

Self-government processes of the urban bioregion: insights from a study on the Metropolitan City of Rome Capital

Giovanni Ottaviano

Dept. of Biosciences and Territory, Molise University, Campobasso, Italy
giovanni.ottaviano@unimol.it

Luciano De Bonis

Dept. of Biosciences and Territory, Molise University, Campobasso, Italy
luciano.debonis@unimol.it

Francesca Giangrande

Dept. of Biosciences and Territory, Molise University, Campobasso, Italy
francesca.giangrande@unimol.it

Abstract

The relevant transformation processes that affect contemporaneity require a radical transformative change across all fields in terms of relations among human activities and the environment. The research illustrated in this contribution addresses the issue of change through the lens of territorial planning, discussing the hypothesis that in practices of territorial self-government it is possible to define 'minimum units of bioregional planning' enabling virtuous co-evolutionary interactions between humans and the environment. Drawing on theoretical insights and empirical work in the Aniene River basin, the study emphasizes the need to transcend the institutional/non-institutional divide and support subsidiary planning processes. Within this framework, digital platforms, such as a GeoSocialWeb, are conceived as enabling environments for interaction, fostering relational governance processes and context-specific forms of territorial self-government.

Keywords: bioregion; natural resources; agreement tools; self-government; river contract

1. Introduction

This contribution presents the conceptual framework and some findings from the ongoing work of the authors within the Italian PRIN (Research Project of Significant National Interest) "Bioregional planning tools to co-design life places. Empowering local communities to manage and protect natural resources"¹.

Based on the urban bioregion approach developed within the Italian territorialist school, the research project's main goal is to contribute to the drafting of a framework for agreement tools for territorial planning, which could support collaborative forms of management and use of environmental resources directly empowering the communities that live in the territory.

These agreement forms of planning are intended as flexible environments in which the actors involved in each specific planning process are able to define the most suitable tools to allow effectively the implementation of the principle of vertical and horizontal subsidiarity, in the perspective of addressing at different scale both local and global challenges.

The focus of this contribution regards the concepts of urban bioregion approach, natural resources management, agreement planning tools, and interactive spatial planning as intended by the authors.

Moreover, it illustrates how within the research project a bioregion has been selected as case study in the area of the Metropolitan City of Rome Capital and the neighbouring Province of Frosinone, and the partial findings identified by the authors at the date, including the denotation of some experiences of territorial governance that, in different ways, extend beyond traditional institutional planning frameworks.

¹ The project, funded by the PNRR (Recovery and Resilience Italian Plan) and running from October 2023 to the end of February 2026, is led by a Research Unit from the University of Florence (PI prof. Daniela Poli) and involves RUs from the University of Cagliari (Associated PI prof. Anna Maria Colavitti), University of Genoa (Associated PI prof. Giampiero Lombardini), University of Palermo (Associated PI prof. Filippo Schilleci), and University of Molise (Associated PI prof. Luciano De Bonis), to which all the authors are affiliated.

2. The urban bioregion approach

The concept of urban bioregion has been developed within the Italian territorialist school, mainly through the work of Alberto Magnaghi. It represents an evolution of the bioregion concept, which emerged in the Sixties and Seventies in the context of North American ecological movements (Berg, 1978; Todd, 1984; Sale, 1985), and was based on its Greek-Latin etymology, combining “bios” (life) and “regere” (to govern), signifying a region governed by nature (Magnaghi 2014a).

The “urban” adjective, which distinguishes Magnaghi’s approach from the above bioregional model, is aimed both at overcoming ineffective anti-urban opposition, recognizing the widespread nature of contemporary urban phenomena at their current geographical scale, and steer clear of deterministic view that tie human settlements solely to environmental factors (Magnaghi 2014a).

Additionally, according to Dematteis, Magnaghi employs that adjective to emphasize that the “return to the territory” civilization he advocates is inherently urban, in the particular sense of a “return to urbanity” as a space of relationship and proximity, and as a process capable of re-establishing the idea of the city in a new bioregional perspective (Dematteis, 2021).

