

The Osmotic Territories

Architecture needs to engage with the possibilities of sustainable development and the reconciliation of development and sustainability, through the exploration of strategies that go beyond *the mere advancement of green technologies*.

For a long time, the notion of development in architecture had been a synonym for technical progress and its measurement was made strictly quantitatively. Today's requirements and regulatory controls are to minimize energy consumption, to increase the insulation of buildings and to reduce waste. But these technical solutions are simply not enough to construct an architecture of sustainability. Architecture cannot be reduced to pure technique.

In the same way, ecology, which asks the question of our relationship to the environment, has the tendency to be reduced to the dimension of green technologies. Sustainable development, beyond a quantitative scale, must be able to address a qualitative balance. This question must then take into account the two scales that are intrinsic to architecture: the body and the landscape.

As architecture can only exist according to a specific location, I postulate that the site—the place or context—can no longer be defined in an immutable manner in relation to a static ground.

As climate change is becoming a defining reality of our times, I consider architecture to be a climatic answer to a climatic context through parameters such as technology, phenomenology and ecology.

The notion of territory, today too simplistic in its strict morphological dimension, must extend to a more generous context regarding ecological, climatic and physical immersion. I'm defending an "architecture of territorial resources" that is highly contextualized in order to place the local context within the global and more dynamic realities of ecology and climate.

My work focuses on how energy and climate qualify space rather than on formal mechanisms. Air, light and heat are regularly summoned in my projects as a material, first definition of space. Simultaneously, this architecture is physically linked to its specific, territorial context.

In fact, new ways of research and practice open up the possibility to consider architecture in terms of immersion, with respect to the body's immersion into architectural space and the immersion of architecture into a climatic and physical territory. In this sense, Architecture can no longer be apprehended from a single aesthetical point of view; it becomes a straightforward connection between the body and the territory.

Kenneth Frampton, in the 1980s, theorized the revival of context in architecture. It was about opposing the unifying and globalizing tendency of Modern Architecture through the creation of a "critical regionalism." Today, things are more complicated.

We can ask ourselves if this critical regionalism has "found the means to resist without falling into nostalgia or demagogic strategies of kitsch with political or cultural consequences of capitalist theory."¹ In other words, if, through "introducing an ontological dimension to place rather than space," this point of view or attitude could transcend the results of a simply aesthetic stance or style.

There is no doubt that issues of ecology and economics viewed as a series of crises over a longer historical period, have not increased. How can architecture, as an architecture that has attempted to come to terms with issues of context and the local, deal with this historical inevitability? The relationship between the external characteristic of architecture, its relationship to space and its internal characteristic has become more complex. This relationship can no longer be limited to its local and regional dimension, nor to its material and constructive traditions.

Site, place, environment, resources—words which all apply to the question of context—all help move beyond a poetic representation towards a sphere of study and action to discuss the condition of the present.

Historically, architecture was forced to return to a form of local rootedness and place as a counterpoint to the generic globalism of modernism and steamroller capitalism.

The triumph of the 1990s and globalisation could lead one to consider this attitude as utopian or naïve. I believe nevertheless that a form of resistance and rootedness in



Three examples of architectural projects involving territorial resources

Offices For Academia

Jean-Gilles Décosterd was commissioned to re-design the offices of the Swiss Railway Company Academia Building. The key issue is how a room may facilitate collective work. The study links work with rituals, furniture with space, the office with the territory. The linking element is water and mosses.

The pretext of a collective ritual is organized around the consumption of water, a reason to take breaks and for casual exchanges. Specific furniture that contains plant mosses and water distributors that generate their own fluorescence light are developed for the project. From the building's physics point of view, the surfaces of plant mosses introduced within the offices have the capacity to filter air, to regenerate it and to improve the hygrometry of the workspaces in a passive manner.

Through introducing natural samples into the workspace, the project makes reference explicitly to the northern Alps of the Swiss territory. Plant mosses taken from the four Swiss versant basins reveal the geological and hydrological qualities of the different locations. Historically, the railroad networks were constructed in close relation to the pipeline of the streams on the valley floor: the superposition of the hydrographical network maps and the railway network is striking.

Distribution of mosses limits the need for ventilation or cooling systems in the offices. The corporate identity of the Swiss Railway Company offices is given simply by promoting social exchanges and regenerated air. Via the purifying mosses, the outside territory of the company is "invited" to act in the inside space of the office, the natural materials linked to artificial spaces create hybrid architecture.



context and landscape for architecture must operate within a framework which defines new modes of action and a new definition and understanding of landscape itself.

From our perspective today, the question of landscape as a place is not only to be viewed in its cultural or historic dimension. The climatic dimension has carved a role in the definition of context. In these terms a new definition of landscape considers air quality, light, water, physical, chemical or fluid mechanics.

In this sense there is a change in the paradigm of territory, a new reading grid of the territory that superimposes itself to the former and inflects it: in other words, a passage from the *territoire-paysage* to the *territoire-climat*, which is also a *territoire-énergie*.

