The Historic Centre and The Centralities in Évora - Structure and Dynamics

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Introduction

Centres and centralities are fundamental elements of the urban structure and reflect its growth and evolution. Centralities can be seen from a functional viewpoint (land uses), a historicist (legacy of the urban past) viewpoint or an architectonic viewpoint (morphological character) (Cutini, 2001). Historic centres are a special case, for the fact that they constitute the original nuclei, for their historical/heritage-related importance and for the interdependence and co-evolution in relation to other urban centralities.

This paper is based on investigation work that used the city of Évora in Portugal as a case study. Évora is a medium-sized city (approx. 45,000 inhabitants) and is the main urban centre in the region it is located in, the Alentejo, which is in the southern half of mainland Portugal. Its historic centre has been recognised as a UNESCO World Heritage Site since 1986.

Up until the 1940s the city was all but contained within the city walls. It was in this period that planned expansion beyond the walls began. However, the new planned neighbourhoods were an insufficient response to the need for housing of a growing population and there simultaneously emerged, up until the 1970s, a number of illegally developed urban nuclei. Between 1940 and 2000 there was strong growth in the city’s population (which roughly doubled) and its size/surface area.

The growth of the services sector characterised the latter half of the 20th century, and more pronouncedly so from the 1970s onwards. The establishment of Évora’s university (1979) and diverse public services had a particular impact on the city’s development. The urban structure was characterised by mono-functionality up until the 1990s. In that decade the tertiary activity was still largely concentrated within the city walls and the city centre was still the city’s main hub of employment. In the last two decades the city’s functional structure has become more complex: commerce and services have spread in the urban area and multi-functionality is now patent in a number of urban areas outside the city walls. The distribution of employment in the urban area has also changed; there are now two main hubs – the historic centre and the city’s southern zone – and a number of centralities have emerged.

The aim of this paper is to identify and characterise the centralities that co-exist in the city of Évora and, proceeding from there, to characterise the urban structure and respective transformation dynamics over time, as well as the critical factors involved in the emergence of the new urban centralities. It simultaneously aims to:

- assess the role the historic centre has in the city and
- how the successive planning and urban development policies have dealt with the emergence of peripheral centralities and the conservation of the historic centre.

1. Identification and Structure of Centralities

Identification of the centralities was based on the land use, more specifically on the pattern of distribution of commerce/retail trade and services. Characterisation of the centralities and the urban analysis were based on two complementary methodologies:

- functional survey – making it possible to identify the existing functions and their degree of specialization;
- syntactic analysis – urban morphology is characterised by diverse location potentials for central functions.
1.1 Characterisation and composition of centralities – centricity functions and index

A study of the land uses and their distribution throughout the city enabled us to identify 14 concentrated areas of commerce/trade and service that constitute centralities, in addition to the historic centre (Fig. 1).

The composition of the centralities depends on the functions present, whereby the variation in the weight of retail trade, services, facilities or public services is obvious. In all, 33 main functions were identified. The café/snack bar is the only function that is present in all centralities. Also worthy of mention for their presence in diverse centralities are functions such as restaurant, clinic/doctor’s office, fashion/garment store, hairdresser, ATM, bank branch office, homeware store, tobacconist/newsagent, mini-market/grocery store and estate agent.

Fig. 1 – Location of historic centre, centralities and respective rings

![Location of historic centre, centralities and respective rings](image)

Fig. 2 – Centrality Index for centralities arranged in order of number of function units

![Centrality Index for centralities arranged in order of number of function units](image)

The Centrality Index (CI) was determined on the basis of the number of functions and their degree of specialisation, taking as a basis eight function classes defined for the regional urban system (Portuguese National Statistics Office, INE).
Each of the eight classes was given a weighting value, with the Centrality Index for each local centre being the sum of the weighting of the existing functions as given by the following formula:

$$IC_i = \text{Sum } i,j (N_{j,i} \cdot V_j),$$

where $IC$ is the Centrality Index of centre $i$, $N$ is the number of functions in each centre $i$, $j$ is the function/activity and $V$ is the value, which is a function of the specialisation level.

