Natural Environment and Culture in the Mediterranean Region II

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Edited by

Recep Efe, Munir Ozturk and Ibrahim Atalay

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PREFACE

The Mediterranean basin is commonly known as the old world region, including the countries from three continents namely; Europe, Asia and Africa, which contribute to its high ecodiversity. The basin was shaped by the ancient collision of the northward-moving African-Arabian continent with the stable Eurasian continent. Phytogeographycally, the basin belongs to the Tethyan Subkingdom of the Boreal Kingdom and is enclosed between the Circumboreal, Irano-Turanian, Saharo-Arabian and Macaronesian floristic regions. These eco-regions are semi-arid, with poor soils, so they are vulnerable to degradation by human activities. Food crops, including wheat, chickpeas, and olives, along with sheep and goats, were domesticated in the eastern part of the Mediterranean in the very old past.

This prompted us to look for the possibilities to increase international collaboration among different scientists sharing common interest in the basin. With this aim in mind an "International Symposium on Geography "GEOMED" was organised in 2007. Symposium addressed to the researchers and academicians in various disciplines primarily related to the Mediterranean Region. More than 120 scientists from 23 countries participated in the symposium. This successful attempt encouraged us to organise second symposium. The purpose was to increase our knowledge, share our experiences, and research results about all aspects of geography, ecology, and environment. A total of 32 topics were chosen and surprisingly double the number of countries (44) and three times the number of participants (330) actively took part in the second symposium. A total of 36 peer reviewed papers with extensive bibliographies were selected for publication in the form of a book in collaboration with "Cembridge Scholars".

This book presents a selection of papers of scientists from a range of disciplines interested in the Mediterranean Basin and its environs as will be clear from the contents of the book. It will enlighten the future role in different scientific fields thus making the book a very useful source for researchers and professionals in different disciplines. Much of the updated information is presented in the book.

Finally, the editorial team would like to express their gratitude to the staff at Cambridge Scholars Publishing for their collaborative efforts in preparing this book for publication.

—The Editors

CHAPTER ONE

ANTHROPOLOGICAL AND PHILOSOPHICAL APPROACH IN REGIONAL GEOGRAPHY

MATEUSZ WIERCIŃSKI

Introduction

Regional geography and general anthropology have been closely related branches of knowledge since their earliest beginnings. Both look for a general view and synthetic approach, with such notions in common as: species, culture, religion, civilization, society, evolution, and differentiated surroundings. For anthropology the subject is human bio-cultural evolution on Earth, while for geography it is the Earth, the living surface of which, from a particular moment in time, undergoes the process of population and "cultivation" by the human species. Anthropology has been more interested in what happens to human beings in their response to differently conditioned environments, where other people are also one of the factors. This resulted first in the concept of different races, substituted next by the notion of population, and different cultures. Because of various methods used to investigate these aspects, anthropology was divided into physical (biological) and cultural (social). But at the same time, the final aim of anthropological research has not been totally lost and still seeks to discover the universal rules connected with human nature, culture, and the course of evolution. Therefore, one can hear the voice of anthropologists treat anthropology as one discipline, which at a general level of interpretation should perceive joined aspects, biological and cultural (Wierciński 1982).

On the other hand, geography is more interested in what happens to the earthly environment, physically and especially as a result of recent human cultural activity, by the effect of which the surface of the Earth is differentiated into regions, zones, countries, eco-systems, and so on. It seems today that the geographical point of view stops at the level of spatial

differentiation of a set of phenomena, occasionally presented on maps and computing programs. The situation is nowadays less optimistic, if one considers how wide a choice of phenomena taking place on the Earth stands in front of geographers for potential description. The pace of various cultural changes and their impact on the landscape are high enough to frighten not only geographers.

Consequently, the need for geographic synthesis reduces it to a small territorial unit (subregion, country), or it disappears completely. Instead of this, there is a proposal for a socio-economic vision of regions. From the enormous amount of various processes going on, only economic development was selected to cement the image of the regions. The rest remains subordinated, or contributes to it; policy, demography, education, resources, technology, state of health, telecommunication, transport, art, folklore, historical places, pilgrimages etc. Paradoxically, what was written five to ten years ago about the region and its statistics, becomes largely out-of-date, sounds old-fashioned, and belongs to the history of socio-economic thought, rather than to geography. From a synthetic vision, one expects more constant results, since it refers to the set of rules and factors which determine the specific course for the processes in the region (regional specificity) in the longer term. Briefly speaking, it always requires a wider frame of reference than that of economic or political nature only.

Moreover, we have witnessed the process of the maturing of new disciplines in geography: hydrology, science of the soil, geomorphology, climatology, oceanography, geography of tourism, etc. Of course, there is nothing wrong in specialization and fragmentation in science if conclusions from narrow disciplines are used to correct the general model. But when a general model is no longer needed, then such a branch of science is only waiting “to be cut off” - it simply splits into other disciplines based on their own terms. Therefore, if geography wants to keep its position, to some extent, as a separate domain of knowledge, as a subject worthy of study and development, it must show the ability of synthetic thinking. The aim of this paper is to present one of the possible general approaches in regional geography, since among all geographical disciplines only this one may claim to cover physical, biological and cultural properties of the earthly environment.

