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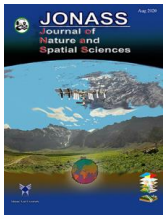

Case Study Article

Space memory and identity: The case of Germany

Mohammad Hossain Ramesht [a] *, Barbara Sponholz[b] Fatemeh Nematollahi[c]

a Professor, Department of Physical Geography, Faculty of Geography Sciences and Planning, University of Isfahan, Isfahan, Iran
b Professor, Department of Physical Geography, University of Wurzburg, Wurzburg, Germany
c Postdoctoral researcher, Department of Physical Geography, Faculty of Geography Sciences and Planning, University of Isfahan, Isfahan, Iran

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ABSTRACT

Background and objective: One of the new topics in geomorphology is the concept of space memory and identity. Phenomenological geomorphology begins with a system of new terms, such as land-contexts and land-texts, and then concepts such as space syntax logic, memory and space are introduced.
Materials and methods: Hence, the questions raised regarding the German geomorphology problem are: How many land-contexts have been created in Germany? What is the space identity of these land-contexts? This research is based on the analysis of the Litho Lex database and maps-EU-DEM.
Results and conclusion: The results from a joint study by the Universities of Isfahan and Wurzburg, based on the analysis of the Litho Lex database and maps-EU-DEM, show that: Germany has three land-contexts in its space memory (periglacial, glacial and ice sheet land-context).The ice-water equilibrium line (I.W.E) separates these three land-contexts.Urban settlements owe their own space identity to the convergence law of glacier and river meandering, and to the rural settlement resulting from the development of social groups in forests. The significance of the subject becomes apparent when it comes to an analysis of the same process, which does not follow from the same result somewhere else.

1. Introduction

Phenomenology should be considered as a paradigmatic evolutionary concept that, after decades of delay, inevitably entered the field of geomorphology. This paradigm, which lacks history, was introduced into geography (Merrens 1969) and further developed with the work of (Hillier & Hanson, 1984; Hillier, 2007). The most important difference between this paradigm and the positivist thinking is that it lies in the cognitive-theoretical domain. In general, there are two different ideas about cognitive phenomenona. One group of scientists believe that the researcher (object) is separate from the phenomenon (subject) and that they are two independent facts. Other scholars state that cognition is dependent on the researcher and one cannot assume that these two topics are separate. The second idea,

* *Corresponding author.* Tel.: +989131160245
E-mail address: *m.h.ramesht@geo.ui.ac.ir*
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which is one of the most important phenomenological features, was introduced in geomorphology two centuries ago by Gilbert (1877). He illustrated this concept in his famous report (Henry Mountains), although phenomenology was not known as a concept yet. Gilbert exactly described the advanced concept that Wittgenstein (2019), one hundred years later, expressed in his famous book Philosophical Research. He named this advanced concept "Plexus". His text not only reveals the meaning of the "object" in recognizing the "subject", but also implies a science, a completely different definition than that presented at that time.

Merrens (1969) in his book "The physical environment of early America: Images and image makers in Colonial South Carolina" emphasizes the application of the phenomenological method in geography and Lowenthal (1961) examined the relationship between phenomenology and geography broadly and more deeply. Soja (1989) insists on the concept of "spatial" in his view of the phenomenology of geography. Papoli Yazdi (2003) was the first geographer who defined post-phenomenology in geography. He attempted to explain the concept of post-phenomenology by introducing a new definition of geography. In geomorphology, besides Gilbert (1877), we can mention the Pourkhosravani (2012), Babajamali (2014), Entezari (2014), Mahmoodi (2014), Nematollahi (2014), Mahmoodi et al., (2016), Nematollahi et al., (2018), Nowjavan (2017), Mohammadiyan (2019), Solgi et al., (2019) and Mahmoodi et al., (2020), who have succeeded in using this method in geomorphology studies.

In the field of German glaciology, numerous individuals have done detailed work in the form of approved European drafts or in numerous books and publications, but here they only refer to the studies of the researchers who have used their results in this article. In addition, we use the reports of The International Quaternary Studies in Europe, which is the subject of several volumes of the report published by Schirmer (1995) in Berlin. Among the papers in this collection, the name of Schirmer & Schlichtherle (1995) is prominent in a specialized report on bronze residence and the effects of this phenomenon on changes in the landscapes of South West Germany. Moreover, Frenzel (1975), who described human history in the interglacial periods in Southwest Germany, has examined the way in which people lived with the warming of the climate and the withdrawal of parts of Europe from ice coverings. One of the other scholars who suggested a conceptual model of the way of former life in Europe is Thomae and Mani (1995). Zoller and Wagner (1995) are among the people who have interesting thoughts about urban identity in Germany and the role of the meander in creating it. In a detailed discussion, without giving the notion of spatial identity, they claim that the city of Maur, which is far from the Narkh River, was near the bank of river and by rebuilding the river meanders, proves that the city is the mainland of the Narkh River. Ehlers and Grobe (2011) compiled the glacial information and succeeded in drawing up the extension of the ice map in Germany.

Based on the research background, it can be concluded that in previous research, researchers have focused more on the subject of Glaciology and less attention has been paid to its impact on social structures and groups. Therefore, in this research, with an innovative look, an attempt has been made to give an interpretive method to glacial studies and to present a new analysis of geomorphic contexts.

