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*Full Length Research Paper*

# Geotourism attractions in intermediate destinations of peripheral regions

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**This study discusses the development of palaeontologic geosites, with and without fossils remains *in situ*, as spaces of leisure in peripheral regions. A factor analysis was carried out on 115 geosites at natural surroundings, in eleven palaeontologic areas of North Patagonia (Provinces of Neuquen and Rio Negro, Argentina). The major research findings were four factors. 1) The exterior linkage with other attractions that makes a reference to a space of flows, 2) The distance to a populated centre that is related with the emerge of specialized segments of demand, 3) The management capacity where the role of the local community is fundamental, 4) The state-support for the setting in value of natural heritage attractions without being based on a profitability criteria. These factors contributed to understand the location of a new tourist product and the role of the secondary attractions in the incorporation of peripheral regions to the territory of tourism.**

**Keywords:** geotourism, heritage, attractions, peripheral region, Patagonia.

## INTRODUCTION

The condition of peripherals is not usually recognised explicitly in many of the regions where the tourism based in nature takes place; however, it presents a set of common characteristics that exceedingly affect the establishment and the operation of the tourist attractions (Hall & Boyd, 2005). Two of them are the accessibility and the intervention of the public power, which are of fundamental importance in public property because they provide legitimation (Prats, 2003), give priority to certain resources (MacCannell, 1999) and assign an added

symbolism, which is taken by the tourist system and transformed into a competitive advantage of the territory.

In the same way, final destinations are not the only ones that compete among themselves to attract visitors, but also centre emitters of tourism and the communities in the areas in transit (intermediate destinations) attempt as well, retaining part of the outcome in tourism and amusement by offering secondary attractions (Vera et al., 2007). Nevertheless, the increasing complexity of the territorial competitiveness in tourism is not only direct, rather than it enlarges among destinations with similar conditions and tourist facilities, to the extent that it competes for tourist products through the creation of attractions. Regarding to this matter, marketing sectors mention this increased

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competition that should not lose the point of view that the competition is really for people's time (Fyall et al., 2005).

From the geographic point of view, the intermediate destinations are places of obliged transit (Vera et al., 1997), with an offer of secondary attractions that generally depend on motorcars as a main means of transport to consent to a long-distance final destination. The hypothesis that leads this research supports that the creation of geo-palaeontologic secondary attractions constitutes a competitive advantage, for the incorporation of peripheral regions to the territory of tourism as intermediate destinations.

Attractions supply the main symbols and the images in the presentation that the destinations make to the public (Gunn, 1972; Leiper, 1990; Pearce, 1991) and constitute the reflexion of a differentiated judgement on certain resources and places. The antecedents of the research on tourist attractions are considerably circumscribed in comparison with other aspects related with tourism, some of the reasons attributed to this situation are their fragmented and dispersed nature in the space, in addition to a great variability in the base resource and management's models (Swarbrooke, 2007; Fyall, 2008; Leask, 2010). Regarding the theories and models of analysis of attractions, three main dimensions have been distinguished (social, symbolic and space) that provided the identification of the main tangible and intangible elements to have in account for the design and later operation of the aforementioned attractions.

The general objective is to define the theoretic and methodological criteria for the development of tourist attractions based in palaeontologic geosites. Even though the original research consists in the boarding of methods, the descriptive statistical and the study of cases, in this instance, are deepened the analysis and interpretation of the results of a factor analysis fulfilled on 115 geosites in eleven palaeontologic areas of the region of Patagonia, specifically in the semi-arid environment of plateaus at the provinces of Neuquen and Rio Negro, Argentina.

The universe of study is composed of all geosites that figure in technical reports and documents from disclosure to December 2008, sent by the organisations with participation in the tourist management of the palaeontologic heritage at both provinces. These communities and museums that circumscribe the gravitational point of the palaeontologic areas analysed in this research, are selected due to their insertion in the state planning of the product palaeontologic Tourism, from now on called Geotourism as it is a term more widespread and inclusive.

Geosites can be studied in multiple dimensions, such as symbolic, space or social ones and as a result of the application of the factor analysis, by means of the method Main Components, four structural factors were identified. These factors help to understand the organisation of heritage attractions and the location of a new tourist

product in intermediate destinations of peripheral regions, as well as analysing the role of the secondary attractions in the incorporation of these regions to the territory of tourism.

## Literature review

The geological and natural palaeontologic heritage is mentioned in the World Heritage Convention as 'aspects of the geological physiographical formations of outstanding universal value from the point of view of science or conservation' (UNESCO, 1972, p. 2). Later on IUGS- GEOSITES experts (International Union of Geological Science) and ProGEO have included the palaeontologic heritage in international listings of geosites, with a preponderant interest for their geoconservation (Wimbledon, 2006), geodiversity (Ruban, 2010) and its relation with the landscape management (Knight, 2011).

