

# ECOLOGY AND CIVILIZATION OF THE ARMENIAN HIGHLAND

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## **General remarks**

Scientific evaluation of any given people along with the statehood as a result of its political, economic, and spiritual-cultural development as well as civilization is mostly dependent on the geographical background where this people originates or at least spends main phases of its history. The role of the environment in the development of human society was discussed since long (including ancient Greece and Middle ages), resulting in several theories, any of which was aimed on the establishment of spheres and scales of its influence.

The existence of close relationship between the environment and the development of human society was first touched upon still in the studies of some ancient authors.<sup>1</sup> Human being and consequently society which constitute part of the given ecological system (along with other representatives of fauna and flora), could not avoid its direct or indirect influence, which affects all spheres of the subsistence of the society and tendencies of its development.<sup>2</sup> The role of the environment in the current post-industrial society sometimes is not fully recognized due to high technological potential and international cooperation, but as far we look on earlier periods we see its effect, negative or positive.<sup>3</sup> During the early history of human civilization that influence was incomparably greater, especially during the isolated/hostile nature of the patriarchal-tribal period, the existence of the mentality of “own and alien”.<sup>4</sup>

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<sup>1</sup> Thus, still Thucydides, the famous Greek historiographer, was trying to explain the rise and strength of the Athenian polis through the geographical peculiarities of Attica (Thucydides 1981: 5f.).

<sup>2</sup> In archaeological science this area is called “Environmental archaeology” (see Jones 2005: 59ff.). Actually, it is quite close to the “Ecological archaeology”.

<sup>3</sup> To avoid all historical examples we shall refer to one which is common for all peoples dwelling in one and the same geographical and climatic zone. In the areas possessing with modest water resources the allowable variation of climate towards aridization forces the people to periodically change its habitat, and as a consequence agriculture was becoming a secondary resource of subsistence, limited with small-scale gardening. Instead, from now on dominates pastoralism which requires more mobile lifestyle. The latter begins with the usage of resources which could be acquired in the immediate and more distant neighborhood of the settlement (hunting, booty from neighboring communities, etc.) which later leads to the militarization of the society, aggressiveness, and sometimes culminating in the partial or total depopulation of the given settlement or region. By the way, the continuous migrations of different peoples and tribes of the “nomadic belt” of Eurasia (for this term see Chernykh 2008) has been explained by the negative impact of the climate by some scholars.

<sup>4</sup> For instance, the permanent conflict or at least unfriendly relations between ancient Greek poleis populated by people speaking on related dialects of one and the same language.

Let us refer to some outstanding scholars who had discussed the impact of the environment on the history of mankind – Ch. Montesquieu,<sup>5</sup> H.Th.Buckle,<sup>6</sup> Fr.Ratzel,<sup>7</sup> S.M.Soloviev,<sup>8</sup> V.O.Klyuchevskij,<sup>9</sup> E.Huntington,<sup>10</sup> C.Brooks,<sup>11</sup> R.Stothers;<sup>12</sup> among Armenian scholars are worth to mention A.M.Garagashyan,<sup>13</sup> S.Palasyan,<sup>14</sup> Leo<sup>15</sup> etc. But until the middle of the XIX century prevail theories which underestimate or even reject the role of the environment. Among them were K. Marx, Fr.Engels and their followers in the USSR who, relying upon their theory of the development of human society, claimed environmentalism as “geographical determinism”. As a result, the role of the environment in the development of mankind was neglected and even heavily criticized.<sup>16</sup>

It should be mentioned that even today scepticism prevails regarding the interrelation between the society and environment.<sup>17</sup> One of the main causes for the formation of negative attitude towards the rejection of the decisive role of environment on the society is the absolutization of the influence of environment by some environmentalists.<sup>18</sup> Not the last role was played also by the expansionist-colonial ideas which sometimes could be seen in such studies.

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<sup>5</sup> Montesquieu 1857.

<sup>6</sup> Buckle 1857: 19.

<sup>7</sup> Ratzel 1901.

<sup>8</sup> Soloviev 1988: 56ff.

<sup>9</sup> Klyuchevskij 1987: 63ff. (Lectures III and IV): „Studying the history of any people you encounter a factor which holds the cradle of every people – its nature“ (idem: 63).