The hypothesis that makes up the structure of this research is that: German social groups follow certain rules of space syntax. To achieve this, the expression of an analytical method of geomorphic contexts in the field of Glaciology (phenomenology) defines the purpose of this study.

2. Material and Method

The theoretical framework of this research is based on phenomenology and the analytical text of Genettes (1982). The data that is used in this project have been obtained from Litho Lex, eea.europa and

maps-eu-dem (sedimentary and form data). In the first stage, based on the information provided by the X-Center's fridge survey, the land-contexts of Germany were determined. These studies revealed that the Germany consists of three main land-contexts. Then for each land-context, a pilot region was selected as a control area. (See Wurzburg for the periglacial land-context, Munich for the glacial land-context and Potsdam for the ice sheet land-context). In the third stage of the analysis, the topographic maps of these three regions were analyzed in relation to the settlement network implemented on them.

Different variables were considered, and this led to an assessment of each topographic map covering the following issues: density of villages, dispersion of settlements, I.W.E[1], and convergence of glacial rivers. In the last phase, the outcomes obtained were compared with each other, and the logical rules of their arrangement were extracted from them.

3. Results and Discussion

What is important here is the way in which space memory and identity were created in Germany. In the first phase of the study, surveys of glaciology in Germany were evaluated. Ehlers (2011) has been the head of several research projects in this field. Based on his colleagues' works, he prepared a map of the extent of the expansion of glaciers in the Quaternary of Germany (Fig. 1). He emphasizes that what is cited here is based on only glacial moraine data. In contrast Vinx (1997) believes that this is not a reliable boundary because the glacial moraine cannot determine the frontier of the glaciers.

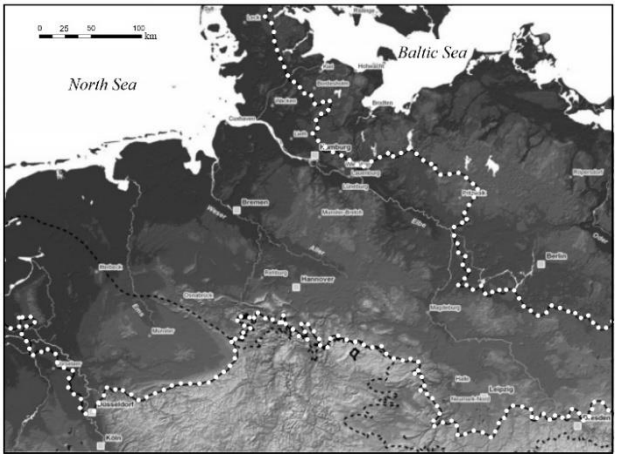

Fig. 1 - The Maximum Boundary of Ice Cover in Germany (After Ehlers2004)

Therefore, to complete the boundaries of the glaciers in the Quaternary in Germany, we are using Landsat satellite images and the Dem (30M) the data which were obtained from the European Data Center. In doing so, the extreme boundary of glacial formed by the combination of Litho Lex database facies and morphological studies were determined (Fig. 2). But what is important here, is the difference in the performance of ice sheets and mountain glaciers, because in general, Germany has been partly traversed by two ice cores. The northern and eastern by Scandinavian ice core, and the southern by mountain glaciers from the Alps.

1 - Ice-water equilibrium: the balance between ice and melting

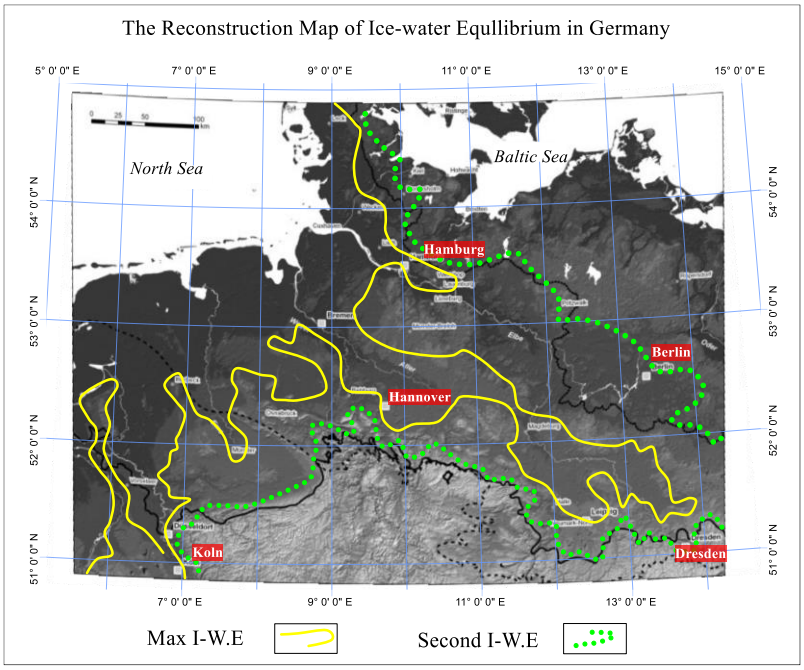

Fig. 2 - The reconstruction map of ice-water equilibrium in Germany. This map based on stratigraphy and morphology of satellite images, is still in preparation.

