

# Determination of the Geographical *Genius Loci* of the Biblical Exodus: Experiences of Exploratory Factor Analysis of the Exodus Text [Ex. 13:20 - Ex. 20:26]

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## 1. Introduction

The study of the Bible is fundamentally an exegetical study of critical interpretation of the text. Exegesis, at first answers when and where a particular text was written; furthermore, how and why, by whom, for whom and under what circumstances it was accomplished; finally, what sources were used in its composition and the message it was intended to convey. Biblical exegesis relies on a vast field of disciplines, including archaeology, anthropology, folklore, linguistics, oral traditions, historical and religious studies.

Recently, Crosilla (2023) proposed the theory of Spatial Ordering in Humanistic Geography as a key to understanding the path of the Biblical Exodus in light of the archaeological ruins present in the Sinai Peninsula. In particular, this is true in the locality of Har Karkom (Negev Desert), indicated by the archaeologist prof. Emmanuel Anati as the probable location of Mount Sinai (Anati, 2016).

As is well known from the literature (e.g. Anati, 2016), the Sinai Desert is characterized by archaeological remains of nomadic settlements dating from the Paleolithic period to the period of the Islamic conquest. Based on the theory of Spatial Ordering in Humanistic Geography, the morphology of the desert landscape and archaeological ruins, can be studied and interpreted by referring them to the so-called First Space theory. The Second Space aims to delve into the origins and classify the age and purposes of these remains and the related settlements. The Third Space, or the space of cultural stratification and the rooting of the memory of individuals and society (Lando and

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Voltolina 2005), thanks to the historical reconstruction of the archaeological remains, can be related to the composition of a “Sacred History”, the so-called Biblical Exodus of ancient populations from the Nile Delta to the Land of Canaan. According to the biblical scholar prof. Silvio Barbaglia (2020), this composition happened during the Hellenistic period (3rd century BC).

In this paper, we wish to explore in depth the meaning and characteristics of the Third Space. The author proposes and applies Exploratory factor analysis (EFA) to the geographical items suggested by Lando and Voltolina (2005) (i.e. the geographical fact, the sense of place, the cultural roots, landscapes of the mind, territorial consciousness) to determine the geographical spirit, the *Genius loci*<sup>1</sup> of the text of the Biblical Exodus. For this purpose, in the interval Ex. 13:20 - Ex. 20:26 of the Biblical Exodus, the text was subdivided into small groups of verses and each group was analyzed according to the items proposed by Lando and Voltolina (2005). In reference to the “geographical fact”, the literary text analysis is based only on the content of geographical information reported in the text. With the “sense of place”, the emotional and psychological bonds that are established with places, are deepened. Through “cultural roots”, the links of a society to a specific place are analyzed. Through “landscapes of the mind”, thought or experienced internalized situations, are described. Finally, through the “territorial consciousness”, it is possible to trace the interpretation and reflection on the described society.

As reported below, the study of the Third Space items proposed by Lando and Voltolina (2005) allows to arrive at a paradigmatic interpretation of the *Genius loci* as a meta-concept based on the assumption that the “*spirit of the place*” is composed of various layers and that each layer refers to a holistic dimension of different meaning (Vecco, 2020).

According to Vecco (2020) the *Genius loci* is the immaterial quality of a material place, perceived both physically and spiritually, characterized by the following layers: 1. Visible and tangible material layer; 2. Invisible experience of place created in the human mind; 3. Processes underlying human and natural activities with the various interrelationships existing between them.

These three dimensions form a set of phenomena that can explain the intrinsic and extrinsic nature of the *Genius loci*. Surprisingly, the subsequent EFA experiments, applied to the verses of the text of Exodus [Ex.: 13.20 - Ex.: 20.26], provide a result that can be framed according to the interpretative paradigm of the *Genius loci* introduced by Vecco (2020).

Before proceeding further, it is necessary to verify whether it is legitimate to reconstruct the *Genius loci* of a place starting from a story, such as the biblical text, without the spirit being contradicted, or without it suffering a phenomenon of estrangement. In a recent work Arianna Romani (2021) states

<sup>1</sup> For more information about the meaning and the fields of application of the *Genius loci*, see for example Norberg-Schulz, 2023; Dixon Hunt, 2022; English, 2003.

that a necessary condition to prevent the *Genius loci* from being contradicted is to have preliminary knowledge of the intrinsic sense of a place.

The presence of a narrative or symbolic element only gives greater prominence to a latent meaning. Assuming that a neutral place has an intrinsic meaning, the meaning can be highlighted, or altered, by a story, but cannot be contradicted without encountering estrangement. In this case, the Sinai Desert is a notoriously difficult place to survive. The story that the Jews spent forty years there, depending exclusively on divine protection, is a clear example of how much a story can increase the intrinsic meaning of a place. If, instead, the story had untruthfully focused on the richness of vegetation, rivers and lakes of the Sinai Desert, the text of Exodus would have placed the reader in a condition of estrangement. For the reader the statement would have been false and he would have been aware that the intrinsic sense of place was opposite to the narrative.

