

# The Transition Between Rural and Urban Spaces in Fragile Peri-Urban Fringes: Water as a Primary Design Tool

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**The focus is on the peri-urban landscape, placed between suburban settlements and the surrounding countryside. It is an “uncertain” area, unable to have crucial urban relations and convincing rural and agricultural fabric. Different expressions of fragility, both physical and social, coagulate in these places: the reason why they represented a significant object of study for several decades, becoming symbols of problematic urban models. Among the possible regeneration processes, the one that starts from a rural, rather than urban, perspective seems to be the most interesting. Today, what appears essential is considering the peri-urban countryside areas, not as a possibility for the urban fabric to expand, but as the necessary open spaces that complete the suburban fringes’ layout. Actively involving rural areas contributes to a more effective transition between countryside and urban elements and improves a general reinforcement of the open spaces system, thus conceiving as the settlement backbone. The importance of inhabiting countryside as leisure spaces for the citizens, beyond agricultural production settings, became more urgent during pandemic times, in which wide open spaces became the safest areas. Therefore, to imagine a multifunctional countryside to inhabit, one of the crucial design tools to work with is the water. Streams innervating the countryside can represent pivotal devices to rethink transitional open spaces in layout and uses between rural and urban practices. Simultaneously, working with streams allows counteracting or preventing possible water imbalances investing and damaging urban areas due to climate change effects and inadequate ways to anthropize the territories. The more dilatated fabric of the peri-urban landscape allows considering water and its ecological connections as a primary design tool.**

## INTRODUCTION

The subject of the research<sup>1</sup> is the peri-urban landscape, considered in its suburban settlements and surrounding countryside. The relation between urban and rural spaces was one of the main topics for the suburban expansion, from the modern city idea onwards.

The paper explores the possible lens to be used today to approach the condition of the fringe areas: from the concept of “uncertainty”—already discussed in the design debate—to the idea of “territorial fragility,” almost entirely missing in the architectural discussion. After focusing on the main topics of the peri-urban landscape, between “uncertainty” and “fragility,” the paper deals with promising approaches to face the fragmented and marginalized condition, concerning the rediscovery of the potential of open spaces and rural areas, together with the regeneration opportunities linked to watercourses, even the smallest one. Two case studies demonstrate then effective design solutions working on the discussed approaches.

## BETWEEN UNCERTAINTY AND FRAGILITY

Starting from the 1990s, the progressive closeness between urbanism and landscape design perspectives and methods triggered the foremost steps in the debate concerning “uncertainty.” The goal was to reconcile the desire for architectural autonomy and the increasing demands for environmental engagement, and one of the process results was just the growing interest in “urban indeterminacy strategies,” self-regulation, and autonomous interventions.<sup>2</sup>

At the beginning of the 2000s, two essential protagonists of the architectural debate talked about “staging uncertainty.” The first was Rem Koolhaas: he assumed that urbanism was unable to define an effective model for the contemporary city, failing its main goal and leaving the floor to architecture to unravel the intricate issue. The problem was that urbanism could not find an alternative to the will of order, control and, immanence, linked to the traditional idea of the city; instead, a contemporary urban model has to deal with the “uncertainty in the definition of the setting,” less permanent elements and processes that sometimes refuse to crystallized into definitive form.<sup>3</sup> Assuming this, James Corner affirmed that the crisis could be solved through landscape design tools, the more effective within architecture disciplines concerning: the interpretation of the site’s potential, complex circumstances, and specificities, especially in environmental terms; the capacity to develop cross-scalar, open, and dynamic relations; and the open-endedly vision of the regeneration process. Therefore, applying the strategic landscape model is essential in “staging

the uncertain performance of life,” and in defining an adaptive and flexible scenario to inhabit.<sup>4</sup>

In the same years, two German architects dealt with the same topic in the European scenario: Kenny Cupers and Markus Miessen, revisited a series of leftover open spaces in Berlin, defining them as “spaces of uncertainty.” The work, implemented around a decade later, demonstrated how their marginality represents the inevitable downside of the architectural process and the “other” side of the designed public domain. Those uncontrolled spaces are buffer zones that border the intentional intervention and grounds for ephemeral and tactical traces that counterbalance places with more fixed configurations.<sup>5</sup>

Regarding instead “territorial fragility,” the concept is related to the analysis of specific sites and historical moments: territorial fragility in absolute terms does not exist. Moreover, it has a multidimensional character as the territory, dealing with complex situations to face through cross-disciplinary and cross-scalar approaches.<sup>6</sup> Territorial fragility represents the inability to react or to adapt to territorial changes without developing adverse effects.<sup>7</sup>

Comparing “uncertainty” to “territorial fragility,” what emerges is the same positive focus on resources and redeeming possibilities linked to indeterminate definitions, rather than focusing on the criticalness of the sites. The regeneration processes have to be aware and recognize the “open” condition of fragile and uncertain places and their not ordinary specificities. Both the scenarios suffer from unbalanced features, improving borderline situations in which something can easily exceed or already has, breaking a precarious balance.