Fig. 2 presents the obtained results. They show:
- a correlation between the number of function units and the CI, although there are also deviations from this rule;
- in determining a hierarchy of centralities, the HC (historic centre) has a CI of 1007, followed at a considerable distance by the second centrality;
- the lowest values are for centralities in residential zones or located in the peripheral ring;
- the highest CI values are for centralities that are based on the ring road around the city walls and are close to the HC or centralities located between this ring and the outer ring to the south, reflecting the city functional pattern; there is only one exception to this pattern (centrality 14).

1.2. Location of centralities in relation to urban structure elements

Distribution of the centralities in the urban area is not homogeneous, reflecting the city’s non-homogeneous growth. Accordingly, the highest density of centralities is to be found to the west of the HC – ten centralities. A majority of the centralities (nine) are located in urban sectors adjacent to the HC. More distant from the main centre are the centralities Bacelo/Coronheiras and, to a lesser extent, Quinta do Moniz, Cruz da Picada, Malagueira and Vilas da Cartuxa (Fig. 1).

In terms of the urban structure, the service-based centralities, with an above-average CI, are located in the multifunctional transition zone surrounding the HC – Urbanização da Muralha/Rossio Ocidental, Horta dos Telhais and Horta da Porta. Most of the local centralities are located in predominantly consolidated residential sectors and some others in the peripheral ring, such as Bacelo/Coronheiras (the centrality furthest away from the HC), Quinta do Moniz and Vilas da Cartuxa.

In the case of Évora, the location of the centralities roughly follows the distribution of the resident population and respective population density, with nine local centralities in areas with a population density greater than 50 inhabitants/hectare; the same is the case for three service centralities. Again the importance of the western zone of the city is evident here.

The location of the centralities is directly linked to the fundamental road network. Of particular importance are the axial roads in the direction of the HC, namely the only old streets, where commerce and services tend to be located (centralities nos. 4, 6, 9, 11 and 14), as well as in the continuation of these roads, confirming the view put forward by Panerai et al (2009). Other centralities (nos. 2, 7, 8 and 14) depend indirectly on the main radial axes in the direction of the HC, and are located in the proximity of those axes.

1.3. Centralities and urban form – application of syntactic analysis

We applied the configurational model based on the space syntax theory, the methodology for which, developed by Hillier and Hanson (1984), was explained in The Social Logic of Space. The aim of this theory is to understand the morphological structures, quantification and modelling of the configurational properties and the comparison between the various spatial systems (Heitor et al, 1996). Axial maps are graphic configurations for describing the morphological properties of the urban forms (Heitor et al, 1996).

The interaction between the elements that make up the urban space generates differentiated flows of persons and vehicles (Medeiros, 2012). The syntactic analysis is based on the role of the urban grid as a generator of movement, and thus a determinant for the location of activities (Cuttini, 2001), whereby the latter effect is particularly evident when it comes to pedestrian movement. The
differentiated flows confer upon the different urban spaces differing potentials in terms of movement and, accordingly, accessibility, attractiveness and utilisation.

Syntactic analysis considers that the urban grid is made up of a set of segments that present varying values in a chromatic scale for:

- connectivity – number of direct connections established by each segment;
- global integration – relationship or distance between each segment and all others;
- local integration – average distance in relation to the surrounding areas only, taking only a limited number of segments into consideration;
- choice, which reflects the hierarchy of the urban spaces through indication of preferred courses.

Integration is the most important syntactic indicator and can be regarded as a pure index of accessibility that is determined by the grid itself, regardless of where the activities are located (Cuttini, 2001). The most integrated axes are the most accessible and most permeable ones in the urban space. Higher overall or local integration scores correspond to greater accessibility, and thus to a location potential that can reflect a greater diversity of land uses, greater construction density (higher buildings, for example) and the location of commerce and services. Segments with a higher degree of integration, and thus with greater accessibility, have greater potential for the establishment of central functions. According to Hillier (2001), the functional centre corresponds to what is known as the integration nucleus, which consists of the segments with the highest overall integration: in red, orange and yellow. Other authors argue that the centre should be determined on the basis of a proportion (10%-25%) of the most integrated lines, the bigger the proportion as smaller the urban area is, assessed in terms of the number of segments (Serdoura, 2008).