## 2. *What is Exploratory factor analysis and what is used for*

Exploratory factor analysis (EFA) is a statistical technique (e.g. Jesussek and Volk-Jesussek, 2023) used to identify the existence of non-measurable latent items (so-called factors) starting from a larger series of observed items. It allows to reducing the amount of information with the aim of providing a summary capable of drawing useful and immediately usable information on a specific phenomenon that is not easily observable. Suppose you want to determine the level of stress perceived by students who are preparing for a university exam. The level of perceived stress is a concept that cannot be measured directly, but only by using some items that reflect this aspect. The values of these items are determined from a questionnaire including some questions to ask to the students, to which a score between a minimum and a maximum value is assigned. To trace the factor, to which the label “stress” is associated, the type of questions to include in the questionnaire could be “How often do you suffer from migraines?”, “How many tenths of vision are you missing?”, “How many hours do you sleep at night?” etc... These, are questions that strictly depend on the level of accumulated stress.

Just to provide some examples in the linguistic field, EFA, is currently applied for studying writing processes, motivational self-systems, language mind-sets (e.g. Ardasheva et al. 2020). Getting closer to the topics treated in this article, EFA, was recently applied by Jiang and Lin (2022) to determine the psychometric properties of the *Genius loci* of an ancient village in the Chinese context starting from the experience of tourists. A series of 12 questions of environmental nature, was submitted to the tourists. By EFA, the original items were traced back to 3 factors that distinguish the *Genius loci* properties of the ancient village: earthbound atmosphere, architectural culture and spiritual homeland.

Moving on instead to a recent application of EFA for the study of a sacred book (like in this case!), we cite the work carried out by Wang et al. (2020) for

the analysis of the different arrangements of the 114 Suras of the Quran. Although the Quran's Suras were revealed to Prophet Muhammad until the end of his life, it is impossible to finalize a copy based on the timing of the revelations. For this reason their order and the sequence of verses are not arranged. The EFA allowed thirteen different arrangements proposals of the Quran's Suras to be clustered into two significantly different distinct parts.

Returning now to our problem, once the items proposed by Lando and Voltolina (2005) are considered, to determine the characteristics of the geographic *Genius loci* of the analyzed Exodus text [Ex.: 13.20 - Ex.: 20.26], it is necessary at first to divide the text into small groups of verses. Then, it is necessary to apply a questionnaire relating to the presence or absence of the Third Space items in each small group, to assign a specific score to each answer, and to submit the result to EFA. To proceed with the analysis, it is necessary at first to compute the correlation matrix of the measured items. Then, it is required to apply algorithms, used in principal component analysis (PCA), that permit to compute the eigenvalue and eigenvector matrices from the correlation matrix. EFA does not offer an "unambiguous" answer as to how many factors should be used. However, there are statistical guidelines (e.g. Kaiser 1960) on how many factors, could be used objectively.

After extracting the factors, it is possible to determine the degree of "communality", i.e. how much each item is explained by the extracted factors, and the degree of "saturation", i.e. how important is the relationship between a factor and the generic measured item. The values of this information, i.e. the "communality" and the degree of "saturation", allow us to understand what the different extracted factors actually measure in order to assign an identifying label to each factor.

Let us return now to the problem that we set out to address in this work. We have already said that the objective is to verify whether by applying factorial analysis, starting from the five items proposed by Lando and Voltolina (2005), it is possible to cluster the correlated items through the identification of some factors in order to arrive at a meta-conceptual interpretation of the geographical *Genius loci* of the Exodus text taken into consideration.

Since we are dealing with the components of the Third Space, the expected result must necessarily include factors specifically of a "geographical" and "humanistic" nature. Furthermore, EFA allows to quantifying the contribution of the various factors in order to characterize at best the *Genius loci* of the text that describes Israel's path from the Land of Goshen to Mount Sinai.

### 3. Results of the experiments

Starting from Exodus 13:20 and up to Exodus 20:26, 67 groupings of verses have been identified, each having a meaning and length as comparable as possible with the others (see tab.1). For all groupings, the presence or absence of the five items introduced by Lando and Voltolina (2005) (the geographical

fact, the sense of place, the cultural roots, the landscapes of the mind, the territorial consciousness) were deeply analyzed.

