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Polycentrism and Effective Territorial Structures: Basilicata Region Case Study

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Abstract. The term 'polycentrism' describes a model of territorial settlement of all human activities in which there are a plurality of connected centres. Polycentrism refers to two very important aspects: the morphological one, which concerns the distribution of built environment in the territory, and the functional one, which concerns the relations between the different poles.

The study for the identification of territorial structures in Basilicata region was conducted through the analysis of several variables: the demographic structure, the infrastructural endowment and the organizational models that condition territorial accessibility. This led to the delineation of a decentralized network scheme, formed by several centralized networks whose nodes are connected to the node of the main network. Three levels of polycentric hierarchy have been identified in Basilicata. Those correspond the urban centres with the highest population density in which the concentration values of services and equipment are meant. The proposed geography represents a relevant starting point to compare ex-ante and ex-post scenario of current programming acts.

Keywords: Polycentrism · Urban poles · Infrastructural endowment · Accessibility

1 Introduction

Defining a polycentric territorial model [1–3] represents a challenge looking at the systematization of spatial data and information in order to understand the mechanisms that determine the spontaneous/endogenous organization of demand and consequently the services and equipment supply. This is an interpretative approach to settlement dynamics, infrastructural endowments and organizational models. Those components strongly influence territorial accessibility and lead citizens to self-determine residence and systematic movements according to criteria of optimization on those individual choices that represent the ways in which space and territory are used. The research for

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rules and criteria contributing to the definition of the polycentric settlement model are useful in planning of sustainable forms of territorial development. This approach is a substantial and critical exercise in the management of so-called "weak demand territories" (i.e. low settlement density) in which rules and standards defined for the organization of large metropolitan aggregates lose their effectiveness. This is the case of Basilicata, one of the regions with the lowest population density in Italy (56.3 inhabitants/sq.km). Furthermore, the region is characterized by a development delay deriving from a secular infrastructural deficit; it is looking for development strategies based on autochthonous resources linked to the system of widespread naturalness and the uniqueness of historical-cultural values and the quality of primary sector productions which recently are in conflict with the widespread settlements of the oil industry [4, 5].

This work considers two main information components for the definition of polycentric geographies: the demographic structure of the settled population and the provision of services and equipment. The first, extensively documented through statistical census data, presents a summary view of the main socio-economic variables of the territory. These have been analyzed considering the trends which emerge from ISTAT census data and annual projections. In particular, demographic trends show the structural territorial weaknesses linked to the depopulation and abandonment of the minor centres. In fact, a continuous migration process intensified over years: since the national "economic boom", the Fifties and Sixties. The other information component for the definition of polycentric geographies derives from the reconnaissance and detailed mapping of the current offer of public and private services that determine different levels of territorial endowment. The endowment of services and equipment is a parameter that can be interpreted as an indication of territorial quality of life in absence of specific investigation. It assumes additional value as a mean of benchmark with other territorial realities. On the other hand, it can be considered as an assessment of deficit, i.e. the absence of minimum requirements for the supply of services and equipment with reference to the urban functions performed by each territorial unit.

For the definition of forms and structures of territorial organization for the Basilicata region according to a polycentric approach (cfr. [6]), the empirical studies conducted by Christaller [7] and Zipf [8] still represents the major references. Their works showed that, through agglomeration economies, within apparently balanced urban systems, cities of different sizes coexist with different economic functions. This explains the reasons for the existence of centres of various sizes and their distribution within the territory according to their size and mutual distance. The result is a specialization of the functions that each centre performs and a hierarchy of the centres themselves.

Using open source data and data available online, processed through geographic information systems (GIS), it was possible to define a map of territorial services within the entire Basilicata region [9].