The axial map of Évora was conceived on the basis of the potential for vehicle travel in the whole urban area\(^1\). In Évora the segments with below-average global integration values are located predominantly in the peripheral urban ring (Fig. 4).

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\(^1\) We built the axial map of Évora using the digital base map in autocad and updating it using satellite images and aerial photographs. We then converted the base map of segments of the Évora urban area into an axial map using depthmap software and applying the respective analysis tools.
The segments with above-average values are located in the first ring of residential neighbourhoods around the HC or the transition zone close to the HC. The highest values are to be found in the axes that make up the ring road around the HC and the surrounding streets, which present themselves as an integration nucleus, and in the radial roads that lead out from the old city gates, be they main, secondary or local distribution roads. The ring road around the walls thus presents a high degree of attractiveness for multiple functions, thus confirming the viability of the Évora Urban Land Use Plan’s spatial planning model (2000), particularly to the south of the HC, in the area around the Rossio square. Most of the HC streets have global integration values that are close to the city average – approx. 0.50. One can observe a strong correlation between high overall integration values and seven centralities.

The local integration map (R3) of the Évora urban area reflects the existing road hierarchy, including the radial roads running in the direction of the HC. It also reflects the importance of the secondary roads and local distribution roads, namely those that connect neighbourhoods and urban sectors. One can observe a significant number of high local integration segments to the west and the south of the HC. The location of shops and services coincides with the axes with the highest local integration values. Centralities 1, 4, 8 and 9 have very high local integration values (Fig. 5.).

The choice values roughly reflect the road hierarchy in the city of Évora, including the ring road around the walls and part of the outer ring road, the bypass road to the north, the radial roads that run in the direction of the walled city (Fig. 6.). There is strong correlation between the location of the urban centralities and the choice scores, which is symptomatic of the hierarchization of urban spaces. With only two exceptions, all centralities are based around high choice score roads or are in their immediate vicinity.

The part of the city within the walls (the HC) reveals a loss of accessibility resulting from the city’s growth outwards, but also from the imbalance in the city’s structure due to its expansion to the south and west. In this context, implementation of the Évora Urban Land Use Plan may give the city back its balance and strengthen the role of the city centre.

High CI scores coincide with high overall integration scores in centralities 5, 10 and 12 and with an average-to-high overall integration score in centrality 6. In both centralities 6 and 7 the road network hierarchy is the decisive factor, with the respective overall integration scores being average. This allows for the conclusion that accessibility – overall and local – is important for the location of shops and services and, therefore, for the assertion of centralities. There is a correlation between high CI ratings and high overall integration scores. This is reflected in the choice of the more specialised functions to be located in urban spaces with a high degree of accessibility. The lowest CI rating coincides with the highest local integration scores, where pre-eminently local purposes predominate.

1.4. Centralities, types of centrality and network

The research work in Évora identified five centrality types:

I. **Historic Centre (HC)** – main centre, multifunctional, having a large diversity of functions, a large number of function units and a very high CI;

II. **Service Centrality (SC)** – characterized by the presence of diversified and very specialized functions, also featuring some not very specialized functions of local importance and having an average/high CI (centralities 5, 10, 12);
III. Commercial Centrality (CC) – a diversified and peripheral concentration of shopping activity, mostly linked to a hypermarket and featuring functions of supra-local importance, with an average/high CI (centrality 7);

IV. Local Centrality 1 (LC1) – a proximity centre in which non-specialized functions of local importance predominate, together with specialized functions of supra-local importance, with an average or average/high CI (centralities 2, 4, 6 and 14);

V. Local Centrality 2 (LC2) – a proximity or neighbourhood centre where non-specialized or very little specialized functions of local importance predominate; there is an almost total lack of specialized functions; low CI (Bacelo/Coronheiras, ZU1/Nau, Cruz da Picada, Malagueira, Vista Alegre/António Sêrgio and Shopping Galleries in Vista Alegre.

