Empirical Evidence of Regional Population Concentration in Europe, 1870–2000

Jordi Martí-Henneberg*
Department of Geography and Sociology, University of Lleida, Plaça V. Siurana 1, 25003, Spain

ABSTRACT

This paper presents empirical evidence to support the hypothesis that, over time, Europe’s population has undergone progressive regional concentration. Using data at the regional level from the first (1870) until the most recent (2000) available censuses, it is shown that the most densely populated areas in 1870 have continued to absorb subsequent population increase, and that as a result, territorial inequalities with respect to population have been exacerbated. Our main contribution consists of measuring this phenomenon and studying the spatial distribution of population in Europe from a historical perspective. For example, a high correlation (0.83) was found between the population density patterns for 1870 and 2000. These results allow a better understanding of the organisation of European society and more specifically of the phenomenon of counter-urbanisation, which has traditionally been observed at the local level but not at the regional one. To make this possible, we have built a new and comprehensive database on the distribution of population in Central and Western Europe between 1870 and 2000. In this paper we explain the methodology followed, which involves the combination of historical information from a variety of sources, to produce a homogeneous, regional-scale database that considers changes in

European administrative borders within recent history. This database has been produced to trace the evolution of regional population throughout this period and to provide an insight into the most important long-term trends and spatial patterns affecting European population. Copyright © 2005 John Wiley & Sons, Ltd.

Received 20 October 2004; revised 23 December 2004; accepted 21 January 2005

Keywords: Europe; population; regional imbalances; history; cartography; GIS

INTRODUCTION AND BACKGROUND

Although several studies have analysed the evolution of European population, as a global aggregate (Bairoch et al., 1988; Champion, 1993; Noin and Woods, 1993), very few have considered the regional distribution of population. Despite some noticeable contributions (e.g. Festy, 1979; Coale, 1986; Watkins, 1991), to date not much has been done in the way of conducting a detailed study of population densities, and little use has been made of thematic maps presenting historical data for the whole of Europe. This has largely been due to the technical difficulties involved in compiling and combining this cartographical data. Until very recently, there was no basic political map of European medium-scale historical administrative units readily available in digital format. This need has, however, now been – at least partially – met (Marti-Henneberg, 2002; Caramani et al., 2005). This map, which includes the administrative boundaries of Europe compiled at ten-year
intervals, has been used for the first time in this paper to produce thematic cartography. The project has involved the compilation of historical data from 21 states with different languages, customs and histories. Furthermore, their national frontiers and the boundaries of their internal administrative units have experienced numerous changes over the period to which the information presented refers. In spite of the difficulties involved, some other authors (Terlouw, 1996) have also investigated regional processes in Europe. Research has been conducted into the concentration of urbanisation in Europe (De Vries, 1984; Hohenberg and Lees, 1995) and the territorial dynamics of fertility (Coale, 1986), while Brunet (1989) and Champion (1989), amongst others, have studied population-related phenomena such as the concentration of human activities in Europe.

The present paper uses a type of digital cartography that has made it possible to map changes in the administrative structure of Europe over a period of 130 years. As a result, we have obtained a more precise overview of Europe’s population dynamics and have been able to draw new conclusions about trends relating to population distribution in Europe. One of the major interests in building a comprehensive regional database on the historical evolution of European population lies in quantitatively demonstrating several well-known qualitative tendencies associated its distribution at the regional level. While certain concentration processes are clearly evident, it is particularly interesting, and indeed necessary, to measure regional differences in this concentration and in its rate. Only very precise information can help to better our understanding of this process.

A historical approach to changes in population distribution offers a new perspective for the comprehension of contemporary European society. It is clear that Europe is currently immersed in a counter-urbanisation process that has been described in detail by many authors (Champion, Blotevogel and Fielding, 1997; Lindgren, 2003). This might give the impression that population is no longer concentrating in specific areas, but that would be absolutely false at the regional level. Population has tended to migrate over relatively short distances, but problems associated with its concentration in specific areas have tended to remain.

