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► **To cite this version:**

Serge Ormaux. Inter-visibility a Concept at the Service of Territorial Intelligence, a Tool at the Service of Governance.. In International Conference of Territorial Intelligence, Huelva 2007, Oct 2007, Huelva, Spain. p. 235-241. halshs-00519813

**HAL Id: halshs-00519813**

**<https://shs.hal.science/halshs-00519813>**

Submitted on 26 May 2014

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***“Inter-visibility a Concept at the Service of Territorial Intelligence, a Tool  
at the Service of Governance”***

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**Abstract:** At the limit, the proposition «this point of space is visible or non-visible from this other point of space» is a strictly geometrical assertion; nevertheless, we will be able to continue the gathering, by integrating information on the sight distance, the proportion that is visible from a given object (for example a pylon) or the visual contrast with respect to a background, etc. such information layers are not trivial at all, even in a research that is directed to the peoples' true-life. It is not indifferent to notice the notions of exposition to the glance and of inter-visibility were firstly developed by the architects, in the approach of the relations between a space function and its insertion in the visual beams, and more generally in the approach of the inhabitant's well-being.

From these introductory purposes, in this papers successively examine the technical outlines of inter-visibility, then its potentialities and its limits in the framework of an inter-visibility taking into account in the territorial decision.

Speaking about inter-visibility in a conference which general theme is territorial intelligence could seem strange, or even curious. Here, I would like to emphasize the fact the thematic of inter-visibility and its relations with the territories settlement, can constitute a genuine problematic of territorial intelligence, and lead to question some of our conceptual representations.

The usual dictionaries define the landscape as a “space portion that is offered to the visual observation”. Since the beginning, this proposition is ambiguous. It has the advantage to clearly show that the landscape is linked to the glance, what is rather relevant and never superfluous, but it induces the idea the landscape would be an object, submitted to the visual recording, like a viewing. It would let suppose that the landscape existed before the landscape glance and that it could be circumscribed by a strictly denotative approach.

Such a conception would not take into account the complex operations of visual recognition, the semantic functioning, the role of the cultural determinants, etc. However, the issue of the landscape rhetoric that is involved in the territorial decisions is strongly concerned by these latest levels and, more generally, by the mechanisms of social construction of the landscape.

Why do we pay interest in the landscape visibility or inter-visibility? Mainly because the visual moment of the landscape process is the articulation point between the objects world and the glancing subject one, consequently it constitutes an essential information stage, as well as a strategic positioning in the framework of territorial governance and mediation.

If we consider the vision is an ascending process, which leads from the detection of primary visual clues (light intensities, orientations, outlines, textures) to the association of clues (shapes, relieves) and lastly to the high-level mechanisms that make intervene semantic, symbols, reasoning, inter-visibility mainly concerns the lowest levels, those that have the lowest plasticity, at the individual and the species scale. Thus, this alignment on the lowest levels of the perceptive edifice authorizes an objectivizing behaviour that allows capturing measurable information, to the nearest point of the vague frontier between the object domain and the subject one.

At the limit, the proposition «this point of space is visible or non-visible from this other point of space» is a strictly geometrical assertion; nevertheless, we will be able to continue the gathering, by integrating information on the sight distance, the proportion that is visible from a given object (for example a pylon) or the visual contrast with respect to a background, etc. such information layers are not trivial at all, even in a research that is directed to the peoples' true-life. It is not indifferent to notice the notions of exposition to the glance and of inter-visibility were firstly developed by the architects, in the approach of the relations between a space function and its insertion in the visual beams, and more generally in the approach of the inhabitant's well-being.

From these introductory purposes, we will successively examine the technical outlines of inter-visibility, then its potentialities and its limits in the framework of an inter-visibility taking into account in the territorial decision.

## I. EXPOSITION, SUBMISSION, INTER-VISIBILITY

### The architecture scale

For architects, inter-visibility refers to the more general notion of exposition to the glance and indicates the set of visual interference problems between two private spaces or between a private space and a public one. We speak about intern-visibility, in a strict way, when there is a reciprocal visual exposition, for example between two private spaces.

If the Athens Charter theoretically eliminated the problem by suppressing the *vis-à-vis*, it is not the case in the central and closed to central urban spaces, and the issue of the exposition of private spaces to the glance can create accurate problems during rehabilitation or some constructions affectation changes. Besides, the rehabilitation operations are often accompanied by the arrival of new inhabitants whose tolerance towards these issues is not the same as the former inhabitants' one.