<sup>10</sup> Huntington 1907a; 1911; 1915; 1919; 1922; Huntington and Cushing 1922. He was one of those scholars who had tried to define the impact of the environment on the activities of society. By the way, in his studies the author had dealt also with the Armenian Highland (see, in particular, Huntington 1907b, where he discusses the problem of the Lake Gölcük (modern Hazar) fluctuations during the last 2,000 years). In some other studies of E.Huntington also figures the Armenian Highland.

<sup>11</sup> Brooks 1926.

<sup>12</sup> Stothers 1979; 1999; 2002.

<sup>13</sup> Garagashyan 1895.

<sup>14</sup> Palasyan 1890.

<sup>15</sup> Leo 1966: 145-146.

<sup>16</sup> For the criticism of the theory of “geographical determinism” in Armenia see Voskanyan 1956; 1960.

<sup>17</sup> The discussion of this problem from the positive point of view see in Crown 1968. He had contributed greatly to the problem of the role of environment (1972).

<sup>18</sup> One of the main arguments of the critics of geographical determinism is extreme fatalism which sometimes could be seen in the studies of determinists. For example, S.Soloviev, the outstanding Russian historian of the XIX century, wrote: “*An extensive plain stretches before us; from White Sea until Black Sea and from Baltic Sea until Caspian Sea the traveler should not meet any significant height, should not notice any change. Forms of homogeneity of the landscape excludes regional connections, forces the population to the similar lifestyle; similarity of lifestyle leads to the similarity of traditions, behavior, faith; similarity of behavior, traditions and faith excludes hostilities; similar needs require identical means of their satisfaction; and the plain, regardless its extensiveness and initially multiethnic character, at some point should be part of one state; from this could be deduced the extensiveness of the Russian statehood – similarity of its parts and strong bonds between them*” (Soloviev 1988: 56). Let us mention that in regard to the landscape of the European Russia another conclusion could be reached, which contradicts to that of S.Soloviev.

If we leave aside some cases of overestimated evaluation of the above-mentioned authors regarding the connection between environment and the development of the human society, however, it is impossible to neglect many facts which prove the existence of that connection. Environment is not an isolated habitat which supplies the society with the so-called “greenhouse conditions”, dividing it from other close and distant neighbors who possess with their own “greenhouses”.<sup>19</sup> The interconnection between habitats having different environmental units do have essential effect on both sides. Environment does not right down complete lifestyle of the society and collective mentality, but it is able to guide priorities of the economic, social, political, and spiritual-cultural development of the given population group, creating “genetic code”.

Returning to the Armenian Highland, it should be stated with sorrow that, connected with political and other circumstances, during the most part of the XX century the scholarly heritage of many Armenian historians had been forgotten. Particularly, in modern studies the history of Armenia was not considered under the light of its integrity with the environment, a factor which essentially overshadowed the understanding of historical events and developments. In this regard the territory of Western Armenia currently is in more profitable situation due to the studies conducted by environmentalists representing different countries during the last decades.

Specific geographical and climatic conditions of the Armenian Highland had greatly affected the development of early societies of the region, essentially stipulating their lifestyle, trends of economic and political development and interconnections with neighbors. The main peculiarity of the Armenian civilization is not its vulnerability from attacks of enemies, as it is usually stressed by many historians,<sup>20</sup> but the specific environment which had imposed a burden to dealt with, regardless ethnic, political and cultural character and level of the population, like it was done by the civilizations of Mesopotamia and Egypt in the IV mill. BC.

For the establishment of the degree of relationship between environment and activities of population the study of several aspects dealing with primary sources is beyond doubt. Among them are archaeological sources which are able to elucidate

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Similarity of landscape and activities of population are by no means signs of peaceful co-existence, but they could be treated as constant factors for the tension of relations between them, and source of highly extensive mobility. The latter is fully registered during the ancient and medieval history of the “steppe belt”. Periodical migrations, as a rule, are main obstacles for the formation of political unity.

<sup>19</sup> As such «greenhouse» or “oasis-like” societies, probably, could be regarded those groups of primitive people who were separated from the outer world through unpassable water or terrestrial barriers during the most part of their history. Among such population groups worth to mention Australia, New Zealand and islands of the Pacific ocean before the European colonization, primitive communities who dwell in the jungles of the River Amazon in Brazil even today, etc.

