation, and with the revision of Portugal's national planning document (the PNPOT) near completion, it is necessary to reflect on these challenges for polycentric urban systems and territorial development and propose an urban model that responds to them. The literature has had some reservations in various theoretical and practical aspects concerning the concept of polycentrism, and indeed the conception and implementation of polycentric models, as in the case of Portugal, has not been without lack of consensus and institutional frictions. According to Burger et al. (2014a) the most important step is to understand the dynamics behind urban systems and the extent to which they can actually be planned to become more polycentric and spatially integrated (and we might add more cohesive). Therefore, analysis should be made on the territorial and functional impact of specific types of planning policies on polycentric urban systems.

By analysing the Portuguese case, it becomes clear that incentives need to be created to reinforce and optimize the institutional inter-relationships and the urban-urban and urban-regional complementarities. Based on the territorial models at regional scale, constructed from the analysis of the urban system, it becomes possible to coordinate policies and execute strategies. But, within the regional framework, the diagnosis and the strategies should be developed locally, in order to manage the different interests at stake and implement measures of

regional policy aimed at reinforcing complementarities. This implies a social and political recognition about the advantages of cooperation and of sharing responsibilities in various domains (economic, social, environmental, cultural and so on). The territorial subsystems, introduced in some of the territorial models of the newest PNPOT, evince strong relationships of proximity, as these territories are structured around the home-work and home-school commutes, and the mobility patterns associated to consumption and access to services. That is, they are structured within an inter-municipal scale, adequate for the promotion of local cooperation strategies.

This being said, it should also be noted that the territorial subsystems present different configurations and different levels of consolidation, which means that they require different approaches in terms of territorial planning and governance. Policy measures aimed at inter-urban and urban-rural cooperation should be distinct according to specific territorial contexts. For example, subsystems with high levels of attraction, such as those of Lisbon and Porto, may present increasing problems of mobility and social and environmental sustainability, hence processes of integrated and collaborative planning and governance need to be devised. Other subsystems, corresponding to inter-urban structures where rural territories are anchored, require economies of scale in order to support integrated investments related to the promotion of local or inter-territorial capacities, or the allocation of services according to territorial needs. And in low density contexts, where institutional weaknesses hinder collaborative processes, it is important to develop mechanisms for greater

territorial cooperation, organizing varied yet disperse resources in order to create sufficient critical mass.

Consequently, considering the different territorial contexts, these inter-urban and urban-rural strategies should be able to: respond to population decline by focusing on policies for attracting residents (temporary or not); develop actions to promote and increase sustainable mobility by, for example, increasing the offer of public transports; improve the accessibility to and the quality of services of general interest; promote and consolidate local or regional ecosystems of economic innovation; and improve energetic efficiency and promote circular economies. These territorial challenges need to be oriented towards reinforcing the functional connections between urban and rural areas (for example by promoting the value chains, implementing short agri-food circuits; attracting youths and economic activities or promoting natural, landscape or cultural resources); and reinforcing the functional connections between other scales, such as interior-littoral, north-south and of national-international (which implies the creation of intra-regional and transnational cooperation networks).

In conclusion, it seems crucial to acknowledge that urban and territorial planning is an all-important political tool for regional and local development, and that toolboxes with concrete action measures need to be developed. These should be able to produce solutions which work at various levels, cross various sectorial domains and are territorial differentiated, hence reinforcing inter-urban and urban-rural relationships and overcoming territorial, social and economic dichotomies.

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