

## **Urban infiltrations: procedure to assembly cities fragments (landscapes)**

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### **Abstract:**

The interpretation of the composite city begins its conception as a composite assembly between different portions of the fabric and then declaring himself as a hybrid, composition of the facts and urban tracks from their admixture create and disseminate new forms. The articulation of the composite city exerts its characters at different scales, the present case deals with a smaller context of Sardinia, Siliqua, where the composition and complexity of forms and experiences is dictated by the integration and interaction between strong natural and anthropic-cultural dynamics. The first, given by the presence of an important water sign which denotes the orientation of the settlement and the complex territorial morphology; the second, represented by a characteristic urban form and mode of appropriation-occupation of space dominated by introverted character of living, as measured by the public-private interface and a strong synergy with the rural landscape. The assembly of these portions of urban and agro tissues lead to the creation of a single solidarity mesh, which has, however, some fragility dates from a little careful and rational reading of the context and the introduction of housing models just responding to his true needs. The redefinition of urban experience is founded on the close relationship between urban and agro shapes. Their mixture try to create a hybrid form, born in the land "of tension" and "in tension", established on a consolidated base which incorporates and assimilates the pre-existing forms making it part of the new mesh structure. The tool that ensures the assembly, is the infiltration; interpretative paradigm and tool that allows mediation and introduction of the rule borrowed from the consolidated areas. This, implies targeted, selective, and inclusive action at the same time of continuous variations and mutations of the rule. The mediation between: rural and urban, inside and outside, public and private, density, the closed and the open goes to consolidating and structuring a new habitat for new hybrid forms. It creates an urban fabric to dwell, in which the infiltration leads, conveys, disclaims the rule of agro which element of the new mesh generator (represented by the agricultural parcel) and the rule of introversion as cultural fact and space to occupancy (declined the element fence). They generate complex spatiality, bearers of the experience that enrich the act of crossing the landscape. The hybrid generated, it is a flexible mesh that becomes support to the various forms of appropriation of space.

**Keywords:** assembly of tissues, infiltration, mediation, hybridization, bearer of experience

## **INTRODUCTION:**

The theme of urban infiltrations arise from the need to revise several urban facts, now affected by degradation and disconnection from the consolidated fabric net. The purpose (o “aim”) of this research is to analyse the procedure to assembly urban fabric or other types of portions and try to understand how to establish a new connection, where they display some weave breaks. The theme of excessive fragmentation leads us through a procedure in which it is possible a complete landscape reading. This approach is used to completely understand urban framework complexity, resources: the potentiality of the articulation of its parts and the assembly of different components, and critical situations: the reasons/causes of the fragmentation and the loss of continuity in reading its elements. The city is conceived as an organism therefore, it works in symbiosis with its different parts. Synergy breaks up when a part of the organism is damaged, causing some “caesuras”, cuts, that needs to be restored to a correct working of the system. The theme of infiltrations now takes place, becoming method, instrument and technique to solve the problem of constant landscape fragmentation and to favour re-sewing and union of broken weaves. The “treatment” through infiltrations can be applied at different scales and contexts of an urban space. It works between urban and rural, inside (centre) and outside (suburb), public and private. The main purpose is to find and experimenting a technique in order to capture resources and experience of spaces, all that can give quality to the damaged fabric.

## **FRAGMENTS OF URBAN LANDSCAPES:**

All of the forms of the land, both the city and natural structure, can be identified in the assembly of the fabric fragments and different pieces. Not always they are organized in severe hierarchies or operated with the logic of separation, segregation or concentration, typical features of the zoning rules. Currently, natural and artificial space is a complex mixture of fragments caught and juxtaposed together, where sometimes it is possible to identify what concerns a conscious act of planning and what does not. All of the structures built by humans are hybrid forms as they were born from the overlapping and combination of “auto-organized weaves of heterogeneous components and of hierarchies of homogeneous elements”, as defined by DeLanda. The basis for the study of the assembly composing the city is the analysis and discovery of contradictions and inner complexities. It is done following the signs of the constant stratifications of the land, through a procedure concerning structural analysis. First in Robert Venturi and Aldo Rossi theories and then in Colin Rowe and Rem Koolhaas, are the basis for this kind of research: the articulation of urban fabric.