One can conclude that the city has a highly hierarchized centrality network that is centred on the main centre – the HC or the city centre within the walls – with a high CI. This centre has been expanding westwards via a multiplication of SCs and LCs, and the complementarity between the city centre and the periphery is evident. There is no secondary centre that could be positioned between the HC and the LC. We can thus corroborate the conclusions of other studies on Évora (Salgueiro et al, 2007; Simplício, 2012).

The LC1s and LC2 are located close to the secondary and local road network, which links urban sectors and neighbourhoods, as is the case for centralities 1, 3, 6, 7, 9 and 11. The centralities that are based on main road axes are those that are located next to the ring road around the city walls (centralities 4, 5, 10 and 12). Centrality 7 is located close to the outer ring road and the old EN 380 road and centrality 2 is adjacent to one of the gates in the city walls and the EN 254 road. Intersections between secondary roads, or between secondary roads and local distribution roads, or also prominent locations for the emergence of centralities (centralities 3, 4, 5, 6, 7, 9, 11 and 12).

Network form

![Network form](image)

Fig. 6 – Form of the centrality network

The centralities with the highest CI scores, with the exception of the HC, form a Y shape in spatial terms, with the HC at the centre. To the north, east and west of this Y, in relatively peripheral positions in the network, are the centralities with lower CI scores. The centrality hierarchy reflects proximity to the HC and to the main road network. Indeed, the centralities with the highest CI scores are based on or located in the immediate vicinity of the main radial roads or the ring road around the walls, with the exception of LC6 (Horta do Bispo/Horta das Figueiras).
The service centralities (SCs) located around the HC reveal a tendency to form a ring which, in the future, may also include the area around the HC to the south, namely the Rossio square itself and centralities 3 and 4. This may be demonstrative of the previously mentioned spread of the tertiary sector from the HC or may be indicative of the “gravitational attraction” of the traditional centre (Fig. 7.) as the city grows.

The Historic Centre

The historic centre of Évora is essentially the city centre within the city walls. With a surface area of approx. 100 ha, the urban fabric is mostly mediaeval in origin. The HC occupies a central position in the city, a topological centrality resulting from the convergence of paths from ancient times. This centrality has been threatened by the urban expansion and by restrictions in terms of expansion of tertiary functions and accessibility by motor vehicle.

We estimate that the number of function within the walled city centre is 102 – for a total of 880 function units (2006) and a CI of 1007. The data we gathered allow for the conclusion that the HC features a large number of function units and a high degree of functional diversity.

One can highlight the very specialized functions (9): general hospital; rehabilitation centre; CAT centre; job centre/employment office; museum and art gallery; theatre; higher education; library. It is evident that the majority of the above functions are public or institutional in nature.

The Historic Centre and the city

The resident population within the walls accounts for just over 11% of the total population of the urban area (2011). The population density in the HC is 42 inhabitants/ha, which is higher than that for the overall urban area (28 inhab./ha), and is characteristic of old urban fabrics and central areas.

As far as the spatial distribution of economic activity it the city is concerned, and based on the available data, the walled city centre remains the main location hub for businesses, accounting for more than 1/3 of the total. The distribution of the retail trade is worthy of mention, given that almost one half of shops were located in the historic centre in 2006. The importance of the tourism activity is reflected in the share of the number of accommodation units within the walled city (58% of the municipal total in 2013).

The location of the main public authorities and services in the city, namely the decentralized offices of the central government, including a number of regional directorates, reflects once more the functional centrality of the walled city centre, although some departments have moved to outside the walls. In terms of collective use facilities, although most of these are now located outside the walls, the HC does present the highest concentration of the five urban zones analysed. One can highlight in particular the cultural and leisure facilities (79%), justice dept. facilities (89%), educational facilities (36%) and social security facilities (29%).

