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# Reflections of Environmental Determinism in the Questions Prepared by Geography Teacher Candidates

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## Abstract

This study investigated whether the environmental determinist approach, which was effective in geographical research especially at the beginning of 20<sup>th</sup> century and generally believed to be abandoned in the 1920's, still had impact on geography teacher candidates. With this aim in mind, teacher candidates were asked to prepare a single question by selecting only one of the four given themes and providing a written text consisting of expected answers to their questions in order to contribute to a questionnaire prepared at high school level. The study utilized document analysis method which is a qualitative research method. The study, composed of 224 geography teacher candidates during four separate academic periods, focused on the theme of rural habitats/settlements in Turkey which was selected by 123 of the participants to prepare questions while the other topics were also evaluated to support the study. As a result, it was determined that 96 of the questions prepared about the theme of rural habitats/settlements in Turkey which was selected by 123 teacher candidates were related to environmental determinist approach. It was found that teacher candidates were directly influenced by the dominant power of nature without taking into consideration the impact of man on environment or the mutual interaction between man and environment. Also, it was observed that teacher candidates did not follow academic level articles or other scientific studies and only used textbooks and they did not have any skills in regards to using documents while they prepared the questions.

## Keywords

Geography Teaching, Paradigms in Geography, Environmental Determinism, Preparing Questions

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Throughout the history of the science of geography, many ideas were generated to explain human-environment relationship. Among these, environmental determinism has been one of the much discussed ideas since its birth. While some geographers defend the constructive and destructive power of man in human-environment interaction, some others asserted that the environment controls human activities (Tümertekin, 1990, p. 25-37).

Since the time of environmental determinist paradigms in which the effects of geographical conditions on human beings are emphasized, many changes have been observed in the epistemology of geography. Due to growing and varying topics that progressed from rudimental geographical information to modern ones, geographical approaches that discuss how and where geographical knowledge will be used have also changed. The immense diversity in the field of geography in addition to the increase of available information has generated a parallel variety in the fields of interest in geography. Views on the use of geographical information are not only limited to the past and in the scope of today's modern thought systematic, there are various studies on how and where geographical information can be utilized (Artvinli & Kaya, 2010; Bekaroğlu & Yavan, 2013; Kaygalak, 2011; Kayserili, 2010; Kızılcıoğlu, 2006; Ünlü & Alkış, 2006; Girgin, 2001). Many of these studies center on "critical thinking, geographical questioning and environmental awareness".

Actually, before the rise of geography as a separate branch of science, the issues of what geographical information is and what purpose it serves were based on the views of early geographers like Aristotle, Herodotus, Strabo and Ptolemy. During the time of these early geographers, the nature was referenced as the source since knowledge was directly acquired from the nature and environmental factors always constituted the main theme. Hence, with examples taken from Ibn Khaldun; Tümertekin and Özgüç (2014, p. 47-48, 200) stated that environmental determinism, which has emerged as the reflection of determinism on geography, existed before the period when geography developed a scientific identity. As a matter of fact, the works of mediaeval scientists such as Ibn Khaldun mention that environment is used as a medium to present racial and cultural differences. For instance, by establishing a relationship between civilizations and climate and physical environmental conditions, Ibn Khaldun investigated the effects of weather conditions on human character and foundation of states. With his aforementioned ideas, Ibn Khaldun played a significant role in the development of environmental determinism movement (Alexander, 2005, p. 415; Glassner & Fahrer, 2004, p. 4; Gümüşçü, 2014, p. 318; Fekadu, 2014, p. 136; Görgün, 1999, p. 545; Kızılcelik, 2006, p. 142; Doğanay & Doğanay, 2014, p. 123). On the other hand, there are studies which demonstrate that Ibn Khaldun was not a strict determinist and he favored the role played by man over physical geographical conditions (Dönmez, 2002, p. 136).

Historically, during the early times when technology was not yet developed, environmental determinism was dominant in human-environment interactions. As a matter of fact, the expression by Herodotus, who is regarded as the founder of the

science of history, stating that Egypt is a gift of the Nile, is an indicator pointing to the fact that impact of the physical environment on man was noticed by early thinkers as well (Herodotus, 2016, p. 133). In the same vein, Strabo, one of the significant representatives of early geography, indicated in his work titled *Geographica* that while societies that resided in lowlands, coasts and regions with mild climates were more civilized and amenable; people who lived in highlands and higher regions were rude and far from being civilized. According to Strabo, life in highlands represented the first stage in civilization and lowlands and coasts indicated later stages. In this sense, downward progression from mountains (towards lowlands and the seas) pointed to some transformations in civilization and lifestyles (Strabo, 2000, p. 111).