The method concerns the decomposition of the complexity of the city in urban facts which formal and structural behaviour can be studied with an analytical approach; then it is possible to classify its elements. The term assembly is referred to a representation technique based on the concept of decomposition, re-composition and overlapping of pieces. This approach supports the thesis of urban framework seen as an assembly in which the composition of traces generates complex structures. The fragments reflecting approach in reading the city supported the formulation of main theories interpreting the complexity of urban landscapes. They are based on the research of new urban unit of measure and compared different visions such as those of Robert Venturi and Aldo Rossi. Fragment is the area (Aldo Rossi) where urban events occur showing an homogeneous basics, but also the single building (Robert Venturi): both of them allow us to read the complex layers of spaces around us through assembly, juxtaposition and intersections. Urban space and its context is the result of a complex assembly where all of the spatial-temporal components coming from the reading of different exiting and interacting traces, contribute and take part. The characters, aggregating together in time, make new fabric portions but also alter and damage it. However, they are essential

for the development of the city, allowing it to be an organism with constant evolution and transformation. For this reason, Koolhaas asked about how the dynamics of this “living matter” constantly evolving can be represented. How to describe the changing experience of our relation with places. It often occurs that the kind of transformation and its speed bring a sense of disorientation, loss of knowledge of the place and loss of identity. These fragmented spaces, with undefined boundaries, did not abandon their rules of spaces natural occupation and planning. We only need to recover them. Many of the urban frameworks show a hybrid, amorphous and de-structured landscape, able to indifferently absorb natural morphologies and widespread urbanizations, where all seems to be homogenized and with any difference. Actually, differences persist as the signs of place, layer on layer, for this reason more difficult to recognize. We only need to analyse what are traces and what diversifies homogeneous fabrics. The structure of the city or any other urban center (nucleus) having a relation with a different context from it, can be compared to what De Carlo defines “il crostaceo” (crustacean). It is “where all of the parts are strictly connected together: there are no conflicts between solid and empty parts, no contrasts between articulations and limbs; all of the components are congruent but clearly recognizable. It is always possible to discern a necessity and correspondence relation among the parts”. De Carlo’s basis for his method is the decomposition of parts using geometric rules, assimilated to the different layers of the crustacean, and their re-composition, allowing understanding the relations of the complex fabric. It is a way to describe the complexity of the urban organism, its connections and many configurations, coming from the rules gathered from the analysis of context. The modalities of aggregation of fabric portions and the reason of the assembly are then ascribable to those of a crustacean: it grows up slowly and adapts itself to the base where it lays, an organic base as well. Fragmentation, assembly, composition of urban facts that form the organism, necessary introduce the concept of complexity, typical of urban dynamics. Complex means woven and if we want to talk about complexity, it is necessary to have various components not possible to isolate. The organism complexity can be compared to a theme of the ’50, analysed by Ilya Prigogine: systems entropy. When a strong exchange of energy occurs within an open system, the system has not equilibrium because it pass through temporary equilibrium states interrupted by bifurcations. To know such a physic system and their dynamics means to recover the traces of bifurcations through the analysis of complex interactions of components with additive and multiplicative properties. The land, the territory becomes the moment of a formative process always evolving and generated by a system of relation at different scales, place of the twist, of morphology of hybrids, of spatial complexity and of disorientation. In the process of evolution of a system, complexity is in the middle between equilibrium and chaos. In this situation a system adapts to environmental solicitations. As Kauffman says, being “at the edge of the chaos”, for the system, does not mean being subject to randomness. On the contrary, new spatial-temporal configurations express an implicit order that is about to appear. The auto-organization is the origin that encourage an organism to spontaneously investigate new positions in space in order to reach a status of equilibrium. The core of this impulse is not something external but is a tension between comparison and collaboration. It is very important insinuate through the articulations of landscapes pieces in order to understand the complexity and operate through the fragments. The point is to analyse confines and border spaces and settings. Piero Zanini help us to define this situation of the urban space. He says, a confine can be represented by a certain and sure line, instead the border is a depth between two lines: inside of it is possible to recognize instability, differences, everything mixed together. The break of the confine becomes necessary in order to transform it into a wider edge, a margin, where differences and resources can emerge. This “third space” becomes a threshold, a place of transition and suture among fragmented parts. The different parts of the city concerning assembly areas are characterized by a strong grade

of complexity, just like an organism. Jane Jacobs wrote “we need to have the same kind of mindset when we study natural ecosystems and urban ecosystems: both of them need diversity to be sustainable” (1961). Both of them are changeable, fragile and constantly conflicting.