Basing on the consideration of the social dimension of the bioregion (Berg, 1978), the socio-ecological and municipalist vision of Bookchin (1970), and with particular reference to the ecological geography studies (De la Blache, Martonne, 1903), as well as the experiences of the Regional Planning Association of America (Friedmann, Weaver, 1979) and Mumford’s (1963) concept of the “region of the human community”, Magnaghi (2014a) anchors the concept of the bioregion to the territorial project, i.e. he refers above all to the principle of coevolution between place, work and folk of the bio-anthropocentric Valley Section by Geddes (1915).

It is worth noting that Magnaghi (2014a) refrains from defining the urban bioregion by fixed territorial boundaries. Instead, he presents it as an analytical and, more importantly, planning tool for managing a territory, a concept that Dematteis (2021) identifies as the planning outlet of the entire territorialist theory.

In this respect, it is also important to emphasize that, once clarified that the physical boundaries of an urban bioregion are not fixed, but must be defined in a contextual manner, Magnaghi also states that in the governance of the territory the urban bioregion should translate into an interpretative and planning tool at the level of the “minimum units of territorial and landscape planning” of a large area of a region (Magnaghi, 2014a).

The definition of these minimal units remains a subject of debate among territorialist scholars. However, for our purposes – namely, opening the way to a form of living understood as a complex interplay between human societies and the environment that transcends mere habitation – we believe that, among the various components constituting a bioregional complex, political factors enabling forms of self-government hold particular significance (De Bonis, 2024). Therefore, identifying the “minimum units of bioregional planning” must first and foremost refer to such forms of self-government. These units should align with territorial areas governed by self-organized entities engaged in a productive and co-evolutionary relationship with their environment (De Bonis, 2024).

3. Natural resources management in the urban bioregion

The productive and co-evolutionary relationships that can take place between human societies and the environment within the area that we identify as the minimum unit of bioregional planning reflect an approach to the relational dynamics between human and non-human that seeks to overcome dualistic visions, which generally result in hierarchical and sterile forms of inter- and intraspecific interaction.

In fact, if the concept of urban bioregion were to be understood solely according to an ideal of “return to nature” in opposition to development models that are not environmentally sustainable, the transformative and planning potential that it intrinsically possesses would be significantly decreased, failing to counter those global political trends that reduce the environmental issue to the imposition of rules and limits on the use of environmental resources and the emission of polluting and climate-altering substances.

In addition to contributing to the creation of that “techno-fascist” scenario (Gorz, 2015) towards which contemporary society has predominantly oriented itself for several decades now, adopting a ‘sterile’ approach to the concept of urban bioregion would also foster a nostalgic vision of nature (Fabbri, 2019), conceived as incapable of self-regeneration, in need of human intervention to survive and return to an idealised, primordial and uncontaminated state, according to a form of “naturalist demagogy” (Baudrillard, 2019) which is far from the most intimate essence of nature itself.

The urban bioregion project, on the other hand, has the potential to enhance the relational continuum in which all organisms are immersed, including humans, avoiding both the initiation and perpetuation of processes of value extraction from natural resources (De Bonis, Ottaviano, 2024), and those approaches based on a “bad conscience” (Magnaghi 2010, citing the expression used by Françoise Choay in *L’Allégorie du patrimoine*, 1992), which manifest in strictly conservationist instances that tend to reduce or exclude the interaction between humans and ecosystems. Therefore, by overcoming the principle that the difference between human and non-human presupposes separating boundaries, and that human action is always imbued with an ‘original sin’ towards the environment, the urban bioregion project can interpret this difference as a relational interface within an osmotic environment, constantly seeking states of equilibrium between the components of the system.

It is widely reported in literature that the human role as an ecological factor goes well beyond the negative meaning to which it is generally associated in contemporary times. The long-term interaction between agro-forestry-pastoral activities and the environment has often produced highly diversified ecosystems that are now recognised as being of particular value (Gauquelin *et al.*, 2018), and the interruption of historical co-evolutionary processes can cause a decline in ecosystem richness (Conti, Soave, 2006).