The main philosophy of geographical determinism is based on the view that to a great extent, human life is shaped according to physical environmental conditions and in this sense, it is similar to other organisms. In other words, determinism in geography argues that in order to be successful in their struggle for life, man has to adapt to the rules of nature. In this context, determinists claim that the topic of geography is the exploration of the methods used by man to react to the physical environment. Thus, the reactions displayed by man encountering a new physical environment can be predicted (Tümertekin, 1990, p. 25). In this respect, the determinists have argued that human nature and the nature of human activities are shaped in relation to a set of invariable rules of nature and at the same time, just like other living beings, humans are dependent on some natural rules.

The idea of determinism was affected by Darwin's theory of evolution in 19th century and became a source of inspiration in geography research and geographical insights. Hence, Darwin's views were started to be applied in the science of geography (Tümertekin & Özgüç, 2014, p. 193-199).

In modern sense, geographical determinism became effective after geography acquired an academic identity. As a matter of fact, along with the increase in the number of academic studies on environmental determinism, the environmentalist approach started to gain acceptance by some Western geographers in the end of the 19th century and at the beginning of the 20th century. The geographers who were most affected by environmental determinism movement were the German and American geographers who argued that human activities on earth were controlled by the environment (Şahin & Belge, 2016).

The determinism movement gathered immense momentum with Ratzel's (1844-1904) work in geography. In his two-volume work, *Antropogeographie*, Ratzel presented the impact of physical environment on man. He explored the styles of group formation on earth and the distribution and migration of these groups and addressed the issue of man in relation to external environment by leaving genetic entity aside. Regarding man as the product of physical environment sustaining their lives under the influence of nature, Ratzel believed that man could succeed in their struggle on earth as long as they complied with the rules of physical environment (Tümertekin & Özgüç, 2014, p. 193-199).

Ratzel pointed to the relationship between the environment and political units in his work *Politische Geographie* in which he openly advocated the view of environmental determinism. In this work, Ratzel approached the state like a living organism and defended the view that like living beings, states are also born and they develop, age and die (The Organic Theory of State). Hence Ratzel found it necessary for states to acquire new areas/land in order to continue their growth and dominance and argued that this necessity was born out of biological obligations (Akengin, 2013, p. 37). In this context, Ratzel regarded man as an entity that continue to live depending on the rules of physical environment just like other living beings and asserted the superiority of environment over human beings. At the same time, Ratzel adopted the idea of environmental determinism to political units. His views made tremendous impact in the geography community and were followed with great interest by American geographers such as Davis (1850-1934), the first President of American Geographers Association, Semple (1863-1903) and Huntington (1876-1947) before the 1920's (Friedman, 2003).

Semple superficially played a role in making the environmental determinism movement effective in countries like England and U.S where English is spoken. Influenced by Ratzel, Semple explained the impact of the physical environment on man with examples in his book titled *Influences of Geographic Environment* (1911). As a matter of fact, the introductory sentence in the aforementioned work (Semple, 1911, p 1), "Man is the product of Earth's surface" clearly Semple's deterministic view.

One of the geographers who promoted determinism in his work is Huntington. In his work, *Civilization and Climate* (1915) Huntington demonstrated the relationship between the development of civilizations and climatic occurrences. According to Huntington, changes in climate are effective factors in the development or annihilation processes of civilizations. Huntington argued that civilizations could only develop under appropriate climatic conditions. He also asserted that temperature was a significant influence on the energy of man and the tempo of work changed according to seasons (Huntington, 1915, p. 214). In addition to deterministic views, he used the theories he developed to explain the rise and fall of civilizations. To support his theory, he maintained that the Middle Eastern, Central Asian and Mayan civilizations disappeared due to climate changes (Tümertekin, 1990, p. 25-37). In this sense, according to Huntington, while climate affects man, it is closely related to the development process of civilizations.