The observation of our urbanized landscapes demonstrates that conflictual interactions on the margins of the planned city or parts of it and in the middle and confines zones create ideal conditions for spatial, functional, social metamorphosis, together with spontaneous processes of auto-organization. This allows to create some urban pocket, that are uncertain, permeable, more wide open, more dynamic, more suitable to change. The place of urban fabrics assembly is defined as a margin area, a sort of “delirious” place and territory that jump out of the limits of its consolidated parts, waiting to be conducted again inside an atlas of city forms as places of our time. Reconfiguration of limits, give dignity to confines, operate on edges-interfaces are all main topics. We refers to residual situations of a system that has been urbanized, resettled, reorganized. The assembly of fabric portions or fragments as a process permitting to receive disconnected parts or spaces inside an organized system, lead back to the concept of construction of the net and identification of those already existing. Places related together thanks to forms, functions and significance create the net’s node and form the landscape. The net concept is representable by a group of lines, ideal or real, meeting and intersecting. These net systems structure the landscape and can be articulated in three main categories: historic-cultural, ecological-environmental and perceptive-visual nets. Inside a composite landscape, the net potentially perform many roles: structural; system, because of its capability to leave a trace; hierarchy among subjects; the capability to identify, quantify and evaluate flows among subjects. The net has an innate capability of flexibility and change. Perceptive and visual nets are more difficult to identify and represent than the others, because they are empty spaces rather than objects, able to activate relations between and with places. The net, being a structure, allows obtaining inside of it a specific and measured quantity of information, signs drew on the land by facts and anthropic and natural dynamics. It occurs to identify, select, interpret the big quantity of signs that are necessary to reveal the founding structure of landscape and the organization of fabrics. Understanding the system generated by the net means also to understand the spatial organization of a landscape, the appearance of discontinuity points, of permanencies, hierarchies among different signs, possible conflicts. Correct assembly of fabrics have to guarantee the functioning of every net and mutual relations, in order to assure quality and efficiency. It is possible to recap the landscape and the city as an organic unit of forms-images that can be interpreted, whose identification comes from the superimposition of different nets as a structure and a system of signs. Every sign is related and associated to other signs. They are called functions-signs, in the sense of having an utilitarian and functional origin; they are the mean of the landscape’s communication. The sign change in terms of quality and quantity in different cultures. Quantity and quality of human and natural signs are related together to form the fabric, a “cultural depth”.

The concepts expressed before can be applied to the analysis of Siliqua as well, the smaller context of Sardinia. Compositions and assembly of fabric portions here occurs between urban and agro framework, giving value to their strong synergy. Consolidated fabrics fragmentation occurs on the margin between city and countryside, where new ways of inhabiting and occupying space broke the structural continuity of space and places. This critic point derives from a lack in reading pre-existing traces and in the investigation on the modality of assembly among different landscape components. The observation of Siliqua landscape, on the contrary, tells how various are the characters of places that have a strong “experience of space” capability. Every of them is a guide line, a sign able to build a new net, the basis for a new portion fabric. These dynamics identify in form and signs of the historic centre (matrix centre), orography, agro, water. In matrix centre paths and blind alleys

determine the use of it and solid parts of the settlement determine the procedure of space occupation. Identification, bind and combination of pre-existing signs, after being filtered and modulated, brings to a formal logic fitting context characteristics. This gives life to a new net, a matrix susceptible in constant variations and combinations that will structure the entire new project area. The new habitat will maintain the characteristic of the net such as "imperfection" of variation inside a grid; the form of the agro portion (tile) becoming module and measure inherited but filtered with needs and characteristics of the context. That mean a net holding and leaving at the same time a consolidated form, thus permitting variation.