This postulates that the nature of territory has simply evolved: it has expanded with a new climatic and energetic dimension. Climate and energy is our contemporary way of relating to the territory. It is here, in the notion of climate and territorial resources, that we look for a territorial anchoring for contemporary architecture.

These layers of new territorial realities, those of climate and of energy, are of direct interest to architecture by linking the inside space and the outside place in terms of fluxes (or streams).

In my sense, the benefit of that new territorial paradigm consists in the redefinition of the usual boundaries or limits of context. Architects who are concerned by contextual notions usually refer to cultural areas, political boundaries or visual landscape limits. Working with climatic determinations of a place means to think of local conditions as part of a global flux. It means also to think interior space as a climatic extension from the outside.

Modernity in architecture attempted to take the step of emancipating itself from outdoor climatic conditions to the benefit of a climate created from nothing in order to maintain the most "purified" territorial inscriptions: orientation and the view. The machine, allied to the pure laws of optics, created an architecture essentially retinal in its apprehension and its relationship to territory.

How is architecture thought of today, when our definitions of the territorial matter change? Or to put it in another way: what happens when architecture and territory are considered with respect to climate and energy, and situated within a paradigmatic shift from a *territoire-paysage* to a *territoire-climat*?

From this last modality that I call "an architecture of territorial resources," is one that operates as both a climatic and energetic reading with concomitant scales of references: the territory, the city and the inner space. In this way, architecture isn't just an object with a visual dialogue with the landscape, but a *thing*, submerged into a climate that extracts its own living environment. Energetic continuum and climatic submergence are crucial recurring themes.

A double entrenchment: the human body inside the body of architecture, inside the body of the territory, opens the possibility for new architectural designs as well as new means of construction. It promotes architecture as the science of setting relations, beyond the average production of forms. Architecture, thus seen predominantly as what links, becomes (once again) ecological, in the first meaning of the word, as invented by Ernst Haeckel in 1866 in his work *General Morphology of Organisms*: "the science of relations of organisms with the surrounding world, that is to say, in a large meaning, the science of existing conditions."

Could there be a more beautiful definition of architecture than this *science of existing conditions*?

In a text written in 1967, *Heterotopias*, Michel Foucault addresses the question of the nature of *outside* space throughout its historical evolution. He observes the passage from *localization*; a prioritized set of formed and autonomous places which originates from the Middle Ages, to the notion of *location* peculiar to our time and which relies more on the relationships between singular points within a neighborhood: "we live a time where space is given to us under the form of relationships of locations." It might be that this territorial conception applies also today as a consideration of the linkages between spaces from the inside to those of the outside, as ordinary points of a climatic and energetic continuum.

This way of thinking about the territory corresponds to a way of physically building these *inside* spaces. The building materials and techniques of today directly engage with this climatic and energetic continuity between inside and outside. Constructive Modernity taught us to think about building in terms of specific layers, superimposed to respond to a succession of problems: bearing the static load, containing the water vapour, insulating from the temperature, waterproofing the façade; all designed as segregation processes. Today new materials could ensure comfort and energetic savings through a kind of climatic permeability and continuity between the inside and the outside.



Thermal insulations in the future authorize hygrometric migrations; indoor paints and outdoor rough coats are embedded with photo-catalytic properties, which improve the quality of gaseous exchanges. Materials with phase-changing properties regulate thermal variations. These materials with passive regulation emerge from nano-technologies, powered by catalysts not consuming any energy. They announce the decline of mechanical conditioning technologies of indoor climate in favor of materials, which failing being intelligent, will be smarter.

So if a field of research opens at the crossroads of materials and state-of-the-art technologies, including high-tech answers to ecological and climatic questions, there is also another domain, low-tech in nature, which resurfaces in architecture. It is the rediscovery of a whole repertoire of techniques and materials, coming from traditional or vernacular architecture, whose use had been overshadowed, if not demoted, by Modernity. It is therefore why we re-discover straw and adobe construction, lime coating plaster and vegetal insulation. It is a matter of finding in parallel the knowledge and the know-how often only transmitted orally and which has disappeared in the leap of a generation, swept by a blind confidence in technological modernity.

The radical opposition between high-tech and low-tech and the dominance of the hi-tech has, for a long time, been made possible through the modern ideology of the *tabula rasa* and the desire to constantly renew the architectural language. Indeed, low-tech materials often dictate, by their needs of implementation, a constructive expression that is in opposition to the diktats of Modernity. Modernity is digested as a granted historical fact and architecture should be able to reposition itself on other issues that are less aesthetic and more essential, which touch public health and energy saving. Today the traditional antagonisms between high tech and low tech approaches are no longer valid: combinations of highly engineered nano-technologies can be integrated with passive heating or ventilation methods as well as lower tech building components.

The only reason to choose one or the other depends on the energy consumption entailed in each specific situation. The question is no longer about confronting ideologies or aesthetics but about finding smart organizations of techniques and materials in order to answer the legitimate climatic *non-tranquillity* that has seized the (re)territorialized question of architecture.