Finally, what mainly differs between the two ideas is the relation with the phenomena linked to each of the situations: the territorial fragility represents the possibility or the “predisposition” to develop dangerous effects linked to a mix of quantifiable and unquantifiable negative factors, keeping together the unmeasurable uncertainty and the measurable vulnerability, investigated in probabilistic terms;<sup>8</sup> on the contrary, the spaces of uncertainty represent situations in which the unpredictable consequences of only unquantifiable factors take place.

#### **PERI-URBAN SPACES: WHICH TOPICS FOR THE RESEARCH**

As a result, we define the peri-urban areas—the subject of the research—uncertain in the definition of the setting: a condition that opens possibilities, accepts tactical uses but, if not balanced as often happened in fringe areas, can trigger fragmentation phenomena. In fact, no crucial urban relations or convincing agricultural landscape characterize the peri-urban areas: the fabric dilatation gives the floor to not so strong networks of open spaces, unable to intertwine effective urban

relations if not supported by the presence of the building masses, and the countryside territory emerges as residual, invaded by the growth of the urban fabric, whose buildings seem to be the real focus in the planning of the fringes.

Therefore, what visualizes the setting uncertainty the most is the layout of the “open spaces network”: a substantial and strategic part but wholly inadequate in mending urban places and ineffective for the transition to the surrounding countryside.<sup>9</sup>

However, the situation of the peri-urban areas is even more complex: it is not only about a general condition of uncertainty, but resources are often threatened constantly by measurable negative phenomena. Among the most important are: soil consumption, often linked to building without any architectural or landscape connections to the surroundings – malls, warehouses, or logistic buildings; abandonment or neglect of spaces, primarily public outdoors, impoverished by the absence of dialogic relations; ecological fragmentation due to unsustainable uses of the soil; pollution linked to intensive agricultural techniques or active and inactive factories; and environmental risks, among which we focused the ones concerning the water. The possibility to develop undesirable effects makes these places “fragile,” proving that fragility is a possible development of uncertain conditions.

Concerning open spaces, a crucial factor to work with is the “water,” connected to imbalance phenomena in hydraulic and environmental terms. Climate change effects, together with inadequate ways to anthropize the territories, increased the possibility of hydraulic inefficiency, and peri-urban areas, with dilated networks of open spaces, appeared strategic in counteracting the damage of the denser part of the city as well. Moreover, environmentally speaking, suburban places represent a “buffer” between the city and the countryside: they can work as ecological filters for the water running from urban areas to the rural side or, in the same way, from suburban industrial settlements to the denser city. Precisely, acting on suburban streams appears crucial also for the redefinition of their role in the design of the setting: small and medium-sized streams – more than the major ones – are so often scarcely considered in the developing of the layout, but, on the contrary, they are pivotal in mending network of “transitional spaces” between countryside and suburban areas.

#### **AN OPEN SPACE PERSPECTIVE STARTING FROM THE COUNTRYSIDE**

Working then on a perspective that primarily focuses on the rural side and the open spaces means acting on the most “uncertain pointers” of the suburban settlements to define a possible regeneration process for the peri-urban areas. The goals are, firstly, the development of a more efficient relation between countryside and urban side, fixing the idea of a residual rural landscape to be invaded by building expansion; and consequently, the improvement of the layout of the open

space to be considered as the “settlement backbone” connecting rural and urban places.

In planning and design terms, countryside and city have always been perceived as the opposite, even if, during the twentieth century, influential architects conceived urban models dealing with the implication of agricultural production.<sup>10</sup> The “agrarian urbanism” proposals represented a sort of counterhistory, in which rural and urban were not separate domains but the urban figure dissolved into a productive landscape to design a renew condition for the suburban areas. This approach stood as an alternative to the dense metropolitan setting, fueled by migrations and industry scenarios, and expressed the utopian will of a more dilated and osmotic fabric in which greenery and agriculture could find a place as structural elements.<sup>11</sup>