### **INFILTRATION: METHOD TO MEND THE URBAN ENVIRONMENT:**

The question becomes how, what and by what means reading the city as a composite assembly of elements. The first step is to understand how it is done the settlement or the tissue that we have before us, then, one must understand how to intervene and with what tools. Very often, even in contexts fragmented, difficult to read, there are conditions that allow you to search for a track already written. Rem Koolhaas, usually refer to a clear separation between center and periphery, to the non-places or generic city, recognizes the potential of existing tracks: "The writing of the city can be unreadable, damaged, this does not mean that there is a scripture; it may simply be that we who have developed a new illiteracy, a new blindness". The dynamics that affect the composite city, its articulation, criticality between assembly, leads to the reflections of Gonçalo Byrne that introduces the concept of "vulnerability" talking about those parts of the city not consolidated, as brownfield sites and the suburbs. He argues that the city is vulnerable entity, ineptitude translatable of contemporary life, a weakening of the role urban, a loss of meaning. The need therefore to mend the urban fragments means to regenerate the city from its genetic heritage; diversity and variety of elements that make up the urban and natural landscape becomes the engine of a new process of constitutive form. The difficulty of acting within the urban junctions, where the bonds are made more complex or where to take place more easily breakages giving rise to fragmentation, allows to make good use of a method capable to creep in, to act in a targeted, selective and to penetrate into the interstices of the urban joints and those pulsed, to draw from the experience of those injured in both of which convey the rules and characteristics of the tissues consolidate. The difficulty of acting within the urban junctions, where the bonds are made more complex or where to take place more easily breakages giving rise to fragmentation, allows to make good use of a method capable to creep in, to act in a targeted and selective and to penetrate into the interstices of the urban joints, both those pulsating, both in those damaged to which instil the rules and characteristics of the tissues consolidated. This is achieved by the infiltration. You can define infiltration as the act of spatial transposition of the place's characters. This is an accumulation and spread within a healthy tissue of damaged materials, factors, customs inherited from episodes consolidated. The infiltration acts from the moment in which, within the organism, injuries occur; from the time when the organism is injured from the damaging of "external factors". This is an adaptive response that may occur to the stimulus harmful or stressful for the fabric. The infiltration is expressed as a method, tool and technique:

The method makes it possible to conceive and represent the stratification of the signs and landscapes as a complex mixture multifaceted and flexible. Lets break up, change, reinterpret the assembly of the different parts of the urban fabric and to investigate the dynamics of their assembly. The landscape architects as Michel Courajoud, James Corner and Adriaan Geuze introduce the technique of reading in layers, so you can grasp the dynamics, the complex relationship between man and environment and conceive infiltration as temporalized re-composition of the fragments inside the "systemic assembly". The goal of the infiltration is therefore to borrow and bring the rules

derived from an established context to episodes fragile and marginalized in which you need to restore a state of legibility and spatial union.

Materially, the infiltration is characterized as a tool with which to enter and borrow rules. The transposition of cultural facts introduced by the infiltration can be punctual and take action on a specific articulation or may characterize an entire route. You can characterize him as a real corridor in which path-way it is possible to observe the operation of reweaving an urban area. The infiltration is also a technique that represents a set of practical rules to be applied in the execution of reweaving; correlates the information collected and, through adaptive processes, admits and welcomes the development and adaptation over time of cultural facts introduced. There is an exchange in which the rules borrowed take consistency and meaning within the context of destination.

In the proposed example, which examines the case Siliquese, the assembly takes place, as already mentioned, between the rural and urban fabric portions and, infiltration makes possible the connection between these tissues and the generation of new ones. It get first of all the existing tracks that have the charge-generating capable of creating the basis for new weft that complement existing ones. Dalle strade di penetrazione alla campagna in avanti, come loro continuazione, dei corridoi che danno struttura alla cintura del progetto e introducono i collegamenti di continuità. The corridors are configured as binders, connectors bearers and "diffusers" of the agro's rules. They have different types depending on the episodes that go to report. The rule is introduced and made explicit through infiltration, defined as injections, grafts, that, in a selective way, structure a new habitat according to the rules in which they are contained. The infiltrations take on different connotations and interpretations to varying of scope that is passed through it, from the rural to the social housing than the new expansion. The potential of infiltrations is expressed from the filaments, which follow the logic, orientation and shape of the piece agro. It then generates a new fabric, bearer of the "agro's rules". Through infiltrations weaves the new network of relationships certainly constructive but also visuals, perceptual and social. These have as their aim to meet the demands of the context. The interlace and overlapping of consolidated networks leads, as a result, the creation of a new fabric, or simply the continuous of the existing one, rediscovered and reinterpreted in its peculiarities, according to the new requirements. The urban dimension that emerges is multi-layered; the result is an open structure and defined, but also compact and dense. In this way we highlight the differences, are emphasized the identity of the individual spaces related with the surroundings, but at the same time ensure their synergy. The reports that you create are morphological, perceptual and cultural. The open network becomes a support to the various forms of appropriation of space, at different scales. The reading of urban areas, scope of action of infiltrations, in which a break in the composition of the facts and a strong fragmentation of the joints are evident, derive from a now distorted conception of space and its occupation. There is talk of an adjustment to a standard whose requests are those of excessive availability of space of the dwelling and of the consumption; in this excess are lost relationships and spatial hierarchies. Transitions and spatial scans, that have shaped and functionality to consolidated centers, ensuring different degrees of permeability and reading, are no longer detectable. In contexts minors, this, materializes at different scales in the fraying of the urban to the rural and within consolidated tissue; but, is also evident in the endless commercial areas in which the urban spatiality of the city dilate up to the distortion or, in the center-periphery interface and comparison between vertical-horizontal development within the metropolitan contest. The potentiality of infiltrations consist therefore also in the rediscovery of values, habits, uses, blurred over the years, always present in consolidated realities, but who have lost continuity. It is necessary to heal the overripe, recover woven nets in the past and continue. The fabric of the new habitat, generated from the traces passed, will have all the characteristics of the