For what concerns the “geographical fact”, the following distinctive traits have been selected, together with their percentage value on the total geographical fact terms. The trait with the highest percentage value (54%) can be labeled as “general geographical places” (e.g. sea, desert, mountain, sanctuary...). The second distinctive trait concerns “specific geographical places” with 28% of the total (e.g. Succoth, Etam, the Sinai Desert...), while the third trait corresponds to “topological concepts”, present in 18% of the total geographical fact terms (e.g. near, in front, far, towards...).

As regards the “sense of place”, the trait most recurring in the item analyzed can be labeled as the “manifestation of the Lord’s Glory”, present in 35% of the specific terms. This is followed by the traits labeled as “recommendations and warnings” present in 24% of the terms, “reminiscence and jubilation” in 21% of the terms, “bewilderment and affliction” of the Jews in 14% of the terms and finally “murmurs and insinuations” present in 6% of the specific sense of place terms.

About the item “cultural roots”, 30% of the groups of verses do not present the specific item. The remaining part of the verses (70%), is characterized, in equal parts, by the following specific traits, “Sense of belonging to the Lord”, following his favors manifested during the Exodus, and “Sense of rootedness to the places”, where the Lord communicated a law or a right to the Jews.

As far as it concerns the item “landscapes of the mind”, 69% of the total groups of verses do not present this specific item. For the remaining part, the “landscapes of the mind” traits are to be attributed to the Lord in 9 cases, to Moses in 4 cases, to the author of the text and to Jethro in 3 cases, to the Egyptians and to the Pharaoh once each.

Finally, concerning the “territorial consciousness”, the specific item is not present in 48% of the groups of verses. The topics reported in the remaining groups of verses refer to the interpretation of the kind of society described by the author. The main traits are a need for protection of the Jews in 14 cases, their difficulty of survival in 7 cases, and the need to obey God’s orders in 4 cases.

Moving now to the calculation procedure, the author of this article, acting in the most objective way possible, attributed the following values to each voice and for each group: 0, absence of the voice in the specific group of verses; 0.5, presence of the element with limited importance; 1, significant presence of the element in the specific group of verses. Table 1 reports the values attributed to each item for all groupings of verses.

The actual EFA of the five items was then performed. By applying the PCA (Principal Components Analysis) calculation routine of the DATAtab software (<https://datatab.net>), the correlation matrix of the five items was computed. It is reported in Table 2. The matrix is symmetric and is characterized by the value 1 along the main diagonal (each variable is maximally correlated with itself) and by values other than 1 off the main diagonal. It can be seen that some items are correlated with each other, both positively and negatively.

We then proceeded with the spectral decomposition (eigenvalues, eigenvectors) of the correlation matrix. The diagonal eigenvalue matrix allows us to define the presence of independent latent factors, while the orthonormal eigenvector matrix measures for each vector of the matrix, i.e. for each factor, the significance of the five items.

Figure 1 shows the trend of the five eigenvalues obtained from the spectral decomposition of the correlation matrix reproduced in Table 2, relating to the interval [Ex. 13:20 – Ex. 20:26].

Tab. 1 – Series of verses analyzed and score attributed by the author of this paper to each of the items described by Lando and Voltolina (2005).

	Geographic fact	Sense of Place	Cultural Roots	Mind Landscapes	Territorial Consciousness
Ex. 13: 20-22	0.5	1	0	0	0
Ex. 14: 1-4	1	1	0	0.5	0.5
Ex. 14: 5-9	1	1	0	0	0.5
Ex. 14: 10-12	1	1	1	0	1
Ex 14: 13-14	0	1	0	1	0
Ex 14: 15-18	0.5	1	0	1	0
Ex 14: 19-21	1	1	0	0	0
Ex 14: 22-23	1	1	0	0	0
Ex 14: 24-25	0.5	1	0	0	0.5
Ex 14: 26-27	1	1	0	0	0
Ex. 14: 28-29	1	1	0	0	0
Ex. 14: 30-31	0.5	1	1	0	1
Ex. 15: 1-2	0.5	1	1	0	1
Ex. 15: 3-5	0.5	1	0.5	0	1
Ex. 15: 6-8	1	1	0.5	0	1
Ex. 15: 9-10	0.5	1	0.5	1	1
Ex. 15: 11-13	0.5	1	1	0	1
Ex. 15: 14-15	1	1	0	1	1
Ex. 15: 16-18	0.5	1	1	0.5	1
Ex. 15: 19-21	1	1	1	0	1
Ex. 15: 22-23	1	1	0	0	0
Ex. 15: 24-25	1	1	1	0	0.5
Ex. 15: 26-27	0.5	1	1	0.5	0
Ex. 16: 1-2	1	0.5	0	0	0.5
Ex. 16: 3	0.5	1	0	0	1
Ex. 16: 4-5	0.5	1	0	1	0
Ex. 16: 6-7	0.5	1	1	1	0
Ex. 16: 8	0	1	0.5	1	0.5