Referring to the natural heritage, among the ones that include the palaeontologic sites, these can be catalogued as unmovable geological heritage and movable geological heritage (Jakubowski, 2004). Examples of this unmovable heritage are the fossilized tracks, places with fragments of eggs of dinosaurs, trunks and other paleobotanic remains that cannot be easily removed and require a protection *in situ*.

Inside the movable heritage, a great diversity of fossils of vertebrates, marine reptiles, sweet and salt-water invertebrates, etc. have been found and studied scientifically. This natural inanimate heritage is generally gathered by means of a palaeontologic excavation and taken for its study to the museum of the correspondent jurisdiction. Nevertheless, according to the new museum tendencies this last movable heritage in some occasions, is left at the place, not only to put the object in value but to incorporate an interpretation of their geological and its social present-day context as well.

The visit to the geosites is organized by the palaeontologic museums that correspond to municipalities of different hierarchy. The variables like motivations, sought attributes, degree of contact with nature and time of permanence at the palaeontologic site, have permitted to difference two macro-segments and eight sub-segments of visitors in North Patagonia (Vejsbjerg, 2005). Some geosites receive several simultaneous segments of visitors due to a space differentiation of experiences based in nature.

Appraisal methods of geosites have been elaborated in which in addition to the usual indicators of scientific and conservation importance, it is considered adjusting for the educational and leisure visits (Cobos, 2004). However, they do not deepen his theoretic analysis on the role of the geosites as tourist attractions, neither in the structural aspects for the development of this activity in the context of peripheral regions.

It is also observed that geosites operating definition, during its process of patrimonial creation presents some complications, the same as the operating definition of tourist attraction. To solve this situation, various documents have been presented to homologate the definition of geosite because it can be considered as a key locality or as an area with geological features of intrinsic scientific interest (ProGEO, 2011).

In consequence, once the scientific geo - palaeontological academy agrees on a definition and makes a listing of geosites for the region, it is necessary to specify an operating definition of these geosites as potential tourist attractions. In order to generate statistical information of these units of analysis, the concept supplied by Pearce 'a named site with a specific human or natural feature which is the focus of visitor and management attention' (1991, p. 46) has been chosen to be taken as a base, although, particularising the attributes that a geosite of palaeontologic interest (with or without remains *in situ*) should contain to be analysed as a tourist attraction: a) A scientific denomination and/or a name that identifies it as tourist attraction. b) A punctual location (even though it has to do with a temporary attraction). c) Being considered of concern by the organisations, with responsibility in the tourist management of the palaeontologic heritage, such that it figures in the register of its technical reports and documents divulged at different canals of communication and finally, d) Being considered of concern by the visitors, independently of the visit motivation and place of residence, since from an ecological perspective anybody who is present in a natural area with palaeontologic fossils, visits it utilising it and causing an impact on it as well.

Regarding antecedent research on the Geotourism in palaeontologic resources, the desert and plateaus environments are seen as emerging areas of development (Newsome & Dowling, 2006), for example in Australia, Iran and South Africa (Reimold, 2002). From the tourist planning, in addition to the distinctive qualities of the base resource, the conditions of conservation of the place and its major ecological surroundings, prove to be fundamental to contemplate other indicators that proper of the tourist activity.

In antecedent studies on the contribution from the natural heritage to the rural development in peripheral areas, like in the case of Scotland, Courtney et al. (2006) have concluded that tourism is one of the natural heritage reliant activities with major potential due to its tendency to an endogenous economic development and, Leask et al. (2002) have argued that 'the sector of the heritage attractions frequently serves a broader set of organisational objectives than purely commercial and profit related targets, with an absence of revenue maximisation or revenue management consideration' (p. 248). Besides other research accomplished on heritage attractions located in peripheral areas highlight social and

cultural benefits added for their setting in value, although, in a first moment a criteria of profitability was not applied.

From a geographic perspective, the proliferation and standardization of the tourist product introduces territorial logics with a high fragmentation and a discontinuity in the spaces of leisure (Cazés, 1992). As a result, the competitive strategies and the collaborative alliances generated to obtain an increment in the visitors extend from the punctual attractions to the territories. In this context, areas in transit try to become tourist intermediate destinations, offering secondary attractions.

One important aspect to distinguish between primary and secondary attractions is time (Botti et al., 2008), because the duration of the stay supplies a most obvious understanding on the behaviour of visitors and an idea of how they perceive attractions. This point is of concern particularly for the handling of intermediate destinations.

