

CHANGES IN THE ISOLATION OF EUROPEAN MICROSTATES DURING THE 20th CENTURY

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Abstract: Great changes have taken place in the 20th century with respect to the isolation of sovereign states worldwide. This article examines such changes. One of the most significant elements acting on the degree of isolation is accessibility, or lack thereof, which is in turn most affected by the existing transportation infrastructure. The aim of the article is to examine how the transportation infrastructure of European microstates has changed, and whether in the beginning of the 20th century, there were greater disparities in the degree of isolation among the states examined than at the end of the 20th century. A point system was used for calculating and comparing the degree of isolation among the different states. The results obtained were as follows: The overall degree of isolation has decreased by a factor of about three. Differences among the microstates were least pronounced at the beginning of the century, and the greatest during the 1950s and at the end of the century.

Key words: isolation, transportation infrastructure, microstates, Europe

1. INTRODUCTION

Thirty years ago, specialists from various disciplines, such as economy, law and political science, began to focus on issues concerning small states. These states were termed variously (as, for example, "small states" or "mini states"). A term which came to be one of the most widely used was "microstate." And although numerous publications have been written on the subject, no one has yet formulated a common definition or a set of criteria that a state would need to fulfill to qualify as a microstate. What more, the term is not commonly found in dictionaries and encyclopedias. The definition of the prefix "micro-" ("one-millionth" or "extremely small") makes the concept easier to define to some extent.

Six of the world's 37 microstates are located in Europe. They are: Andorra, Liechtenstein, Luxembourg, Malta, Monaco and San Marino. The smallest of them, Monaco, has a population of 33,000 people and an area of 2 km². The largest, Luxembourg, has a population of 440,000 people and an area of 2,600 km². Of the six

microstates, three are located in mountainous areas, two in lowland areas, and one comprises several islands.

The term "isolation" is widely used in many disciplines and for this reason its meaning is quite broad. In the *Słownik wyrazów obcych* (Polish Dictionary of Foreign-Derived Words) from 1999, it is defined as "seclusion, separation from the surrounding milieu, detachment, a state of seclusion." To help measure the degree of isolation, various characteristics were chosen, such as distance to major economic centers, accessibility throughout the year, elements of the transportation infrastructure, and the number of accommodation and catering facilities (Jędrusik, 2001). In this article, isolation has a narrow meaning, equal to lack of accessibility. One of the most important elements influencing a state's degree of isolation thus defined, is whether it can easily be reached, and that is determined by, among other things, the local transportation infrastructure.

The aim of this article is to examine how the transportation infrastructure of European microstates has changed, and whether in the beginning of the 20th century there were greater disparities in the degree of isolation among the states examined, than at the end of the 20th century.

The degree of isolation for all the examined countries has changed greatly during the 20th century. The proposed hypothesis stated that disparities in the degree of isolation among the microstates were greater at the beginning of the 20th century than towards the end of it. It appears that the transportation infrastructure, which was significantly improved over this time period, has to a large extent eliminated the effect that terrain features and distance to economic centers have on the degree of isolation.

2. METHODS

It was not possible to find quantitative data concerning the transportation infrastructure for the entire period examined. A point system was used to compare changes in the degree of isolation. A specified number of points was assigned to each element of a state's transportation infrastructure system, relative to that element's capacity for reducing isolation. The more people are able to access the microstate by a given element's means, the more points were assigned for that element. Elements of the infrastructure can be either linear (e.g. roads and rail lines) or punctual (e.g. ports and airports), each being assigned points according to different rules. Punctual elements were given points for their mere existence, while linear elements were assigned points for every instance that they crossed the border of the microstate.

One also needs to classify the chosen infrastructure elements on a qualitative basis. And this is why, for instance, a distinction was made between regional and international airports, which differ not only with respect to the number of passengers they serve, but also in the extent of their flight service network. The same distinction was made with respect to ports. No pre-1950 data on roads could be found and thus could not be included in the study. In atlases published before the Second World War, one can only find representations of the rail network. Roads were classified as either asphalt roads or highways. Although it is not easy to define what precisely constitutes a highway, there is little doubt that, regardless of its other features, its transportation capacity will be much greater than that of a regular asphalt road. Changes were analyzed at 10-year intervals.