Even the IUCN - International Union for Conservation of Nature - recognises² the value of OECMs (Other effective area-based conservation measures), i.e. those practices of land use and management that allow the achievement of positive results in the long term for biodiversity conservation and ecosystem functioning, also in association with cultural, spiritual and socio-economic values. Among the practices that can be recognised as OECMs, we include those involving the use of “rural commons”, which we can certainly consider the most evident form of those “territorial common goods” that Magnaghi defines as “intergenerational collective products that are distinguished from natural common goods as they are entirely produced by human action as a human environment [...]” (Magnaghi, 2015, 139), and one of the most symbolic forms of territorial self-government found throughout history and across the world.

4. From institutional planning to planning through agreement tools

The need to develop tools that enable forms of territorial self-government is particularly relevant to the advancement of the urban bioregional approach, because it is by starting from areas in which such forms of self-government are exercised that we can identify the minimum units of bioregional planning.

Magnaghi notes that the process of progressive reconstruction of territorial common goods finds concrete expression in the activation of “multi-actor, multi-sector and multi-functional contractual and pact forms to address the governance of the territory as a common good” (Magnaghi, 2015, 151), in which the processes of self-organisation among local actors precede institutional involvement.

Furthermore, in the same text Magnaghi recognises a particular interest in the contractual forms aimed at the management of water resources (such as river contracts, which will be discussed in more detail in paragraph 5 as one of the components of the project’s case study), because they invert the top-down logic of sectoral policies, paving the way for new forms of care and planning by the local community, which only subsequently extend upward, involving institutional sectors (Magnaghi, 2015).

Well, as already argued elsewhere (De Bonis 2024b; FC; De Bonis, Ottaviano, 2024), we reiterate here that Magnaghi’s interpretation of these processes can not only be considered a potential evolution towards innovative institutions of collective action that generate commons, but also, in this context, provides a meaningful and distinctive

² In December 2024, IUCN co-organised, together with ICCA Consortium, International Association for the Study of the Commons, and University of Lausanne, the event “The European Commons, Territories of Life and OECMs Conferences”. <<https://ruralcommons.eu/>> (Last accessed: June 2025)

contribution from territorial planning. This contribution lies in the creation of 'collective rules for individual use', which form the core essence of the above non-state institutions (Ostrom, 1990).

It is also particularly interesting, in the context of this contribution and the research project outlined here, how Ostrom shifted the focus of her discussion from a purely theoretical level to the search for real-world experiences in which collective resource management practices were effective, and how the integration of her insights into the bioregional design approach enriches them with a generative dimension capable of producing entirely new commoning practices.

In the specific Italian regulatory context to which the research project refers, the possibility of implementing forms of territorial self-government must be sought within the spaces that the institutional planning system, rigid and hierarchical by nature, leaves open to actions grounded in the principle of subsidiarity (De Bonis, 2019). Article 118 of the Italian Constitution, following the 2001 reform, attributes all administrative functions to the Municipalities "unless, to ensure their unitary exercise, they are conferred to the Provinces, Metropolitan Cities, Regions and State, on the basis of the principles of subsidiarity, differentiation and adequacy" (clause 1). It also establishes that all the administrative bodies mentioned in clause 1 must promote "the autonomous initiative of citizens, individually and in association, for the performance of activities of general interest", based on the same principle of subsidiarity (De Bonis, 2019).

Furthermore, the Law on Local Authorities (Legislative Decree 267/2000, art. 3, clause 5), even before the constitutional amendment of 2001, establishes that Municipalities and Provinces, in carrying out both their inherent and delegated functions, perform their functions also through activities that can be adequately exercised by the autonomous initiative of citizens and their social groups, again in accordance with the principle of subsidiarity (De Bonis, 2019).

This means that experiences of "voluntary" planning and design, implemented by local communities even without involving the institutions, can be considered fully compliant with the constitutional and regulatory provisions, as an application of the principle of subsidiarity in the field of territorial governance (Ottaviano, De Bonis, 2021). Among the voluntary land planning tools, the river contract is arguably the one that has attracted the most attention in recent years³, both from local actors and from institutions.