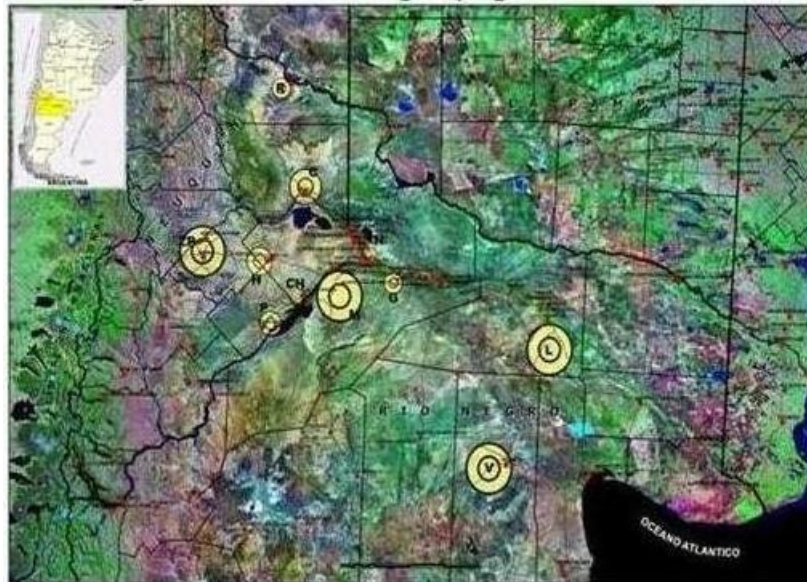
Tourism can be considered a problem or a threat when it has to do with patrimonial places, particularly if government agencies show a trend towards a strong sustainability position (Hunter, 1997). Adding to this situation 'the small attractions may offer only a single image-scape, often proscribed by the resource base' (Wanhill 2005, p. 27), which makes it difficult to increase the power of the differentiation between the different geosites and to find complementarity among them at regional scale.

Another characteristic observed in isolated geosites with natural heritage, is that the majority of these are financed by Government subsidies or they adopt sponsor complementary strategies, with a strong commitment of part of the local community and the arrangement of an organisation of voluntary participation. Similar conclusions about long term financial viability of peripheral attractions were reported by Prideaux (2002), who emphasises the importance of the local participation in small communities of Australia. Other aspects all categorised by the same author as second order magnitude, are the local infrastructure and the willingness of the public sector to bear some of the costs of establishing tourism as an industry.

In the same way, the majority of the theoretic background on the process of creation of attractions in peripheral regions, refer to tourist final destinations (Almirón et al., 2006), compared with those located in transit areas that try to become tourist intermediate destinations and insert themselves, in regional and national tourists circuits (Baccaro & Beltran, 2007).

Referred to models that specifically discuss the organisation and development of tourist attractions present a priority orientation toward a symbolic dimension (MacCannell, 1999; Urry, 2005), a space dimension (Gunn & Var, 2002; Leiper, 1990; Pearce, 1991; Lew, 2000) or a social dimension with emphasis in management (Wanhill; 2005; Swarbrooke, 2007, Watson & McCarken, 2005; Garrod, 2005; Fyall et al., 2005; Prideaux, 2005; Kotler et

**Figure 1.** Palaeontological areas in North Patagonia, Argentina



References: Palaeontological areas in *Neuquén Province*: CH (El Chocón); P (Picún Leufú); H (Plaza Huincul); C (Añelo-CePALB), ZP (Zapala-Mariano Moreno), N (Neuquén Capital); R (Rincón de los Sauces). Palaeontological areas in *Río Negro Province*: M (Margen Sur de Cipolletti); G (General Roca); L (Lamarque); V (Valcheta).

al., 1993) and other aspects, as the role of the managers and the process of planning to create business opportunities for attractions (Benckendorff & Pearce, 2003).

It is too considered in the same way that attractions are tools of management of tourist destinations and of territorial development, therefore they are the result of image strategies, communication and policies where actors with various logics of interaction intervene.

### Description of the case study

The region North Patagonia has a 30,000,000-hectare surface and a population density estimated of 3 inhabitants by km<sup>2</sup> in the province of Río Negro, and of 5 inhabitants by km<sup>2</sup> in the province of Neuquén. The study was focused on the central plains of both provinces, compound by plateaus and a semi-desert climate conditions that favour finding and exploring palaeontologic geosites.

Nowadays the majority of the palaeontologic areas is found at a territory of tourist transit for national visitors and soon, will become a territory of tourist transit for the Corridor of the southern axle that will join two Argentine

harbours of the Atlantic with two Chilean harbours of the southern Pacific Ocean.

### Figure 1. Palaeontological areas in North Patagonia, Argentina

The characterization of North Patagonia as an intermediate territory or potential intermediate destination has been given by its geographic condition. The role of these municipalities as centres of excursion or a scale for tourism (Boullón, 1985) is proved by its dependence of ground transportation and a minimum 22-hour trip, from the main issue centres of the country to the favourite final destinations of the Patagonia (the Andean mountains and the Atlantic coast).