Geographers such as French geographer Demolins (1852-1907) advocated the view of determinism in Europe with positive assertions. Indeed, Demolins proposed that steppes shaped man's lifestyles and societies living in steppe regions created cultural unities thanks to horses. Demolins stated that patriarchal family structure was a general characteristic of steppes and that the food consumed, work and structure of society underwent transformations due to frequent change of location by nomads who bred animals (Tümertekin & Özgüç, 2014, p. 199). Hence, emphasizing the animal breeding as the main factor that changed man's life, Demolins indirectly addressed the impact of

climate. He expressed that this had significant implications on social interactions and creation of cultural unity.

According to Humboldt who was regarded as the founder of physical geography and Ritter, the founder of modern human geography, human geographers should benefit from nature sciences in comprehending the human-environment relationship. According to Ritter, the fundamental topic of human geography is the relationship between man and environment. However, Ritter did not accept the dominance of any of the two parties in human-environment interaction (Doğanay & Doğanay, 2014, p. 21). Nonetheless, according to Ritter, small and slanted eyes of Turkmens with swollen eyelids clearly showed the impact of desert conditions on the organism (Semple, 1911, p. 36). Based on this, it can be argued that while Ritter was not a pure determinist, he advocated views that supported the influence of environment over man.

Deterministic views are reflected on geography as environmental determinism which asserts the superiority of environment over man. Accordingly, the environment has the power of control over man's body and mind. In this context, geographical determinism, which portrays man as a passive being, argues that the nature shapes man. However, the fact that societies living under similar physical environmental conditions have different cultural characteristics has generated significant criticism for the view of environmental determinism because according to environmental determinism, man is the product of nature and similar outcomes are expected for man under similar physical environmental conditions. Different human characteristics observed in the regions with similar physical environmental conditions have incited significant criticisms against determinism. On the other hand, it is correct that physical environment shapes some of the human activities. However, it is clear that this shaping/forming is not absolute. Human beings can isolate these limitations based on their needs, traditions and the technological means they possess because they can shape and benefit from the environment with their knowledge accumulation (Şahin & Belge, 2016).

For some geographers, geographical determinism was only a theory. According to Glassner and Fahrer (2004, p. 54-55) this was related to the fact that determinism has never been supported with concrete evidence and experiments. Hence, mild criticisms for environmental determinism after the 1920's became more intensive at the end of the 1930's and in 1950's the term "determinist" almost acquired a derogatory and depreciatory meaning. Therefore, geographical determinism, which was once a common view, has become insignificant in academic geographical studies since the middle of the 20th century. The most important cause for this shift is the increase and distinctiveness of the constructive and alterative power of humans over nature due to the technologies they have developed.

Geographical thought has been observed to penetrate the processes and periods of these paradigm shifts from time to time. That is to say, a distinctive transition may not be observed between periods. It is possible to summarize the definitions for the scientific method and analysis of these approaches in the following manner (Özgen, 2010):

- “Descriptive geography” paradigm which describes the natural environment and human activities,
- “Environmental determinism” paradigm which argues that man is dependent on nature,
- “Humanist geography” paradigm and the impact of space on the attributes of man,
- “Possibilist” approach that sees the nature as a field of man’s actions,
- “Positivist geography” or “quantitative geography” that believes space is composed of what can be measured,
- “Probabilist” paradigm that supports natural environment-human interactions,
- “Landscape” view that defines scenery and beautiful areas,

Undoubtedly, these approaches point to the relationships between science and technology at the time and the extent of their use by human beings. In addition, these paradigms, which form the approaches to science of geography, also defined the framework of geographical studies. Based on the framework of these studies, concepts were created in each of these paradigm periods which were influential in the history of geography as schools of thought. Concept formations were especially visible in research questions and were predominantly observed in the studies conducted at that time. According to Kaygalak (2011), it is possible to comprehend the periodic changes in a discipline or branch of science by examining the changes in the research topics or questions. However, when this change is examined in social sciences, the main indicator, to a great extent, is the concepts generated in this field and therefore the language. In reality, meanings attributed to concepts and the changes in concepts point to the paradigm shift in social sciences.

This study addressed the environmental determinist expressions and concepts used in textbooks, source books and academic articles in Turkey as the research topic and undertook an inquiry as to the views of geography teacher candidates in regards to these approaches. Hence, this study aimed to follow the traces of environmental determinist paradigm in the minds of geography teacher candidates. The results will help present the extent of importance attached to paradigm approaches and current studies while teaching geography in higher education institutions.