**EMPIRICAL BASE AND DATA SOURCES**

The Europe that we have studied comprises 21 states and covers a total surface area of four million square km. Our cartography and database divides this area into more than 600 territorial units, which we have subsequently used as the basis for studying the territorial distribution of its population.

The cartographic sources used to create our map have been many and varied, and the task of compiling the information has involved archive work requiring the location and consultation of numerous original sources. We have mainly based our work on documents found in the Historic Maps section of the Cartographical Institute of Catalonia (Barcelona), the University of Heidelberg (Germany) and the Map Section of the Bodleian Library at Oxford (UK). The objective has been to draw a digital map capable of tracing the evolution of the boundaries of Europe’s administrative divisions over the period between 1870 and 2000. All boundary changes had to be mapped at ten-year intervals for comparison. The preparatory work posed a series of technical problems: the raw data that had to be incorporated were originally presented at different scales and in several geographical projections. Furthermore, the atlases that constituted our main sources of information for periods prior to the mid-twentieth century seldom indicate the type of projection used. It was therefore necessary to make a series of cartographic calculations using control points in order to georeference all the maps into a common projection.

In the case of population, we used a number of different sources, including bibliographical references (Mitchell, 2003; Flora and Quick, 2000), unpublished manuscripts (Flora and Quick, 2000) and original censuses and annual statistical reports. Our starting date (1870) corresponds to the first year for which these data are available for the whole of Europe (the database will be available in 2006 at: http://web.udl.es/dept/geosoc/europa/index.html). Prior to this date, records are incomplete for the territories occupied by the modern-day states of Germany and Hungary. It is important to note that census data are available for different years in each country. For the purpose of homogenising data, and facilitating comparison, we have always used data for the year closest to the pivot year.
(1870, 1880, 1890... 2000), without interpolating the results.

The regional level at which data are available also determined the scale of the units of analysis employed for our cartography. We had to decide upon the most appropriate administrative scale at which to conduct our study, and finally chose the supra-municipal, or first intermediate, level. In most cases, the areas of these administrative units ranged from 5000 to 15,000 km². This left us with a relatively homogeneous final map, although a number of exceptions still remain, such as the small Swiss cantons and the extensive units of northern Scandinavia. The base map series also relate to the data sources and general methodology (Martí-Henneberg, forthcoming).

METHODOLOGY

Base-Map Making

The first issue to solve relates to what part of Europe to cover and how to subdivide it. This aspect merits a long debate in itself (Sellier, 1995a,b; Martí-Henneberg, 2002) but briefly stated, we decided to focus on Western and Central Europe as this is the only area for which comparable statistical data is available from 1870 onwards. With regard to the question of the administrative subdivisions, the interior structure of the map was largely conditioned by two factors: the existence of similar sized administrative units in different states, and the availability of population data at this level of detail.

One central point in this paper, and a facet that differentiates it from other possible approaches, is the representation of the long-term evolution of population densities (Decroly, 1991). The map of states is not detailed enough to represent the evolution of population densities at the regional and local scales; their dimensions vary greatly and the majority have experienced significant boundary changes since 1870. Geographical analysis requires similar units in order to make cartographic and numerical comparisons.

Administrative Units

The utility of the base map for geographical analysis derives from the possibility of comparing historical units; for this reason the map has been divided into similar sized units. This approach is ratified by the fact that, when deciding how to organise the interior divisions of their respective territories, the majority of European states chose units with average sizes of between 3000 and 10,000 km². As mentioned, the only real exceptions to this general rule are to be found in Switzerland and the Scandinavian states of Norway, Sweden and Finland. Switzerland has maintained an essentially medieval structure based upon small cantons, while the Scandinavian countries have much larger provinces in their arctic territories due to their lack of population. It was therefore necessary to make a geographical analysis of each individual state. In doing this, we found that in some cases administrative divisions had remained virtually unchanged throughout contemporary history, while in others both national and subnational boundaries had undergone quite radical changes (Bennet, 1989).