More precisely, the architecturology or space psychology works have very quickly very important difficulties because of the discomfort graduation that is created by such interferences. Many authors tried to suggest limit distances or relations between outside/inside space, below which the situation is considered as impeding. Apart from the fact this distance or this relation also depends from the glances incidence angle, such approaches very quickly face civilisation and sociological factors, of which Hall's works shown the importance (Hall, 1971) and that make any quantification difficult.

Nevertheless, it is obvious it is possible to map the spaces that are actually submitted to expositions from someone else glance, within an urban sector. Mapping can be made from readings *in situ* or from a data-processing three-dimension model; in all cases the mobilized information is information of tangential kind that is put on the space of projection representation that is constituted by the background map, what we will see again when think at the landscape scale.

Even if it is Boolean (exposed/not exposed), this map making for example allows saying that a garden or a courtyard that is located in a sector will actually be able to be used as a private relaxation place because it is not submitted to the glances from the neighbourhood windows. On the contrary, other gardens or terraces will *a priori* appear as less adapted to this function because they are submitted to plunging glances from other flats.

But the parameter of exposition to glances is rarely isolated. An absolute confinement from other persons' glances can have as corollaries a difficult accessibility, a limited sunshine, or a limited opening to the sky. The issue is generally presented in terms of compromise and optimization.

After having said that, some kinds of exposition to the glance can on the contrary be sought, when the objective is to guarantee the visual control of some accesses or to monitor playgrounds for children from a flat. In the same way, the urban theatricality requires places it is important to be seen and to see that were are seen, as the bars terraces, the chic promenades and other «passagietta» circuits.

It is true these considerations are not located at the landscape scale, but they already indicate all the problems that are linked to the landscape inter-visibility. Between the cold space of the map, of the plat or of the mock-up, and the appropriate and lived by the inhabitants' space, there is space for an intermediate information field, the visibility one that requires a specific protocol of gathering and treatment and that opens vast prospects in terms of management.

### **The territory scale**

A quick search on Internet from the headword «inter-visibility» offers very different results. Almost all of the hundred got answers refer to the universe of the Geographic Information Systems (GIS).

From a Digital Elevation Model (DEM), they allow three-dimension visualization and visibility calculations. For each DEM pixel, the spaces that he can visually accesses can be determined, it is the “active seen”.

Conversely, for each DEM cell, it is possible to calculate from which other cells it is visible, it is the “passive seen”, or view submission, which corresponds to the “visual exposition” we already speak of. For that matter, this is this glance commutativity that justifies the inter-visibility word use. Generally, the DEM is topped by the soil occupation that is provided by an image which is derived from the satellite data to integrate some obstacles presence, like vegetation and buildings.

Most of the GIS that are presently on the market provide such functionalities and the latter notably improved during the latest years. For example, they allow specifying an item height that is in the target pixel; indeed, for a given pixel, the visual submission of a pylon or of a 30-meter wind machine will not be the same as the one of a daisies fluff that is located on the ground close to the wind-machine. Conversely, the setting of the observer height in relation to the soil allows simulating the visible space from an observation platform and for example optimizing the density, the location and the height of monitoring towers of forest fires. It is also often possible to calculate of which height it would be useful to raise the observation spot so as a set of points become visible.

In most of the cases, the user can also define maximal visibility distances and thus specify the scope of the taken into account vision; of course, the visual weight of an item decreases with distance.

Some software also allow detailing for each pixel not only the pixels number from which it is visible but also these pixels location and distance in relation with the target-pixel, what genuinely allows knowing what is seen and from which place.

Beyond these elementary measures that allow saying I see / I can not see from this point, or I am seen / I am not seen from this point, some tools offer advanced functionalities that make them closer to the vision pragmatic.

They allow integrating angular, horizontal and vertical constraints that impose to the observer, for example from a car windscreen, or the window of a railway coach.

Some of them allow calculating for any point of the space a visual field width. Other inform on the distance and the point of view from which a work or an equipment (plunging view, horizontal view or tilt-up), what specifies the way the item visually manifests itself to an observer who is located in a given place.

Lastly, the optical contrast can be determined from the same information-sources. The all thing being equal, a pylon will not have the same visual impact according to the fact it is seen on the sky or it is seen on a foreground on a mountainside; and in the last case, it will radiate much more from the background if the latter is composed by grasslands, and much less it is covered by wildland or forests, here we join the principles of the prey and predator camouflage.

## II. FROM THE LANDSCAPE INTER-VISIBILITY TO MEDIATION

If the inter-visibility measurement is interesting because it provides reliable information, which can be quickly reproduced, implemented and opened to simulation, it does not sell out the landscape issue and even presents the danger of scientism, or of an appropriation of the landscape management by a new kind of techno-knowledge. The layout of visual basins or of zones of equal visual submission is only a framework that details the spatial field of the glance exercise and does not prejudge the landscape atmosphere that is felt by the inhabitants, and even less their expectations or their behaviours.