## **Methodology**

This study was designed as a qualitative study and utilized document review method which is based on examining written materials. Content analysis was used as data analysis technique. In content analysis, similar data are combined around specific concepts and themes and interpreted in an intelligible manner (Yıldırım & Şimşek, 2008). In fact, this study may be regarded as an open-ended survey. In order to collect data in a robust manner, teacher candidates were given appointments as groups composed of 2, 3 and 4 individuals and interviews were held at prescribed dates. During the interviews, teacher candidates were asked to prepare open-ended questions for high

school students using the given themes. Also, books written by different authors about topics used in the study, high school geography textbooks used by T.R. Ministry of National Education and various academic articles were placed on the desk as sources during the interviews so that teacher candidates could use them while they prepared their questions. Teacher candidates were informed that they had no obligation to make use of the sources. Interviews for each group lasted approximately 20 minutes. Each participant signed the document that contained the questions prepared by them and wrote their names, surnames and the date. For this reason, the interviews were not digitally recorded.

A computer with internet access was also provided by the researchers in case participants wanted to obtain information about the topics. Based on the observations of the researchers, participants who did not use any sources during preparation was asked “why they did not use any of the sources that were provided” and participants who benefited from the sources were asked “why they preferred this specific source”. The researchers took notes about participants’ answers and attached these notes to participants’ question documents.

Based on preliminary work conducted by the researchers, the following instructions were prepared for the teacher candidates who participated in the interviews. The instructions included the topics that focused on natural environment-human interaction based on the texts found in textbooks and the sources.

“A question bank is prepared to be used in classical written examinations in high school geography classes. The bank will be composed of questions that motivate students to think and increase their ability to interpret. You are asked to prepare a classical written exam question for only one of the themes provided below”.

- ✓ Rural habitats/settlements in Turkey and the world
- ✓ Distribution of population in Turkey and the world
- ✓ Atmosphere and its characteristics
- ✓ Stockbreeding and its distribution in Turkey and the world

Each teacher candidate who prepared a question for the given themes was also asked to develop the “answer key” to be used in assessing the questions.

After the teacher candidates prepared the questions and the answer keys, they were asked about the source (s) they used during preparation or whether they felt the need to utilize sources.

The data collected in this manner was grouped according to concepts and statements that express the paradigm approaches in geography and the themes that were selected. Content analysis was conducted on the data. Finally, detailed literature review was undertaken about the groups with the highest frequency and answers were interpreted. Based on this, questions related to “Rural habitats/settlements in Turkey and the world” theme for which 123 teacher candidates prepared questions were taken as the actual data for the study and the study focused on this theme from this point onwards. Questions

prepared for the other themes were included in the study only through categorization so as not to create data confusion.

Questions prepared for the study were piloted on 40 geography teacher candidates who received their formation in the fall semester of 2014. Based on the feedback obtained from the pilot study, the measurement tool and the questions were directly used in the actual study without any changes. While interpreting the questions provided by the teacher candidates, a grouping was done. Views of an assessment and evaluation expert were taken into consideration about how to conduct the grouping and the points that needed to be considered.

Cognitive domain levels and scopes of questions were not taken into account during evaluation. The questions were only evaluated and grouped in relation to paradigm approaches in geography.

### **Study Group**

This study was conducted with the participation of 224 geography teacher candidates (128 males, 96 females) who received Pedagogic Formation training course in Balıkesir University in four separate periods during the spring term between 2014 and 2017. Pedagogic Formation training course is composed of educational sciences, domain training and internship that need to be attended by university students in departments other than faculties of education or graduates so that they can perform the teaching profession in the future. The geography teacher candidates in the sample received their bachelor's degrees from six separate universities. While 176 participants were students in/graduates of Balıkesir University, 38 graduated from other universities.

### **Findings**

Examination of the themes selected by teacher candidates for their questions shows that Rural habitats/settlements in Turkey was the theme with the highest number of questions (123 teacher candidates) followed by Stockbreeding and its distribution in Turkey and the world (40 teacher candidates), Distribution of population in Turkey and the world (38 teacher candidates), and finally, Atmosphere and its characteristics (23 teacher candidates) (Table 1).