<sup>20</sup> Let us refer to Leo, the outstanding Armenian historian: „*Armenia was cut by communications leading to different directions and represented a place where permanently appear international movements. By these roads used to proceed conquering armies, tribes, and big caravans. ... Thus, from the first migrations of the human race Armenia was a trampled country*” (Leo 1966: 144).

main fields of the lifestyle (agriculture, pastoralism, craftsmanship, urban centers, trade, communication, etc.) Unfortunately, extensive regions of the Highland lack systematic excavations; the number of fully excavated sites is small which does not allow to establish the activities of the population, their number, relations with neighboring regions, etc.

The next problem is connected with written sources, which elucidate only the history of some regions of the Highland during the limited historical period. First episodic information regarding the mountainous region of Armenian Taurus comes from the Mesopotamian cuneiform sources of the kingdoms of Akkad (XXIV-XXIII c. BC), and Assur (XIX-XVIII c. BC); then about five centuries of silence appear Middle Assyrian texts (XIII-XI c. BC). Both Akkadian and Assyrian sources deal with the southern and south-western regions of the Highland, including the basins of Lakes Van and Urmia. As to the Hittite cuneiform texts, they focus on the western parts of the Highland (classical Armenian provinces of Tsopk-Sophene, Aldznik and the upper streamflow of Euphrates river).

In this regard useful information could be found in the memoirs or reports of European and American travellers, diplomats and missionaries where are fixed important observations dealing with the environment and activities of population of the Armenian Highland. This information allows one to evaluate geographical and climatic situation of the region under discussion, land resources and their usage, means of subsistence of the population, etc.

### **Geological description of the Armenian Highland**

Armenian Highland is one of the most elevated regions of the northern hemisphere, comprising a part of the mountainous massive which stretches from Himalayas to the Northern Mediterranean (Alps). Its average elevation is about 2000 meters. In geological terms the formation of the Armenian Highland and the neighboring Iranian plateau is a result of the pressure of Eurasian and Arabian plates upon each other, in the Serravallian phase of Late Miocene.<sup>21</sup>

Even today this region comprises one of the most active tectonic belts of the earth, due to the pressure of African and Arabian platforms on the Eurasian one.<sup>22</sup> The geologically registered “north-eastern Anatolian fault” of the Armenian Highland which

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<sup>21</sup> The Serravallian period is dated with about 13.82-11.62 million years BP. On the geological structure and related problems of the Armenian Highland see Abich 1857; 1858a; 1858b; 1867; Petzholdt 1866: 108ff.; Şengör and Yılmaz 1981; Dewey et al. 1986; Pierce et al. 1990; Türkoğlu 2009; Adamia et al. 2011; Rolland et al. 2012, etc.

<sup>22</sup> This belt is known for its high seismic nature, especially the part which originates in Western Armenia and proceeds through RA well into North-western Iran (about 900 km long); in width this belt reaches 350 km (Pierce et al. 1990: 190). The Lake Van basin is located inside the mentioned active volcanic belt which includes Mush, Bingöl, Nemrut, Sipan, Tondurek, Ararat, and the Kars plain). The central and earliest volcanic region is the area from Erzerum to the southern shores of Lake Van (Pierce et al. 1990: 194).

was formed during the Late Pliocene, affects the tectonic processes in this region.<sup>23</sup> It begins from Arabian peninsula, the place of the meeting of the Arabian and Eurasian platforms, and proceeds to the north-east passing through modern Marash, then the upper stream of the Euphrates towards the Kars region and Lesser Caucasus.<sup>24</sup> Near the Lake Hazar the fault has two offshoots, one proceeding towards the north-east of the lake, another to the west about 35 km. From Erzincan the fault continue its root until the Lesser Caucasus. The vast region lying to the east of the fault, that is most part of historical Armenia is slowly moving to the east (1.8-2.5 cm annually).

In the Republic of Armenia geologically are registered the next faults<sup>25</sup>:

1) Ani-Ordubad, which follows the line Ani-Artik-Alapars-Verin Getashen (Maghmaghan)-Eghegnadzor-Vaik (Azizbekov)-Ordubad.

2) Yerevan fault follows the line Baghran-Karmrashen-Aghavnatun-Parakar-Yerevan-Tazagyugh-Dvin-Vedi-Arpa-Julfa. This fault, probably represents the part of the “north-eastern Anatolian fault”.<sup>26</sup>

3) Shirak-Zangezur fault proceeding by the line Gyumri-Vanadzor-Sevan-Martuni-Tatev-Giratagh-Shishkert.