The microstates examined were divided into two groups – insular and continental. Because the means used to get to a microstate depend greatly on whether it is insular or continental, a different point scale was created for each group. For insular states, the following transportation infrastructure elements were taken into account: international airports, regional airports, international ports, regional ports, and air strips. The following point scale was used:

Table 1 Point scale for insular microstates

Infrastructure element	Point value
International airport	15
Regional airport, international port	10
Regional port	5
Airstrip	3

Based on own rendition

The following elements of the transportation infrastructure are to be found in continental microstates: asphalt roads, highways, rail lines, ports, heliports, regional airports and international airports. The first three elements are linear in character, and were assigned points for every instance that they crossed the border. Information on the subject was found in geographic atlases. The maps used had a scale of about 1:2,000,000. The following point scale was used:

Table 2 Point scale for continental microstates

Infrastructure element	Point value
International airport	15
Regional airport, international port	10
Regional port, rail line, highway	5
Asphalt road, cableway	3
Airstrip	1

Based on own rendition

Particularly in the case of continental microstates, infrastructure existing right outside their borders has a large effect on their degree of isolation. To not take this into account would be to falsify data concerning the actual situation. For example, Monaco has neither an international airport nor a highway, but a freeway passes within 5 km of its border, and the airport in Nice is about 20 km away. Although these elements greatly help in reaching the microstates, they do not make it possible to attain this goal directly. For this reason, points assigned to them are multiplied by an indicator, the value of which is relative to the distance from the element of infrastructure to the capital city of the microstate. The values for this coefficient are presented in the table below.

Table 3 Conversion factors for infrastructure located outside microstate borders

Distance to capital of microstate (km)	Coefficient
10 or less	0.75
10 – 50	0.50
50 – 100	0.25

Based on own rendition

3. CHANGES IN THE DEGREE OF ISOLATION

Changes in the degree of isolation occurred differently in each country, and this is why the process is described separately for each of the European microstates.

Andorra

At the start of the 20th century, Andorra was a country located far away from transportation routes. One could access it only by means of a narrow road, starting from either a French or Spanish train station.

The greatest reduction in the degree of isolation came following the Second World War. By the 1960s, or possibly even earlier, regular bus service was established, connecting the capital of Andorra with the closest cities in France and Spain (The Europa Yearbook 1965). By the 1980s, it was possible to get to the vicinity of Andorra by plane; the closest airport being in Seo de Urgel (The Europa Yearbook 1985, 1995). It is worth adding that construction of tunnels leading from Andorra to France and Spain began in the 1990s and the construction of a rail line began in 2001 (Europa World Year Book 1995, 2004).

Liechtenstein

In the first half of the 20th century, there was no reduction in Liechtenstein's degree of isolation. Liechtenstein was already accessible by train at the beginning of the century, as it lay on the Vienna-Paris rail route (Diercke Schulatlas 1905). It would have been certainly possible to get there by roads as well, but this element of the transportation infrastructure was not taken into account for the pre-WWII period.¹

Following the war, a network of highways was developed, and although no freeway bisected Liechtenstein, they all passed in very close proximity to the border (Europa. Atlas samochodowy [Polish Road Atlas of Europe] 1995/1996; Europa. Atlas samochodowy 1985). In the 1970s, no airport was to be found within a 100 km radius (Das Moderne Länderlexikon 1976), and this situation remained unchanged until 2000 (Central Europe, 1995).

Luxembourg

It was possible to reach Luxembourg by train in the beginning of the period studied. The rail network was highly developed at the time and crossed Luxembourg's borders at four locations (Diercke Schulatlas 1905, Atlas Général 1925). Changes in this microstate's degree of isolation before the Second World War were insignificant. One additional rail line was added in the 1930s (Atlas Geograficzny, circa 1936).

An airport that had been built by the 1940s, by the 1960s was operating on an international scale. A large river port in Mertert on the Moselle was opened in 1964, what gave Luxembourg direct access to the Rhine (Europa World Year Book 1977).

A network of highways was also built. Making sense of the data on this subject proved to be most difficult, since different atlases provided contradictory information.

¹ This pertains to all the microstates.

Highway network development most likely proceeded in the following way: in the 1950s, there were two freeways crossing the country's borders, while by the end of the 20th century, there were four or five (Newnes Automaps 1977; Europa. Atlas samochodowy 1985; Europa. Atlas samochodowy 1995/1996).

Malta

Malta is the only insular country among the European microstates. At the beginning of the period studied, it was already an international port. This was the result of its location relative to major sea routes and of its strategic significance to Great Britain.