Formally introduced into the Italian legal system by Law no. 221 of 28 December 2015, through the addition of Article 68-bis to Legislative Decree 152/2006 (Environmental regulations), the river contract is defined as a voluntary tool "for strategic and negotiated planning" aimed at protecting and managing water resources and enhancing of riverine territories, with the goal of supporting local development. It also contributes to the definition and implementation of district planning tools at the level of the hydrographic basin and sub-basin. This makes it a tool that complements institutional planning of river contexts (typically under the responsibility of River Basin Authorities, though it often incorporates broader, multi-sectoral aspects) by actively and non-hierarchically involving non-institutional actors such as associations, committees, businesses, and individual citizens. Furthermore, within the river contract framework, "variable geometries" of planning relationships between different actors frequently emerge, allowing for the overcoming of rigid administrative boundaries. These flexible, contractual, and voluntary arrangements often are more adaptable than the rigid structures of the institutional planning framework (Ottaviano, De Bonis, 2021).

5. The Aniene river basin as a case study of urban bioregion

In order to support the process of defining adequate forms of self-government of territorial resources that can be effectively implemented in bioregional areas, the research project included experimental analytical work in some areas identified as case studies.

The research unit of the University of Molise therefore examined the vast territory of the Metropolitan City of Rome Capital, also following up on previous research work carried out by a research group from the University of Florence⁴, and in particular focused its research work on the bioregional sub-area corresponding to the

³ According to data from the National River Contracts Table observatory, in May 2024 more than 200 River Contracts were activated, of which 80 have been signed. Moreover, in all Basin Management Plans, drawn up by the District Basin Authorities, there are references to River Contracts.

⁴ The work, carried out under the scientific responsibility of Professor Daniela Poli, and which saw the participation of the

hydrographic basin of the Aniene river, in the eastern portion of the Metropolitan City.

This area is particularly interesting due to the variety of landscapes and socio-economic contexts that it traverses over its almost 100 km length, from its sources at about 1900 m above sea level on the Simbruini Mountains in the province of Frosinone to its confluence with the Tiber at the northern vertex of Villa Ada Savoia, just upstream of its entry into the consolidated city of Rome.



Figure 1 - The basin of Aniene river in the context of the hydrographic network (in blue) and the widespread urban fabric (buildings in black) of Lazio region. Elaboration by G. Ottaviano.

The Aniene has played a significant role in shaping the settlement structure of the territorial area that is headed by Rome, in particular along the linear axis of the ancient Via Tiburtina Valeria from the city to Tivoli, which acts as the valley outlet of the river and from which a polycentric network of numerous hill and mountain towns extends. The principal upstream element, in both historical and contemporary terms, is Subiaco.

The presence of a watercourse of significant flow enabled the development in ancient times of various productive activities that exploited its driving force, in addition to agricultural and fish farming practices that in some forms persist today. In the upstream section, which is largely consistent in social, economic and demographic characteristics with the broader context of Italy's inner and mountainous areas, grazing and forest use have also been historically significant.

A further element of interest within the ongoing research is the existence of a River Contract for the Aniene, which

scientific committee consisting of Professors Alberto Magnaghi (president), Alberto Budoni, Luciano De Bonis, Claudio Cerreti, Paolo Cesaretti, Carla Masetti, Claudia Mattogno, and the working group composed by Doctors Monica Bolognesi and Eni Nurihana, is presented in the research report "Studi, ricerche e linee strategiche per riorganizzare la Città Metropolitana di Roma in un sistema di bioregioni urbane resilienti e autosostenibili" ("Studies, research and strategic lines to reorganise the Metropolitan City of Rome into a system of resilient and self-sustainable urban bioregions").

concerns nearly the entire extension of its hydrographic basins, involving numerous institutional, economic and civil society actors.

The activities leading to the River Contract definition began in the early 2000s, well before this instrument gained recognition in practices and in the regulatory system. The Forum for the Aniene, which generated numerous meetings and events open to a wide range of entities interested in environmental and socio-economic issues relating to the river territory, can be considered as both the original nucleus and the catalyst of that associative dynamism which has expanded over the years and now comprises numerous actors with interest in actively participating in the management of the watercourse.