Three were the main agrarian urbanism visions during the XX century: Frank Lloyd Wright’s *Broadacre City* (1934-35), Ludwig Hilberseimer’s *New Regional Pattern* (1945-49), and Andrea Branzi’s *Agronica* (1993-94). None of them were fully realized, but they inspired residential commissions—the Wright’s Usonian Houses—and masterplans—as the Lafayette Park by Hilberseimer or the Strijp Philips district in Eindhoven by Branzi. The organic model of *Broadacre City* designed a territory where modern houses alternated to agriculture and small farms; light industry, commercial centers, and civic buildings were widespread in the area, entirely connected by the highway. Hilberseimer’s idea, instead, involved two different scales: the one of the settlement unit—a semiautonomous pedestrian settlement comprising housing, farming, commerce, and light industry—and the larger environmental one—involving the use of cars—in which the settlement units located in open-endedly sequences surrounded by the agricultural landscape. Finally, *Agronica*, some decades later, developed the concept of “weak urbanization” linked to what the neoliberal economic paradigm provided: agricultural and energy production represented the culture of consumption and, at the same time, the main drivers of urban form.<sup>12</sup>

The visions share the idea of an active relation to rural areas to get through their inclusion in settlements whose buildings are spaced to design more dilated open areas. These models of agrarian urbanism represent today’s unsustainable ways to conceive suburban fringes: we learned, in the last decades, how compact settlements are more sustainable than urban sprawl in environmental, ecologic, and social terms, counteracting soil and energy consumption, being more efficient in a transport perspective, and developing “proximity” social values.<sup>13</sup>

Therefore, introducing today a reflection on promising models for suburban areas means coming back to as dense as possible settlements to be located close to equally compact rural areas: the open spaces network has to work as the main driver to connect the two different domains—a “backbone” between

countryside and city. The edge represents an open space “buffer” that contributes to a more effective transition to plan by a different “agriurban” idea, together with the improvement of the potential connection elements, among which are the streams of water.

The agriurban idea to develop is the one conceived, during the 1990s, mainly by the French landscape tradition and, in particular, by Pierre Donadieu. Beyond the forms of settlements, the idea focuses on new forms of inhabiting the peri-urban countryside, no more considered an expansion possibility for the urban fabric but envisioned as a multifunctional open space that completes the suburban fringes layout. Rural areas have to be “resized” and reimagined to include *loisir* (leisure) uses for the suburban citizens, beyond preserving the main production activities. A “post-productive” and “porous” countryside space represents a crucial aspect of rethinking the transitional buffer zone located within the edge.<sup>14</sup>

#### WATER AS A MENDING TOOL

Working on streams means counteracting the uncertainty of the fragmented peri-urban settings by enhancing a potential “joining tool” involving open spaces. At the same time, it also means reducing or preventing the undesirable effects linked to the “fragile balance” of water in hydraulic and environmental terms.

In the last decades, with the development of a completely different perspective on water management, if significant streams have begun to be the protagonists of regeneration processes concerning the goals stated before,<sup>15</sup> small and medium streams are still underestimated as a resource, most of all in Italy. Beyond their size, mending through water streams implies the idea of sharing a “territory mark”—between the different domains of the countryside and urban areas—characterized by spatial disposals and uses unfolding all along its length. Shared features, completed by the peculiarities of the different situations, represent “continuity,” essential in dissolving the ever-present dichotomy between the two domains and counteracting possible fragmentation factors; and “inclusiveness,” necessary to face a mainly negative perspective of urban or rural peripheral places and to decrease marginalization phenomena.

Moreover, water appears crucial also for the leisure activities enhancement to get a multifunctional countryside: designing the disposals to go closer to the water, imagining the proper paths to raise awareness on water environmental and ecological topics, and improving networks for sports activities along the streams, are some of the main actions involving open space and water.

Regarding the hydraulic and environmental terms, peri-urban areas still represent a “buffer” to solve imbalance phenomena before innervating the denser city or the countryside far away



Figure 1. OMGEVING Landscape Architecture Urbanism, Kerremanspark, Brussels, 2011-2019. Credits OMGEVING.

from the suburbs. The main water challenges for the regeneration projects are sudden events as periodic floods and runoff; and gradual weakening processes as groundwater depletion and water quality deterioration.<sup>16</sup> Landscape flooding disposals or ecological filters are hydraulic and environmental strategies that can fit the dilatated peri-urban spaces going hand in hand with a landscape design holistic vision of the open suburban network as the backbone between the settlement and the rural side.

Resetting an area where water plays a central role means thus dealing with another design theme concerning landscape “mutability”: cyclical mutability linked to seasonal flooding or dryness of the watercourses, and sudden mutability linked to atmospheric events, capable of quickly distorting the characteristics of a site. As a result, a crucial aspect of the regeneration of peri-urban areas concerns the reorganization of transitional places related to territory marks and mutability conditions between urban and rural. Vegetation, water, and built space have to work in synergy, drawing interactions with the landscape inhabitants.