In geological terms one of the main peculiarities of the Armenian Highland is extremely high percent of volcanic lava sitting over the earth core, as a result of continuous eruptions towards the end of Neogene and Quaternary period.<sup>27</sup>

This layer covers about 2/3 of the Highland. For example, the Mush plain is covered by volcanic layer which reaches about 1 km (lower part of the layer comprise lava, the upper one – pyroclastic flows). The earth crust of the Republic of Armenia and Southern Caucasus consists of three layers. Among these the upper, volcanic layer reaches about 10-15 km to the east of the Republic of Armenia, in Azerbaijan. It directly covers the solid second layer comprised of granite (in some places about 30 km).<sup>28</sup>

Another peculiarity is seismic activity, represented by several seismic belts. According to calculations, in the Mediterranean-Transasiatic seismic zone is concentrated about 1/3 of all earthquakes of the world.<sup>29</sup> The mountainous massive of Byurakn (Bingöl) represents a great volcanic semi crater, which intersects by the Vardo fault. Unlike Byurakn and Nemrut (near the Lake Van), Sipan is a multi-layered volcano, which consists of numerous craters belonging to different geological periods. As it was

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<sup>23</sup> On the active tectonic processes of the Armenian Highland and surrounding regions see Türkoğlu 2009: 28ff.; also Aslanyan 1970: 366ff. (for the Republic of Armenia).

<sup>24</sup> Pierce et al. 1990: 189ff.

<sup>25</sup> Aslanyan 1970: 371ff.

<sup>26</sup> Aslanyan 1970: 372.

<sup>27</sup> The Quaternary period begins after Neogene and continues until present. It is divided into two phases - Pleistocene (2.588-11.700 years BP) and Holocene (11.700 – until present). The maps of these sediments and tectonic belts see in Türkoğlu 2009: 35. Such belts are numerous and embrace the next regions – Erzincan, Erzerum, eastern and northern shores of Lake Van, Ararat plain, Kars, and Western Georgia as well.

<sup>28</sup> Aslanyan 1970: 368f.

<sup>29</sup> Aslanyan 1970: 390.

shown by scholars, Sipan was active about 700.000-400.000 years BP, and which, in its turn, rests on more ancient volcanic structure (5.8 million years BP). In the neighborhood of Sipan's crater were found traces of later activity (360 and 150 thousand years, and 230-190 thousand years as well).<sup>30</sup>

The geological structure of the Armenian Highland, particularly its tectonic and seismic characteristics used to have great impact on the development of the society, especially in the remote past. Destructive earthquakes and volcanic eruptions constantly interfere into the economic and social-political activities of the population, thus affecting the demographic situation. The list of earthquakes and volcanic eruptions fixed in the Armenian Highland by medieval authors<sup>31</sup> is impressive. Among most destructive ones could be mentioned the 893 AD earthquake in Dvin when approximately 70.000 people were killed. Probably, even worse consequences should be attributed to the 1309 AD earthquake at the same Dvin, and the city of Ani as well. In the latter case the city was completely destroyed and the population had abandoned it permanently.<sup>32</sup> Resuming this topic one shall recall the suggestion put forward comparatively recently regarding the fall of Urartu as a consequence of a destructive earthquake.<sup>33</sup>

### **The position, relief and climate of the Armenian Highland**

*“South-eastern Anatolia is strongly influenced by changes in the position of the westerly jet streams, the extension of the subtropical low-pressure belt, and the Siberian high-pressure area that determine the boundary between humid Mediterranean and continental climate”*<sup>34</sup>. These three different climatic regimes essentially influence especially the Lake Van region which is too sensitive to climatic changes. Due to the winds coming from the south-west, during the interval from autumn to spring prevail precipitations, and in summer - dry climate. To the south and south-west of the lake annual precipitations reach 600-800 mm (in Bitlis - 1000 mm), and to the north and north-east - 300-400 mm.

As to the flora, Armenian Highland falls into the meeting place of the European-Siberian woodland and Iranian-Turanian steppe belts where at the early phases were represented both zones. During the early Holocene wet and warm climate was favorable for the extension of forests, but later the European-Siberian forests began to decrease, due to the gradual desiccation and human intervention in the Bronze age. And by the time most part of the Highland was transformed into generally deforested

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<sup>30</sup> Pierce et al. 1990: 196. Tondurek and Ararat also are strato-volcanos.