Table 1

*Distributions of the Questions Prepared By Participants According to Themes*

	<b>Themes</b>	<b>Frequency</b>	<b>Number of Questions Corresponding to Determinist Paradigm</b>
1	Rural habitats/settlements in Turkey	123	96
2	Distribution of population in Turkey	38	26
3	Atmosphere and its characteristics	23	8
4	Stockbreeding in Turkey and its distribution	40	21
	TOTAL	224	151

Researchers kept different sources, textbooks, articles and a computer handy on the desk during the interview with teacher candidates to support them. While questions were prepared, it was observed that teacher candidates did not prefer to use these supplementary references very much (Table 2). During this stage, the participants who benefited from the books were asked prompting questions such as “why they did not benefit from the articles or the computer” and “why they preferred this specific book”.

Table 2  
*Sources Used By Participants to Prepare Their Questions*

Sources used	Number of teacher candidates
Book	12
Article	2
Digital Documents / Internet	26
Own information	184

While they prepared the questions, from among the available books, teacher candidates used the sources identified as “reference books” which they studied during their university training. None of the 12 teacher candidates who prepared questions by using books benefited from high school textbooks. When asked the reason for this, teacher candidates stated that “they already knew the content of the textbooks very well”.

Among the answers provided to the question why they did not benefit from articles during preparation, the most salient answers were expressed in statements such as “articles mostly included specific topics; general themes were not included in articles and articles contained information that belonged to the period in which they were written while books included information valid for a lengthier time frame. However, participants did not even open the file that contained the articles while they prepared their questions.

When answers provided to the question “why documents were used instead of the computer” were examined, it was found that teacher candidates mostly provided the reason as “faster access to information”.

A total of 184 teacher candidates completed their questions without consulting any sources. Some of the answers teacher candidates gave to the question “why they did not use sources” is provided below:

- ✓ I feel my knowledge is sufficient for this question.
- ✓ I did not ask for information, I asked for interpretation. Hence, I did not need to use a source.
- ✓ I did not use any sources thinking that I have sufficient knowledge.
- ✓ I know the topic

Almost all teacher candidates who did not use sources while they prepared questions gave similar answers.

Following the preparation of questions, some of the questions prepared in the theme of “Rural habitats/settlements in Turkey and the world” were identified to belong in the

determinist paradigm framework as a result of the grouping based on the themes. These questions were not prepared by a single teacher candidate but by more than one participant and they represent a general combination of questions with similar expressions. Questions are followed by a section titled “expected answer” based on the answer key prepared by the teachers.

Environmental determinist approach is observed not only in the questions but also in the answer keys personally prepared by the teacher candidates who prepared the accompanying questions. The questions and answer keys provided below are organized by combining similar questions prepared by more than one participant. While combining these questions, the gist of individual questions and the meaning of sentences were preserved.

**Question 1:** Traditional habitats in the rural settlements of the Mediterranean Region and the traditional habitats in the rural settlements of the Black Sea Region are different. What does this difference indicate about the characteristics of these two places?

**Answer 1:** *While the habitats in the rural settlements of the Mediterranean Region are made of goat hair tents or stone materials, they are mostly constructed by wooden materials in the Black Sea Region. This difference is related to two main factors: differences in climate and accessible construction materials.*

**Question 2:** Provide information on the reasons why dispersed settlements are common in the Black Sea Region.

**Answer 2:** *The two most important reasons why dispersed settlements are commonly observed in the Black Sea Region are related to the existence of mountainous areas along with fragmented agricultural areas and scattered rather than concentrated water resources.*

**Question 3:** Explain the relationship between construction materials of rural habitats in Turkey and the physical geography characteristics.

**Answer 3:** *Traditional rural habitats in Turkey are designed to accommodate the impact of the climate in the best manner and their construction materials are the most common natural materials found in the geographical region they are located.*

**Question 4:** What is the most important factor in selecting construction materials used in the rural habitats in the Southeastern Anatolia Region?

**Answer 4:** *The most important reason for using adobe bricks made of sundried earth and straw as construction materials in the Southeastern Anatolia Region is the accessibility of this material.*

**Question 5:** Provide information about the factor that causes the formation of dispersed and clustered settlements in Turkey.