### METHODOLOGY

This research was boarded from a geographic synchronic point of view by means of a descriptive and explanatory factor analysis of the main associations and similarities

among the indicators found in the geosites. The statistical units are the mentioned 115 geosites located at natural surroundings of Rio Negro and Neuquen provinces. Twenty indicators were selected and incorporated to the matrix of data for the resulting factor analysis.

The data used in the twenty indicators was collected by means of visiting the geosites with geologists and palaeontologists, making in-depth interviews to visitors and semi-structure interviews to authorities of regional and municipal entities as well as to directors of museums, tourism agents and persons who leaved nearby the geosites. Besides, there was gathered data from state documents in order to confirm information regarding land ownership and management plans.

These indicators were organized taking as a base the model of space organisation of the three spheres of Gunn and Bar (2002, p. 137), with the following adaptations according to the characteristics of the palaeontologic resource and the area of study. The indicators in the nucleus are: presence of fossils remains (E4), estimated surface of the geosite (E5) and time opened to the visitors (C1). The indicators in the inviolate belt are: the geosite disposition (E1), ways of access to the geosites (E2), information *in situ* (E3); distance to the closer populated centre (E6), observation points (E7), tasks of maintenance of the palaeontologic resource and its natural immediate surroundings (E8), compatibility with productive activities (E9), declaration of protected area (E10), management plan or regimentation of uses (E11), human resource assigned to the site (E12). The indicators in the zone of closure are: information *ex situ* (C2), programming of the offer (C3), state-support in investments of setting in value of the attractions (C4), sponsors support in investments of setting in value of attractions (C5), volunteer work in the tourist management of the geosite (C6), complement with other attractions (C7), place of residence of the visitors (C8).

Other incorporated indicators in the inventory of the geosites that were discarded for the factor analysis are the following: a) The type of tourist management according to the ownership of the lands, b) The level of staff training assigned to the geosite, because few geosites count on the aforementioned staff permanently or during the opening time of the attraction, c) The purpose of the visit, because it can have an educational priority, tourist or artistic, as well as being volunteer or obligatory, d) The price, since the operating cost of the attraction can be transferred to other agents (public and private) by means of subventions or donations itself, as it frequently happens with the patrimonial places.

Is important to mention that one of the first attempts to combine the conservation of the resource and its sphere of influence, the demand and the recreational offer applied to areas protected and non-protected is the model R.O.S (Recreation Opportunity Spectrum) (Clark and Stankey, 1979). The application of this model in

palaeontologic geosites in North Patagonia has corroborated that there is an existing distinction among visitors that look for an experience in a modern area with a major provision of services *in situ*, and those that prefer a tour experience in an area with more nature. For this reason, it has been taken the precaution of not pondering the quantity neither the kind of installations and/or equipment in the geosite, because its adjusting responds to perceptions and attributes seeked by several segments of visitors.

With respect to the statistical technique used, the factor analysis involves summarizing the information contained in a matrix of a data with variables. Factors represent the original variables, with a minimum loss of information; therefore, the method of the factor analysis is expressed as a lineal mixing of factors not directly observable. The aforementioned factors, named as Principal Factor or Main Component emerge from the lineal combination of the observed variables.

The method Principal Factor supposes that an adjacent common factor of the variables exists and searches factors which explain the major part of the common variable, the fact which is the part of the variation of the variable that is shared with the other variables. On the contrary, the unique variable is the part of the variation that is proper to that variable.

The method Main Components (that was deepened in the present research) looking for to find lineal combinations of the original variables which can explain the major part of the total variation. The first factor or component accounts for a heft of the total variable (variance), the second factor explains the heft of the remaining variable (variance) and so on.

The steps in the factor analysis are: 1) Calculation of the matrix correlations among all the variables, 2) Extraction of the necessary factors to represent the data and analysis of the matrix of loads, 3) Rotation of the factors in order to make an easy interpretation and its graphic representation, 4) Calculation of factorial punctuations of every individual.

The matrix correlation among variables (Figure. 2) helps to identify variables that more contribute to the variable in each new factor used. At the same time, it is expected that they will correlate with the same set of factors.

### **Figure 2. Matrix of correlations between variables**

As a result of the application of the of Main Components it can be synthetically mentioned that they did not detected inverse relations between variables, so it is necessary to use 4 factors in order to explain as a whole that 56.7 percent of the total variable. To select the necessary

Factor Loadings (Varimax raw)					
Extraction: Principal components (Marked loadings are >,700000)					
	Variables	Factor 1	Factor 2	Factor 3	Factor 4
E1	Disposition of the geosite	-0.187020	0.144337	0.272989	0.346388
E2	Access to the site	0.299613	0.684584	0.087680	0.041244
E3	<b>In situ information</b>	0.369302	0.155361	-0.020855	<b>0.718739</b>
E4	Presence of <i>in situ</i> fossils	-0.278232	-0.190461	-0.083687	0.471400
E5	Estimated measure of the geosite	0.357911	-0.332500	-0.191624	-0.196034
E6	<b>Distance from a population centre</b>	-0.082108	<b>0.863639</b>	-0.073793	0.175309
E7	Observation points	0.183974	0.279800	-0.066396	0.147670
E8	Maintenance	0.242207	0.107105	0.493413	0.464173
E9	Compatibility among activities	0.450276	-0.332973	0.421432	-0.112514
E10	Statement of protected area	-0.221722	0.177313	0.196305	0.637754
E11	<b>Management plan or control</b>	0.091150	-0.162955	<b>0.725472</b>	0.365409
E12	Human resources	0.133142	-0.508655	0.465947	0.327605
C1	Time opened to the public	0.427930	0.518340	-0.229834	0.171530
C2	<b>Ex situ information</b>	<b>0.826775</b>	0.008593	0.216237	0.098615
C3	<b>Supply programming</b>	<b>0.841126</b>	0.123305	0.237312	0.114911
C4	<b>State-funded investment in the VA</b>	0.400509	0.134658	0.077510	<b>0.777051</b>
C5	Private sponsoring in the VA	0.124201	-0.023632	0.653739	0.223870
C6	<b>Volunteer work in the VA</b>	0.166432	0.032173	<b>0.768533</b>	-0.284372
C7	<b>Complementarity among VAs</b>	<b>0.868984</b>	-0.121975	-0.026750	0.177853
C8	Place of residence of tourists	0.482870	-0.573318	-0.030599	-0.102760
<b>Expl.Var</b>		3.609841	2.570938	2.520813	2.656491
<b>Prp.Totl</b>		0.180492	0.128547	0.126041	0.132825

Figure 2. Matrix of correlations between variables

Extraction: Principal components				
	Eigenvalue	% Total	Cumulative	Cumulative
1	4,529966	22,64983	4,52997	22,64983
2	3,016087	15,08043	7,54605	37,73026
3	2,378881	11,89441	9,92493	49,62467
4	1,433149	7,16574	11,35808	56,79041

Figure 3. Eigenvalues

quantity of factors two methods were used. The determination based in eigenvalues (Figure. 3) and the determination based in a graphic of accumulation of proper values (Figure. 4).

Besides the former geographic approach, there were selected five geosites as study cases, to determine how the various actors intervened in the final organisation of attractions, the role (geographic distribution; kind of preponderant logic, for instance, market, institutional or personal ones) and the process of formation of social networks (the scale of the enterprise, changes in use and

land ownership, kind of management and structure of the social nets).

## RESULTS AND DISCUSSION

The descriptive factor analysis, by means of the application of the method of the Principal Factor, gave as a result that a unique structure in the 115 geosites does not exist, according to twenty relieved variables. Therefore, it is not possible to fulfil a characterization

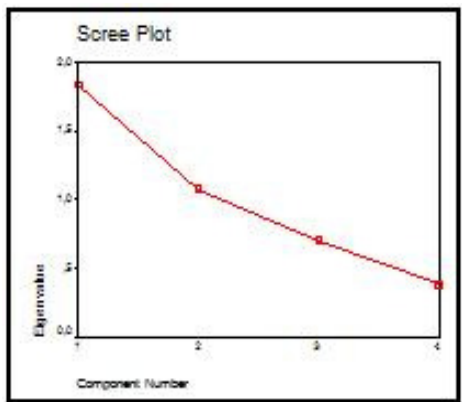


Figure 4. Accumulation of eigenvalues

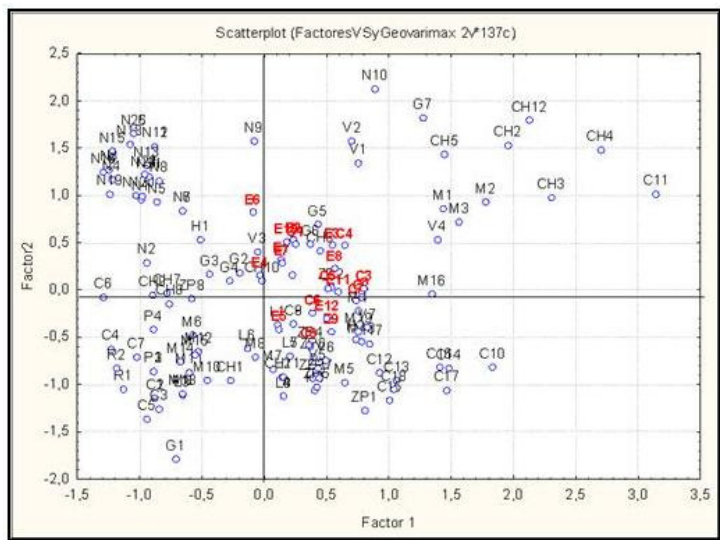


Figure 5. Location of variables and geosites

excluding a set of geosites, in such a way that as from the clusters, it can be elaborated a typology to explain and to predict which ones are those geosites with major tourist potential.

Nevertheless, the use of the method Principal Components enabled calculating the variables not observed, called factors, from the variables observed that more contribute to the description of the individuals. The factor 1 is the one that more explains the variable and therefore, the rest of the factors are represented in relation to this. The contribution of every variable in the factors is the following: First factor: C3 (Programming of the offer), C2 (Information *ex situ*) and C7 (Complemented with attractions geo palaeontologic according to the area). Second factor: E6 (Distance to a closer populated centre). Third factor: E11 (Management plan or regimentation of uses) and C6 (Volunteer work in the geosites tourist management). Fourth factor: E3 (Information *in situ*) and

C4 (State-support in investments of setting in value of the attractions).

From now on it can be identified the combination of closer variables to the horizontal axle, which conform the factor 1 and the closer combination of those closer to the axis, that constitute the factor 2 (Figure. 5).

Figure 5. Association of variables according to factors 1 and 2

Each factor is considered as a category for interpretation, which can describe the reality of the geosites under consideration according to its status of development as attractions for visitors. To integrate the empiric diagram with the conceptual, the variables and the general behaviour of the geosites is presented (Figure. 6).

**FACTOR 1: ASSOCIATION AND EXTERNAL LINKAGE.**

It was verified that in the same palaeontologic area geosites coexist with different pondering and in addition, it was not possible to distinguish defined clusters, even though sixteen geosites, which clearly differ from the rest, have been able to be identified.

Considering the following three variables that contribute to the factor 1 (Figure. 5 and 6) the situation can be described in the following way. According to the variable programming of the offer (C3), the sixty one percent (70 out of 115) of the geosites considered in the analysis, have some kind of offer organised for their visit. The areas that stand out are CePALB, Plaza Huincul, Zapala Mariano Moreno and Lamarque, in which the total of the geosites with some programmed offer, (28 out of 30 geosites) only ninety three percent are accessible for the public by means of a hired excursion. On the other hand, the seventy five percent and 85.7 percent of the geosites from El Chocon and General Roca respectively, are accessible not only to be visited independently but for programmed excursions as well.

Among the geosites with less association to this first factor, there are three deposits of dinosaurs' fossils footprints and a typical geological feature located at the coast of the river Limay, in the area Picun Leufu. These geosites do not have a programmed offer although they are visited intensively by a demand of fishermen and bathers, during the aestival season.

According to the variable information *ex situ* (C2), only forty three percent of the geosites has this kind of information (booklets, promotion in internet, road banners, etc.). That indicates its existence to the potential tourist. Considering the mentioned seventy geosites with an offer of programmed visits, sixteen do not count with *ex situ* information that does specific reference to its existence and various reasons are insinuated. In the first place, there are cases in which *ex situ* information does not mention attractions particularly, but this is definitely included within a tourist recreational programmed offer. Secondly, there are geosites that are a part of a tourist programmed offer published in internet and it is developed by private as proof, but without continuity in time. In the third place, the geosites considered very fragile and vulnerable to the depredation that are not promoted and are part of programmed outings of the managing entity as the ENDEMAS (in the area southern Margen) for a very reduced public expert in palaeontology. In fourth place, some geosites do not have external diffusion rather than the outings are organised locally and in punctual cases, with the deal of a local expert authorised to take visitors to a private field. Finally it stands out that the thirty nine percent remaining geosites (45 out of 115) that do not have any kind of offer of visits organised, neither do they have an *ex situ* information that references to them.

According to the variable complement with geo - palaeontologic attractions in the area (C7), the twenty four

attractions with bigger linkage for belonging to tourist regional and local circuits, are in the Southern Margen, El Chocon, Plaza Huincul and Añelo- CePALB. The only geosite that is not a part of the offer in its same palaeontologic area (El Chocon), but that definitely is more complemented with three more areas, is the site where the *Giganotosaurus carolinii* was found (the biggest teropod dinosaur in the world).

The remainders thirty seven geosites that have a low linkage, due to its exclusive relation with geosites located only upon its same palaeontologic area, distribute themselves in seven out of the 11 areas considered.

**FACTOR 2: DISTANCE TO POPULATED CENTRE** (Figure. 5 and 6). This adds a fifteen percent to the explanation of the variable of the first factor, previously exposed. If the physical distance is analysed for every one of the 115 geosites, a high percentage of geosites is located at 1:30 hours journey from the aforementioned populated centre.