<sup>31</sup> Aslanyan 1970: 391f.; Karapetyan 1986; 1990 (Karapetyan refers to 1479 volcanic eruptions happened in the Armenian Highland); Barseghyan 1995.

<sup>32</sup> Barseghyan 1995: 50-52.

<sup>33</sup> According to this theory, the fortress of Ayanis which lies approximately 30 km to the north of Van, was destroyed by the earthquake and abandoned (Çilingiroğlu 2010: 337f.). It was proposed that the same agent was responsible for the several important cities-fortresses of the empire.

<sup>34</sup> Wick et al. 2003: 665.

steppe zone.<sup>35</sup> This could be observed on the example of Lake Van which is represented by two floral belts - Kurdish-Zagrosian oak tree belt and north-eastern steppe belt.<sup>36</sup> Thus, most part of the Highland, except the northern regions (Lori, Javakhq and some others) are characterized by the continental and dry climate.

As to the internal division of the Highland, it could be defined as a collection of autonomous regions each having their characteristic geographical and climatic features; actually, except some short historical periods, this part of the Near East used to lack strong political organization.<sup>37</sup>

Here everywhere one could encounter neighboring regions which have different climatic and floral characteristics. Great number of big and small intermontane valleys are separated by three main mountain chains (Lesser Caucasus, Armenian Dance and Armenian Taurus) and their offshoots, mostly extending from northwest to southeast. These valleys represent pockets having their own microclimates, different from that of their neighbors.<sup>38</sup> Except Ararat plain, Shirak, Kars and some other lesser regions, the population of other regions is concentrated in river valleys and plateaus. Here one should recall the definition given by Leo: *“Many geographical names of Armenia contain the elements “dzor (gorge, canyon)”, “valley”. These gorges and valleys were natural pockets for the administrative division of the country”*.<sup>39</sup> If one considers the fact that the communication between two neighboring mountain valleys is impossible or at least endangered during several cold months (mid-autumn - mid-spring), then this isolated nature would appear as serious factor.

Armenian historian St.Palasyan still in the XIX century writes the next in regard to the geography and landscape of the Armenian Highland:

*“If we study the structure of the Armenian land, then can see that it used to have a strong influence on the historical fate of the nation. The whole country is cut down by big and small mountains, which are followed by ravines and valleys, and streams of numerous rivers and rivulets, which, like a natural barrier, divides the people and endangers the communication. This factor contributed much to the development of tribal life among Armenians and from the very beginning in different parts of the country were organized numerous big and small principalities which usually were eager to gain*

<sup>35</sup> See Davis 1965; Zohary 1973; Collins et al. 2005. In earlier studies the term «Pontic-Hirkanian and Iranian» was used in regard to the flora of the Armenian Highland (Tachtajyan 1941: 7).

<sup>36</sup> Wick et al. 2003: 666 (with references).

<sup>37</sup> The same is true in regard to the situation in the modern eastern Turkey (= Western Armenia).

<sup>38</sup> In this regard the definition of the Armenian Highland by P.Zimansky is more than in place: *“Urartu is more effectively characterized as a terrestrial archipelago. Intersecting mountain chains and a propensity for volcanism have mangled its topography, leaving the rather modest amounts of arable land cut off from each other in irregular pockets, like islands in a sea. It is in these low-lying areas that human population has traditionally been concentrated”* (Zimansky 1985: 9).

<sup>39</sup> Leo 1966: 120.

*independence from the kingdom. Araratian kings (he means Urartu - A.K.), despite their efforts, could not conquer these principalities completely*".<sup>40</sup>

Before St.Palasyan the same idea was expressed by H.Kiepert, well-known German ethnographer.<sup>41</sup> He says that Armenian Highland consists of numerous small and big political entities any of which corresponds to the main valleys (wording of the author, probably, he means extensive valleys - A.K.). Here big settlements are rare, which are mostly located near the churches ("temples" by Kiepert - A.K.). Here the towns came to existence initially only around the residencies of kings, particularly in the Ararat plain, during the rule of Arshakids.