The centrality index score determined for the HC (1007.2) is by far the highest in the city (see Fig. 2), showing that the HC remains at the top in the hierarchy of centralities and activity hubs. In other words, it remains the centre of the city, as asserted previously.

2. Dynamics

The emergence of centralities during the second half of the 20th century and in particular after the 1980s accompanied the evolution of the urban structure and form. The city maintained a pronouncedly radial form up until 1990, due to the fact that the paths/roads that led to the ancient city nucleus provided the basis for the urban development (Fig. 8.). The radial form reflects the monocentrism, the functional predominance of the old centre, which survives today. The emergence of circular roads, intersections between these and the radial roads, has resulted in high levels of accessibility in urban space of the areas of expansion, thus giving them location potential for the establishment of trade and services.

Up until 1990, Évora was characterized by the mono-functionality of its various urban sectors, with tertiary activities concentrated in the HC surrounded by residential areas and with industry and
warehouses located to the south of the HC. The tertiary activities gradually spread around the urban area, mostly to the west and south. From the 1990s onwards, when the urban expansion outside the walls was consolidated, diverse centralities emerged outside the walled city and a more balanced pattern of distribution of activities emerged in the city, in particular in terms of complementarity between the traditional centre and the periphery and a certain functional mix is now evident in residential zones, which are now home to proximity retail outlets and service facilities, amongst other facilities.

The emergence or formation of centralities may be related with the growth of the city, but, above all, it has to do with its functional evolution. Indeed, the functional structure of cities tends to become more complex over time, as a result of the increase in the urban area (Gaspar, 1985). The formation of local centralities has been indissociable from the consolidation of the urban space itself, emerging a number of decades after the resident population installed itself and generated a demand for retail trade and services. In Evora the time gap of 20 years is patent in six local centralities (1, 3, 6, 9, 11 and 13).

The dynamics of the Historic Centre

The resident population in the HC has been in decline for seven decades (4,738 in 2011, which is roughly ¼ of the figure for 1940 – 18,500 inhabitants). The ongoing ageing of the resident population was partially offset by new residents settling in the city, as demonstrated by the increase in the population with higher education between 1981 and 2001 and by the increase in the number of university students.

In the mid-1970s the progressive physical and social decline of the walled city area became evident. A progressive trend toward tertiarization was accompanied by the degradation of the built fabric, limited conservation efforts and the persistence of insufficient habitability conditions in many dwellings (Carvalho, 1990). The existence of many buildings in a bad state of conservation was regarded as the main problem facing the HC (Municipal Master Plan, 1980). From the 1980s onwards there was been an increased rehabilitation effort that has resulted in improvements in the state of conservation of buildings and in the habitability conditions (Simplício, 1997).

The summary of the functional dynamics and the evolution of the conservation of the walled city, the most important developments in which are presented in Fig. 9, allows for a number of conclusions to be drawn. From the 1980s onwards there was indeed a gradual improvement in the conservation of building and conditions of habitability which coincided with a cycle of tertiarization and decrease in the resident population, which was partially offset by the new student population, which were not permanent residents. This conjugation of factors led to a strengthening of multi-functionality through new investment in the HC. The decrease in the population may initially have had a positive effect on habitability, given that it also resulted from the over-occupation of the existing dwellings and the search for better living conditions outside the walls, thus paving the way for renovation interventions.
The tertiarization was fostered and regulated by municipal actions and was a result of the convergence of private sector dynamics and the growth of public bodies/authorities. To a certain extent it had a positive impact, in that it showed the importance of central functions for the revitalization of the historic city. The decline in certain activities – warehouses, workshops, food retail – can also have had a positive effect, as it favoured the installation of more qualified or appropriate uses. One can therefore conclude that the decline in population and tertiarization are not necessarily negative phenomena and can, within certain limits, generate new balances.