## TWO CASE STUDIES IN EUROPE

The collection and design analysis of many European case studies are one of the essential research steps to point to the relationship between the explored topics and the connected design responses. The paper discusses two solutions among the regeneration projects, offering comparable strategies and peculiar aspects strictly linked to transitional open spaces and

watercourse issues within peri-urban areas. The case studies, dated in the last decades, are the Kerremanspark, near Brussels, designed between 2011 and 2019 by OMGEVING, a Belgian architecture firm; and the Ecological Park of Saint-Jacques, near Rennes, designed between 2008 and 2015 by the Paris-based office Atelier de Paysage Buel Delmar.

Both the solutions work on a peri-urban “buffer” for a more effective transition to the countryside, testifying how the open spaces can be a backbone for the reconnection of the two different fabrics. The firms conceived the buffers as “agri-urban” parks where recreational and sports activities, together with ecological purposes—assumed as demonstrations to increase people’s awareness—implement agricultural functions, meadows, and pasture areas. Water plays a crucial role in both cases: small streams animate the buffers and strengthen the reconnection locating new outdoor activities and enhancing paths along their course. Moreover, the improvement in hydraulic and ecological disposals, beyond facing environmental issues, took to enrich the visitors’ water experience and climate-change understanding.

The first case study, the Kerremanspark, displays in a green and agricultural area surrounded mainly by the residential neighborhood of Horing and the Zellik research park: its regeneration provided an effective link between the two sides, passing through a residual part of the Brussels countryside. The two leading disposals of the park are a 1-kilometer ribbon that connects the different recreational zones, “play landscapes,”



Figure 2. Atelier de Paysage Bruel Delmar, Ecological Park of Saint-Jacques, Rennes, 2008-2015. Credits Atelier de Paysage Bruel Delmar.

and ecological functions; and the Molenbeek river, a little stream that goes from one side to another and that the new ribbon intercepts, designing places to rest in connection to the water and to have specific views of the surrounding forests. The vegetated enlargements along the stream also took to more efficient control of the flooding, offering a landscape mutable in its water level and greening scenario.<sup>17</sup>

Concerning the second case study, the Ecological Park of Saint-Jacques displays in a small valley, in the outskirts of Rennes, with residual agricultural practice, meadows, and forests. The park aims to connect the rural landscape with the surrounded residential neighborhoods, offering new uses and connection disposals. This purpose goes hand in hand with the renewed presence of water provided by two main actions: the formation of a place with a small lake and oak trees; and the strengthening of the stream network of the area, adding sophisticatedly designed disposals to touch the water, cross the ditches, and observe the ecological dynamics. In environmental terms, working with water implies managing the runoff by the urban side and filtering it through additional reed beds before innervating the countryside and enriching the groundwater.<sup>18</sup>

Finally, what emerges are two different “buffer strategies”: if the first solution related mainly to a single stream and the reconnection strategy concerns that line, the second one involved a water network innervating the peri-urban area, conceiving a more complex mending operation ensured

by a diffuse system, going from the urban to the rural side and vice-versa.

## CONCLUSIONS

As the case studies demonstrate, peri-urban areas need renewed spatial devices to rejoin the rural and urban domains: strengthening ecological issues, improving infrastructures to prevent instability concerning water, and working on a better perception of open spaces’ habitability. These represent the main actions on the uncertain and fragile pointers to solve a condition that today becomes impelling.

The restrictions on movements due to the pandemic have also demonstrated the importance of a network of “proximity” open spaces that effectively connects close places and can accommodate the recreational and sports activities of the neighborhood inhabitants. Peri-urban citizens deserve liveable and inclusive open spaces related to the surrounding countryside as much as the compact city’s citizens deserve urban parks.

“Anti-fragility” is assured by considering together the measurable vulnerabilities and the unmeasurable uncertainties of a transitional landscape. The architect’s approach, a cross-scalar and interdisciplinary one, has to guide the adaptive process of transformation to come, mediating between natural elements, built spaces, and people gestures.