E.Huntington, an outstanding American geologist, in his study devoted to the central and south-western regions of the Armenian Highland, describes the land as follows.<sup>42</sup> In the mountainous region from Alashkert to Malatya, between mountain ridges are located a number of plains. The line which separates plains from the mountain ranges is so stressed that it reminds one a shore-line with bays and promontories. These plains are extremely fertile due to waste brought from the mountains by streams and rivulets which, taking into account their regular accumulation in the central parts, are the result of the existence of lakes in the past. Most part of the population lives exactly in these plains. Rugged character of the landscape has a negative effect on the communication between the population of different valleys which in its turn leads to the provincialism of the people, local dialects and traditions.

### **Land resources**

The peculiarities of the landscape and climate of the Armenian Highland was first correctly described by the famous geographer Strabo: "*In Armenia itself there are many mountains and many plateaus, in which not even the vine can easily grow; and also many valleys, some only moderately fertile, others very fertile*".<sup>43</sup>

Except some regions having plain landscape and mountain valleys, where the soil is fertile and well watered through rivers and precipitations (Ararat plain including Nachijevan,<sup>44</sup> parts of Tsopk-Sophene, Harq, Derjan etc.), in other regions internal economic resources and first of all agriculture are unable to secure minimal needs for the subsistence of more or less sizeable population groups. In such regions the role of

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<sup>40</sup> Palasyan 1902: 12. The concept of St.Palasyan was criticized by H.Manandyan (Manandyan 1981: 9), particularly in regard to the idea that the weakness of Armenian kingdoms could be explained by inner problems (feuds), a factor which was used by their aggressive neighbors since the times of Urartu. It should be mentioned that feuds and separatism of *nakharars* (hereditary rulers of provinces) were result of the geographical isolation of the landscape and, consequently the population. Actually, both authors were right, but H.Manandyan had failed to study the political history of ancient Armenia in its close interrelationship with the environment.

<sup>41</sup> Kiepert 1881: 50.

<sup>42</sup> Huntington 1902a: 302ff.

<sup>43</sup> Strabo XI,14,4.

<sup>44</sup> Anyway, even in the Ararat plain which is well-watered by the Araxes river and its numerous tributaries, counters problems connected with the semi-arid climate and possible salinization of the soil.



agriculture was marginal, meanwhile pastoralism during all historical periods, especially in antiquity, was truly most important means of subsistence.<sup>45</sup> But more precisely one can use the term complex agricultural-pastoralist economy (with different proportions of its components).

The peculiarity of the economy of the Highland is the horizontal specialization of agriculture, pastoralism and craftsmanship. In the early city-states of Mesopotamia, Syria-Palestine and Egypt the concentration of large groups of population was the result of the existence of fertile soil and water resources along the course of big rivers, and, consequently, their specialization in one and the same limited area. But even in the close neighborhood of such urban centers are registered semi-nomadic pastoralist peripheric communities.<sup>46</sup> Since the Armenian Highland lacks favorable conditions for the emergence of such urban centers (with the exception of western Tsopk-Sophene and Ararat plain), one is forced to think that in this case one might suppose close neighborhood of small communities which differ by their lifestyle. That is - 1) predominantly agricultural communities in fertile and well-watered regions (valleys/plains) and 2) predominantly pastoralist communities in more elevated places in the neighborhood of the first category. This, indeed, does not exclude certain overlapping between two modes of subsistence, but it could not cardinaly change the situation. Pastoralism as a productive mode of subsistence implies mobility since it is forced by the means of lifestyle. Pastoralism is an independent mode of lifestyle which should be regarded as a natural response to the given ecological background.<sup>47</sup>

The relief and climate of the Armenian Highland does not favor the formation of nomadic or semi-nomadic pastoralist societies. At best here could be stated about the existence of seasonal pastoralism (i.e. transhumance) in some ecological niches, i.e. inside the space consisting of neighboring mountain valleys/plateaus and mountains. It means that the given population group has its permanent settlement in the lowland and which moves to the high pastures during the pastoral season (from early spring until late autumn). Or, and this seems more probable, the existence of combined pastoralist-agricultural mode of production,<sup>48</sup> in contrary to nomadism which does not regard agriculture as a constant and safe means of subsistence. In the Armenian Highland functions the vertical system of transhumance which implies alternation of winter and summer pastures located on different altitudes.<sup>49</sup> Such lifestyle points on the existence

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<sup>45</sup> Let us remember what wrote Strabo regarding the horse-breeding in Armenia. He says that in Armenia there are favorable conditions for horse-breeding which do not yield Media (Strabo XI,14,9).