Ex. 16: 9-10	0.5	1	1	0	0
Ex. 16: 11-14	1	1	1	0.5	0
Ex. 16: 15-18	0.5	1	1	0	0
Ex. 16: 19-21	0	0.5	0.5	0	0
Ex. 16: 22-24	0	0.5	1	0	0
Ex. 16: 25-27	0.5	0.5	0.5	0	0
Ex. 16: 28-30	0.5	1	1	0	0.5
Ex. 16: 32-34	0.5	1	1	0	0.5
Ex. 16: 35-36	0.5	0	1	0	0
Ex. 17: 1-3	1	1	0	0	1
Ex. 17: 4-7	1	1	1	1	1
Ex. 17: 8-9	0.5	0.5	0	0.5	0
Ex. 17: 10-11	0.5	0.5	0	0	0
Ex. 17: 12-13	0.5	1	0	0	0
Ex. 17: 14-16	0.5	0.5	1	1	0.5
Ex. 18: 1-4	0.5	0.5	1	0	0.5
Ex. 18: 5-6	0.5	0	1	0	0
Ex. 18: 7-8	1	0	1	0	0
Ex. 18: 9-11	0.5	0.5	1	0.5	0.5
Ex. 18: 12	0	0	1	0	0.5
Ex. 18: 13-14	0.5	0	1	0	0
Ex. 18: 15-16	0	0	1	0	0
Ex. 18: 17-19	0.5	0	1	0.5	0
Ex. 18: 20-23	0.5	0	1	0.5	0
Ex. 18: 24-27	0.5	0	1	0	0
Ex. 19: 1-2	1	0	0	0	0
Ex. 19: 3-6	1	1	1	1	1
Ex. 19: 7-8	0	0.5	1	0	0.5
Ex. 19: 9-11	0.5	0.5	1	1	1
Ex. 19: 12-13	1	1	1	0	0
Ex. 19: 14-15	0.5	0.5	1	0	0.5
Ex. 19: 16-17	1	1	1	0	0
Ex. 19: 18-20	1	1	1	0	0
Ex. 19: 21-22	0.5	0.5	0.5	0	0
Ex. 19: 23-25	0.5	1	1	0	0.5
Ex. 20: 1-11	1	1	1	0	1
Ex. 20: 12-17	0.5	0.5	1	0	1
Ex. 20: 18-20	0.5	0.5	1	0	0.5
Ex. 20: 21-26	1	1	1	0.5	1

Tab. 2 – Correlation matrix of the five items analyzed in the interval [Ex. 13:20 – Ex. 20:26].

	Geographic fact	Sense of place	Cultural roots	Mind landscape	Territorial consciousness
Geographic fact	1	0.35	-0.19	-0.09	0.16
Sense of place	0.35	1	-0.26	0.16	0.34
Cultural roots	-0.19	-0.26	1	-0.05	0.19
Mind landscapes	-0.09	0.16	-0.05	1	0.14
Territorial consciousness	0.16	0.34	0.19	0.14	1

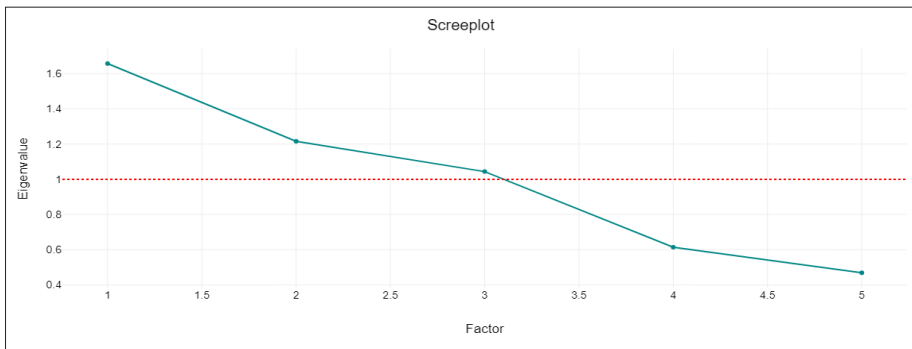


Fig. 1 – Diagram of the eigenvalues from the spectral decomposition of the correlation matrix of Table 2. The factors are on the abscissa, the eigenvalues are on the ordinate.

In figure 1, please note how the eigenvalues spectrum has three eigenvalues greater than 1. The analysis of the eigenvalues spectrum allows defining the number of factors that can be extracted. According to Kaiser (1960) the number of objectively extractable factors is equal to the number of eigenvalues greater than 1. Therefore, in this case, the number of extractable factors for interpretation is equal to 3.

