

CONSTRUCTION AND ORGANIZATION OF A LAKESIDE SPACE, THE BASIN AND THE LAKE LLANQUIHUE IN SOUTHERN CHILE

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The paradigm of sustainability, the lack of resources, the awareness of the ecological footprint or the loss of environmental biodiversity force us to analyse territories in a multidimensional fashion in order to be able to foresee or solve the different problems or struggles generated within them. Thus we recognize the Lake Basin Space as a unique space of particular interest and vulnerability which presents certain cultural, historical and landscape values; a defined and fragile area where the concepts of interaction and/or interdependence of the uses and activities it supports are crucial when their capacity, quality and integrity are connected and implicated.

A lake by itself does not constitute a *Lake Basin Space*; nor do its shores or hydrographic basin do so on their own. It is the socio-temporal construction and the perception of the common area, added to the use and activities carried out in this specific territory, which constitute this unique, interdependent, finite and specific spatiality (Folch, 2003). This is a category which is different from that of shoreline, river basin or rural area; it is a space composed of dimensions which are dependent among themselves (Castillo, 2010). Today the *Lake Basin Space* is modified by man's activities, intensive agriculture, seasonal tourism or the industrial use of the land; there are new spatial requirements which are not being visualized, with complex and systemic interactive properties, involving all the resources of a *Lake Basin Space*.

The Lake Basin Space presents itself as: polysemic, with different social, historical and cultural meanings, with a multi-scalar tradition and identity, with overlapping uses of different intensities and at different levels of activity on the Lake Basin Space, multi-functional in the diverse economic activities it supports, timeless and synchronous, since even though the Lake Basin Space transforms in time, it continues to be the integration and the relationship of the four dimensions which comprise it

The ecological dimension of the Lake Basin Space is recognized and developed through a biophysical matrix of the territory, starting with the live hydrosphere studying the flow of water to the lake; it presents the lakeshore as a necessary interface of this matrix, it develops an approach to the lake basin with the concave lithosphere as a unit of the landscape, of defined and interrelated patterns, to conclude with the comprehensive analysis of the Lake Basin Space as a large ecosystem (WRI 2005). At the same time, it is the social construction of the Lake Basin Space which leads us to the anthropological dimension and becomes a matrix that links and presents elements such as culture, history, or cultural landscape; it acknowledges a particular social imprint with rights acquired in its own unique way to occupy a specific territory, both urban and rural (Ress, 1996).

The biophysical matrix which comprises the Lake Basin Space simultaneously associates the following four elements: Water and lake. Lakeshore. Hydrographic basin. Ecosystem. The Lake Basin Space, through its Ecological Dimension, comprises a large ecosystem along with the biodiversity of the body of water, of the hydrographic lake basin in particular and of the lakeshore or river bank as a transition zone between the earth's lithosphere and the hydrosphere of the lake. Regarding its characteristics we can say:

- A large eco-system with hierarchies, scales and dependencies: river, shore and basin. The fragility of the lake, balance of the cycle, temporality, resiliency and integrity.
- Its hydrology, dynamism of the water, renovation rate, courses and underground water.
- The natural resource, protected natural assets, biodiversity and their distribution.

The Lake Basin Space organizes the anthropological dimensions through a unique social matrix, as a specific social resource, an expression of the historical, cultural and landscaped structure, with rights acquired in a specific manner of occupying the territory, urban or rural. It is the social construction of the Lake Basin Space that leads us to its anthropological dimension, and becomes a social matrix that links the following elements: Culture. Rights. Landscapes. Urban and rural.

The anthropological dimension of the Lake Basin Space is determined through the different uses man has given it throughout its history; with a specific demographic density and usage, with a particular landscape, natural and man-made, with specific history, traditions and culture, with an urban and rural use of the same basin and with a characteristic public or private manner in which the area has been used. So, synthesizing the anthropological dimension, we can say that the social matrix of the Lake Basin Space is characterized by:

- Its social capital, culture, demography, education, health, traditions and symbolisms.
- The rights, assets for public use, individual and collective rights over land and water.
- The landscape in a limited territory, patterns and units of materials and energy.
- Settlements, density, grouping and dispersion systems, land division.