The formal River Contract process began in 2014, initiated by the Committee for the Aniene, to which numerous associations⁶ belonged, also with the support of various individual actors. This initiative prompted the engagement of the Mountain Community X of the Aniene, which in 2016 assumed a leading role and broadened the group of institutional and associative actors involved, up to approximately 100 parties that, in 2018, formalised a Document of Intent outlining the objectives and governance structure of the River Contract.

In February 2020, the Lazio Region allocated funding to support the process, integrating the financial contribution of the Mountain Community X of the Aniene and enabling the definition of an Action Programme, comprising 94 project initiatives (Figure 2), and the formal signing of the River Contract in 2022.

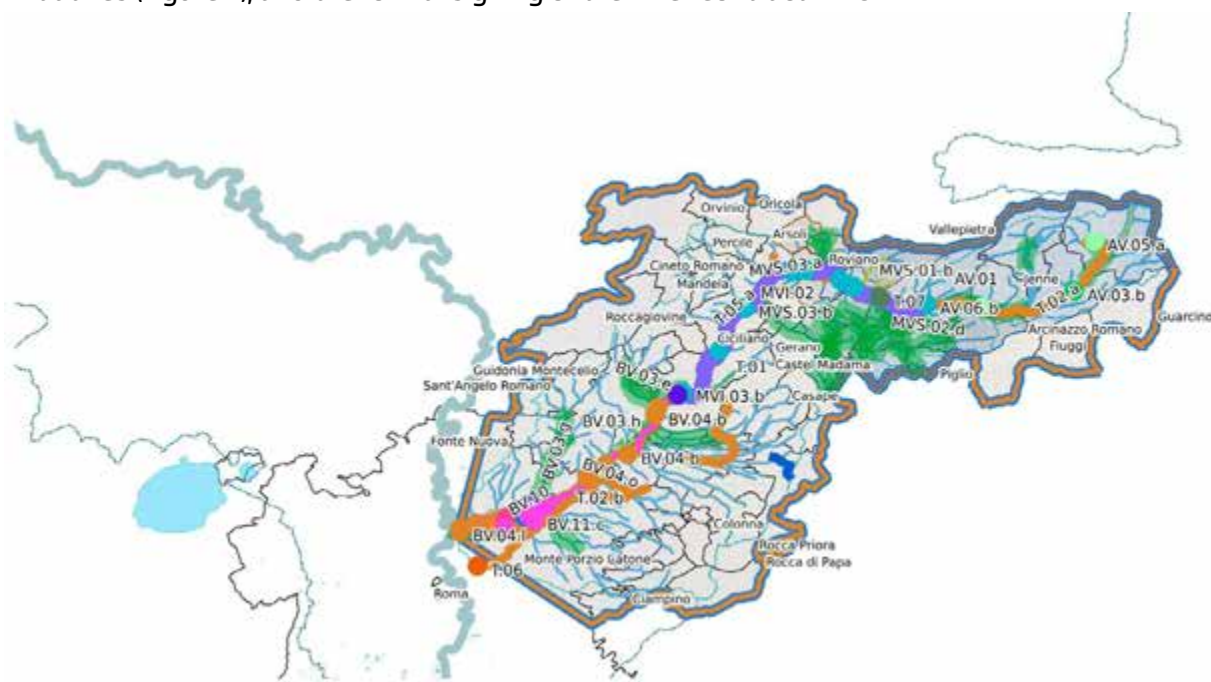


Figure 2 - The WebGIS map of the project initiatives of the Action Programme. Source: WebMap of the River Contract, accessed 06 June 2025, <<https://shorturl.at/9KTCi>>

The initiatives within the Action Programme refer to four general objectives: i) mitigation and adaptation to hydrogeological risks; ii) environmental improvement; iii) sustainable use of environmental resources; iv) tourist-recreational enhancement of the environment. For each initiative, the Action Programme designates the responsible party (single or multiple) and additional actors potentially involved in implementation. The analysis of the initiatives reveals that responsibility is distributed among 61 actors, predominantly with exclusive assignments. Shared responsibility is more common among associations. Responsible actors include

⁵ With the exception of a portion of approximately 2 km² (equivalent to less than 0.15% of the entire surface area of the river basin) which falls within the administrative territory of the neighbouring Abruzzo region.