Some philosophical remarks

Any attempt at a synthesis in regional geography must have at its base some philosophical statements which, as such, are not to be proved

scientifically and remain only a proposal. Why is this so? Because geography exercises a privilege of using the results of analysis of various disciplines, both humanistic and scientific, which apply different methods and terminology. The second reason is that science has not found the transformation from molecular physics to biological life, and from biology to a phenomenon like religion. The latter is usually outside the field of scientific questions (no methods of verification other than self-experience), but nobody can deny that such a phenomenon as religion exists and may be taken as a criterion in regional characteristics. Although there is an attempt at defining human nature and explaining rules of social life solely in terms of sociobiology, these are not satisfactory, especially when speaking of better investigated groups of hunters and gatherers (e.g. Bushmen) for whom religion clearly had adaptive value. Thus, until now these three levels, physical, biological, and cultural, have been different in nature, in spite of the fact that they have been interacting with each other.

Let us explain this essential statement by the use of an analogy. If, for example, one is going to describe a tree in a synthetic, holistic way, one cannot stop one's observation at external or internal structure, genetic information, functioning of root system, leaves and the rest of elements. It is not enough to notice genetic, morphological and processual features of a growing tree. One must also explain the role of the tree as a whole in the surroundings full of living creatures and make remarks on processes distinctive in nature, which are less determined but throw some light on the sense of existence of the particular tree. I mean here the potential 'users' and 'inhabitants' of the tree, e.g. birds, animals, insects, fungi, plants, bacteria, or people. Contrary to the description of a tree in a botanical handbook, each particular, living tree has its own history and can be used in many ways. These users change the theoretical genetic history of the tree into a wider and real one. They add something else in nature which is needed to formulate the specificity of each separate tree in time and space. On the one hand, we have the genetic program (species/kind of tree) in the seed as his carrier, on the other the external program of users, related to all parts and growing stages of the tree. These objects of two natures share the same environment of some abstract properties (mainly physical and chemical: minerals, air, light, climate, electro-magnetic field, acoustics, gravity and so on) which influence them all. Users, having different nature than the tree itself, may considerably modify (for better or worse) the development and the persistence of the tree, while the tree may do the same to some of its users (e.g. medicinal properties, edible or poisonous fruits, source of fuel, danger of a falling tree). It is reasonable to state that every kind of tree and each particular tree achieves its specific

character from two different "natures" placed in a common environment, and this additional perspective creates yet another interpretation of the synthesis.

This statement also has didactic implications. The descriptive model is only a preliminary form of help in the study of an object or phenomenon of living reality, in order to facilitate the experience of a cognitive act; better understanding due to a wider context and farther reaching prognostics of proper or improper use.

The next step is to introduce here the idea of "unifying sense". According to M. Kosztołowicz (2001), unifying sense for two or more different notions leads to a new quality or new notion. There is unifying sense *ex ante* and unifying sense *ex post*. The first refers to the situation when some notions indicate another. In geography, for instance, we have the notions of longitude, latitude, and altitude. The place (city, village, forest, etc.) on the globe is a unifying sense *ex ante* for these three notions. The second case refers to the situation when we search for the unifying sense of different notions, usually by observations, measuring, and some methods like the correlation index. For example, temperature and precipitation are two different, but correlated notions, and they come together as variables in a notion of climate. They coexist in a unifying sense: the climate.

It is necessary to understand that the higher sense gives new quality, and is not a simple sum or a result of notions or, at the level of objects and phenomena, it is not a sum of the elements (similarity with the system theory). The new notion is somehow indicated by participation in the common goal, but is never a simple sum of previous notions. Two more examples clearly show the difference. The unifying sense for a musical instrument and a musician is music, which is something different from both the instrument and the musician. By playing music one can achieve different goals, which cannot be discovered only by investigations of the physical features of the instrument, like weight, shape, and colour, and the biological and psychological features of the musician.

Bringing back our metaphor of the tree, when there are many trees in a big area we notice a new quality, which we call 'a forest'. It is impossible to achieve the meaning of the forest just by multiplication of one tree or the summing up of the botanical properties and description of every tree. A forest is a new quality, which also changes, to some extent, the physical, chemical and biological conditions of the area. By this comparison, it can be said that the synthetic approach is founded on the ability to discover a specific unifying sense between objects and processes differing in nature, but present and activated in the physical environment.