The Scandinavian Ice Core was a continental glacier with a thickness of more than three thousand meters, which had crossed the North Sea, and covered the Northwestern area of Germany (Fig. 3).

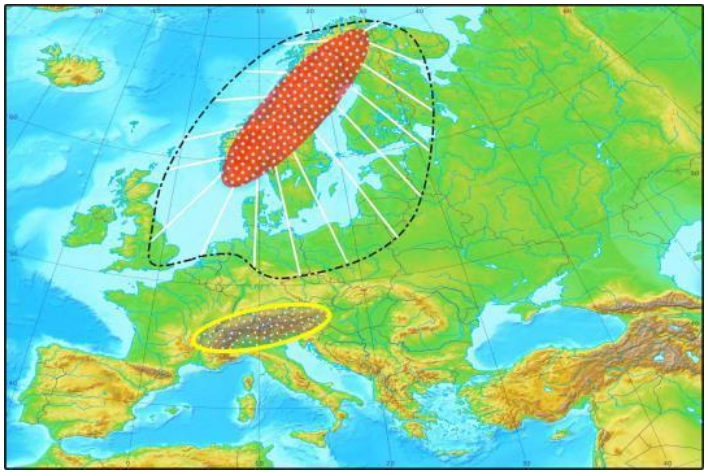

Fig. 3 - The impact of the Alps and Scandinavian ice caps

In the Southern part of Germany, the situation was different because in this area mountain glaciers where dominant and, besides the timberline (permanent snow), they had a line of ice-water equilibrium, which was drawn to the inner wavy plains. The space between these two different icy cores, the rest of

the territory of the present-day Germany, has been under the influence of the periglacial system, which itself has another space memory and identity, and is quite different.

3.1. Ice-water equilibrium in northeastern Germany

Now, with the completion of information about the ice sheets in the north and east of Germany, the second stage, the lines and stages of glacial retreating and reshaping the surface of the earth, should be identified. In this field, detailed work has been done in Germany, including (Schultz 1962). The Scandinavian ice core in the eastern part of Germany has several stages of retreats, and these phases have led to the formative system of ice. The most important remnant of this line can be seen as lakes, which streaked along the ice-water equilibrium (I.W.E). These lakes have a linear shape and form the margins of ice sheet, and meanwhile they have created marshy environments and only relatively small lakes remain. In general, it can be said that on a large scale the lakes in the Eastern part of Germany incorporate a memory of the glacial evolution of these areas and therefore are considered to be space diagnostic indicator. The only important issue to be mentioned in this regard is that the changes in the level of the retreat of ice sheets are much more than the ones mentioned here. Hence, the most prominent of these lines were identified, and the two lines drawn here represent those of ice-water equilibrium in the east of Germany (Sokołowski, et al., 2021). (Fig. 4).

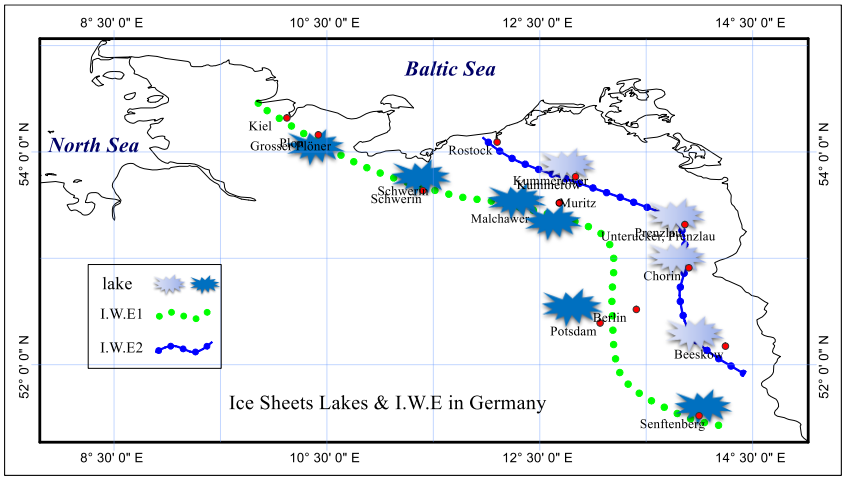

Fig. 4 - The distribution of lakes in northern Germany as a diagnostic of retreat of Scandinavian ice cape

3.2. Ice-water equilibrium in the south of Germany

In the Alpine Mountains there are many lakes in the northern and southern periphery, which, unlike the lakes of the northeastern ice sheets, do not define the water-ice equilibrium line. Instead, these lakes are the remains of the nucleus of the ice, after the glacial period (Fig. 5).