An airstrip was built here in the 1930s – notably early in comparison to other microstates. During the 1960s, the air strip was upgraded to an international airport, with flight service available to many European, North African and Middle-Eastern cities (Europa World Year Book 1995).

Monaco

Monaco is Europe's only continental microstate that has access to the sea. Due to this fact, Monaco had a low degree of isolation at the beginning of the period studied. Even more significant was the existence of a rail line, served by the French railways (Łaptos J. 2002, Statesman's Yearbook 1974). As was the case with several other microstates, the degree of isolation did not change prior to the Second World War.

The development of transportation infrastructure in the vicinity of Monaco's borders had a significant role in reducing its degree of isolation. In the 1950s an airport in Nice was opened, with regular bus service to Monaco. Highways built in the 1960s pass in close proximity to the border. A heliport, most likely opened in the 1980s, should also be mentioned (Europa World Year Book 1985).

San Marino

In the early 20th century San Marino was only accessible by a road, but infrastructure was quite well-developed in its vicinity. Rimini, about 30 km away, was the site of a train station and a sea port. In 1932, the construction of a cableway linking San Marino and Rimini greatly altered the degree of isolation. The cableway was shut down in the 1970s (Statesman's Yearbook 1934; Europa World Year Book 1977, 1985).

Significant changes in the transportation infrastructure took place in the 1960s and 1970s. A highway from Rimini to San Marino and a regional airport in Rimini were opened during this time period. The construction of a heliport did not have as much significance.

4. CONCLUSIONS

The degree of isolation of all the examined countries changed significantly in the 20th century. Andorra experienced the most spectacular changes. In this most-isolated

microstate, the degree of isolation was reduced more than fivefold. Infrastructure developed in a similar fashion in Luxembourg, the least-isolated country, where the total point score more than quadrupled. For the remaining four microstates, the degree of isolation was reduced by a factor of about 2.5. The greatest changes in the degree of isolation occurred between the years 1950 and 1980.

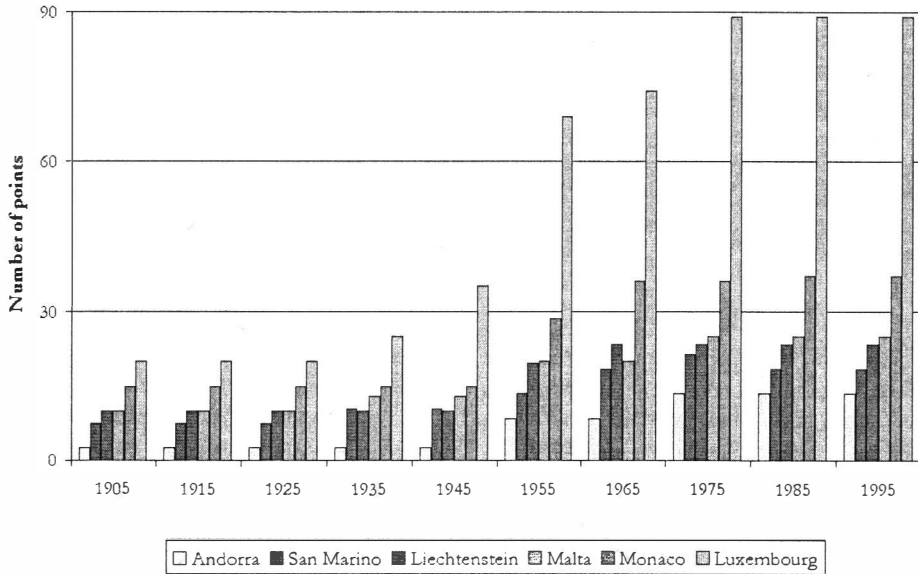


Figure 1 Changes in the degree of isolation of European microstates. Source: own rendition based on the Statesman's Yearbook, Europa World Year Book and all the atlases mentioned in the reference section

After calculating the variability of the degree of isolation by using the coefficient of variation (standard deviation divided by the arithmetic mean), it was determined that differences were least pronounced at the beginning of the 20th century, and the greatest during the 1950s and at the end of the century. Thus the hypothesis was not confirmed. It still seems true that terrain features and the distance to economic centers largely determine the development options available (as far as the transportation infrastructure of a given microstate is concerned), as well as that microstate's actual degree of isolation.