What does all of this mean for geography? Firstly, it means that from separately treated geographical disciplines (geology, study of soil, demography, climatology, tourism, etc.) it is impossible to constitute regional geography. They are like subsidiary disciplines in historical research. The synthetic description of a region cannot rely upon the sequence of information (data, conclusions) from different disciplines, since each one works on one aspect and the common (general) sense is something different in its nature (Francis Galton 1855 in: Wilczyński 1997: 117). From the epistemological point of view, there is a real problem os regards how to logically and sensibly pass from the knowledge of physical, chemical and biological properties of the soil, through the precise botanical description of the plants growing up from the soil, to the situation when, for example, a Japanese person makes a composition from chosen flowers to create the *ikebana* (cultural level). The rules of art and the sense of *ikebana* cannot be established or discovered only by scientific studies of the soil and botany. Should a geographer know about the spiritual culture of Japan when he writes a regional monography on Japanese Islands? To enumerate the typical phenomena, like the tea-ceremony, *ikebana*, *bonsai*, Japanese garden, theatre, patterns in architecture etc., is not enough. These are expression of something that is more difficult to catch: the specific way of thinking resulting from a shared world view, shaped by long tradition.

Secondly, it means that the concept of a region in geography should be founded mainly on cultural criteria that are imposed on physical conditions. To delimit the boundaries of a region of first rank we need the concept of culture or civilization, since mountains, deserts, and oceans have ceased being big obstacles in the expansion of people, their ideas and products. Historically, such an attitude is rooted in ancient chorography, and is close to the concepts of geography of Strabon, Bernard Varenius, Alexander von Humboldt, Paul Vidal de la Blache and, in Poland, Wacław Nałkowski (Staszewski 1966; Wilczyński 1997, 2009).

Consequently, the method applied in regional geography is descriptive, narrative, and more intuitive in the selection of ideas and processes.

Definitions of geography, culture, regional geography and landscape

Geography is a science that adequately describes and interprets the process of differentiation of the conditions of the life-surface (Biosphere) of Earth, dividing them into physical, biological and cultural. The Earth's surface shall be treated here as one super-region, having her changing

landscape as the external expression of the interrelated factors, different in nature, namely physical (cosmic, geological, climatic, etc.), biological (biological diversification; expansion or decline of species) and cultural (cultural activity of the human species). Some of them are more stable across time, such as cosmic rhythms, physical fields, or climatic fluctuations, while others are more sensitive and may quickly change intensity or disappear (cultural innovations, traits and trends).

It is reasonable to maintain that the whole human species is engaged in the cultural process. Thus, one may speak theoretically of the culture in the dimension of the human species. It is necessary to have this general frame of reference, otherwise it would be impossible to understand the aim of division into regions, subregions, local landscapes, socio-cultural systems and also the process of integration on the scale of the human species (globalization). In order to divide something, one should first have the concept of the whole. Of course, it should be remembered however, that man, and culture, contain antagonistic traits. This is so because individuals, groups and socio-political systems use antagonistic adaptive strategies. The source lies in the specificity of human nature, which is internally polarized. It is enough to state here that the polarization is manifested by needs that are shared by man with other animals and needs that are specifically human (needs of the generalized cognition of the world and meaning of life, plus aesthetic ones). The earlier division of culture into material and spiritual can still be maintained. Cultural activities and artefacts partaking in satisfying the specific human needs belong to spiritual culture. Material culture is connected respectively with the animal needs in man (A. Wierciński 1982).

Culture itself may be anthropologically defined as "the species specific and socially organized system of conscious adapting of man to surrounding by means of artifacts, aiming at satisfying his various needs which in turn prompt arousal of his emotional (motivational) centers" (A. Wierciński 1977; 1982).

Regional geography may be understood as the branch of knowledge that adequately describes and interprets the specific conditions for human life on fragments of the Earth's surface, as the result of local evolutionary changes, first of all in culture and in landscape. This means that on Earth's relatively isolated fragments specific processes of microevolution take place due to long term interactions between properties of the local environment and the generations of its users or inhabitants with directional selection. Among the inhabitants, people have an exceptional nature, which allows them to adapt through culture. Therefore, the directional selection is also a cultural one and refers to the pool of cultural memory

(tradition, stereotypes). In this case, the interpretation of the process shaping the specific conditions for human life in a region rely on the presentation of factors that assure the persistence in time of the dominant pattern of cultural strategy, encompassing the so called 'way of thinking'. Consequently, historical investigations of regional traditions are obviously indispensable.

Speaking more precisely, any essential cultural change is determined by the respective change in ideological regulation, of a given society, in the dominating model of the "world-view" and "meaning of life" that is disseminated by the education system. Any change in this model induces changes in human behaviour, and in the end affects the landscape.

The term 'landscape' is still very useful for regional geography. Landscape is the external reflection of regional properties. It contains elements which can be perceived and measured on a qualitative or quantitative scale. Those elements that are the effects of human cultural activity and belong to the spiritual aspect of culture (fulfilling human-specific needs) are especially important. Through their historical and anthropological analysis, we are able to indicate some principles which characterize the local world views or ways of thinking, with the division of traditional ones and those opposed to them. By studying pieces of visual art, music, architecture, customs, religious behaviour etc., and the written sources of traditional, along with modern socio-cultural systems and in order to find out general truths about the world, we can try to decode human beings, goals of human aspirations, and the adaptive strategy dominant in the region as the principles in the ideologically regulating subsystem. The landscape is the common sense of a region and its inhabitants in a particular time. Thus, depending on the knowledge of adaptive strategies, ideological regulation of societies, and the power of expansion, it is possible to foresee the course of change in the landscape, to state if it is consequent, harmonious or not. Moreover, it is possible to explain the shift of borders between regions, since they depend on direct influence of the competing ideologically regulating subsystems.