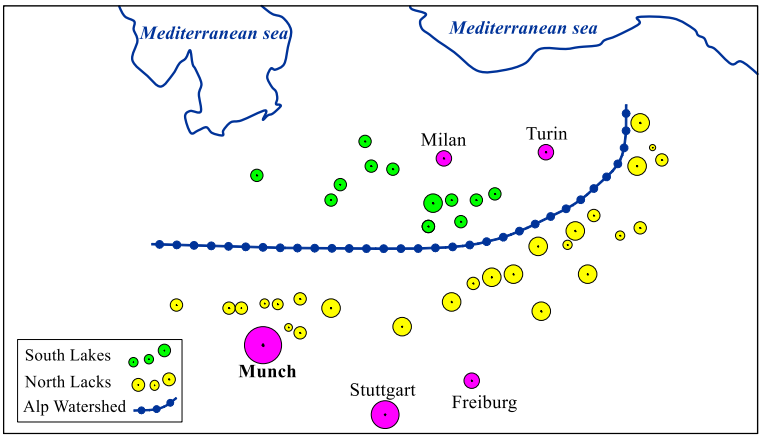

Fig. 5 - The distribution of lakes in the northern and southern Alps

Nevertheless, on the northern hillside of the Alps, lakes can be regarded as two-level lines. They show two retreats of the Alpena ice core, which can almost be considered to be equivalent to the changes in the ice cover of Scandinavia. See Table 1 and 2.

Table 1 - Lakes situated in the northern hillside of the Alps

Alpine lakes	Elevation > 550 m
Starnberger See	596 m
Forggensee	814 m
Kochelsee	600 m
Tegernsee	725m
Schliersee	777 m
Average elevation	700 m

Table 2 - Lakes situated in the north hillside of the Alp at 450 M height

Alp lakes	Elevation ≤ 550 m
Geneva	372 m
Jura Mountains-Nuremburg	429 m
Constance	395 m
Simssee	470 m
Mondsee	481 m
Lucerne	434 m
Sarnen	469 m
Zurich	406 m
Ammersee	533 m
Chiemsee	518 m
Average elevation	450 m

The table above defines a dual-axis for a lake space syntax: one with an average elevation about 450 meters, and the other line lying at 700 meters above sea level (which indicates a retreat). Certainly, the ice-water equilibrium line in the Alpine mountains is much lower than that in the lakes, because mountain glaciers have become much lower than the Timberline's boundary, due to the feeding of the cirques. In other words, the ice-water equilibrium in the mountain glaciers, like those in other places, has been much lower than the permanent snow line (timberline). Fig. 6 shows that the lakes can be a good indicator for determining the ice cap boundary, and help us to determine the ice-water equilibrium lines in mountain glaciers[1].

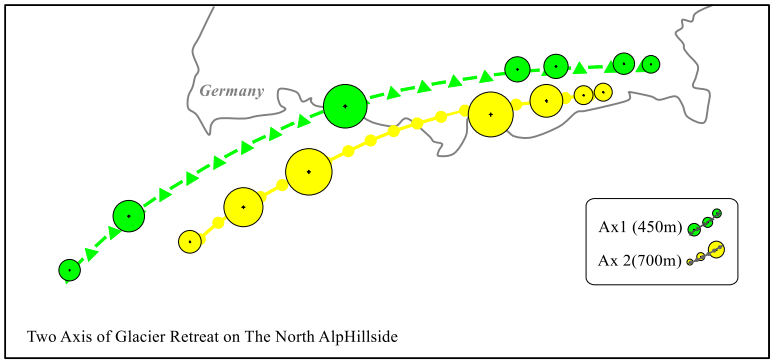

Fig. 6 - Two axes of glacier retreat on the Northern Alp hillside

Based on geomorphic evidence in Dem (30M), the lowest height of the tongue of a glacial lobe in the main bedding of mountain glaciers in the Rosenheim region and Freilassing is well known, but in the main Rheingraben, there is geomorphologic evidence that indicates the lowest height of a glacier tongue. The reason is that the main axis of the River Rhine was fed by numerous glacial lakes, including the Constanz Lake. The flow of ice from Weil am Rheine and Lorrach as well as Rheinfelden, to the main Rhine is shown in Fig. 7 and this connection is still there.

Fig. 7 - The connection of Rheingraben between glacial tongues and lake

Several pieces of geomorphologic evidence suggest that the glacier tongue of the mountains was lying in much lower height than those of the lakes. Among these, the retreat of a glacial tongue at the entrance to the Graben-Rhine, is shown in Fig. 8, but the main issue is the Rhine's main Graben.

1- Obviously the ice-water equilibrium is important for us because it expresses the role of attractive points.

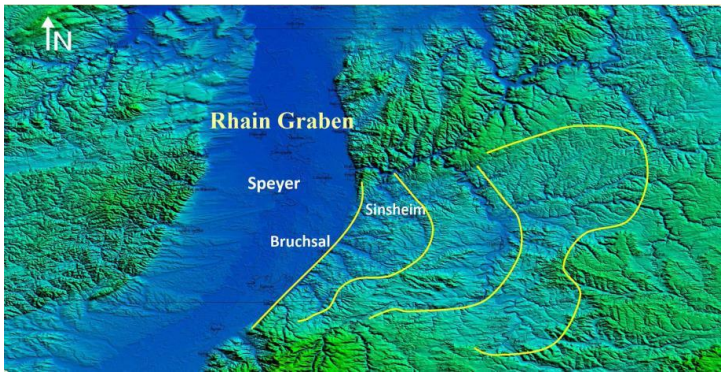

Fig. 8 - Steps of retreat of glacial tongue in the eastern side of the Rheingraben

The Rhine River was fed, on the entrance to the Rheingraben by Lake Constanz and caused the thalweg of the area. Obviously, if such a route was influenced only by the river flow, there should not be several thalweg lines, but the evidence of the three thalwegs in this direction has shown (in the Dem 30M of the region), that attempting to maintain their independence at the beginning of the Rheingraben, and after going through the path, they came together in a certain way. This shape denotes that the ice stream entered the Graben because only in these cases the lateral moraines cause the glacier not to converge and flow in one stream but by that joining to each other, ice streams try to go their own way independently, and the lateral moraines prevent them from joining each other. This independence is maintained up to the point where the ice flows exists and, as soon as they melt, independent channels interconnect with each other and form a single flow (Fig. 9).