network, imperfect in its perfection, retains and borrow some characters and let go of the others, that no longer meet the current needs, selects and discard. The urban infiltration acts at different scales and within both public and private sectors. We know that, carefully define the role of public space is a key step in the rethinking of the urban condition; because, it is thanks to it that you complete the process of appropriation of space by those who inhabit it.

### **CONCLUSIONS:**

The theme of the urban infiltrations concerning the topic of the composite city allows the study of a method to investigate on the problems of development processes. The aim is to find a new technique able to reconstruct urban completeness, using the method of assembly of disconnected fabric parts. It is then necessary to act with a margin suture in order to obtain a unique system from different episodes. The potentiality of this procedure concerns the operation of a preventive reading of the place traces and dynamics that built consolidated fabrics before. The act of the intervention on the urban space through infiltration, permits to research and experiment techniques that can catch the most abstract and creative properties of systems; also describe the complexity of the urban organism, its connections, various configurations deriving from acquired rules. The concept of fabrics assembly, fragmentation, complexity, lead to the importance in activating a process of connection among different parts inside a system or organism or net. To operate on a single organism becomes a need and the use of the infiltration a method in redefining the urban experience. The intervention occurs in a measured way and inside mediation framework; the main subjects of this investigation are elements and factors seen as hybrids because of their changing aspect. The articulation of this analysis and the intervention on the urban landscape, based on potentialities of infiltrations, permits to engage critic situations occurring in the system, both in its entirety and at different scales and assures a correct assembly of the organism components, called "composite city".

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## **BIOGRAPHY:**

**Aurora Perra:** I obtained my bachelor's degree Magistral in February 2014 with a thesis entitled: "The rules of agro: proposals for action in the western edge of Siliqua." I've done internships in architecture studies dealing with issues like sustainable architecture, the project of restoration of disused buildings. Since February 2014 I collaborate with the research group of the Department of Architecture in Cagliari with numerous activities:

Research Project: "Cagliari. Procedures and models for the integrated enhancement of the historic built environment. Guidelines for the implementation of the Recommendation on the historical urban landscape that UNESCO will take over in 2011. "

Drafting Manual recovery of the historical districts of the city of Cagliari, district of Castello. Analysis of the urban fabric, typological studies, analysis of construction techniques.

Research project for the preparation of the recovery manual of the old town of Bethlehem funded under the project Montada Euromed Eritage. Analysis of the urban fabric, typological studies, analysis of construction techniques.

In May 2014 I participated as a speaker at the seminar of the course LabTesTi (fabrics and types of habitat) held in the academic year 2013-2014 by prof. Silvia Mocci.

From March to June I worked as a tutor for the LABI3 2014, III year Bachelor in Science of Architecture, (lecturer: prof. Carlo Atzeni), carrying out activities for tutoring students for the preparation of projects under the educational workshop III year.

From 4-13 September 2014 I attended the 3rd international school of architecture. Sardinia: the territory of the sites, cultural landscapes. Plans for a European Capital of Culture in 2019.