The data we have at our disposal shows a pronounced growth in services in the first decade we analysed (1985-95) and a drop in the number of retail and services units in 2007 in comparison to the preceding period. This drop was more accentuated for retail units – from 568 to 375.

3. Centralities in urban planning and in policies

The public policies furthered the emergence of centralities in diverse ways. The consolidation and remodelling of the road infrastructure network had an effect on the locational decisions made by businesses. The construction of a fundamental road network outside the walled city was particularly important. The building of the outer ring road and the branch roads to the south contributed to the dissemination of retail and services in that area.

As far as planning is concerned three main guiding principles had a major impact on the emergence of centralities:

- a radio-concentric urban form, not yet consolidated but in clear evolution from 1945 onwards;
- the functional structuring of the city, with the advancement of the multi-functionality of the neighbourhoods outside the walled city, particularly from 1990 onwards;
- retaining the historic centre as the city’s main centre.

Since 1947 Évora’s urban land use plans have provided for the existence of local centralities, or tertiary activity areas outside the walls, with the historic centre being considered the city centre. But the plans were only partially implemented, with the planning department using a range of instruments to promote centralities:
- the establishment of centralities through direct execution of the urban development plan (1947) and public housing programmes;
- the concentration of public facilities and services, the most recent example of which is the chosen locations for the new parish councils (after 1997);
- zoning, namely for the location of retail and services and public authorities, tertiary activity zones and other economic activities and the establishment of complementary uses to housing in the residential zones;
- detail plans and urban development studies and implementation thereof, either at the direct initiative of the council or through collaboration between the council and property owners;
- imposition of tertiary activity uses in dealings with private developers;
- execution of the fundamental road network and linking of the network with green spaces with non-residential uses
- promotion of retaining important central functions in the HC – administration, university – and the transfer of some uses due to restrictions on alteration of uses;
- establishment of large retail spaces/hypermarkets.

The successive versions of the plans reveal the evolution away from functionalist planning, very much based on segregation of functions, to the fostering of mixed functions and complementarity. These facts reflect the evolution the urban planning discipline itself, criticism of the functionalist city and the limits and disadvantages of zoning.

The revision of the Urban Land Use Plan (2000) was aimed at improving quality of life and furthering the multi-functionality of the neighbourhoods and integrating them into the city by making changes to the rigid zoning in force prior to the revision. Here one should highlight the concern with complementarity of functions and the requirement of a certain degree of mixture of uses, achieved through the imposition of non-residential uses on the ground floors of properties built in areas of expansion.

4. Conclusions

The urban occupation, the medium-high population density and the hierarchy of the urban spaces, in particular the fundamental road network, are decisive factors for the emergence of centralities. There is a direct correlation between the evolution of the urban structure, the spatial distribution of the functions and the urban form and the emergence of centralities.

The urban morphology is a supporting factor for local centralities. Secondary road axes that interconnect the urban sectors, and the intersections of these roads, take on particular importance for the emergence of local centralities. Urban spaces with a high degree of accessibility have the conditions to support trade and services and central functions.

The HC has simultaneously been the city’s shopping, administrative, educational, cultural and symbolic centre, maintaining a high degree of multi-functionality. The planning process has tried to reconcile conservation of the architectural heritage and the retention of multi-functionality, with diverse activities and central functions. In accordance with the typology defined by Troitiño (2003), we also found that opinion that the walled city of Évora remains the main centre of the city, although the loss of topological centrality, which has to do with the growth of urban areas peripheral to it and the imbalance in the urban structure, may result in a progressive loss of functional centrality.

The establishment of the university and recognition as a UNESCO World Heritage Site have had a positive impact on the HC and its level of activity.

As a final remark this case study found no direct correlation between the decreasing resident population, the tertiarization process and the decline of the built fabric. On the contrary, the tertiarization and drop in the population density seem to have made an important contribution to the conservation of the built fabric through the resulting establishment of new activities that are more appropriate for the HC and its traditional weaknesses.
References: