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# SYSTEMATIZATION OF CONSTRUCTIVE-TECHNOLOGICAL AND REGULAR FACTORS OF GEORGIAN ETHNO-SHOE

*Abstract*: *In the article the actuality of the Georgian ethno- footwear as the significant part of the nation's material culture is explained, also is gives the general facts about the creation and development of the footwear in the world. The chronological frame of the ethno-footwear was determined, which covers the historical period from II millenium BC till the second half of XIX century AD.*

*Key words*: *research of material culture, clasterization of regular factors; constructional-technological characteristics of the footwear.*

*Language*: *English*

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### Introduction

For describing the constructional-technological picture of the ethno footwear and systemizing its functional or epochal-evolutional information it became necessary to use clastering method. This is conditioned by the fact, that samples of material culture are characterized by typical factors, which needs to be classified in order to formulate research results in scientific way. This shed light to the epochal dominant factors. When we talk about samples if material culture, by factors I mean qualitative features. Leather ethno items basically are characterized by many such factors dominating for a long period of times. Therefore, the cluster analyses were directed right to describing the features of these objects by us, for which the description of each separate object according characteristics was made (table 1). Because the footwear is the item with multifactorial features, also the matrix was constructed according the characteristics distinguishing each item from others. In this case, the matrix of similar features accurately describes dominant factors, which are characteristics of the given epoch, or have the transition (slightly dynamic) nature between epochs.

### Materials and Methods

Several typical models of Georgian ethno footwear are presented belowe, along with it, about 40 different sources are studied and analysed (Fig. 1, fig. 2) [1-7].



**Fig. 1. Fragments from the Trialeti Cup, II millennium BC**

**Fig. 2. Gelati XII-XIII century.**

Like the Fig. 1 and Fig. 2, all sources has been studied, described, the sketch and constructional mockups have been restored, as well as, and the analysis of their technological characteristics has been done and etc.

For the purpose of analysus, objects to be studied were divided into following clusters by us: dominant, non-dominant specific, non-dominant non-specific, historical and geopolitical (table 1). While according the epochal signs the following epochs were separated: from II millennium BC to VI century AD, from VI century to X century, X-XIV centuries, XIV-XVII centuries, XVII-XIX centuries [8-9].

The stratas from similar factors of individual objects and epochs were separated. This was done based on the condition that each factors from obtained tratified selection would be representative. Therefore, the size of individual strata was taken not with strictly defined interval, but with considering the dominance of the characterizing factors. The size of strata on its own describes the level of social development according the epochs. Exactly this is justified by the fact that in the distant past, the duration of "rule" of dominants factors lasted for several centuries, while in the modern epoch the viability of the factors may count several years only.

**Table 1**

**Cluster differentiation of epochal characteristics with classification of dominant factors**

| Historical epochal qualitative factor | Cluster 1 Shape of toe | Cluster 2 Shape and height of heel | Cluster 3 Type of footwear | Cluster 4 Quantity of details | Cluster 5 The means of connecting the details and decorating |
|---|---|---|---|---|---|
| Dominant | Narrow toe | Wide low | Sandal, ankle-high boot, "Mogvi" or boot | 3-5 details | Reeling stitches – decorative brushes |
| Dominant Specific | Curling tip | Flat Plaited bottom Heeled | Low boot, Bast shoe, "Mogvi" | 3-8 details | Sewn, reeling stitches – colorful (red) leather – with precious stones and embroidered - pleats |
| Non-dominant, non-specific | Round shape | High narrow heel | Summer slippery "Mashia" and shoe | 10-12 details | Overlaying sew – with colorful application |
| Historical and Geo-political | Curling tip | Plaited sole flat, Low wide heel | Bast shoe, low boot, "Mogvi" | 3-6 details | Reeling stitches, decor, sewn |

**Conclusion**

The results are more visible and understandable with using hierachical method of clustering. The dendrogram below (fig. 3. **Note:** With non-continuous line connecting the levels the variable factors are indicated, with continuous line – permanent, dominant factors.) represents the result of hierarchical algorithms, which describes the separate features and closeness of clusters with each other.