The historical maps series that we have used (Fig. 1) are appropriate for ‘visual’ and numerical comparisons for each given year, but if we want to trace evolutionary map trends, the same borders are needed. As the data presented refer to different units/borders, a specific technical solution is necessary. Thus, current borders (Fig. 1) have been transformed into constant borders to allow the evolution of population density to be represented and charted. The borders for the year 2000 have therefore been treated as constants and applied to the whole period. It should, however, be noted that most of them do not coincide with historical (current) administrative boundaries. In such cases a GIS application has been used to calculate the average population density for all the areas defined by the 2000 borders (Gregory, 2002). If we assume a relatively homogeneous distribution of population within each unit, we can obtain a series of historically comparable maps. This method formed the basis for all of the calculations used to produce the maps presented in Fig. 1.

RESULTS AND DISCUSSION

Our working hypothesis was that the main characteristics of the territorial distribution of Europe’s population as observed today essentially relate to the same basic locational pattern that was already evident in 1870. In other words, the most densely populated areas at that time

Figure 1. European population density from 1870 to 2000.
have tended to absorb subsequent increases in population, and previous territorial inequalities have consequently tended to increase and become exacerbated.

In the next two sections we seek to verify our initial hypothesis. In the first, we present an overall picture of European population growth and its distribution. In the second section, we examine this question in greater detail, presenting and commenting upon the map series and statistical calculations that have enabled us to describe and explain the historical evolution of the territorial contrasts reflected by these population densities.

Evolution of Population Distribution in Europe

Table 1 shows a generally constant increase in population in Europe. It should also be remembered that some of the observed changes in total surface area correspond to modifications in the frontiers of the easternmost states. On the other hand, changes in the total number of administrative units reflect modifications in the administrative geography of the states in question. With respect to population density, a steady, gradual increase was observed from 51.1 inhabitants per km² in 1870 to 111.6 in 2000. However, its distribution was not homogeneous, as revealed by the standard deviation of population densities among the different units. The standard deviation shows that the density range has expanded over time in an almost constant number of territorial units. Over the period studied there was a steady increase in the standard deviation from 314 to 1273.

The key factor for explaining this process is the persistence of the European dorsal (Brunet, 1989): the area stretching from the southeast of England to the north of Italy. Throughout history, this area has had a significantly higher population density than the rest of Europe. The map series presented in Figure 1 shows how this dorsal was already well-defined in 1870, with a progressive consolidation of its shape that could be quantified by the gradients between this area and the rest of the European regions. It is evident that while an extensive area of Europe has remained almost unpopulated, Europe’s inhabitants have become increasingly concentrated in an ever-smaller area.

To understand fully this phenomenon of steady concentration, we must look back at what constituted Europe’s main areas of consolidated urban settlement back in the Late Middle Ages: the north of Italy and the Netherlands. It is also important to analyse the commercial flows between these areas, which mainly involved overland transport (Braudel, 1967; Pounds, 1990). The cities that lay along these trading routes