⁶ Associazione Insieme per l'Aniene Onlus, Canoa Kayak Roma Assex, Canoanum Club Subiaco, Associazione Sistema Ambiente (clubs of Tivoli and Subiaco), Legambiente, WWF, Italia Nostra (section Aniene - hub Vicovaro Mandela), Compagnia del Casone (Castel Madama), Associazione Amici dei Monti Ruffi, F.I.E. - Sentiero Verde.

22 municipalities, 20 local associations, 5 territorial bodies (such as managing authorities of protected areas, mountain communities, and basin authorities), 4 municipal districts of Rome Capital, 4 local sections of national associations, the Lazio Region, 2 companies or business networks, 2 professional orders, and the Autonomous Institute of Villa Adriana and Villa d'Este.

Across the 94 initiatives, 164 actors are cited as either responsible or involved in implementation. In addition to the aforementioned typologies, these include public service providers, universities and research centres, schools, public agencies and consortia, ministries, superintendencies, museums, local action groups, municipal unions, and the Metropolitan City of Rome Capital.

The most frequently cited actor is the Lazio Region, involved in a total of 58 initiatives, but designated as responsible in only two. Likewise, the two regional parks (Monti Simbruini and Monti Lucretili), the Regional Authority RomaNatura, the Mountain Community X of the Aniene, the municipal districts II, III, IV and V of Rome, the Basin Authority, and certain associations ("Insieme per l'Aniene" and "V.A.R.A. - Valle Aniene Rete Associazioni") participate extensively, but rarely as responsible parties.

Both the Municipality and the Metropolitan City of Rome Capital are involved in numerous initiatives (20 and 27 respectively), yet never with positions of responsibility, similarly to the public company managing the integrated water service Acea (involved in 29 initiatives).

In addition to the typological mapping of the involved actors and the relational geometries envisaged in the Action Programme, the research assessed the coherence of each initiative with the four general objectives, categorising each initiative accordingly.

Furthermore, a typological classification of the proposed interventions was conducted to analyse the project contents of the River Contract, resulting in the identification of 32 types of action.

The objective of tourist-recreational enhancement is the most prominent (68 out of 94 initiatives, including 33 where it can be considered as its exclusive objective), followed by the objective of environmental improvement (51 occurrences, of which 14 as an exclusive objective). Mitigation and adaptation to hydrogeological risks (19 total occurrences, 2 exclusive) and sustainable use of environmental resources (15 total occurrences, 3 exclusive) are significantly less represented.

Among the planned actions, the most frequent concern the restoration, improvement or enhancement of soft mobility infrastructure (e.g., paths, cycleways, pedestrian routes) with 44 occurrences; removal of environmental criticalities (19); creation of recreational or visitor spaces (16); river maintenance (12); restoration of buildings or structures (12); and environmental redevelopment (12).

The analysis results are substantially consistent with what can be hypothesised on the basis of the overall objectives of the River Contract, i.e. the environmental protection and management of the river area and socio-economic development, which in high-quality, environmentally sensitive contexts, is generally predominantly referred to tourist and recreational use only.

While acknowledging the preferability of protective and valorising territorial approaches over extractive and deteriorative practices, we argue that these do not fully restore the centrality of the relational continuum between human society and the environment necessary to sustain the processes of virtuous co-evolution that the urban bioregion project should aim for.

Points of interest do emerge from certain initiatives focused on reactivating sustainable production practices, such as agri-food and phytotherapeutic production, and local, multi-source energy generation integrated with other territorial management cycles.