In the economic dimension, the large number of activities and uses that the Lake Basin Space has as its main characteristic is explained and the conflictive activities at the lake, its shores, its basin and eco-system are described; cyclical characteristics, the complexity and interdependence within the Lake Basin Space are pointed out; the struggles, the intensity of

the economic pressures and the resolution (or lack thereof) of the environmental issues in the dispute over the same area, acknowledging the current problems in development, environmental deterioration or economic globalization (Naredo, 2006).

The economic dimension of the Lake Basin Space stands out in the development of extractive or primary activities (fishing, mining, forestry and quarries), productive, secondary or industrial activities (energy, aquaculture, silviculture, livestock or agriculture), tertiary activities (leisure, recreation, services, tourism, commerce or sports) and some activities of a connective nature, like main arteries and different communication networks. The Lake Basin Space is a complex and singular area due to the different factors which must be studied in order to establish regulation and control over the use of the water and the land, to adopt strategies for sustainability in the development and the localization of human activities within a system. In summary, the Lake Basin Space forms an economic dimension, through a matrix of the different activities developed within it: Extractive: fishing, mining, forestry, quarries. Productive: energy, aquaculture, silviculture, livestock, agriculture. Tertiary: services, commerce, sports, tourism. Urbanization: cities, connectivity, networks and transportation.

This economic dimension of the Lake Basin Space is determined through the following characteristics:

- The intensity of economic activities and their level of development, loads and impacts.
- The economic capital, ecological economy, local economies and environmental services.
- The compatibility, mono or multifunction, conflicts or disputes over the environmental resources.
- Its urban structure, hierarchy of cities and networks, multimodal connectivity.

Finally, a dimension of governance is recognized as the intermediary between the ecological, anthropological, and economic dimensions of the Lake Basin Space, establishing limits and administrating the natural resources among the permitted uses and activities, in hierarchy and coordination with the rest of the legal and administrative system (Dourejeanni, 2001). In the Lake Basin Space this governance dimension is established through a matrix of political regulation and the different types of organization present, connecting participation, the government, institutions, agreements, norms or laws, among others.

The governance dimension mediates between the ecological, anthropological and economic dimensions, establishes limitations and regulates the natural resources, environmental units, among economic uses and activities and hierarchy and coordination with the rest of the legal and administrative system. In the Lake Basin Space the governance dimension is established through a political regulation matrix and the different types of organization affecting it, connecting the following elements: Base participation. Institutions and government. Accords and agreements. Regulatory mechanisms and laws.

This dimension is determined through the following characteristics:

- Ruling political system, government, financing and its policies and programs.
- The administration, the competency of institutions and present organisms.

- Its legislations, the administrative body, planning, laws and regulations, enforcement and control.
- Self-regulation, participatory base, methodology, treaties and agreements.

Lake Llanquihue in southern Chile is a unique case: a vast lake of glacial origin, a basin connected to two active volcanoes, and only one natural drainage. Various government regulatory agencies and cities come together along its shores, a legacy of German colonization amid an extraordinary landscape.

Here, the intensity and diversity of uses and activities within the Lake Basin Space involve the space itself (the landscape patterns, the lake, the basin, the territory and its biodiversity), the importance of studying the current state of its organization has been considered, taking into account the increased role of significant natural spaces (and fragile, as is the case of Lake Basin Space) in the accelerated processes of urbanization.

How are sectorial plans related, or are they not related? How do they intervene or compete given the confluence of interests, uses and activities all gathered within the Lake Basin Space? Is an organization of the Lake Basin Space possible, superseding sectorial planning?

The Lake Basin Space of Lake Llanquihue and its basin gives us the opportunity to understand a unique complexity, evidence of the alteration of the systemic balance of arrivals and departures, an ecological dimension with a rich biophysical matrix, a unique anthropological dimension with the legacy of German colonization of the mid 19th century, added to an emerging economic dimension which exerts pressure on a governance dimension which is young, sectoral and disperse, with vacuums and superpositions evident in Lake Basin Space planning. The inhabited territory presents diverse conflicts and analysis matrixes are designed and temporal charts of the ecological, anthropological, economic and governance dimensions are elaborated in relation to them. The findings promote a crossover model of social construction and sustainable planning for the land under the concept of Lake Basin Space.