The very matter of architecture evolves towards this organic dimension that builds climatic phenomena in collaboration with the outdoor climate, more than by artificial creation. The energetic supplies follow the same evolution, which summon the sun and wind in order to extract energy. A decreasing architecture announces itself, breaking off from the all-consuming technologic of Modernity in order to elaborate a *construction of climates within the climate*.

References

1. Frampton, Kenneth. *Modern Architecture: A Critical History*. London: Thames and Hudson, 1993

Jean-Gilles Décosterd was born in 1963 in Lausanne, Switzerland. Over the last 15 years he has been developing architectural research on the energetic and climatic definition of space. Air, light and heat are often used as the substance and elementary material for his architectural projects. This strategy was applied to the interior space in several well-known projects such as *Hormonorium*, the Swiss pavilion he designed in 2002 at the Venice Biennale with his former associate. Other projects, such as the *Omnisport Hall*, were acquired by the Modern Art Museum, Centre Pompidou in Paris. Décosterd considers architecture as a climatic answer to a climatic context through parameters such as technology, phenomenology and ecology. In 2008, with architect Catherine Cotting, and civil engineers Guscetti & Tournier from Geneva, he won the international design competition for Egremont Castle in England. Décosterd is currently teaching architecture in Switzerland and has been running his own office in Lausanne since 1993. Further information: www.climats.ch and www.decosterd.net



Egremont Castle Competition

In Egremont in Britain's Lake District, the structural design is considered together with the wind factor—one of the major climatic definitions of the site.

Our research aims is to bring together a conceptual contemporary structure and an 800-year-old construction. Historically, the usual response to entropy was to apply heavy materials and thick walls to construct premeditated forms. The castle itself illustrates such a strategy against external forces such as gravity, wind and rain. Nowadays, high tech materials are available that have the ability to react to internal deformation and external conditions. The formal definition of the structure is dependent on this climate contextualisation.

In order to deal with the wind factor, the whole structure has the ability to minimize the wind's impact. Hydraulic masts permit height and angle adjustment accordingly to lessen its flying surface. The round cylindrical beam made of carbon fiber, which sustains the sail border, has a variable geometrical design. The part of the round cylindrical beam that is most exposed to the dominant winds bears an elliptical design, whereas the least exposed part has a circular shape.

Lastly, the central coverage material made of armed foil can be used as a filter for daylight. For that reason, we aim to transform the quality of daylight by warming it throughout our main architectural feature. Northern European homes use colors and light to warm up their interiors to counterbalance the grayness of their weather. The coverage could gain a new function by "warming up the daylight." During the night, the bottom of the coverage will act like a big reflector, disseminating the projected light as a diffused ambience.

Architecture remains a simple interface between territorial conditions and human needs. The formal proposition could not exist without the specific climatic conditions of Egremont. The architectural project uses territorial resources to modify elementary climate conditions—shield from the rain, expand the light and deflect the wind.





Grizedale Arts in the Lake District: Lawson Park and Park Amoor

Grizedale Arts, an international research and development agency for artists based in the Lake District National Park, was looking for an architectural strategy to transform Park Amoor Farm. With both a pragmatic consolidation of the existing building, and the addition of a rammed earth technical structure, we aim to develop links between our architectural intervention and the material and climatic determinations of the territory. For the isolated existing buildings, which are not connected to energy networks, the project produces solar and wind energy towards the dual objectives of auto-subsistence and having a minor impact on the site. It makes use of present technology as well as low-tech materials. When used without an existing building, the structure produces energy and stores it briefly, just as it preserves the raw materials for domestic needs: wood for cooking and food production. It is linked to an experimental agriculture program developed under the auspices of the Grizedale Foundation. One lives there as in a shelter, nestling in a hollow, an empty space with a domestic vocation, a vertical dormitory that is not a house, and is at most a refuge for backpacking tourists

The project is a landmark in the countryside on the scale of the landscape. The establishment of a new isolated shelter responds to a simple territorial rule: each is built at a distance of six hours walk from the next. Solar energy is used for the night lighting. The shift phase of energy reproduction is 9 hrs 30 minutes indexed on the sun's course. The aeolian energy feeds the heating in real time; the temperature obtained varies in accordance with the force of the wind.

Rammed earth which forms the walls of the built structure of this energy annexe is of interest to the project in more than one aspect. As a link with the land, it is simply the local application of resources present at the site: mud that is compacted and mixed with lime, itself present in the chalk deposit of the subsoil. This lime was at the origin of energetic autonomy of the area in the 18th century, making it possible to produce with coal, the fuel which fed the foundries. It is a particular to the geological subsoil of the region, which unites the crystalline volcanic rocks with chalk sediments. It is this mixture of volcanic and sedimentary

rock which produces the bio-diversity which today characterises the region and produces the richness of the flora. The rammed earth will be enriched with organic residue from the filtering of barley: the malt draff is rich in azotes and was traditionally used as agricultural manure and for feeding livestock. In the construction, this additive plays the role of catalyser for the vegetal colonisation of the rammed earth by mosses and lichens.