Conclusion

An anthropological and philosophical approach to regional geography offers not only a general frame of reference, needed to understand the antagonistic processes in regions, but also provides an opportunity to discover the method of a synthetic description of existing regions. At the base of regional geography should be, first of all, concepts of landscape, peculiarity of human nature, and cultural strategy.

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CHAPTER TWO

RELATIONSHIPS BETWEEN RURAL MIGRATION AND SOCIO-ECONOMIC FACTORS IN THE MEDITERRANEAN REGION

MEHMET GURBUZ

Introduction

In general, the concept of migration is explained as continuous change in the place of residence in administrative borders (Tümertekin and Özgüç 1998), and migration from rural areas to the cities is called rural migration. The need for migration started from the old civilizations when they began migrating because of their needs for finding food (Tanoğlu 1966). Later, the needs for migration varied in accordance with many factors, such as physical, political, historical, military and social economic needs (Gürbüz and Karabulut 2008).

In this sense the migration from the rural areas to the cities has occurred in many different ways in Turkey. During 1923-1950, the policy was to hold peasants in their village (Kurt 2003), but after Second World War this policy changed and migration from the rural areas to the cities followed an increasing trend. From 1950 to 1960, Turkey imported agricultural devices and equipment, and because of this there was a surplus of working power in the rural areas, forcing the peasants to migrate to the big cities (Yavuz et al. 1978). At the same time, this lead to an increase in the population after 1950. The concept of core family was developed, and traditional understanding of agriculture changed where big agriculture areas were divided into smaller ones. The relief in mountainous regions, harsh climatic conditions, and drought, were the main factors that contributed to the migration from rural areas to the cities. The migration of people who owned large areas of land affected the migrations (Özbay et al. 2001), leading to big differences between the rural areas and cities (Bulutay et al. 1971). Even today the rural migration continues because of

different changes in the global agenda. There are a lot of social and economic reasons for the migration of the people who are migrating from the rural areas to the cities in the Mediterranean region. In this study, the reason for the rural migrations in the Mediterranean region has been analysed in accordance with the social and economic relations using statistical techniques such as correlation and regression. It is better to understand the reasons for the migration, rather than to look to the migration rates; this will also give a possibility to guide the works of planers, politicians and academics to solve the migration problem (Yılmaz et al. 2005).

Material and Method

In this study, all information was taken from the 1997 inventory of the villages, changed and adopted according to our methods. A total of 39 socio-economic reasons affecting the numbers in rural migration and the migration rates of the provinces (Table 2-1) were prepared. The Pearson correlation coefficient was calculated to find the linear relation between the rural migration rate and socio-economic factors, and results were tested in accordance with the 95 percent confidence interval level. In this study, the hierarchical clustering analysis of the provinces and the economic features were clustered in similarity groups. In the hierarchical clustering analysis the distance unit was taken as Euclidean distance. The ward method was used, and later, the functional relation between the emigration rate and the socio-economic variable was evaluated through the regression model. Statistical calculations were done with SPSS Windows 11.0 software and mappings of these calculations done with the ArcGIS 9.1 software.

Results and Discussion

Rural migration: In 2009, the rural population of Turkey was 17,754,093 people, and this constituted 24.46 percent of the total population. The level 1 was divided into 12 statistical regions according to the statistical regional unit classification of Turkey. One of these regions is the Mediterranean (TR6). Total population of this region is 6,499,564 inhabitants, and 2,753,338 (42.36 percent) persons are living in rural areas. According to these rates, the Mediterranean region has the biggest rural population compared to other statistical regions, and 15.5 percent of the rural population of Turkey lives in this region.

According to the 1997 inventory of the villages, 182,110 persons migrated to the cities in this region. Adana and Kahramanmaras have had the highest migration rate based on the migration rates of the Mediterranean region (Fig. 2-1), and Adana saw 10 percent of the rural migration (Fig. 2-2, Table 2-1).

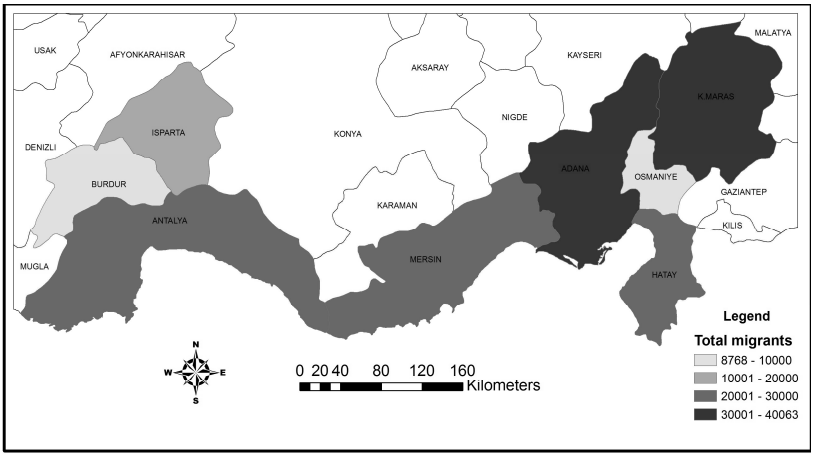

Fig. 2-1: Distributions of rural migration by provinces.