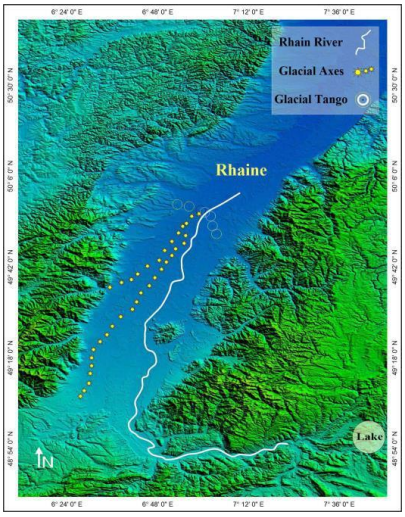

Fig. 9 - Several thalwegs in Rheingraben

In Fig. 9, the final point of the melting of the ice tongue is evident. Measurements taken in some parts of the Rheingraben show that the mid-moraine height reaching up to 5 or partly 7 meters, and that this wall of moraines keeps independent of the ice flow path. But the height of the end point tongues (sea level height) is about 200 meters. Therefore, it can be concluded that although the permanent boundary of the snow in the LGM was mostly at 450 meters, the ice-water equilibrium line was almost 200 meters lower than the timberline. This figure is close to 1,000 meters in Shirkouh (Yazd-Iran) because the moraine cirques of Tazrjan is at 2,650 meters, while the erratic rocks in the Fakhr Abad plain has fallen to the 1,650 meters as (Hagedorn 1975) has noted in his report.

3.3. The main land-context of Germany

As a result of what was said above in order to obtain the rules of space syntax in these three land-contexts, for each of them an area was selected as the index of the region, and later on we calculated some variables. These were as follows:

- The Wurzburg district as the representative of the periglacial land-context.
- Munich as the representative of the mountain glacier land-context.
- Potsdam as the representative of the ice sheet land-context (Fig. 10).

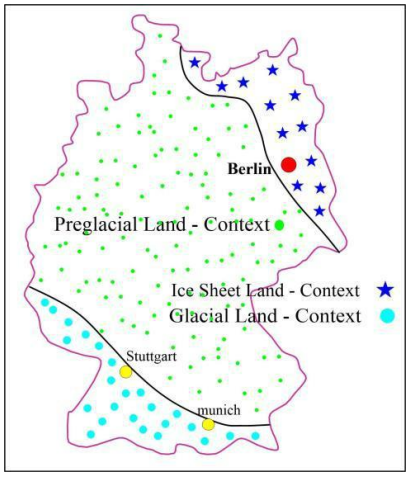

Fig. 10 - The main land-contexts of Germany

The survey on this section is based on the topographic maps of Germany, using a scale of 50,000 and 100,000. The former for mountain glacier and pregacial glacier land-contexts and the later for ice sheet land-context and their complementary information based on satellite imagery and Dem 30 Germany.

3.4. Wurzburg as a representative of pre-glacier land context

- The district selected has a length of 46 km and is 36 km wide, and its area is 1656 km^2

- The entire Rhine River route is 130 km in the selected mosaic map.
- The number of cities located exactly on the river bank is 40.
- There is a city for every 2/3 km.
- The number of residential villages in the region is 111.
- For each village, there is almost 15 km^2 surrounding land.
- Based on this, a network was designed for the region, the dimension of each cell based on the average share of each village area. Because of this, it was possible to calculate the dispersion of residential points (Fig. 11).

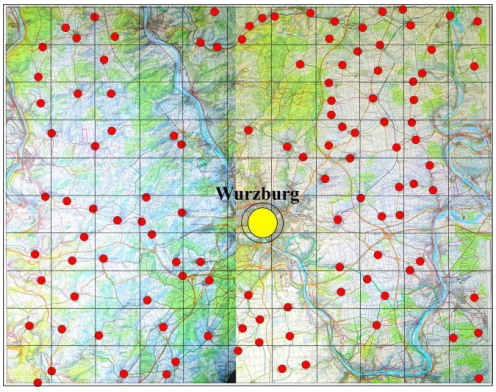

Fig. 11 - The network of residence in Wurzburg

- The village residences landed on the network.
- The number of cells that were inhabited was counted (85)
- The number of cells that were vacated. (25) (Table 3)

Table 3 - The characteristics of the periglacial land-context (Wurzburg)

Wurzburg characteristics			
1	S	Total area	1656km^2
2	Sa	Area of settlements	1275Km^2
3	Sb	Area of non-settlements	375 Km^2
4	Hc	Dispersion coefficient	288.7
5	a	Number of settlements cell	85
6	b	Number of non-settlements cell	25
7	a - b	The difference between the number of residential units and non-residents	60
8	Number of cities		40
9	Length of River Main in Area		130Km
	Number of villages		111

$$Hc = 288.7$$

$$a - b = 60$$

To get the dispersion of the area, the following logic can be analyzed[1].

based on surveys in the Wurzburg region, the third assumption is true for this region, and the difference between a and b is 900. But the distribution of cities in pre-glacial land-context follows other rules and acts linearly. In other words, cities follow the river lines, and their rules are taken from the River meandering. As shown in Figure 12, the spatial distribution of villages is a specific one, and the presence of the village is less visible only on the Main line, which has been settled by urban settlements (Fig. 12).