<table>
<thead>
<tr>
<th>Year</th>
<th>Population × 1000 inhab.</th>
<th>Surface area × 1000km²</th>
<th>Population density</th>
<th>Number of territorial units</th>
<th>Standard deviation of population density</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870</td>
<td>214,210</td>
<td>4,192</td>
<td>51.1</td>
<td>620</td>
<td>314.0</td>
</tr>
<tr>
<td>1880</td>
<td>231,002</td>
<td>4,190</td>
<td>55.1</td>
<td>621</td>
<td>413.0</td>
</tr>
<tr>
<td>1890</td>
<td>244,522</td>
<td>4,162</td>
<td>58.7</td>
<td>623</td>
<td>496.1</td>
</tr>
<tr>
<td>1900</td>
<td>269,424</td>
<td>4,160</td>
<td>64.7</td>
<td>624</td>
<td>598.0</td>
</tr>
<tr>
<td>1910</td>
<td>296,284</td>
<td>4,183</td>
<td>70.8</td>
<td>625</td>
<td>696.5</td>
</tr>
<tr>
<td>1920</td>
<td>306,925</td>
<td>4,287</td>
<td>71.5</td>
<td>599</td>
<td>816.3</td>
</tr>
<tr>
<td>1930</td>
<td>331,609</td>
<td>4,254</td>
<td>77.9</td>
<td>617</td>
<td>866.4</td>
</tr>
<tr>
<td>1940</td>
<td>346,456</td>
<td>4,311</td>
<td>80.3</td>
<td>583</td>
<td>832.1</td>
</tr>
<tr>
<td>1950</td>
<td>346,387</td>
<td>3,980</td>
<td>87.0</td>
<td>611</td>
<td>874.3</td>
</tr>
<tr>
<td>1960</td>
<td>377,715</td>
<td>4,012</td>
<td>94.1</td>
<td>613</td>
<td>957.6</td>
</tr>
<tr>
<td>1970</td>
<td>407,924</td>
<td>4,024</td>
<td>101.3</td>
<td>613</td>
<td>1,216.8</td>
</tr>
<tr>
<td>1980</td>
<td>425,141</td>
<td>4,024</td>
<td>105.6</td>
<td>614</td>
<td>1,189.7</td>
</tr>
<tr>
<td>1990</td>
<td>440,415</td>
<td>4,024</td>
<td>109.4</td>
<td>616</td>
<td>1,239.9</td>
</tr>
<tr>
<td>2000</td>
<td>450,653</td>
<td>4,036</td>
<td>111.6</td>
<td>613</td>
<td>1,272.7</td>
</tr>
</tbody>
</table>

Source: Own computations. Data from Flora and Quick (2000) and European Annuaries.
became progressively consolidated and eventually came to define what, even today, remains Europe’s main axis of economic and commercial activity (Capel, 2002).

When we compare Terlouw’s (1996) map of urban population distribution in 1850 with our own map reflecting population density in 1870 (Fig. 1), we find numerous similarities. Although the subject analysed is not the same, it is possible to observe a high degree of coincidence between the most densely populated areas and those with the highest levels of urbanisation.

It is very significant that even in such a relatively homogeneous space as Europe, there still remain large areas in which the density of population remains less than 25 inhabitants per km², while in others it has exceeded 1000 per km² since well before 1870. The former is largely explained by hostile environments, harsh climates and a shortage of land conducive to agricultural production. But to understand the distribution of population in the most densely populated areas, it is necessary to examine a series of other factors that have influenced and/or determined settlement patterns. We have already mentioned the most relevant of these: the establishment of networks of communications and urban settlement.

These are traditionally competitive areas and their respective development has tended to depend on the initiative of their local societies. Thus, territorial organisation has gradually developed and led to concentrations of population and economic activity in certain specific areas rather than in others. This effect can be observed in Fig. 2, which shows how there is a clear relationship between the population of a given unit and those of its neighbouring regions.

The effect can be quantitatively assessed by calculating the number of neighbours that follow the same growth pattern. Figure 2 has been obtained by plotting the number of neighbours that an administrative unit has (x-axis) against the number of neighbours within a radius of one degree (approx. 111 km) that have followed the same pattern of growth. This influence is enhanced in larger (>500,000 inhabitants) units. The right panel shows this effect: the correlation for larger units increases with respect to that of others (from 0.72 to 0.87), indicating a stronger influence.

This calculation supports the argument that territorial inequalities were exacerbated from 1870 to 2000. This has mainly been the result of the dynamics of the larger units and their continuous influence on their respective hinterlands.

This concentration mechanism has produced territorially dense structures, because new activities have tended to be drawn to, and to have established in, previously consolidated areas (‘territorial inertia’). This tendency has been largely maintained despite the fact that technological change has continuously offered new locational influences. It is curious how, from the

Figure 2. Growth potential of all the municipalities (left) compared with those with more than 500,000 inhabitants (right).
time when the windmill constituted the main source of energy to that of the widespread use of the computer, the general factors that have determined the location of population in Europe and its regional structure have remained essentially unchanged. Apart from the dorsal of the most densely populated part of Europe, which already existed in the Late Middle Ages (Terlouw, 1996: 130–32), the only real novelties with respect to the distribution of Europe’s population have been associated with this core area’s westward extension into England and its spread eastwards to incorporate most of western Germany.