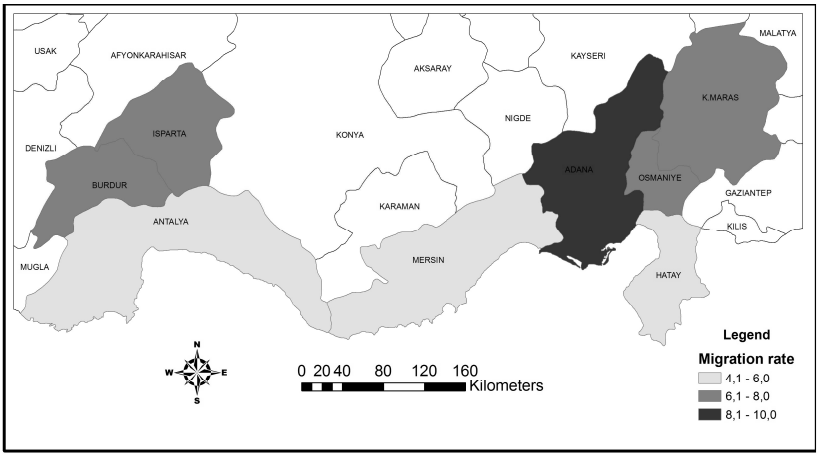

Fig. 2-2: Distributions of rural migration rates by provinces.

Table 2-1. Factors of rural migration in the Mediterranean region

Provinces	Migration rate	Rural migration number	Rate of buildings used for the purposes other than residence	Size of land per house	Rate of land applied disinfestations treatment	Number of cattle per household	Mortality rate	Rate of people benefiting from social welfare centers	Rate of green card	Rate of people at the age of primary school but not going to school	Rate of graduate degree	Rate of villages with primary source of income vegetable growing	The rate of land eligible for agriculture but not used
Adana	10,0	40063	29,78	193,44	21,81	2,01	0,62	1,85	4,79	0,24	0,27	79,69	12,27
Antalya	4,1	24987	23,36	163,35	136,73	1,23	0,47	1,38	2,43	0,04	0,09	64,10	3,25
Burdur	7,2	8768	28,33	196,46	11,48	2,48	0,75	2,83	4,96	0,17	0,10	62,19	5,57
Hatay	4,9	29517	16,49	36,06	27,47	0,61	0,50	0,94	3,39	0,04	0,06	65,53	4,13
Isparta	8,0	14853	26,48	183,03	11,69	1,71	0,64	2,44	8,62	0,17	0,08	57,14	5,51
Mersin	4,5	23619	14,65	143,11	12,44	0,79	0,52	1,32	1,73	0,07	0,10	49,47	2,64
Kahramanmaraş	7,3	31525	13,63	169,41	11,06	1,68	0,73	2,65	4,58	0,61	0,13	78,14	3,44
Osmaniye	6,4	8778	24,99	118,76	22,56	2,14	0,61	2,18	4,19	0,26	0,16	85,88	9,41

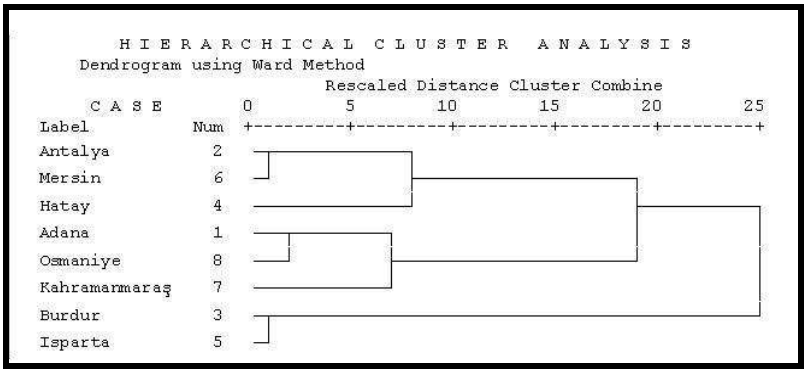

Fig. 2-3: Rescaled combined cluster distances of hierarchic analysis for socio-economic features