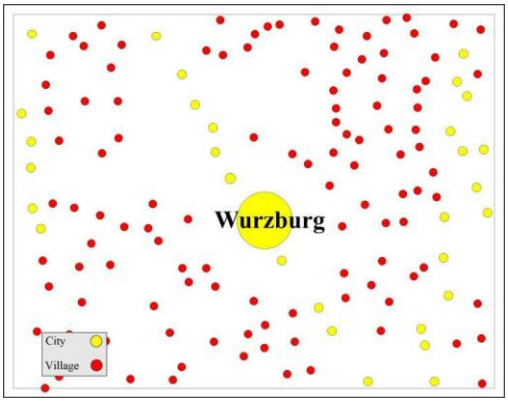

Fig. 12 - The dispersion of cities and villages in a periglacial context

An interesting point in this distribution is the privacy of urban areas. Newtonian gravity is usually considered to be the dominant factor between the city and village as a rule. In this area, the case is exactly the opposite this law. Cities around themselves define a kind of solitaire location and do not allow rural settlements to exist. This law is called reverence domain in biology, and the cities in this area have therefore defined such a rule for the habitats. But in this area, the distribution of cities follows other rules and has a linear syntax (Figure 13). In this area, 40 urban settlements are located within 130 km of the Main River, which means that for every 3.2 km, there is an urban settlement. In other words, cities follow the river lines, and the rules and regulations of their distribution and syntax have been taken from river meandering laws. There are not any towns in the pre-glacial area that are on the river bank, and the villages have been located away from the margin of the rivers (Fig. 13). Throughout the length of great rivers, like the Main, all the settlements are usually historic and have churches, clock towers, coffee

1- If Sa * Sb / S2 is equal to 1 / S and a-b = a, then there is, perfect dispersion

If Sa * Sb / S2 is equal to 1 / S and b-a = b, then, there is perfect centralization and there will be no dispersion.

If Sa * Sb / S2 is not 1 / S and a-b > 0, then there is a dispersion, and the rate of dispersion depended to difference of a-b. The lower the difference, the greater the dispersion will be.

If Sa * Sb / S2 is not bigger than 1 / S and a-b is negative, then there is a concentration, and the rate of concentration depends on the difference of a-b. The lower the difference, the greater the concentration will be.

houses and hotels. The symbol of urban civilization in Germany is, in fact, more focused on such phenomena.

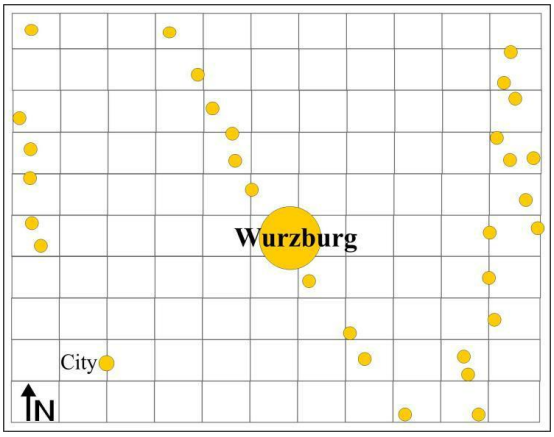

Figure 13: The syntax of cities in a periglacial context

The analysis of Fig. 12 and fig. 13 shows the difference in the spatial syntax between urban and rural settlements in the periglacial area. The rural settlements are created by biostasis dominance, after the withdrawal of ice and appearance of social groups with limited mobility. According to Schlichtherle's (1995) research, human groups that have had limited movements in forests have gradually begun to choose points for housing, but have continued to move around their district and in the last phases, as the population grows, the village is formed. In Fig. 14, the evolutionary stages in the spatial organization show the animated categories of human being in residence maturity.

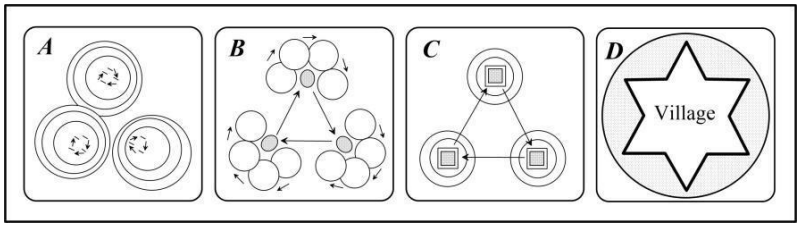

Fig. 14 - The historical evolutionary stages of villages in hinterland (AfterSchlichtherle1995)

But in the case of cities, the issue was completely different. There is no city outside river operations in this land-context. Therefore, we can say that cities in this area take their identity from river meanderings and that identity of the villages is due to biostasis[1] dominance after glacial period.