By clustering the data the following were studied – distribution and dispersion density of the cause-effect, hierarchical and epochal-dimanic features of regular factors. With using that method the systemizing of regular factors of production means development was done, the development level of production means and production materials was revealed, which conditioned the development of the construction. Also, ranking and cause-effect analysis of dependent and interactive factors took place using that method. This gave us an opportunity to construct scheme of regularities of cyclical analysis of visual-constructional-technological features of stadial-regular factors, which is well represented using the systemized scheme-table constructed as a result of cluster analysis of dominant factors (Fig. 4).
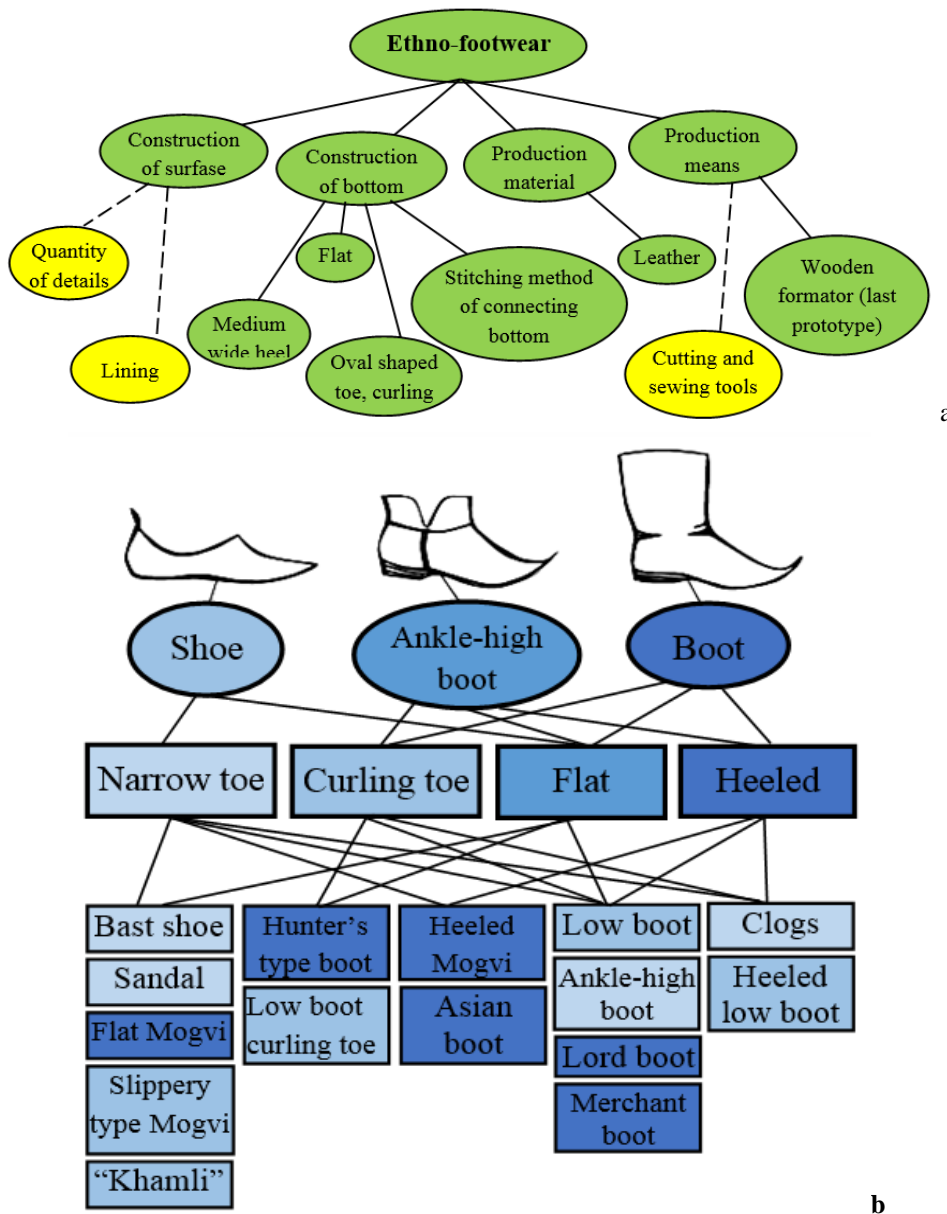