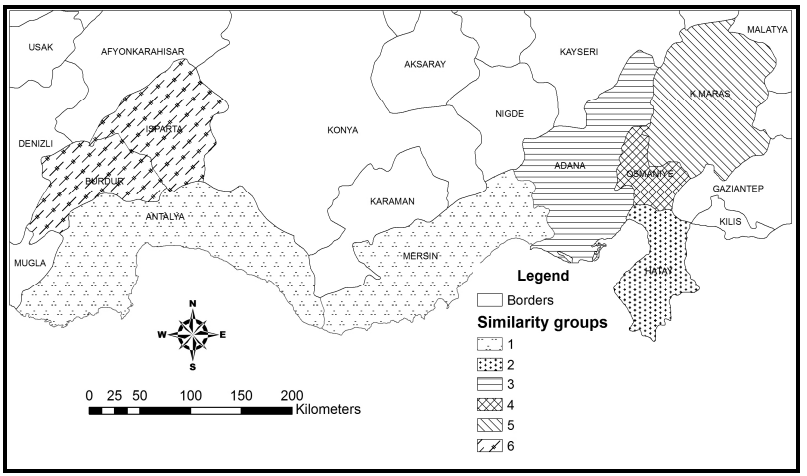

Fig. 2-4: Similarity groups of rural settlements based on socio-economic features at province scale (one unit distance)

Hierarchical clustering analysis: According to Hierarchical Clustering Analysis carried out using 39 socio-economic variables, clusters can be grouped as follows: 6 clusters in the range of 1 unit, 5 clusters in the range of 2 units, 4 clusters in the range of 7 units, 3 clusters in the range of 8 units, 2 clusters in the range of 19 units, and 1 cluster in the range of 25 units (Fig. 2-3). One unit distance is composed of a group including Burdur-Isparta and Antalya-Mersin, and the other provinces are

considered as a single group. Adana and Osmaniye are unified into two unit groups. In an eight unit distance Hatay and Antalya are grouped, and in a seven unit distance Kahramanmaraş is included in the Adana group. In a nineteen unit distance the Burdur group is combined with the Adana group and the number of groups is decreased to two (Fig. 2-4, 2-5, 2-6, 2-7, 2-8).

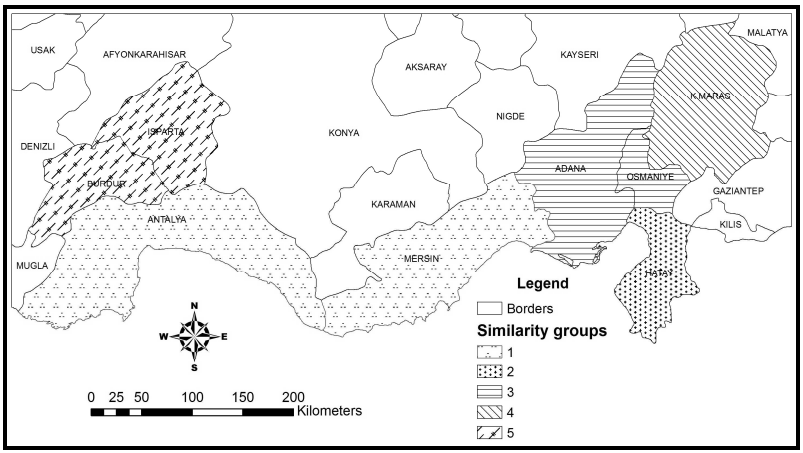

Fig. 2-5: Similarity groups of rural settlements based on socio-economic features at province scale (two unit distance)

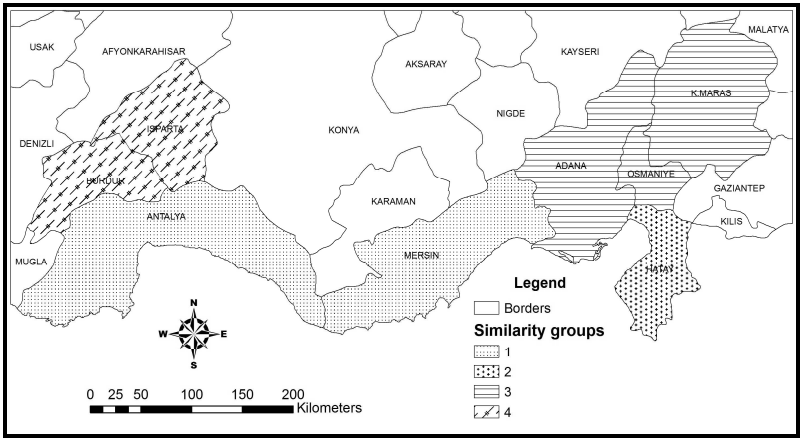

Fig. 2-6: Similarity groups of rural settlements based on socio-economic features at province scale (seven unit distance)

If we make a hierarchical clustering analysis according to the rural migration rates in the Mediterranean region: in one unit distance we have four clusters, in two unit distance 3 clusters, and in an eight unit distance 2 clusters (Fig. 2-9). The provinces in the Mediterranean region are similar in regards to the socio-economic and rural migration rates. This verifies that the rural migrations are affected by socio-economic features (Fig. 2-10, 2-11, 2-12).