1 - Biostasy is used to against the rhexistasy and indicates a period of lifetime vegetation

3.5. Glacial land-context

There are several main urban points in the glacier land-context in Germany. In this research, the Munich axes were chosen as the representative of this land-context and, its characteristics examined. As mentioned earlier, in the Southern part of the Alps, there are two lines of lakes that are the heritage of ancient ice cores and here the height of ice-water equilibrium is less than timberline. The ice-water equilibrium in this area has had fluctuations (because we have had several advances and retreats of glacial), but, in places where several glacial axes have been interconnected, a strong attraction point has been created, and large settlements such as Munich, Stuttgart,etc have formed. The height of these two major cities is about 200 meters. They are located at the end of the terminal of the Alpine Mountain glaciers (Fig. 15).

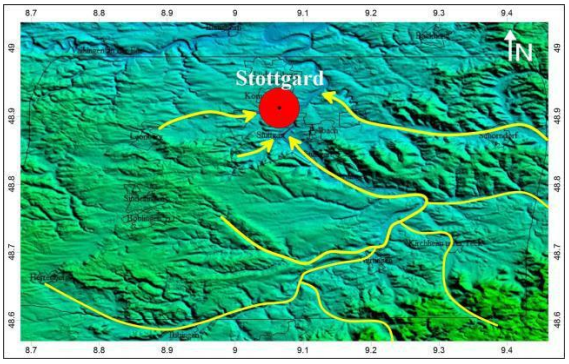

Fig. 15 - The convergence of glacial ice-water equilibrium line, causes attractive locations generating space identity of urban settlements in German land-contexts

3.6. Munich as preventive of glacial land-contexts

The height of Munich is approximately 500 meters and the city is located at the line of the second ice-water equilibrium boundary. This means that the ice-core was previously located at 450 meters and 700 meters and the glaciers could go down to 200 meters below the ice core. Munich is also located on the line of convergence of the four glacial axes, which has created a high attraction point, and all the ice axes that interconnected in Munich were driven from the icy lakes in highlands (Fig. 16).

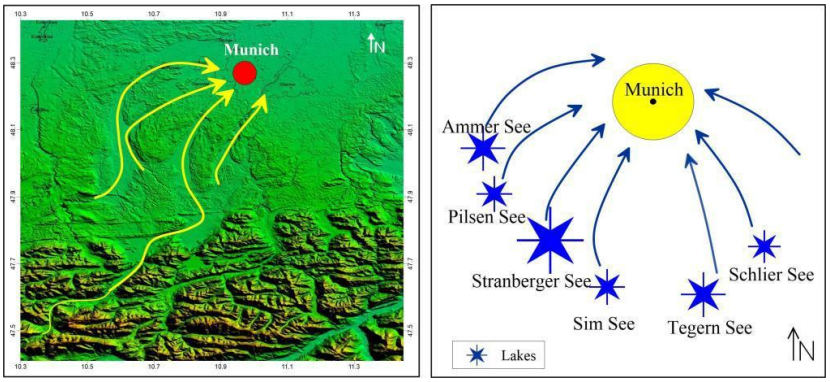

Fig. 16 - The ice axes that interconnected in Munich and were driven from the ice formed lakes in the Alpine highlands

The Munich region was selected based on the 100,000th map of topography and the analysis of its characteristic. The total study area covers 5775 km^2 and covers 397 villages. According to the average occupancy for each village, a network was designed that showed the dimension of each cell based on the average share of each village area (Table 4).

Table 4 - The characteristics of glacial land-contexts (Munich)

Munich characteristics			
1	S	Total area	5800km^2
2	Sa	Area of settlements	5090Km^2
3	Sb	Area of non-settlements	710.5 Km^2
4	Hc	Habitation coefficient	623.4
5	a	Number of settlements cell	351
6	b	Number of non-settlements cell	49
7	a - b	The difference between the number of residential units and non-residents	302
	Number of cities		397

$$HC = Sa \times Sb \div S$$

$$623.4 = 5089.5 \times 710.5$$

$$a - b = 302$$

According to calculations based on the data of Table 4, we can extract some important principles about the coefficient of residence in this area. As you can see, the third proposition also includes the Munich region. This area has a high settlement coefficient, but the difference between (a-b) in the Periglacier land-context and the glacier land-context is significant, and from 60 to 302, which indicates a more residential concentration in the mountainous glacial region. In fact, the distribution of residence in the Periglacier land-context is much higher than that in the mountainous land-context.

3.7. Ice sheet land-context

In this land-context, the syntax of the settlement points differs from the other two. Firstly, in this area, cities are very small and formed on the margins of lakes, and only in cases where the law of convergence of rivers is true are the large cities such as Berlin created, but the rest of the towns are very small and, in fact, the city-villages are counted.