2 The Data Processing and Construction of the Polycentric Model for Basilicata

Basilicata region is characterized by a high degree of structural backwardness that originates from troubled historical events and its peripherical geographic conditions. The demographic structure is characterized by a historical tendency to depopulation as a consequence of migratory processes [10]. Based on the data relating to the demographic structure of the population collected through the latest Censuses, Basilicata is characterized by a negative demographic trend (census data 1991–2011), an ageing population (more than National average of >60 in 2011), a decrease in young people and an increase in foreigners' presence [11] (that cannot balance the emigration and generates social concerns in small villages). The demographic analysis provides an image of the region that is characterized by a considerable polarization in a few fulcrums and the relevant depopulation of the internal areas which favors the intensification of regional disparities. Areas characterized by population increases are provincial capitals, Potenza and Matera, and municipalities located in their hinterland. In addition to these areas, there are other attractive centres in the region, such as the Vulture for the presence of the FIAT - Sata of Melfi settlement and its related industries, the Ionian area for the development of intensive agriculture and tourist attraction and, in more recent periods, some centres in the Agri Valley which show an appreciable demographic vitality thanks to the large-scale start of oil extraction activities. The rest of the regional territory, which mostly coincides with the mountain area, is characterized by a significant depopulation opposed to settlement fragmentation [12–15].

This territorial weakness is matched by a fragmented supply of services for the population. Using open source data available online, processed in GIS environment, a map of territorial services for the entire region (including over 17,000 instances) has been defined. Ten macro-categories have been defined: trade, culture, education and training, sport and leisure, tourism, general services, public services, financial services, security and health (Fig. 1).

These data, based on PCA techniques combined with geo-statistical elaborations (Kernel density) and territorial classifications to balance supply and demand levels in relation to territorial accessibility parameters, led us to the definition of a polycentric model for Basilicata [16, 17].

Three first, second and third level territorial arrangements have been identified. These areas are represented by:

- Potenza and Matera which have an independent role when compare to all the other regional municipalities and therefore correspond to the first level areas;
- the Melfi-Venosa-Rionero-Lavello aggregate, in the northern area of the Vulture/Melfese Region, the Lagonegro-Lauria aggregate, in the Lagonegrese/Pollino area. In this case, a single first level centrality is not recognized, but rather a second level polycentric territorial system;
- Policoro, primary node of the Ionian area, that is configured as a second level centre;

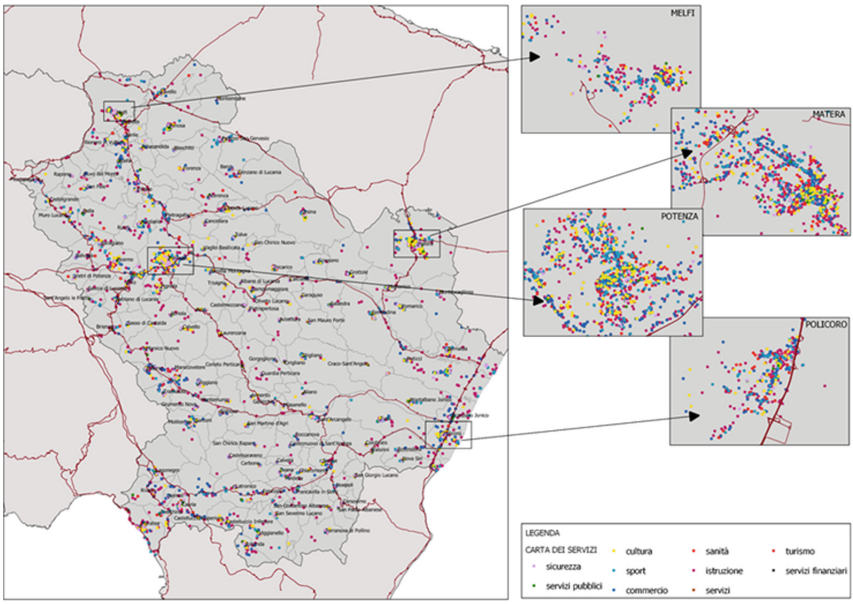

Fig. 1. Map of services in the Basilicata region

– Marsicovetere (Villa d'Agri), Senise and the Genzano-Palazzo S. Gervasio-Irsina aggregate represent the third level centres, i.e. centres that are not characterized by a clear identification of territorial specialities.

The definition of the hierarchy of the centres has been accompanied by the analysis of territorial accessibility expressed in terms of travel time that a resident citizen must make in order to use territorial services (see also [18, 19]).

The following map (Fig. 2) proposes the polycentric model for Basilicata region obtained through the application of the geo-statistical techniques mentioned above (other relevant tran-scalar reference of the polarization processes of the southern region can be found in [20]. For more extensive documentation on the analytical methodology, it is necessary to consider the work of Curatella [21].