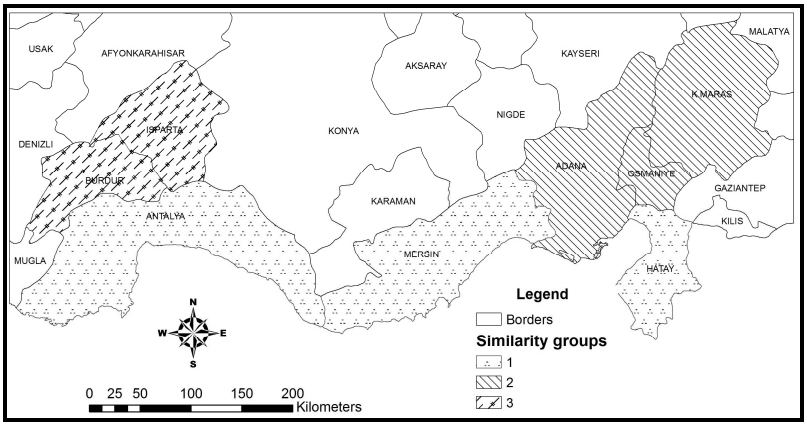

Fig. 2-7: Similarity groups of rural settlements based on socio-economic features at province scale (eight unit distance)

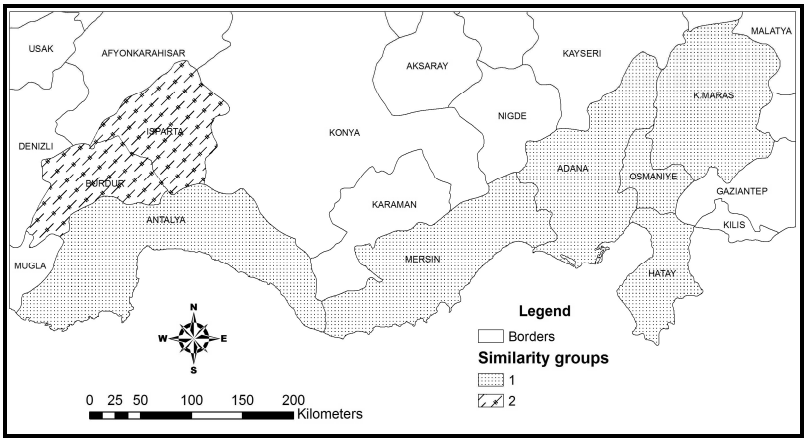

Fig. 2-8: Similarity groups of rural settlements based on socio-economic features at province scale (nineteen unit distance)

Correlation analysis: In the case of Pearson's correlation technique, from 39 variables we see that 12 of the socio-economic variables show negative relation with the rural migration rate (when the variables are increasing, the rural migration rate is decreasing), and the remaining 27 variables have a positive relation (when the variables are increasing, the migration rate is also increasing).

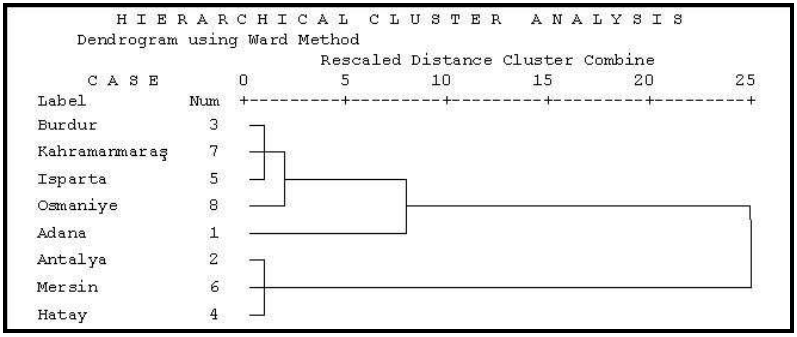

Fig. 2-9: Rescaled combined cluster distances of hierarchic analysis for migration rate

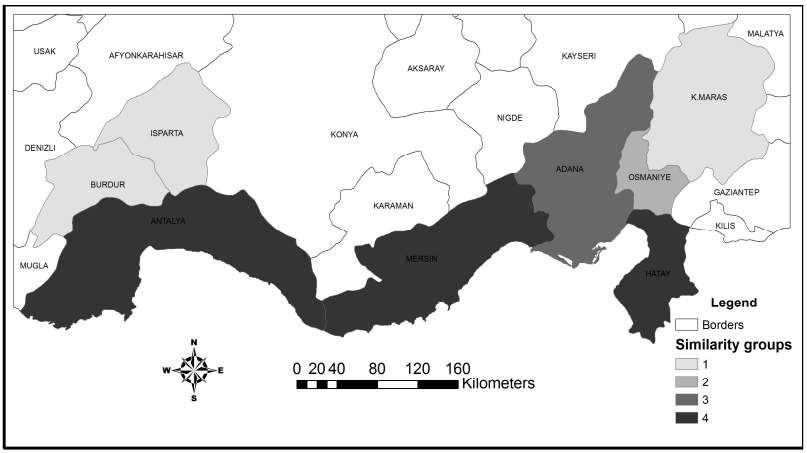

Fig. 2-10: Similarity groups of rural settlements based on migration rate at province scale (one unit distance)

Three variables have a high relation with the rural migration rate, 8 have a medium relation, 12 have a weak relation, and 16 have too weak a relation. In accordance with the 95 percent confidence interval, we see that just one variable is important from a statistical respect, and the remaining 36 values are seen as not significant (Table 2-2).