3.8. Similarities and differences of space syntax in pre-glacier, mountain glaciers and ice sheets land-contexts

According to citations, one can summarize the similarities of the syntax logic in Germany's land-contexts in several cases as follows:

3.8.1. The reverence domain rule

The law of "reverence domain" which is a biology principle, is well seen in German cities. On the basis of the biological domain rule which applies to many trees (for example, the walnut tree), by releasing chemical substances around them, they do not allow the growth of other plants within a certain area of their proximity, and in reality, they define their reverence domain. Cities in pre-glaciers and glacial mountain land-contexts have a low density around their and villages or other smaller settlements have not been able to grow (Fig. 17).

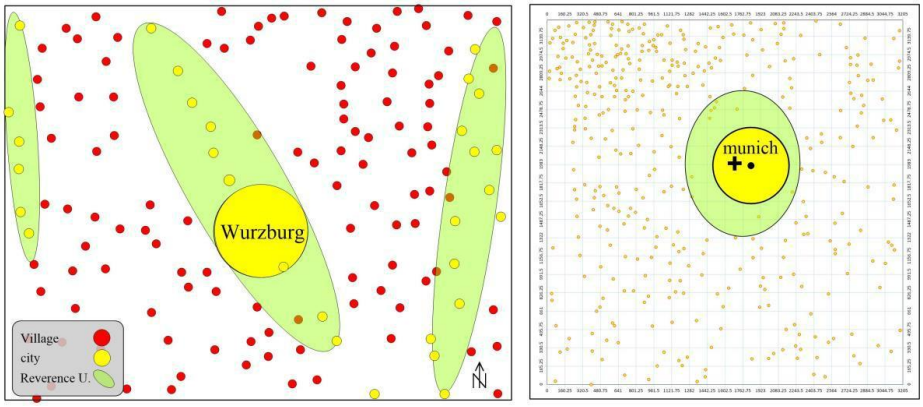

Fig. 17 - The rule of reverence domain in glacial and preglacial contexts in Germany

Fig. 17 shows that the city of Munich and the towns of the Perglacial area have a reverence domain and that there are not villages or settlements visible around them. Note that with an increase of distance from them, rural densities also increase.

3.8.2. The urban geometry syntax rule

Another issue is the difference of geometric patterns in their growth. As seen in the previous maps, in perglacial land-contexts, urban identity is a function of river meandering, and because rivers are considered to have a linear geometry, cities have a linear syntax, but the cities' glacier land-context has a pointed pattern.

3.8.3. The frequency–magnitude rule

Among the other differences of spatial syntax is the number of cities and the magnitude of their extent. There are many towns in periglacial land-context, but their size is small, whereas the number of cities in glacial and ice sheet land-contexts is small and their size is very large.

3.8.4. The convergence and river meandering rule

The convergence of ice and river in Germany controls the formation of urban civilization in all three land-contexts. This rule holds true even for river meander in Germany, and wherever this convergence occurred, larger settlements were found.

In the field of German glaciology, important and extensive studies have been done, including Frenzel (1975), Thomae (1995), Zoller and Wagner (1995), Ehlers and Grobe (2011), etc. But what sets this study apart from other studies is that, for the first time in German glaciology studies, the concepts of

spatial memory and identity, Land -text and Land - Context, and space syntax logic have been introduced in the form of a phenomenological Paradigm and due to the function of ice sheets and mountain glaciers in Germany, it has created a different spatial memory and identity.

4. Conclusion

What is nowadays referred to as "memory and spatial identity" in Germany should be the heritage of the late glacial maximum (LGM). The effect of this memory on the current space identity of Germany is crucial. In this period, Germany was influenced by numerous and different glacial systems, and the generic differences in the creation of today's spatial identity are due to the spatial memory of that era. According to numerous glaciologists, who have done valuable and precise work, Germany was not faced with only a glacial climate in that period, but also encountered numerous glacier formative systems. These facts, for famous geomorphologists such as (Penck and Bruckner 1879), have been clarified. If we want to analyze the geographical context of Germany using Janet's literature, it should be said that Germany is a geographic text with three paragraphs (land-contexts) and that although the whole text has its own coherence, each paragraph has its separate identity and, therefore, despite all the common characteristic, has distinctions that define the spatial identity in these three contexts. The geographical text of Germany includes the ice-sheet land-context (in eastern Germany), the preglacial land-context (in Central Germany) and the glacial context (in Southern Germany) and they are the main factors generating space identity in this country.

The difference between the performance of two land-contexts of ice sheets and mountain glaciers lies in their permanent snow line, because the glaciers have a permanent snow boarder (timberline) and water - ice equilibrium, while the ice sheets have a continuous melting line. The urban civilization in Germany in the land-context of mountain glaciers is due to the ice-water equilibrium and the law of convergence of ice vectors, whereby ice vectors are centered on a point which has created urban civilization and Munich, Stuttgart, Freiburg, etc. are among such cities. In periglacial land-contexts, urban civilization is due to the performance of river meandering, and in fact, there is no city outside the territory of the river meanders. In the land-context of ice sheets, urban identity is due to the ice-water equilibrium and lakes formed on this line that is, the cities of Basco, Chorin, Prenzlau, Cameroure, Rostock, Stennberg, Pembert and Verlaine, Morets, Malchu, Chorin, Plon and Kiel are all formed on the margins of these lakes. The villages and rural life in Germany have been developing in a completely different context, and most villages take their identity from mobility in a biostasy environment which was dominated after glacial period.

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