The greatest relative differences in the number of points attained by Andorra and Luxembourg were noted in the 1930s and 1940s, (10- and 14-fold differences, respectively). Luxembourg's point total was 8 times greater than that of Andorra at the beginning of the 20th century and 6.5 times greater at the end of the century, and although this relative difference remained quite stable, the absolute differences grew significantly. In the 1990s, Luxembourg was awarded 75 more points than Andorra, while at the beginning of the century it was only 18 points more. The remaining microstates experienced a reduction in the degree of isolation at very similar rates, which is why the order of the microstates in the final decade remains unchanged from the first decade.

The smallest number of changes pertained to rail lines. The only new rail line bisecting the border was built in Luxembourg. A cableway was built, connecting San Marino and Rimini. Only one port – a river port – was built in Luxembourg. Following

the Second World War, the road network was expanded, including new highways, either inside the microstates, or close to their borders. This period also saw the construction of air strips and airports, either inside the microstates, or in their vicinity.

Table 4 The coefficient of variation

Years	Coefficient of variation
1900 – 1910	0.56
1910 – 1920	0.56
1920 – 1930	0.56
1930 – 1940	0.58
1940 – 1950	0.77
1950 – 1960	0.82
1960 – 1970	0.77
1970 – 1980	0.79
1980 – 1990	0.81
1990 – 2000	0.81

Source: own rendition based on the Statesman's Yearbook, Europa World Year Book and all the atlases mentioned in the reference section

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Zmiany izolacji mikropaństw Europejskich w XX wieku

Resume

Mikropaństwa to kraje należące pod względem liczby ludności do grupy państw bardzo małych (20 % państw świata), a pod względem powierzchni do państw bardzo małych bądź małych (40 % państw świata). Spośród 37 mikropaństw w Europie znajduje się sześć. Należą do nich Andora, Liechtenstein, Luksemburg, Malta, Monako i San Marino.

Pojęcie izolacji jest stosowane w wielu dziedzinach nauki i dlatego jego zakres znaczeniowy jest szeroki. W Słowniku wyrazów obcych zostało ono wyjaśnione w następujący sposób „odosobnienie, oddzielenie od otoczenia, odseparowanie, stan odosobnienia”. Jednym z najważniejszych elementów wpływających na stopień izolacji państwa jest możliwość dotarcia do niego, a na to największy wpływ ma infrastruktura transportowa.

Celem było znalezienie odpowiedzi na pytania, jakie zmieniła się infrastruktura transportowa w mikro państwach europejskich i czy na początku XX wieku istniały większe różnice w stopniu izolacji pomiędzy badanymi krajami niż pod koniec XX wieku? Postawiono hipotezę, że na początku XX wieku istniały większe różnice w stopniu izolacji niż pod koniec XX wieku.

W celu porównania zmian w stopniu izolacji posłużono się metodą bonitacji punktowej. Za każdy element infrastruktury transportowej przyznano określoną liczbę punktów w zależności od tego, jak bardzo zmniejszał on stopień izolacji. Ze względu na ogromne różnice w możliwościach dotarcia do państw wyspiarskich i kontynentalnych, stworzono dwie różne skale punktowe. Duży wpływ na izolację mikro państw, szczególnie kontynentalnych, miała infrastruktura znajdująca się w pobliżu jego granic. Chociaż te elementy znacząco ułatwiają dojazd do mikro państw, to jednak nie pozwalają na bezpośrednie dotarcie tam. Dlatego punkty za nie przemnożono przez wskaźnik, którego wartość była zależna od odległości do stolicy kraju.

Stopień izolacji wszystkich badanych krajów zmienił się znacznie w XX wieku. Najbardziej spektakularne zmiany zaszły w Andorze (5 razy) i Luksemburgu (4 razy). W pozostałych czterech mikro państwach stopień izolacji zmniejszył w podobnym stopniu – około 2,5 raza. Najmniejsze różnice pomiędzy mikro państwami występowały na początku wieku, a największe w latach 50. oraz pod koniec XX wieku, zatem hipoteza nie potwierdziła się. Najmniejsze zmiany dotyczyły linii kolejowych i portów. Po drugiej wojnie światowej bardzo rozbudowano sieć dróg, szczególnie autostrad, oraz otwarto dużo lotnisk. Te elementy infrastruktury transportowej zostały zbudowane albo wewnątrz mikro państw albo w ich pobliżu.