The second column of Table 3 reports in decreasing order the values of the five eigenvalues. Note, in the last column on the right, how the sum of the first three eigenvalues describes more than 78% of the variability of the phenomenon under study (the so-called cumulative variance). Therefore, following Kaiser's indications for the first three eigenvalues and the significant percentage value describing the phenomenon (78.33%), we will proceed with the analysis of the first three factors. Now, by multiplying the square root of the first three eigenvalues by the corresponding elements of the first three columns of the eigenvector matrix, the components of the three analyzed factors are obtained. Table 4 reports these results. Note how the results obtained for the three main components allow us to define the meaning of the three latent items, i.e. the three factors. In the first numerical column on the left, you can see the predominance of the "Geographical Fact" and "Sense of Place" components.



Therefore, the first factor can be labeled with the term “*Geo-information*”. Proceeding with the second column we note a numerical predominance of the “Cultural Roots” and the “Territorial Consciousness”. We can therefore label the second factor as “*Rootings and Society*”. Finally, in the third column there is only one predominant variable, the “Landscapes of the mind”. Therefore, the third factor can be labeled as “*Visionariness*”.

Tab. 3 – Numerical values and percentages of the variance described by the eigenvalues of figure 1.

Components	Eigenvalues	% of variance	Cumulative variance %
1	1.66	33.14	33.14
2	1.22	24.32	57.46
3	1.04	20.87	78.33
4	0.61	12.29	90.62
5	0.47	9.38	100

Tab. 4. – Matrix of the principal components corresponding to the three factors extracted in the interval [Ex. 3:20 – Ex. 20:26].

	Principal components		
	1	2	3
Geographic fact	0.65	-0.28	-0.44
Sense of place	0.84	0	0.06
Cultural rootings	-0.38	0.74	-0.38
Mind landscapes	0.27	0.38	0.81
Territorial consciousness	0.54	0.67	-0.23

The geographical *Genius loci* of the analyzed Exodus verses [from Ex. 13:20 to ES. 20:26] is therefore characterized in importance by the following factors: “*Geo-information*” (33%), “*Rootings and Society*” (24%), “*Visionariness*” (21%). Therefore, we can state that the *Genius loci* of the text is composed by “*Geo-information*” for a third, “*Rootings and Society*” for a quarter and “*Visionariness*” for a fifth.

Following the detailed analysis carried out at the beginning of this chapter, through which the topics of the five items introduced by Lando and Voltolina (2005) were described, it is now possible to appropriately define the geographical *Genius loci* of the Exodus text taken into consideration.

Of course, we can state that the geographical *Genius loci* depends above all on the geographical component, constituted both by the physical characteristics of the territory and by the location of the places crossed, where the glory of God touched the hearts of the Jews, provoking reminiscence, jubilation, but also bewilderment and affliction.

Alongside the geographical component, the *Genius loci* depends also on the type of rooting, and on the characteristics of the society to which it be-

longs. As far as rooting is concerned, the sense of belonging to the places where the Lord manifested himself with his laws and rights, is a priority. As regards the type of society, due to the difficulties of survival, this depends on the need for protection of the Lord.

Finally, the *Genius loci* is conditioned by a visionary component that probably might constitute the basis for the sacredness of the text of the Exodus, as it is attributed, in most cases directly to the Lord and to Moses himself.

The result obtained, by applying EFA to the series of data reported in Figure 1, fits well with what Marilena Vecco proposed in a recent article (Vecco, 2020). She writes that *Genius loci* is composed of three main layers. The first one is the “visible and tangible material layer” that in this case corresponds to a relevant part of *Geo-information* factor. The second one is the “invisible experience of the place created in the human mind”, that might correspond to *Visionariness* factor. The third one, are the “processes of human and natural activities with all the interrelationships among them”, that might correspond to *Rootings and Society* factor. According to Vecco (2020), these three different dimensions constitute a set of phenomena capable of describing the intrinsic and extrinsic nature of a meta-conceptual interpretation of the *Genius loci*.

#### 4. *Exploratory factor analysis and Vecco’s meta-conceptual interpretation of the Genius loci*

Recently, Crosilla (2023) proposed the theory of spatial ordering in Humanistic Geography [H. Lefebvre (1991), E.W. Soja (1996)] to interpret and codify the facts described in the Biblical Exodus. Humanistic geography considers space characterized by a physical component integrated by imaginative, symbolic and literary parts. Space, can therefore be perceived, conceived and represented. The “Perceived Space” (also called First Space in humanistic geography) is the physical space of investigation. In the biblical context, it is characterized by the localities mentioned in the text, by the desert environment of the Sinai Peninsula and by the archaeological remains of different periods present there, studied and classified by the team of prof. Anati, in particular for the Har Karkom area (Anati 2016). The “Conceived Space” (also called Second Space in humanistic geography) constitutes the fields of study of the various professional disciplines that interact with the territory. With regard to this paper, it concerns the archaeological and interpretative research of the numerous remains present there, which range almost continuously from the Paleolithic to the Islamic Period. The Third Space, or the “Space of Representation”, is the lived space that makes use of meanings and symbols that distinguish the space of cultural stratification and the rootings of the memory of individuals and society (Lando and Voltolina 2005). As already said, these authors consider the “geographical fact”, the “sense of place”, the “cultural roots”, the “landscapes of the mind” and the “territorial consciousness” as interpretative voices of the existing relationships between man-place, community-environment, culture-landscape of the “space of representation”.