The areas at the forefront of Europe’s economic development in the Middle Ages have – despite a number of ups and downs – largely managed to adapt to change and to maintain their hegemony. There have evidently been exceptions to this general trend, but generally speaking, ruling elites and business communities in the most important states have successfully conserved their hegemonic positions within their respective geographical territories (Braudel, 1967).

However, entrepreneurial tradition and culture have not been the only important factors in this process: the heritage value of established infrastructures has also played a key role in this process and largely explains the importance of inertia and the relative stability of Europe’s historical geography. The existing settlement pattern has not only been maintained, but has in fact been further consolidated since 1870.

Since as early as the seventeenth century, the greatest density of population has been associated with the north–south axis that runs from England and the Netherlands to the north of Italy. The persistence of this logic throughout European history has been referred to in several disciplines. Even so, the question remains as to how to continue with this line of study beyond 1870. An analysis referred to in Fig. 3 indicates that the pattern of densities for 1870 was basically the same as for 2000. There is therefore a high correlation ($r^2 = 0.83$) between the densities for the 1870 units and those corresponding to 2000. This comparison was made possible by transforming the administrative boundaries for each period into current borders, in the way previously explained.

In the next section we analyse the behaviour of this axis of greater density, and also take a look at the urban areas that lie outside it, which contain such major cities as Paris, Barcelona, Lisbon, Naples and Madrid. These zones have been mainly responsible for Europe’s population disequilibria: the attraction that they have exerted has been largely responsible for the observed decline in population experienced across large areas of Western and Central Europe. We shall now take a more detailed look at how the population of these relatively peripheral areas has gradually declined since 1870.

Analysis of Population Distribution

Population distribution has been mapped using two different techniques: static and evolutionary analysis. Static analysis is based on the representation of population densities associated with the real administrative boundaries in each particular year: 1870, 1900, 1950 and 2000. This map series (Fig. 1) is comparable, since the individual maps share a common legend and all show the population density of each specific territory. In other words, they present a dynamic overview of a population that grew from 214 million in 1870 to 450 million in 2000.

Analysing these maps in greater detail, we must remember – as seen in the third column of Table 1 – that the increase in Europe’s population density has been both sustained and considerable, despite bloody wars and large-scale emigrations (Bardet and Dupâquier, 1998, 1999). It should be noted that we assigned data relating to...
population densities since 1870 to the areas occupied by the administrative units corresponding to 2000, in order to trace diachronic comparisons across changing territories. Since 1870, there has been a general tendency for densities to increase, although in some cases they have, in fact, fallen: this occurred after the two World Wars due to frontier changes and the corresponding exchanges of population.

This tendency gives an idea of the great vigour of vegetative growth, which has been paralleled by a major increase in economic activity. These factors have combined to produce the densification of the space commonly referred to as the dorsal of Western Europe. This is clearly visible in 2000, but was also an evident reality back in 1870 (Fig. 1), when a continuous zone of greater population density could already be traced from England to the north of Italy, including the Netherlands and western Germany. Other densely populated areas were also apparent at that time, as were regions with high concentrations of economic activities – such as Silesia – or associated with major cities: Berlin, Hamburg, Paris, Lyon, Marseille, Naples, Bilbao, Barcelona and Oporto.

The interesting point to note here – which is highlighted in the subsequent map series – is that all of these areas went on to consolidate their population densities further between 1870 and 2000. But, as previously stated, this is a case of territorial organisation with much older roots. In fact, it follows the same distribution pattern as that of the city system, whose main nodes also coincide with the areas of greatest industrial and commercial activity. It is therefore evident that historical tradition has had an enormous influence upon the location of human settlement. This tradition has undoubtedly crystallised in the cities, which offer channels for innovation.