The first, second and third level centralities correspond to the 30 min accessibility isochrone demonstrating that a large part of the regional territory is external to areas of proximity. This determines costs for the population that are often unsustainable and determine internal and external migrations that weaken local demand and contribute to the marginalization of the territory.

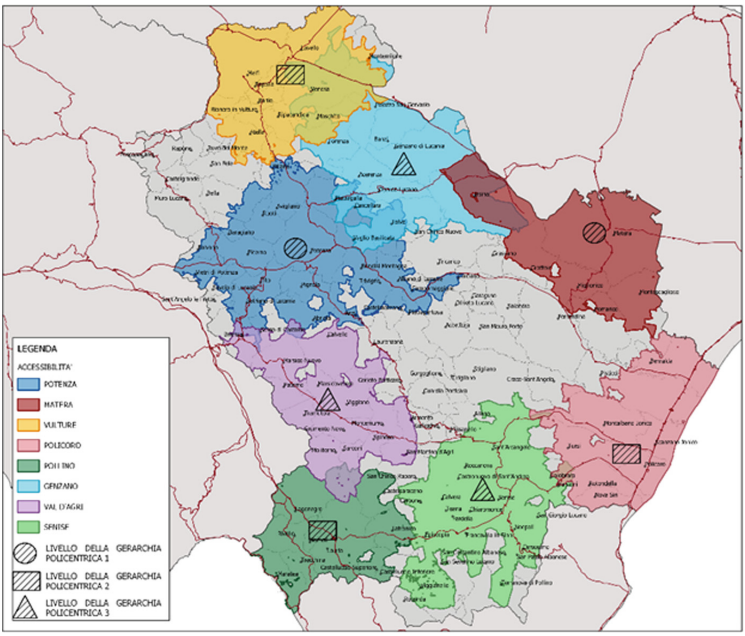

Fig. 2. Isochrone 30′ of the territorial layouts

The area defined by the 30′ isochrone starting from Potenza encloses a population of 125988 inhabitants, the second Provincial capital, Matera, manages to enclose only 72881 inhabitants, a figure slightly higher than the 72765 inhabitants of the Vulture area. Among the second level centres, there is the Pollino area including a low number of inhabitants, about 34438, due to its territorial morphology. Based on the analysis performed, the Genzano area has a population lower than the others, despite being one of the largest areas among the third level centres. In fact, it includes 29437 inhabitants, a lower number when compared to Senise with 33301 and Val d'Agri with 35740.

3 Concluding Remarks and Recommendations for "New Development Policies"

Comparing the results obtained and the set of current plans and programs aiming at territorial development policies in Basilicata, only a partial coherence can be assessed. Especially if we consider the main regional development programming documents in force in Basilicata (among all the PO FERS 2014–2020). The general feature of the current approach is to avoid mapping, or generally not to spatialize, development policies and objectives. The results are "space blinded" [22] programming approach and this represents a structural weakness of the programming system [23]. This needs a critical assessment of the "preconditions" of regional development that appear far from an effective description of the territorial organization levels of the centres [24].

The usefulness of a polycentric reference model for directional governance actions and resources. Moreover, it is reference term for monitoring trends and evaluating the effectiveness of development investments for both public and private actors.

At regional level, the objective to reinforce a polycentric model deliver a process shifting the services and equipment enhancement from one or two dominant regional centres to a number of small and medium sized centres ensuring minimum standards for their local demand basin. Such approach will imply a strategic alliance between cities, particularly where critical mass is lacking, and rural-urban partnerships [25] exploring common potential and joint development projects in a sustainable perspective [26–28].

The primary need is to connect cities, "metropolitan" regions and their hinterlands through more efficient links so as to bring rare services (in terms of use) closer to peripheral populations. Since public infrastructural investment is an unrealistic prospective due to weakness of current public capacity, forms of territorial cooperation oriented to the efficient organization of the main public services supply should be undertaken on the basis of a rational model [29, 30] of context based territorial organization [31]. This work contributes to achieve this goal offering, through a renewed rationality [32], a synthetic representation to compare localization choices, financing and local policies with the current levels of supply/demand of services and equipment on a regional basis.

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