As mentioned at the beginning of this paper, as regards the “geographical fact”, only the geographical content of the textual information is considered. With the “sense of place”, we go beyond the territorial description to also understand the emotional and psychological bonds established with the places. The “cultural roots” allow us to delve into the origins of a society, its history in a specific place. The “landscapes of the mind” express the scope of human experience through the description of certain situations that take shape in the human mind and that the author of a text transmits through narrative language. Finally, through “territorial consciousness”, the image of the territory provided by an author goes beyond his descriptive capacity and reveals his interpretation and reflection on living society.

Furthermore, in the previous chapter it was verified that EFA allows to identify for the text analyzed [Ex. 13:20 - Ex. 20:26] the presence of three factors, labeled as “*Geo-information*”, “*Visionariness*” and “*Rootings and society*”. Surprisingly, it was noted that the three factors correspond well enough with the three layers identified by Vecco (2020) for a meta-conceptual interpretation of the *Genius loci*.

Deepening the analysis, it then appears that the first layer proposed by Vecco (2020), i.e. “Visible and tangible material layer”, can be mainly brought back to the “*Geo-information*” factor and consequently to the “geographical fact” of Lando and Voltolina (2005) item. In the case of the Exodus text the “geographical fact” corresponds to the mentioned localities and environments, and consequently to the archaeological remains present there and to the morphological description of the Sinai Desert. The second layer of the *Genius loci* proposed by Vecco (2020), i.e. “Invisible experience of the place created in the human mind”, can be associated with the “*Visionariness*” factor, which analyzes internalized, thought or lived situations of places reported in the text by the author. Finally, the third layer of the meta-conceptual *genius loci*, “Processes underlying human and natural activities”, can be associated with the “*Rootings and society*” factor, which studies the links of a society to a specific place.

##### 5. *Identification, protection and transmission of the Genius loci of the Biblical Exodus*

As Marilena Vecco (2020) writes, the spirit of a place does not exist in itself; it is a human conjecture in order to satisfy social, cultural and religious needs of a community. She recommends that to maintain and enhance the spirit of the place, three main actions are necessary: rethinking, preserving and transmitting the place and its spirit. At first, it is necessary to know how to recognize the place and its *Genius loci* and how to interpret its meaning. These topics have been explored in depth in the previous chapters. About preserving the spirit of a place, Marilena Vecco (2020, p. 11) affirms that «Preserving the *Genius loci* as the cultural [...] identity of a place, ensuring its permanence in the collective memory [...], means fully understanding the functional, stylis-

tic and constructive reasons from which a place originates». Concerning the transmission of the *Genius loci*, she states that this is necessary for its protection, since, if the *Genius loci*, is not transmitted, it could vanish together with the place that characterized it. Transmission is a delicate operation because it must allow a place to renew itself and, at the same time, continue to exist in memory, so as not to lose sight of the historical phases and vicissitudes that have characterized the place.

Passing now to the biblical text, preserving the *Genius loci* of the Biblical Exodus imply to transmit the spirit of what Silvio Barbaglia (2022) indicates with the term “*theory of space*”, that is, with the theory of a space that in this case corresponds to the itinerary described in the book of Exodus along with the location of Mount Sinai. According to Barbaglia, the assumption that the space was located ad hoc to assert a thesis and transmit a precise message allows us to affirm that the topographic aspects have to be re-interpreted in an original way, compared to what was foreseen by historiography and classical archaeology.

In his doctoral thesis, prof. Barbaglia (2020) asserts that during the Hellenistic period the priest of Jerusalem, Simeon the Righteous, promoted the publication of a “foundational history” containing previous traditions, reinterpreted in a theological project known as the Ennateuch (Genesis- 2 Kings). Prof. Barbaglia (2020) believes that the strategic choice of the Jerusalem authorities to convince the inhabitants of the diaspora territories to return to Judea, in particular to Jerusalem, gave rise to the culture of the figure of Moses, considered as a hero of the people of God, guide of his people, up to the threshold of the Promised Land. This is a strong message for the community in diaspora, which continually lived with thoughts directed towards the motherland.