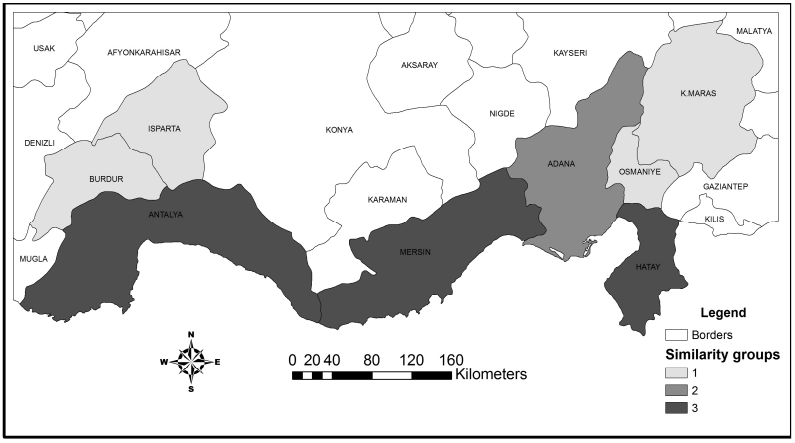

Fig. 2-11: Similarity groups of rural settlements based on migration rate at province scale (two unit distance)

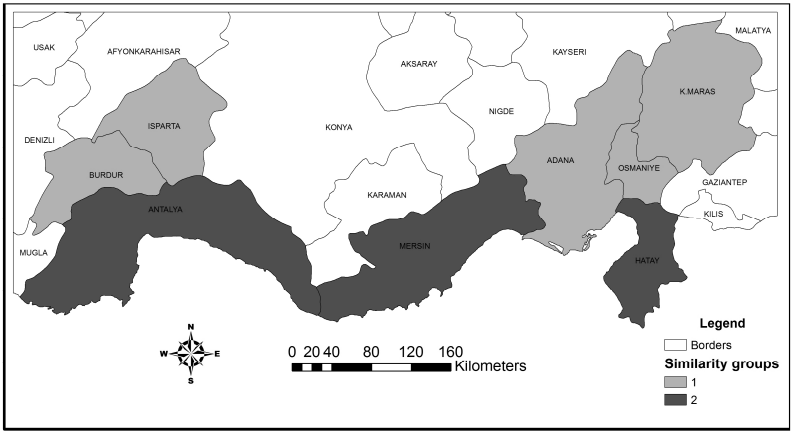

Fig. 2-12: Similarity groups of rural settlements based on migration rate at province scale (eight unit distance)

Only three variables (the rate of villages with primary source of income from vegetable growing; the rate of land eligible for agriculture but not used; the rate of graduate degrees) have a statistically significant relationship with migration rate.

The number of villages whose primary source of income is from vegetables and fruit has a significantly negative relationship with rural migration, because vegetable and fruit growing activities yield higher income in the Mediterranean region.

Table 2-2: Relationships between rural migration and socio-economic variables according to correlation coefficients. (S= Significant, NS= Nonsignificant)

Variables	Pearson correlation coefficient (r)	Significance level (α=0.05)		Relationship degree *
1. Rate of villages with primary source of income vegetable growing	-0.771	0.025	S	High
2. The rate of land eligible for agriculture but not used	0.742	0.035	S	High
3. Rate of graduate degree	0.725	0.042	S	High
4. Number of cattle per household	0.687	0.060	NS	Medium
5. Rate of green card	0.682	0.063	NS	Medium
6. Mortality rate	0.671	0.068	NS	Medium
7. Rate of people benefiting social welfare centres	0.596	0.119	NS	Medium
8. Rate of buildings used for the purposes other than residence	0.576	0.135	NS	Medium
9. Size of land per house (da)	0.559	0.150	NS	Medium
10. Rate of people on the age of primary school but not going to school	0.504	0.203	NS	Medium
11. Rate of land applied disinfestations treatment	-0.500	0.207	NS	Medium
12. Household rate dealing with agriculture and livestock	0.495	0.212	NS	Weak
13. Household rate not dealing with agriculture and livestock	-0.495	0.212	NS	Weak
14. Rate of villages with primary source of income fruit growing	-0.471	0.239	NS	Weak
15. Physiological density of population	0.461	0.250	NS	Weak
16. Rate of villages with primary source of income vegetable growing	0.449	0.264	NS	Weak
17. Household rate who deals with biological struggle	-0.424	0.295	NS	Weak
18. Household rate of farmers owning land	0.413	0.310	NS	Weak
19. Household rate who deals with biological treatment	0.413	0.309	NS	Weak
20. Maternal mortality rate over total birth	0.387	0.344	NS	Weak