<sup>46</sup> For example, the Aramaean tribal units located in the steppe zone next to Northern Mesopotamian urban centers.

<sup>47</sup> Unlike modern period, in antiquity (semi)nomadic pastoralism was not regarded as secondary, auxiliary lifestyle and used to have important role in the daily life of eastern societies (Riehl 2006: 105). Any of the three social groups (agriculturalists, pastoralists and craftsmen) used to have their well defined place and it is impossible to establish a scale of importance between them.

<sup>48</sup> According to A.Khazanov, this is the "semi-sedentary pastoralism" (Khazanov 1994: 17ff.).

<sup>49</sup> Hammer 2012: 5f. On the contrary, there is also horizontal transhumance which exists in the lowlying geographical areas (i.e. steppe belt).

of mutual dependence between seasonal pastoralists and sedentary agriculturalists. For example, in the ancient Near Eastern polities both units were integrated into the economic system of urban centers.<sup>50</sup>

In this regard it is worth to recall travel reports of European diplomats, missionaries and others who visited Western Armenia in the XIX century; in their accounts dealing with some regions they present the same situation as we have described above. Particularly they mention the existence of mutually profitable cooperation and peaceful co-existence between agriculturally oriented Armenian villages located in lowlying areas (i.e. river valleys) and pastoralist Kurdish settlements of elevated regions.

For example, J.Brant, the British consul in Erzerum who visited the province of Mush and adjacent areas in 1830s, wrote that between the Lake Van and Kharberd, in the neighborhood of Armenian villages are located settlements of pastoralist Kurds. During the winter season the latter live in the Armenian villages for rent, but from spring to late autumn move to high pastures.<sup>51</sup>

When one looks on the same Mush then it becomes clear that only its northern part possesses with land resources favorable for intensive agricultural lifestyle. In the central part agricultural activities encounter the problem of drainage since the soil “rests on a large plate of sandstone conglomerate not well suited to drainage and soil accumulation”.<sup>52</sup> The problems are more than visible at spring when run-off streams are flooding large areas and turn part of them into swamps for quite a long period.

For the evaluation of land resources of the Armenian Highland it will be useful to look on statistics.

First table is compiled by the Ministry of Ecology, Republic of Armenia, in 2002,<sup>53</sup> the second one - Institute of Statistics, Republic of Turkey.<sup>54</sup>

#### **Land resources of the Republic of Armenia in 1997 (thousand hectares)**

Province	1	2	3	4	5	6	7
Syunik	450.5	194.3	48.3	9.6	133.7	57.0	199.2
Geghargh.	407.1	240.1	95.3	35.6	107.4	16.0	278.9
Lori	378.9	192.2	48.4	39.4	99.9	90.0	96.7
Aragatsotn	275.6	136.7	56.2	4.1	68.7	7.5	131.4
Tavush	270.4	98.6	27.8	15.0	49.0	123.9	47.9
Shirak	268.0	165.7	84.5	16.8	63.9	2.5	99.8
Vayk	230.8	75.9	20.6	4.6	47.4	6.5	148.4

<sup>50</sup> This model („enclosed nomadism“) has been formulated still in 1970s (Rowton 1974: 6f.).

<sup>51</sup> Brant and Glasscott 1840: 353f. In the Armenian village of Kizil Aghaj located in the western part of Mush during the winter live 30 Kurdish families along with their cattle.

<sup>52</sup> Rothman and Kozbe 1997: 108.

<sup>53</sup> National program 2002. This publication is not paginated.

<sup>54</sup> Zimansky 1985: 15, Table I. The data is taken from Devlet İstatistik Enstitüsü, Türkiye istatistik yilligi 1971, Ankara, 1973: 3, 202f.

Ararat	209.9	99.1	30.0	2.9	54.4	9.5	101.3
Kotayk	209.5	99.8	40.6	10.9	40.7	20.0	89.7
Armavir	124.2	80.7	40.4	0.2	26.5	1.0	42.5
Total	2846.4	1391.4	494.3	139.1	694.4	333.9	1249.0

### Explanatory symbols

- 1 - Total
- 2 - Agricultural
- 3 - Arable land
- 4 - Meadows
- 5 - Pasture
- 6 - Forests and bushes
- 7 - Other

\*Total land resources used for agricultural purposes reaches 18.5 percent, that of forests and shrubs 11.8 percent; 12 percent of all land resources of the republic which are not used for agricultural purposes comprise water basins, mountains chains etc.