## ENDNOTES

1. The research is framed within the project *Territorial Fragilities/Department of Excellence 2018-2022* led by Department of Architecture and Urban Studies (DAStU), Politecnico di Milano. See also <https://www.eccellenza.dastu.polimi.it/>.
2. Charles Waldheim, *Landscape as Urbanism. A General Theory* (Princeton: Princeton University Press, 2016), 32-47.
3. Rem Koolhaas, "Whatever Happened to Urbanism?" in *S, M, L, XL*, Rem Koolhaas and Bruce Mau (New York: Monacelli Press, 2002), 958-971.
4. James Corner, "Not Unlike Life Itself: Landscape Strategy Now," *Harvard Design Magazine* 21 (2004).
5. Kenny Cupers and Markus Miessen, *Spaces of Uncertainty. Berlin Revisited* (Basel: Birkhäuser, 2018), 15-19.
6. Francesco Infussi, "Fragilità primer," *Territorio* 91 (2019): 60-61.
7. Arturo Lanzani, "Fragilità territoriali" in *Manifesto per riabitare l'Italia*, ed. Domenico Cersosimo and Carmine Donzelli (Roma: Donzelli Editore, 2020), 121.
8. Daniele Chiffi and Francesco Curci, "Fragility: Concept and Related Notions," *Territorio* 91 (2019): 55-58.
9. Arturo Lanzani et al., "Nell'Italia di mezzo: rigenerazione e valorizzazione dei territori della produzione" in *Ricomporre i divari. Politiche e progetti territoriali contro le disuguaglianze e per la transizione ecologica*, ed. Alessandro Coppola et al. (Bologna: il Mulino, 2021), 107-109. In the same book see also Arturo Lanzani et al., "Strade, parcheggi e spazi di risulta: ridisegno del suolo e benessere ambientale nelle aree urbane fragili," 283-285.
10. Vanessa Miriam Carlow, "The Relevance of Thinking Rural!" in *Ruralism. The Future of Villages and Small Town in an Urbanizing World*, ed. Vanessa Miriam Carlow (Berlin: Jovis, 2019), 6-13.
11. Charles Waldheim, *Landscape as Urbanism. A General Theory* (Princeton: Princeton University Press, 2016), 124-137.
12. Waldheim, 124-137. See also Frank Lloyd Wright, *La città vivente* (Torino: Einaudi, 2013); Ludwig Hilberseimer, *The New City: Principles of Planning* (Paul Theobald: Chicago, 1944); and Andrea Branzi, *Modernità debole e diffusa: il mondo del progetto all'inizio del XXI secolo* (Milano: Skira, 2006).
13. See David Sim, *Soft City. Building Density for Everyday Life* (Washington: Island Press, 2019); Ezio Manzini, *Abitare la prossimità: idee per la città dei 15 minuti* (Milano: Egea Editore, 2021); and Arturo Lanzani et al., "Strade, parcheggi e spazi di risulta: ridisegno del suolo e benessere ambientale nelle aree urbane fragili," in *Ricomporre i divari. Politiche e progetti territoriali contro le disuguaglianze e per la transizione ecologica*, ed. Alessandro Coppola et al. (Bologna: il Mulino, 2021), 283-285.
14. See Pierre Donadieu, *Campagne urbane* (Roma: Donzelli Editore, 2013); Anna Lambertini, "Urbano/post-urbano/non urbano: prossimo! Reinventare paesaggi di margine" in *Margini e spazi aperti delle città in trasformazione*, ed. Anna Lambertini (Bologna: Editrice Compositori, 2014), 12-17; Chiara Merlini, "Un nuovo viaggio nella 'città diffusa': spazi aperti, dotazioni pubbliche, infrastrutture come primi elementi di riqualificazione" in *Città tra sviluppo e declino*, ed. Antonio Calafati (Roma: Donzelli Editore, 2015); and Lucina Caravaggi et al., "Nuovi parchi agro-sociali: infrastrutture di cittadinanza nei territori periurbani" in *Ricomporre i divari. Politiche e progetti territoriali contro le disuguaglianze e per la transizione ecologica*, ed. Alessandro Coppola et al. (Bologna: il Mulino, 2021), 271-282.
15. Martin Prominsky et al., *River. Space. Design. Planning Strategies, Methods and Projects for Urban Streams* (Basel: Birkhäuser, 2017), 14-17, 28-35.
16. Joshua Zeunert, *Landscape Architecture and Environmental Sustainability: Creating Positive Change Through Design* (New York: Bloomsbury, 2017), 100-117.
17. "Kerremanspark - Asse," OMGEVING Landscape Architecture Urbanism, accessed July 29, 2021, <https://omgeving.be/en/blog/projecten/kerremanspark/#>.
18. "Ecological Park of Saint-Jacques," Atelier de Paysage Bruel Delmar, accessed July 29, 2021, <http://www.brueldelmar.fr/en/project/22/ecological-park-in-saint-jacques/>. See also "St Jacques Ecological Park," Landezine, accessed July 29, 2021, <http://landezine.com/index.php/2013/04/st-jacques-ecological-park-by-atelier-des-paysages-bruel-delmar/>.