Figure 1 presents the evolution of European population density from 1870 to 2000, whereas Fig. 4 helps to explain how these changes occurred. Comparing maps for 1870 and 2000 (Fig. 1), we observe how the European dorsal has been consolidated and how other isolated regions have also emerged. This is particularly true of a number of coastal Mediterranean capitals, but also of inland areas, such as those around cities like Madrid or Lyon. The traumatic evolution of Eastern Europe requires a different interpretation. The unsettled situation in the area of Poland corresponds to drastic boundary changes – from Prussia to Poland – and to massive migrations and loss of life associated with the two World Wars. But the general picture for Europe shows stability in both under-populated and very densely populated areas. These contrasts have been magnified over time, but the general situation has remained relatively unchanged, as evidenced in Fig. 4.

Figure 4 traces the evolution of population densities and relates to the second technique mentioned: evolutionary cartographic analysis. This type of map is only feasible if boundaries are held constant over time. Although in reality change has been frequent, we have adapted our maps and applied the present (2000) boundaries for the whole period. This provides a good example of how to chart the comparative evolution of an area within which the boundaries have been modified. In such cases, it is necessary to make a series of cartographic calculations that redistribute the population relating to these areas. These maps prove useful for gaining a general overview, and provide a very realistic impression of all of the changes that have taken place. They also offer the best possible idea of how to interpret territorial consolidation and diffusion within the areas with the greatest capacity for economic growth (Champion, 1989).

Figure 4 shows the annual accumulated evolution of the density of population between 1870 and 2000. As this figure is based on percentages, it is possible to find a number of anomalies, such as the apparent pronounced growth in the population of northern and central areas of Scandinavia. This can mainly be attributed to this region’s initial lack of population, followed by its subsequent settlement and exploitation. Although its growth has been considerable in percentage terms, in absolute terms its population has remained barely significant. The same phenomenon is observed in the west of what is now Poland (in the map for the period 1950–2000): the sharp increase in population is due to repopulation after the Second World War. But – anomalies apart – what really interests us are the processes of change observed throughout the rest of Europe, which seem to have been far more homogeneous.

Our main objective was to represent the main characteristics of the distribution of Europe’s population: we were therefore primarily inter-
ested in detecting the areas in which population had persistently increased or decreased. Detailed analysis of the map in Fig. 4 shows that over the period 1870–1900 certain areas, such as Ireland and agricultural areas of the UK and France, suffered persistent average annual losses of population, while others, particularly in southern Europe, experienced notable increases. The latter included the southwest of the Iberian Peninsula, southern Italy and Greece, and areas around the more isolated European capitals (Madrid, Valencia, Bilbao, Barcelona, Marseille, Bordeaux, Lyon and Paris). The area that experienced the greatest population growth during this period
was the central European dorsal, comprising the area between England and Hungary, and also including the Netherlands, Belgium and most of Germany.

During the following period (1900–1950), this dorsal became much more centred upon today’s main area of growth, which stretches from southeast England to northern Italy. Meanwhile, areas within the southern arc saw their positions reconfirmed, with the definitive consolidation of capitals such as Barcelona, Madrid, Lisbon, Rome and Paris. On the other hand, the declining areas remained much the same as before, with the addition of eastern Germany–western Poland as a consequence of migration following the Second World War.

In the third period (1950–2000), the previously mentioned urban areas and the central ‘dorsal’ became fully consolidated, while there were also signs of rapid recovery in western Poland. One particularly significant phenomenon associated with this period was a large-scale exodus of population from the interiors of many southern European states (Portugal, Spain and Italy), whose inhabitants moved to areas offering better employment opportunities. This phenomenon resulted in migratory flows towards the main southern European capitals, and similar trends were observed within the areas of greatest attraction: France, northern Italy, Germany and England.

The periods represented by the maps are very long and therefore include – and to some extent mask – phenomena that occur over shorter periods. To give just one example, Spain’s rural–urban migration began in the 1960s, occurring later than in most other countries, but to examine this phenomenon in greater depth would require much more detailed study of the available data and cartography based upon a shorter-term map series. In this work, we simply offer an overview of the period during which Europe’s population characteristics became fully consolidated. We provide a general picture of a period in which the increase in Europe’s population was truly spectacular.