### Eastern regions of the Turkish Republic (Western Armenia)

Region	1	2	3	4	5
Agri/Ararat	11.488 km <sup>2</sup>	18%	0.2%	59.5%	21.7%
Bingöl	8.911	11.4	0.1	33.7	58.8
Kharberd	9.951	26	4.0	15.6	53.4
Bitlis	8.551	11.4	0.2	11.4	54.9
Erznka	12.165	16.8	0.5	17.5	65.2
Erzerum	26.582	23.1	0.3	49.7	24.6
Kars	19.407	21.6	0.4	53.6	23.6
Mush	8.713	22.9	0.3	55.8	20.6
Tunjeli	8.676	13.1	0.7	5.6	80.3
Van	21.823	8.9	0.2	(together	91.5)

### Explanatory symbols

- 1 – Total
- 2 – Arable lands
- 3 – Orchards
- 4 – Pastures
- 5 – Other

Some remarks concerning the statistics should be useful. Methodologically, the statistics dealing with the not so remote past could not be applied to the much more earlier historical periods, due to the next considerations.

Every historical period requires specific mode of production which depends on the nature of political organization, level of social and economic development of the population, integration in the civilizational processes of the time being etc. All these criterias one should bear in mind while trying to operate with statistic materials. In particular, in the sense of percentage, indeed, there should have been essential differences while one compares the periods before the rise of Urartu, its later history and that of Hellenistic period. If during the Middle Bronze age which is characterized by the high mobility of population groups and, consequently the pastoralist lifestyle required more territory destined for pasture-lands, hardly the same could be assumed for such highly organized (even sophisticated) state as Urartu. The economic basis of the latter comprise agricultural-industrial regions which were guarded and administered by fortresses, and where pastoralism was not an essential component of subsistence. As to the eastern regions of Turkey (Western Armenia), especially its rural population dwelling in the elevated regions, mostly consist of Kurds whose main field of economic activities comprise pastoralism. Hence the high percentage of pasture-lands.

Even these considerations are unable to cardinaly change the existing percentage of land use as it appears according to the charts referred above. The ecological peculiarities of the Armenian Highland (high mountain ranges and valleys enclosed by them, high seismic characteristics, climatic fluctuations etc.), regardless considerable changes happened during the historical past, could not have cardinaly affected the lifestyle of the population. Climate could become warmer or cooler, precipitations increased or decreased (forcing the societies to undergo some transformations in their activities, change political centers, foreign relations, etc.), but the volume of land resources actually would remain the same.

Anyway, agricultural-pastoralist economy also was not enough to solve vital problems of the population. In some regions of the Highland mining and metal industry along with the craftsmanship, exchange trading of metals, especially with Mesopotamian states supplements the means of their subsistence. The latter sphere of activities is fully elucidated by the Mesopotamian written sources dated with the II-I mill. BC.<sup>55</sup>

Summarizing this brief overview of the land resources of the Armenian Highland, the next important point should be stressed, which had played an important role during the whole history of Armenian civilization.

During the periods preceding the statehood or those lacking centralized states exist numerous autonomous and self-sustaining small economic units which possess with limited population. Their consolidation is possible only in the case of serious threat from outside (for example, Assyrian and Urartian military campaigns). Such poleis-like units, as a rule, do not possess with sufficient material resources and manpower in order to establish economic infrastructures – the main threshold for the creation of

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<sup>55</sup> Grayson 1987; 1991; 1996.

strong and stable statehood in order to establish political hegemony over their neighbors.

In the Armenian Highland the first such state was Urartu, which had succeeded to establish an economic basis for the future empire. The study of the economic background of the Urartian state<sup>56</sup> allows one to evaluate the means of establishing stable mechanisms of unified and strong statehood in the Armenian Highland. Thus, the economic activities of the kings of Urartu was focused on the establishment of military-political control over the lowlying river valleys; here were dug impressive canals and strong fortresses were built in order to secure the agricultural areas from attacks of the neighbors. Also was established firm control over the mines located in elevated regions.

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<sup>56</sup> See the unpublished fundamental study of Ye.Grekyan (Grekyan 2016), where the author analyzes the economic foundations of Urartu based on combined written and archaeological sources.

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