Three categories of distance have been considered in relation with the estimated time of the journey from the closer populated centre to the geosite, because it is fundamental the existence of a centre for the logistics of the palaeontologic research and the tourist management. This centre of services is not frequently the one that provides the major quantity of visitors to its palaeontologic area of influence, on the contrary the emitters centres sometimes are settled at a distance between 100 to 350 km from the regional demand, and at more than 1,000 km. from the demand of other provinces of the country.

The inclusion of the second factor to complement the description of the factor 1, it allows to establish an internal distinction among the geosites with major pondering and to locate them in two quadrants. So that in the quadrant I, those very visited geosites are found, and have a most complex organisation as attractions. In the quadrant IV, are found those complementary geosites or those that count with a tourist offer for a restricted public.

On the other hand, the geosites located in the quadrant IV unlikely those that belong to the quadrant III, are far from populated centres but they have a high complement among geosites, not only inside their same area but with other areas of the region. The financial feasibility of these attractions is maintained by the private sponsors and an entrance fee that is absorbed by the visitor.

In the quadrant III are placed the geosites that not only are farther than the populated centres, but also more isolated among each other. That is, they have a meagre or void complement with geosites inside their same palaeontologic area. However, they are geosites with difficult access, which distance to populated centres contributes besides the nonexistence of a transport service (public and/or hired) and the difficult transit of the place for pronounced slopes. One also observes that the majority of the geosites are eventually only opened to



visitors and in general, these are the places with possibility of re-utilization like excavations.

Finally, in the quadrant II are distinguished an association of geosites next to each other by their belonging to an urban common land, but they prove to be incomplete as attractions for visitors. Their major problems are the incompatibility of activities in the use of the ground, associated to the lack of human resource at the place, that generates a bad management and a degradation of the palaeontologic base resource.

FACTOR 3: MANAGEMENT CAPACITY. This adds a twelve percent more in the explanation of the variance and the two variables that more contribute, are the management plan or regimentation of uses (E11) and the volunteer work in the geosite tourist operation (C6).

The first variable still differs more the fifteen geosites present in the quadrant I regarding the other ones, since they all have a management plan if they belong to a protected area, or they count on a regimentation of use established by the responsible organisation of the setting in value of the attraction. It is important to bear in mind that only thirteen percent of the total of geosites has effectively a management plan and/or a regimentation of use, a forty one percent is in the process of regimentation and the other forty six percent does not have any handling.

According to the second variable, twenty six percent of the geosites (30 out of 115) adopted the mode of incorporating voluntary worker resource, for the tourist operation of the geosite. These ones in most of the cases, are far from the organisation that manages them (at more than 1:00 h of journey) although they are located close at least one populated centre. The difference is that while in Lamarque and Southern Margen the cost of the visit is absorbed by the organizations (due to their educational and regional integration objectives), in the geosites from the CePALB (a research institute of a national university) the cost is obligatory priorly for visitors with educational and recreational objectives.

FACTOR 4: STATE SUPPORT IN TOURIST PROMOTION. This adds a seven percent more in the explanation of variance and is strongly correlated to information *in situ* (E3) and state-support investments of setting in value of attractions (C4). Only nineteen percent of the considered geosites (22 out of 115) has information *in situ*, either by means of banners (15 out of 22) or guides' service/environmental guards that signpost the geosite as an attraction to visit. The two ways of information *in situ* mentioned are considered in the present analysis, excluding here fore, those places that have a service of specific guide in programmed eventual outings.

Specifically referring to the second variable, it is obtained that fifty seven percent of the geosites (16 out of 24) that have information mentioned on *in situ*, have received state-support in their different levels: National

(Añelo-CePALB), provincial (Valcheta and Southern Margen), municipal (General Roca, Neuquen and El Chocon).

Finally it was not possible to identify a very high association among the property (public and private), kind of management (state bureau, ONG, private, mixed) and cost of the ticket (with or without cost). This result was gathered through the analyses of geosites that obtained a high pondering and a low pondering, regarded to its complement with geosites of other palaeontologic areas (one of the variables that more contributed to the factor 1).

According to the analysis of the objectives, actions proposed and results obtained of the public policies encouraged from the provinces of Neuquen and Rio Negro, exists one general tendency to go on supporting the Geotourism as an alternative of tourist development for municipalities located in a place of tourist transit. It is too observed that the prosperity of the Geotourism corresponded to a reflexive local process (with provincial support) of search of productive alternatives for areas in rural decline and/or with a strong regional uprooting for being energetic enclaves (El Chocon, Plaza Huincul, Añelo and Rincon de los Sauces). It is checked that the urgency in activating geosites touristly, considered authentic for its location in natural areas, coincided with a global demand of managers and visitors that surpass the local provincial limits.