Therefore, re-thinking the *Genius loci* of the text of the Exodus, means, in this case, understanding the spirit with which the authors of the Hellenistic period, composed a story based on a “*theory of space*”. According to Barbaglia and Crosilla (2022), this story may certainly have been influenced by numerous archaeological remains from the pre-Hellenistic period, visible on the territory of the Sinai Peninsula and in Har Karkom and studied in depth by the archaeologist Emmanuel Anati (2016). The archaeological remains constitute a relevant part of the “Geo-information” factor and of the Vecco’s “Visible and tangible material” layer. A preliminary reconstruction study of the archaeological remains allows to proceed with the correspondence analysis of the “Rootings and society” factor and the Vecco’s “Processes underlying human and natural activities” layer. Finally, the foundational history corresponding to the Exodus route and reported in the Exodus text, can be related to the “Visionariness” factor and to the Vecco’s “Invisible experience of place created in the human mind” layer. Following the Vecco’s holistic paradigm, it is remarkable and fascinating to consider the *Genius loci* of the Exodus text as a *holistic* result, which is much more than the sum of its components.

In this regard, in a recent contribution, Donatella Caramia (2021) wrote that to achieve an adequate perception of the *Genius loci* it is necessary to

discover the neurofunctional and psychologically active values of the myth, integrating them according to the most recent discoveries about the functioning of the brain and the narration of the places within it. For example, about the archaeological site of Har Karkom, studied for a long time by prof. Anati, anthropomorphic standing flint boulders present there, dating back to the Paleolithic period, indicate the presence of shamanic cultures having an awareness of the energies of the earth, such as to facilitate the manifestation of exceptional qualities of the psyche. Donatella Caramia (2021, p. 38), quoting Carlos Casteneda, continues writing that «in some places and by virtue of their power it is possible to reveal a particular ultrasensory intuition that goes beyond the limits of ordinary perception and that puts the individuals in contact with the earth and with its vibrant natural energies». Since the Stone Age, Har Karkom must have been known to the nomadic people of the Sinai Peninsula for these natural energies. Har Karkom, was therefore adopted in the Hellenistic period by the authors of the Exodus texts as the mythical peak of Mount Sinai, the place where Moses had direct contact with God.

Finally, Donatella Caramia has written (2021, page 39) that to perceive and preserve the *Genius loci* it is necessary for the human soul to experience the systems of the psyche in a personified form. Without the soul experience, the interiority of the psyche transforms into emptiness and consequently the world appears devoid of its depths, of images full of personal intentionality.

## 6. Conclusions

In this paper, Exploratory factor analysis (EFA) is proposed to interpret the geographical *Genius loci* of the text of the Biblical Exodus between the verses [Ex. 13:20 – Ex. 20:26]. The Factor analysis considers the five items proposed by Lando and Voltolina (2005) for the study of the Third Space in Humanistic Geography, namely the geographical fact, the sense of place, the cultural roots, the landscapes of the mind and the territorial consciousness.

In reference to the “geographical fact”, the analysis refers exclusively to the content of the geographical information reported in the text. As regards the “sense of place”, the emotional and psychological bonds that are established with places, are explored. Through the “cultural roots”, the links of a society with a specific place, are analyzed, while with the “landscapes of the mind” the internalized situations thought or experienced are described. Finally, through “territorial consciousness”, it is possible to trace the interpretation and reflection on the society described.

The Exploratory factor analysis was carried out after dividing the verses of the studied text of Exodus into homogeneous groups and assigning a score of 1; 0.5; 0 to each group of verses based on the presence or absence of the item considered. After calculating the correlation matrix of the items, its spectral decomposition into eigenvalues and eigenvectors was carried out. The eigenvalues greater than 1 (Kaiser 1960) define the number of factors that charac-

terize the geographical *Genius loci* while the eigenvectors allow the elements of the sample belonging to each independent factor, to be identified. The results allowed us to define the presence of three main factors classified as follows: 1. “Geo-Information” (mainly characterized by the “Geographic Fact” and “Sense of Place” items), 2. “Rooting and Society” (mainly characterized by the “Cultural Roots” and the “Territorial Consciousness” items), 3. “Visionariness”, mainly characterized by the item “Landscapes of the mind”.

The results of the analysis surprisingly confirm the model recently proposed by Marilena Vecco (2020) regarding the peculiarities of the *Genius loci*, understood as a meta-concept of a holistic approach, characterized by a double nature of physical reality and spiritual entity. The *Genius loci* is the spirit that characterizes the itinerary of the “founding history” of the Jews, created ad hoc and reported in the text of Exodus to affirm a thesis and convey a precise message (Barbaglia, 2020). Finally, the holistic interpretation of the *Genius loci* proposed by Vecco (2020), carried out through the neurofunctional and psychologically active value of the myth on the experience of the human soul (Caramia, 2021, page 39), helps to trace the sacredness of the text of the Exodus, as reported by tradition.