**Answer 5:** *The most important factors that cause the formation of dispersed and clustered settlements in Turkey are land structure and water resources.*

**Question 6:** What can be the common reason for the rural settlements in the Central Anatolia Region and Aegean Region to display clustered settlement characteristics?

**Answer 6:** *The factors that prescribe whether rural settlements in Turkey are dispersed or clustered are access to water resources and the geo-morphological structure of the land. In this case, existence of concentrated water resources in specific locations and wide agricultural areas where clustered settlements can be founded are common to both geographical regions.*

**Question 7:** What inferences can you make about the climate characteristics of the area where you can find a traditional rural settlement constructed by natural rocks?

**Answer 7:** *In general, rural settlements in which rocks are used as construction materials are common in the Eastern Anatolia Region. The most important cause for this is related to harsh winters and extreme differences between day and night temperatures.*

Among the questions prepared by teacher candidates in regards to the theme “Rural habitats/settlements in Turkey”, the question with the highest frequency was found to be “Explain the relationship between habitats and the climate and nature conditions in Turkey (32 teacher candidates). In general, this question allows students to make comments and use their prior knowledge. However, when this question was examined in regards to the topic of this study, it was identified that the question included redirecting. This redirect was hidden in the word “relationship” which molded the theme in a specific pattern. When the teacher candidates were asked why they prepared such a question, in general they stated that “led by climate, other physical conditions are main determinant factors in traditional settlements especially in rural habitats”. While the essence of the question pointed to determinism, the rationale behind preparing this question is as environmentally deterministic as the question.

In addition, the statements used in the answer keys prepared by the teacher candidates to evaluate their questions were also found to support the environmental determinism approach. When the expressions presented in the answer keys were evaluated, it was found that the most frequently repeated terms were “climate” (109 times) and “physical conditions” (98 times)”. Also, sentence analysis was conducted in addition to the statements found in the answer keys prepared by teacher candidates and in general, the most sought out factor in scoring was found to be the answers related to these terms. Therefore, the dominance of environmental determinism is clearly felt.

In addition to the impact of geographical conditions, the answer keys prepared for the same question included expressions such as “traditions and customs, lifestyle and economic situation” but they were limited compared to other expressions (used by only 16 teacher candidates). It was identified that a teacher candidate used statements which pushed human factors into the background such as “culture and economic structure were also effective” when mentioning the fact that human factors affected shaping the types of rural habitats. In general, only one teacher candidate mentioned human factors such as cultural characteristics, economic situation and life style in the first place in the answer key. The aforementioned question and answer key are provided below:

Question: Briefly explain the factors that affect the common use of goat hair tents as habitats in the Mediterranean Region, especially in rural parts.

Answer: *While the climate characteristics in the Mediterranean region allow the use of goat hair tents, the economic activities and culture in the region also play a significant part in using these tents. One of the important traditional income sources in the region, sheep and goat farming (especially goat farming), provides the raw material which is the construction material for this type of habitat while nomadic and temporary transhumance activities are culturally significant in using tent habitats.*

- ✓ *Climate affects man's life in various ways. It determines many things from the agricultural products that are grown to materials used in constructing houses to economic activities (p.71).*
- ✓ *Homes in areas where this climate is effective are generally made of adobe bricks. This material ensures that the house is cool when the weather is warm and it is warm when the weather is cold (p.71, 72).*
- ✓ *The flora in the Black Sea climate is usually the forest. Hence, the construction material of the homes in rural areas is wood (p.74).*

Sentences with similar expressions can also be found in High School Geography 10<sup>th</sup> grade Textbook (T.R. Ministry of National Education, 2017). Some examples are provided below:

- ✓ *“One of the fundamental needs of the man is accommodation. Structures established to meet that need is called habitats. Habitats are the core of settlements. Habitats established in line with environmental factors are combined to create units of settlement units” (p.154).*
- ✓ *“When the areal distribution of population and settlements in Turkey is examined, the first conspicuous characteristic that can be noticed is the irregularity of the distribution. This condition is shaped by the natural environment” (p.154).*
- ✓ *“In dispersed settlements, homes are scattered on land one by one or in the form of a few homes. Distances between habitats are excessive in areas where the land is rugged and agricultural areas are small and fragmented. Lack of an obligation to gather around a water resource is an effective factor in dispersed settlement” (p.164).*

Also, while explaining the rational of dispersed and clustered settlements, the same book only took the climate and physical conditions into consideration and did not mention the cultural aspects at all (p.165).