The scale and mode of development attained by attractions correspond to different points of view on the role of the conservation of the patrimonial natural resources and the inter and intra-generational equity. According to this the majority of the geosites in the palaeontologic areas Añelo CePALB, Plaza Huincul, Zapala – Mariano Moreno and Lamarque are only accessible to the public by means of an organised excursion, although, they have different policies regarding to the cost of the entrance and of the service. On the contrary, the majority of the geosites of the palaeontologic areas El Chocon and General Roca, can be visited in an independent way as by means of organised excursions. Nevertheless, it is contradictory that in other patrimonial places as the fossils tracks of the area of Picun Leufu at the coast of the river Limay, or the deposit of fossils eggs in the municipal protected area Park of the Dinosaurs in the city of Neuquen, effectively receive an intensive demand of visitors and that for ignorance deteriorate the resource (It does not exist *former* information *ex-situ* nor *in-situ*, indicating its existence or condition of the heritage).

Is is also observed that the geosites with a major complexity in its organisation as attractions, have known how to establish and to maintain nets with a logic of market, besides leaning on the institutional and personal nets. Corresponding to a major geographic scale of the actors involved in the institutional nets, major complexity as a tourist attraction.

## CONCLUSION

The present research discussed the development of palaeontologic geosites, with and without fossils remains *in situ*, as spaces of leisure in peripheral areas. Its purpose was defining theoretic-methodologic criteria to develop the attractions based in a palaeontologic generic regional resource, whose operation is mediated by its heritage condition and its location at natural surroundings, of intermediate territories of tourist transit.

Even though the study included only natural attractions based in a palaeontologic resource, it was observed a great internal diversity that made impossible the establishment of a typology of geosites according to its attraction for tourism and recreation. This situation influenced upon an absence of information of comparative and duplicable base, that could be used in the elaboration of a universal instrument, for pondering and evaluation of the tourist potentiality of geosites attractions.

By means of employing the method of Principal Components, it was able to identify four factors (or combinations of variables) that favour the development and the location of the product geotourism in the territory. These factors previously mentioned, are the criteria that are proposed for the creation of geosites with a more complete organisation as attractions for visitors.

The geosites which stand out present a major external linkage with geo-palaeontologic attractions of the same palaeontologic area and with other areas, and at the same time, have a programmed offer and *ex-situ* information, that indicates their existence to the potential tourist. This describes a space of nets, that overlaps to a physical space, and in which the tourism can constitute an element articulating between both. It too shows the social-space conformation of the territory of tourism, as a discontinuous, fragmented space that surpasses the geopolitical interprovincial limits.

The distance in time offers indications on the attractiveness of the geosites, according to the origin of the demand of visitors and the diversity of experiences that can be offered. Even though results suggest that the most successful geosites are those located at less than 30 minutes of transfer from a populated centre, it has also been noticed that the regional origin of the demand of visitors has improved integration and connectivity between its localities. Extra-regional and international increasing affluence of visitors, in some geosites located at more than 1:30 hs. of transfer from the main back-up centres, it is associated to the surging of a tourism interested in authentic experiences at natural surroundings, in which the notion of peripherals transforms into an attractive image for the tourism.

The existence of a management plan or a regimentation of uses, associated to the existence of wilful work (or social nets with personal logic), characterises the

successful formula of the referent attraction of the region *Futalognkosaurus dukei* (palaeontological area CePALB).

The information *in situ* supplied by state investments confirms that the same than in other peripheral areas, the institutional presence is one of the factors that more influences the viability of secondary natural heritage attractions. In the specific case of the North region of Patagonia, the provincial states enacted their respective laws in a coincident moment (year 1996) with a stage of search of self-defining resources that could catch the attention of a casual tourist.

The close position to the media of the variables 'presence of fossil remains' and the 'surface of the geosite', indicates that it is not so important the presence of fossils *in situ*, neither the surface that they occupy, in order that a geosite constitutes itself in a tourist attraction. That is, the general attraction of the geosite is explained with major certainty by the mentioned four factors.

The formation of nets has a strategic character for the competitiveness of the territories, precisely because the construction and consolidation of the interactions among the actors takes time. The geosites with a major complexity in its organisation as attractions, have known how to establish and to maintain nets with a logic of market, in addition to backing on the institutional and personal nets.

Tourism might even generate processes of deterritorialization and reterritorialization (Deleuze & Guattari, 1998), when constituting a diversifying element of a productive matrix of enclave. This is observed in palaeontologic areas where a reappraisal of its resources and a change of vision, regarding the conservation of them are produced, laying the foundations for a distinct logic of development. Localities with different productive activities and without a tourist tradition, although located in a place of tourist transit, could have integrated into regional and inland circuits with an offer of secondary attractions. In this way, the creation and re-creation of attractions for visitors become a tool of management of the tourism, at localities and regions, with intention of inserting in the geography of tourism and the regional development.

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