Future research activity will be oriented at analyzing the *Genius loci* conducted on significant Exodus text components, in order to investigate the historical phases and vicissitudes that characterized the writing of the text.

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*Determination of the Geographical Genius Loci of the Biblical Exodus: Experiences of Exploratory Factor Analysis of the Exodus Text [Ex. 13:20 - Ex. 20:26]*

The aim of the paper is to deepen the study of the Humanistic Geography Third Space – i.e. the space of cultural stratification and memory rooting of individuals and society – for the text of the Biblical Exodus, comprised between Ex. 13:20 and Ex. 20:26. To this aim, the paper reports the results of some experiments of exploratory factor analysis (so called, EFA) for the Third Space items proposed by Lando and Voltolina (2005), i.e. the geographic fact, the sense of place, the cultural roots, the landscapes of the mind and the territorial consciousness. The objective of the EFA is to identify any latent factors, obtainable from correlation studies of the five sample items listed above, in order to identify the geographical *Genius loci*, i.e. the spirit of the Third Space of the Exodus text included in the interval Ex. 13:20 - Ex. 20:26. The results surprisingly confirm the model recently proposed by M. Vecco (2020) about the peculiarities of the *Genius loci*, interpreted as a meta-concept of a holistic approach, characterized by a double nature of physical reality and spiritual entity. The literary interval taken into consideration corresponds to one of the more specifically “geographical” parts of the Exodus, in which the path taken by the Jews from the Land of Goshen to Mount Sinai, is described.

*Détermination du Genius Loci Géographique de l'Exode Biblique : Expériences d'Analyse Factorielle Exploratoire du Texte de l'Exode [Ex. 13:20 - Ex. 20:26]*

Le but de l'article est d'approfondir l'étude du Troisième Espace in Géographie Humaniste – c'est-à-dire l'espace de stratification culturelle et d'enracinement mémoriel des individus et de la société – pour le texte de l'Exode Biblique, compris entre Ex. 13:20 – Ex. 20:26. Dans ce but, l'article rapporte les résultats de quelques expériences d'analyse factorielle exploratoire (appelée EFA) pour les items du Troisième Espace proposés par Lando et Voltolina (2005), à savoir le fait géographique, le sentiment d'appartenance, les racines culturelles, les paysages de l'esprit et de la conscience territoriale. L'objectif de l'EFA est d'identifier tous les facteurs latents, pouvant être obtenus à partir d'études de corrélation des cinq exemples d'éléments énumérés ci-dessus, afin d'identifier le *Genius loci* géographique, c'est-à-dire l'esprit du Troisième Espace du texte de l'Exode inclus dans l'intervalle Ex. 13:20 – Ex. 20:26. Les résultats confirment de manière surprenante le modèle récemment proposé par M. Vecco (2020) sur les particularités du *Genius loci*, compris comme un méta-concept d'une approche holistique caractérisée par une double nature de réalité physique et d'entité spirituelle. L'intervalle littéraire pris en considération correspond à l'une des parties plus spécifiquement « géographiques » de l'Exode, dans laquelle est décrit le chemin parcouru par les Juifs depuis le pays de Goshen jusqu'au mont Sinäi.



*Determinazione del Genius loci geografico dell'Esodo biblico: Esperienze di analisi fattoriale esplorativa del testo dell'Esodo [Es. 13:20 - Es. 20:26]*

Obiettivo del contributo è approfondire lo studio del Terzo Spazio in Geografia Umanistica – cioè lo spazio della stratificazione culturale e del radicamento della memoria degli individui e della società – per il testo dell'Esodo biblico, compreso tra Es. 13:20 ed Es. 20:26. A tale scopo, il contributo riporta i risultati di alcuni esperimenti di analisi fattoriale esplorativa (cosiddetta EFA) per gli elementi del Terzo Spazio proposti da Lando e Voltolina (2005), ossia il fatto geografico, il senso del luogo, le radici culturali, i paesaggi della mente e la coscienza territoriale. Obiettivo dell'EFA è quello di individuare eventuali fattori latenti, ottenibili da studi di correlazione dei cinque elementi sopra elencati, al fine di individuare il *Genius loci* geografico, cioè lo spirito del Terzo Spazio del testo dell'Esodo compreso nell'intervallo Es. 13:20 - Es. 20:26. I risultati confermano sorprendentemente il modello recentemente proposto da M. Vecco (2020) circa le peculiarità del *Genius loci*, inteso come meta-concetto di un approccio olistico, caratterizzato da una doppia natura di realtà fisica ed entità spirituale. L'intervallo letterario preso in considerazione corrisponde ad una delle parti più propriamente “geografiche” dell'Esodo, in cui viene descritto il cammino compiuto dagli ebrei dalla terra di Gosen al monte Sinai.