Similar expressions were also found in another geography book written for high schools and again, the topic was addressed with an approach that gave natural factors precedence over other factors (Tekbaş, Ekiz, & Aydın, 2017);

- ✓ *Rural settlements are composed of scattered or clustered habitats. Whether the unit of settlement is dispersed or clustered is dependent on climate, geographical formations and water resources (p.182).*
- ✓ *Units of settlements composed of a single house and attachments are usually observed in the Black Sea. The reasons for this can be cited as abundance of water resources and scattered agricultural areas in the Black Sea. The single home and its attachment which is usually a barn or a cellar are constructed in close proximity to agricultural areas. Since water resources are limited in Central Anatolia, units of settlements are clustered around waterfronts. Hence, settlements composed of single homes with attachments are rarely found in this region (p.183)*

The fact that the impact of environmental determinism is effectively observed at different levels in formal education in Turkish Education System is highly significant since this approach affects the perceptions of teacher candidates.

While evaluating the results based on the training received by the teacher candidates, some studies were found in the literature that show why teacher candidates followed this line of thought. In Turkey, several studies were conducted on traditional habitats and their modernization process by different disciplines in architectural and sociological dimensions in addition to geography. Studies on traditional rural habitats dated back to 1920's and the studies conducted in the period of 1920-1950 focused on physical environment and construction materials. Determinist approach was distinctly visible in the works of researchers such as Celal (1928), Nureddin (1928), Koyunoğlu (1929), Gabriel (1938), Taut (1938), Eldem (1939) in this period. Studies conducted during this period reported that habitats were shaped by materials and physical environment. While these studies partially mention the impact of culture in shaping the habitats, culture was never regarded as a significant factor in any of these studies.

Environmental determinism approach was single-handedly dominant in the studies on rural habitats until the end of 1960's. These studies sought to explain the construction materials and their causality while examining the habitats. Physical environment was presented as the main factor in shaping habitats in the studies of this period. (Tuztaşı, 2010). Uluç (1946), Hotan (1947), Tomsu (1950), Akok (1953), Kafesçioğlu (1949), Beken (1949), Kömürçüoğlu (1950), Berk (1951), Eser (1955), Çakıroğlu (1952), Erginbaş (1954) and Evren (1959) can be given as examples for these type of studies. In these studies, materials and climate were approached as the main factor in shaping habitats. For instance, in the following sentence Tunçdilek (1960) showed that these ideas were transforming: "Variety in the habitats found in Middle Sakarya Valley is the product of geographical location first and of traditions and customs later".

Despite the dominance of environmental determinism in this period, there were studies that highlighted the cultural perspective. By stating that "in addition to tradition, customs and other psychological, ethnic, historical and economic factors, the impact of geographical factors on habitats which underwent a lengthy development process and which carry the traces of the whole past is significant and undeniably clear in the basic

shapes of homes that constitute the characteristic of each region and that change from region to region”, Tanoğlu (1969, p. 124) emphasized that culture is a more important determinant than geographical factors. In the same period, in his work titled “Architecture in the Village, Eastern Black Sea” Özgüner (1970) listed the factors that affected the planning of homes in the order of importance and featured the cultural perspective by defining the factors such as traditions, customs, life style and culture as the main factors while he specified the other factors such as climate, topography-landscape, sun and construction materials as secondary factors.

By the end of the 1990’s, some researchers started to use the possibilist approach in their studies. In this approach, researchers regard the physical environment as a factor that offers opportunities and places limitations to shape the habitat while they regard the man as the entity that makes a selection from among these. Hence, according to these researchers, the main factors that shape habitats are man and culture. According to this approach, habitat is the product of cultural decisions made out of the possibilities offered by the local culture and the environment (Arı, 2005). In this period, studies conducted by Işık (1992), Tunç (1997), Uzun (1997), Köse (2005), Köse (2007), Yıldırım and Hidayetoğlu (2009), Perker and Akıncıtürk (2011a), Perker and Akıncıtürk (2011b), Gök and Kayserili (2013) provide examples for studies based on the possibilist approach.