CONCLUSIONS

This paper offers an insight into changes in the distribution of Europe’s population between 1870 and 2000. The data presented support the thesis that, in terms of population density, Europe’s regional inequalities have been exacerbated over time. In fact, a long-standing and well-established dichotomous structure has tended to become increasingly consolidated over time. This has occurred despite enormous changes in the factors that have determined the location of population and economic activities since 1870. All of the indicators relating to population density examined in this article point to an increase in territorial imbalance over time. This is confirmed by a range of data including standard deviations (Table 1), correlations (Fig. 3) and map series.

It is also evident that the process of rural–urban migration has been the root cause of the exacerbation of Europe’s population disequilibria. This has been the direct consequence of the change from a form of highly labour-intensive agriculture to one based on the widespread use of capital. To date, these phenomena have only really been generally studied at the local and national levels, but this article offers a more general context in which to examine these phenomena. It helps to shed new light upon and interpret specific cases, such as the rural–urban migrations experienced in Italy during the 1950s and 1960s, and in Spain during the 1960s. For example, by situating this last example within its European context, it is possible to observe how this phenomenon has found no parallel in any other European states (map in Fig. 4).

The main interest of our contribution lies in the accuracy and precision of its cartography and databases. There are three fundamental reasons for these instruments being more precise than any of the means previously available. Firstly, we used completely new digital cartography to generate thematic maps. Our preliminary work involved digitising the boundaries between states and the geography of their internal administrative divisions. The resulting maps reflect Europe’s changing political reality between 1870 and 2000. The current article includes maps selected at bench years, with 10-year intervals between 1870 and 2000.

Secondly, we compiled a database that combines information about the population and surface area of each administrative unit shown on the maps. This enabled us to calculate and compare population densities and produce a series of thematic maps providing information at 10-year intervals. We present these maps in this
paper in order to study population density (Fig. 1) and analyse contrasts in its relative accumulation. In this way, we are able to offer a detailed image of the distribution of Europe’s population over a period of 130 years.

Our work is not, however, simply limited to collecting snapshots that present reality at different moments in European history. It also makes a third contribution. It proposes cartographic methodology for tracing the long-term evolution of Europe’s population density, and also offers a solution to the problem of how to represent the evolution of phenomena located in territorial units with changing borders (Fig. 4).

We provide evidence that Europe’s population growth has tended to polarise in and around an increasingly reduced area, while in stark contrast, extensive areas of Europe have experienced constant population decline. It is therefore evident that, at least as far as population density is concerned, territorial inequalities in Europe have tended to increase with time. It is particularly relevant to stress that the observed tendencies reflect a significant concentration of economic activity and employment. This productive space has given rise to consolidated urban areas which, in turn, have been responsible for population growth at the regional level. In this sense, this article constitutes a continuation of previous studies that have investigated the processes behind the concentration of population in Europe up to 1850.

There is now a new path to follow, and we plan to continue with our line of research by further interpreting the data presented in this article. Along these lines, we plan to investigate the long-term development of the urban structure and use it as a basic element of explanation. For a long time now, this has been closely linked to intensive activities in the traditional commercial and industry sectors and, more recently, has been reported to exert an important influence upon large-scale manufacturing. Our next task will therefore be to try to explain the evolution of regional population densities in terms of the urbanisation process.

This work has already presented data that will allow us to advance our understanding of the historical geography of Europe, but it also poses numerous questions that will only be resolved by future research. The main question that currently remains unanswered relates to the extent to which changes in population density are indicative of the concentration of economic activity. This is clearly the case today, but such direct causality may only be mooted with certain reservations in the case of long-term demographic dynamics. More research, based on new statistical series, calculations and maps, will be required to develop this line of investigation and help to shed more light upon these matters.

ACKNOWLEDGEMENTS

This work has been funded by grant SEJ2004–02824 from Spain’s Ministerio de Educación y Ciencia and by the SGR00299 Programme of the Generalitat de Catalunya. The author would also like to thank Dr Francisco J. Tapiador for his help with the calculations and in revising the manuscript, to the staff of the laboratory of Cartography in the University of Ueide and Malcolm Hayes for the translation and professional comments.

REFERENCES