**Fig. 3. Dendrogram: a) The scheme of factors characterizing the ethno footwear; b) The stratified scheme of epochal dominant factors.**
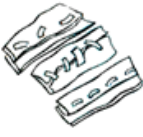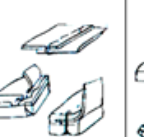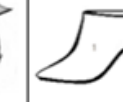
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| Production means | | Stone tools | Bronze and bone knives and awls | Iron knife, needle, awl, hammer, wooden formator | Knife, awl, needle, hammer, formator | Knife, awl, needle, hammer, pliers, last | Sewing machine and first machin for shoe production, and same packet of hand tools | Shoe production machines, last formatting presses last and primitive shoe molding aggregates, hand tools. |
| Materials | | Raw, partly processed leather, perchament type, wet soft leather, fiber stocking | Soft leather, fiber tanned with tanning plants | Shoe surface and bottom with the same leather type, tanned with tanning plants | Soft surface, tanned with plants, sick bottom, hard leather, layered heel, leather residuals, leather and birch bark heeling, iron horseshoe and nails for underheel | Soft surface, tanned with plants, sick leather bottom, hard leather hard layered or wooden heel, over the heel tie of outer leather | Chrome surface and tanned with tanning plants fabric or leather lining, bottom detailes tanned with tanning plants heels and arch from leather and wood | Leather surface, artificial material, bottom, leather, cardboard, texon, thermoplast, partly wood, metals, plastic, rubber, polyurethane, thermoelastoplasts and etc. |
| Methods of connecting detail | |  |  |  |  |  |  |  |
| Types of shoes according modern classification | Shoe |  |  |  |  |  |  |  |
| | Low boot |  |  |  |  |  |  |  |
| | High boot |  |  |  |  |  |  |  |
| Number of details | | 6 Leather details: 4-surface, 2-last | 1-3 detals of same leather, surface, last | 4-6 details: f 2-4 surface, 1-2 last | 6-10 details: 2-3 surface, 2-5 bottom, 2 interim | 8-10 details: 2-3 surface, 3-7 last, 2 interim | 10-15 details:2-4 surface, 2-3 lining, 4-6 last, 2 interim | 10 details: 3-4 surface, 4-5 lining, 2-3 interim, 1 last. |

**Fig. 4.  The scheme-table of Georgian footwear evolution**

## References:

1. (2018) The Trialeti Silver Cup, 1 Millennium, is exhibited at the Exhibition of Simon Janashia Museum of Georgia - "Archaeological Treasures".
2. (2014) Metal-sculpture. National Treasure. Forum - Art.
3. Ivane Javakhishvili (1970) History of Georgian Nation. Tbilisi State University, Tbilisi, t. 1-5. pp. 8-37.
4. N. Khoshtaria, (1970) "Archaeological Monuments of the Antique epoch in Western Georgia" Archeology of Georgia. 1970, Tbilisi. p. 247.
5. (1973) Essays on Georgian History, vol. II (Georgia IV-XI centuries).. Tbilisi. P. 506.
6. (1970). Sulkhan-Saba Orbeliani, Dictionary Georgian. Tbilisi. t. 2, p. 31.
7. N. Chopikashvili, (1964) Georgian Costume. Tbilisi. P. 142.
8. Grdzelidze M.G. Kiknavelidze L.G (2018) Modern Conditions of the Study of Leather Ethno-Crafts Evolution in problematics of researching Georgian Material Culture heritage. International Scientific Journal - Theoretical & Applied Science. Philadelphia, USA. SOI: 1.1/TAS. DOI: https://dx.doi.org/10.15863/TAS.2018.01.57.4 57 (1). 24-28.
9. Kiknavelidze L.G. Grdzelidze M.G. (2018) The modern aspects of research evolution of Georgian leather ethno-crafts. International Scientific Journal - Theoretical & Applied Science. Philadelphia, USA. SOI: 1.1/TAS. DOI: https://dx.doi.org/10.15863/TAS.2018.01.57.5 57 (1). 29-32.