As a matter of fact, Zaman (1995) empathized mutual interaction by stating that “homes are temporary artifacts with short lives such as the human beings that build them or have them constructed. They wear off sometime after they are constructed, they crumble and new ones replace them.”

During the same period, Ünal (1997) stated that, in general, the habitats in Pasinler were constructed according to traditional patriarchal family structure and the construction materials and shapes of these habitats were directly related to the economic level and culture of the family.

Despite this process experienced in the settlement geography in Turkey, many studies still focused on environmental determinism in the 2000’s (Özdemir, 2000; Özav, 2002; Girgin and Güner, 2002; Koday, Koday and Karakuzu, 2004; Köse, 2005; Akbulak, 2007). These studies present the fact that paradigm shift is not yet complete by partly mentioning cultural impact but not including much information in their content.

## **Result and Discussion**

This study examined the impact of environmental determinism among paradigmatic approaches to geography via an activity based on preparing questions. The most important result obtained from this study was the finding that teacher candidates either regarded the cultural values from the past to present and technological advances to be influenced by the power of nature or they did not take these into consideration at all. 151 of the 224 teacher candidates that participated in the study used statements that was directly in line with environmental determinist paradigm as the approach in the

questions they prepared and they used explanations for the expected answers in the same vein (Table 1).

During the activity based on preparing the questions, teacher candidates were found to prepare the questions by using the information they possessed rather than using the documents that provided detailed information about the themes (Table 2). This being the case, their emotions or ideas precluded the main theme and what they expected from the students as the answer to their questions were not current information found in the sources but the information they individually sought.

While a direct environmental determinist view was not dominant in any of the articles written about habitats and settlements, teacher candidates were found not to prefer these articles. It was found that digital documents or books were preferred more in terms of use of sources (Table 2).

The teacher candidates who consulted books while preparing the questions preferred the books they used at the university as textbooks and none of the teacher candidates used the high school textbook (the material they will use when they start teaching) to prepare the questions or the answer keys. To justify not using high school textbooks, they mentioned “good command of the book”.

The view that “man is a part of nature” was confused with the perception of “man is the toy of nature” by the participants. This transformation may have been caused by presenting the extreme nature phenomena along with tragic stories in print and mass media and in internet environments. The statements that support this finding can also be observed in the questions and answer keys prepared for “atmosphere and its characteristics” theme. As a matter of fact, six questions that were similar to the following question were prepared in this theme: “If the attributes of the ionosphere had been different, what kind of effect it could have in daily life (on communication)?”. A probable answer expected from the students are as follows: “frequencies, primarily the radio waves, would not be reflected and therefore immense advances were not going to take place in communication”. While this question seems like a question that will guide students to think, it includes an approach that ignores what man can accomplish. Even if the attributes of the ionosphere did not allow reflecting radio waves in actual life, then man could discover a different wave length or frequency.

### **Suggestions**

While environmental determinism took its place in the history of geography as an approach that was abandoned in 1920's, it still continues to be effective due to two important factors: shortcomings arising from the system of education (inadequate explanations and activities) and shortcomings arising from the individual himself (lack of reading).

It is absolutely necessary to explain human-nature interaction to students by supporting the topic with examples in geography lessons. In this way, people can develop a different perspective to their adaptation to nature by better comprehending the characteristics of their own species. The fact that a precious mine is located in an area does not necessary mean that this location is a mining region or that people living there

should be miners. Traditional lifestyles, technologies developed by man and culture should never be ignored.

Articles are studies that focus on current knowledge and they ensure that scientific studies can be undertaken academically. In addition, they are publications that guide the future work by examining the characteristics and thought patterns of both the present day and the past. Since teacher candidates' excuse of finding the articles "too specific" was not addressed in the present study, this topic can be a separate study that needs to be discussed and investigated.

Also, whether teacher candidates, who took exams to enter the university and to start their professions, were directed to environmental determinist views previously can be studied for the period when they studied for the university entrance exam and the period when they studies For Public Personnel Selection Examination taken before they start their careers.

In order to discover their views and thought patterns, some activities should be integrated in teacher candidates' training at the university which aims to provide education compatible with current paradigms. "Creative writing" method can be used in these activities. Similar studies can be conducted on students at primary, secondary and high school levels to obtain more comprehensive findings about the topic.

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