Nevertheless, it offers a thinking and negotiation material which quality is to have a landscape essence, what does not have the information layers that are usually in the GIS or in the cartographic files.

By positioning in the prospect of the soil vision, the vision that is called «tangential» distinguishes itself from the projection representation that is the usually controlled by the power representation. *A priori*; such tools seem better adapted to the participative democracy.

They can merely authorize a better understanding between the stake-holder' and inhabitant' points of view, in the strict meaning of the word. Indeed, many misunderstandings could be avoided if the actors adopted the same glance axle and the latter one correspond to the daily vision, when the objective is to settle daily elements.

In *L'Espoir* by Malraux, a peasant tries to inform an aviator of the Republican Army about the enemy positions, during the Spanish Civil War. The peasant knows where the Francoists are, but his description of the places can not be understood by the aviator who does not know the region seen from the soil. When the aviator suggests him to show him on a map, the peasant does not manage to locate the concerned place. Eventually, the peasant goes on board, but when he sees his usual environment from on high he does not manage to locate himself and is unable to help the aviator.

In the same way, in the settlement field, there are so many misunderstandings because the reference spaces are not the same. The stake-holder has fixed points in map geo-referenced space of the map, the cadastre, the urbanism document. As regards the inhabitant or the walker he behaves in the geo-referenced space of his personal topology.

Here, we see again the distinctions that Erwin Strauss made between the landscape space and the geography space (Strauss1935): the first one corresponds to the feeling and implies a horizon: *“In the landscape, we only manage to move from a place to another one and each place is only determined by its relation to the adjacent places inside the visibility circle. We leave a part of the space to reach another part of the space; the place where we are never embraces the totality”*. As far as the second is concerned, it corresponds to a more elaborated and more universal vision, it is a space without horizon, a closed one, and presently we would say a geo-referenced one: *“The point zero of the coordinates system is arbitrarily fixed; but determined once and for all, it is absolute. It is universal and my position is always determined according to its situation in the system. I am not in the centre of the system any more, as in a landscape that is surrounded by a horizon”*.

The rehabilitation of the tangential vision in the negotiation and mediation phases seems to succeed. Nevertheless, these cartographies of inter-visibility are not easy to understand and require a patient pedagogy, even with the elected people. Indeed, we do not only a face an intellectual understanding problem. The fact these cartographies adopt the inhabitant's or walker's point of view paradoxically compromise their legitimacy, even towards the latter ones. In a fundamentally Copernican environment, made by distancing and of absolute cult of the grid, the coordinated system, the taking into account of the landscape as I see it, from which place I see it, glances like the returning of a Ptolemaic vision that creates troubles because it shoves all the mound of the classical science.

Generally, it is easier to make the people apprehend the mental maps, because we distinguish them without any ambiguity from the true maps, the exact and serious maps, and we know subjectivity is their research field. As regards the inter-visibility maps, they are hybrid subjects and consequently they are little worrying, they claim rendering an account of the normal vision, of the people's landscape whilst having the ambition to do it in an objective way, and whilst respecting the spatial continuum.

Lastly, the other problem the approaches in terms of visual submission cause comes from the fact that they implicitly imply the best way to built or settle is to do it in the most discreet way that is possible, in other words in the less visible way. It poses a problem: as we can accept this systematic seeking for discretion in the field of noise and noise pollutions, as such an attitude in the landscape field emphasizes a kind of absolute cult of the existing elements, which are considered as an exclusive reference, as a norm.

## CONCLUSION

If the mankind is fundamentally a builder, a developer, if the landscape is “a civilization work” (Saint-Girons, 2001) what does this systematic shyness, this guiltiness to intervene on the existing mean? Would we be in a society that became unable to dare the landscape gesture? Obviously, this question refers to the patrimonialisation one that glances more like a museification step than as a patrimony production one. At his time, Victor Hugo was already moved by the difficulty our societies have to apprehend the urban modernity. The thinking of the motorways firms on this issue is actually very interesting. For the landscaper J. Houlet, every thing depends on the equipment size and on the concerned landscape basin one (Houlet 1999). When a motorway passes a landscape of major scale,

the constructor can (should) claim the new infrastructure as a landscape component, in harmony with the pre-existing components.

On the other hand, in the smaller landscapes, the best solution is often to hide the new infrastructure. We find this open vision in the European Convention of landscape that plans three action modalities, the protection of some landscapes that have a particular historic or aesthetic value, the management that implies a reasoned accompaniment of the physiognomic transformations of the ordinary landscapes and the settlement that is to say the creation of new landscapes.

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