Another noteworthy aspect from the Action Programme is the dynamism of non-institutional, and not exclusively associative, actors. Some entrepreneurial entities, both within and outside the formal framework of the River Contract, have initiated projects enhancing innovation, multifunctionality, and the valorisation of territories and

agricultural practices in Rome's urban area.

Moreover, ongoing research to identify practices within the Aniene basin that reflect reproductive and virtuous co-evolutionary relationalities between human society and the environment has highlighted some experiences that present interesting features.

One of them concerns the farmers' markets in Tivoli and Frascati, promoted by the Slow Food Foundation for Biodiversity, which aim to foster local agricultural production conducted according to methods ensuring quality and sustainability.

Additional relevant practices are the development of a network of urban gardens (which also intersects with some River Contract initiatives), a Solidarity Purchasing Group, and the process of establishing a renewable and solidarity-based energy community in Rome, promoted by an association with active citizen involvement.

6. Co-producing planning action: the project's GeoSocialWeb platform

The process of defining the minimum bioregional units, previously discussed, cannot disregard the enabling of forms of territorial self-government. They configure an "interactive context" characterised by "high complexity and instability" (Crosta, 2003), in which the actors "make themselves" during the implementation of the practices, and within the same process decide upon the tool that regulate them, whether through intentional or unintentional actions (Crosta, 2007).

In this way, paths are enabled that contribute, to some extent, to the "social production of the plan" within the broader "social production of territory", that is, a rethinking of planning action as a process of "self-formation that gives inhabitants the sense of belonging to a community and a place" (Giangrande, 1998) or, even more fittingly in light of the complexity of contemporary socio-geographical contexts and relations, a sense of simultaneous belonging to multiple communities and places, defined by the "variable geometry" of involvement in trans-scalar and trans-local processes of "differentiation of interaction spaces" (Crosta, 2003).

The activation of these social ecosystems of planning requires an opening of territorial governance practices to forms of "projects in planning", understood as the implementation of the principle of subsidiarity within the framework of territorial planning. As illustrated in paragraph 4, recognising the constitutional legitimacy of self-determined design practices would also support overcoming the "clear distinction between 'institutional' and 'non-institutional'" planning (De Bonis, 2019).

The agreement tools would allow the "transition from government to governance" (Micciarelli, 2014) and the emergence of those "forms of federalism from below" necessary for the "integral application of the principle of subsidiarity" (Magnaghi, A. in Becattini, 2015), through a network of relationships across multiple organisational levels, such that each issue can be addressed at its most appropriate level (Micciarelli, 2014).

It is clear that the most suitable form of self-government must be identified in each specific context, as any attempt to formalize or establish the forms in which communities can exercise their power of self-determination would lead to the paradox of "self-management of heteroregulated units", which Gorz (2015) describes as "a nonsense or a mystification".

The activation of planning action by local actors can be significantly supported through technological tools that lower the barriers to accessing technical skills and facilitate the exchange of information with planning potential. Research shows a spontaneous tendency among grassroots initiatives to leverage new technological tools, and in particular collaborative mapping in our case, as a means to construct new images of the territory (De Bonis et al., 2020, 2019).

For this reason, and in continuity with approaches that the authors of this contribution have been developing over the years (De Bonis, 2009), the research project included the creation of an interactive web environment (GeoSocialWeb), interoperable with the information systems used in planning processes and based on the integration of GIS and WebGIS with emerging technologies in the field of neogeography, in the framework of a platform that allows asynchronous communication and peer-to-peer online production (Social Web) of content.

The choice to adopt this technology is based on the recognition that the production of geographic information has undergone a profound transformation in recent years. From being a specialized domain, it has evolved into a multi-actor and widespread process of information production. These forms of neogeography rely primarily on digital tools and the co-production of data through mobile applications and web-based platforms. This phenomenon is associated with the so-called data revolution (Kitchin, 2014).

Among the practices of collaborative mapping and location-based social networks, or geosocial (Kitchin, Lauriault, Wilson, 2017), there are experiences of integration between open source software for web mapping, collaborative writing, and communication, also based on DokuWiki platforms. These systems enable interaction among users for the collaborative construction and sharing of geographically referred analytical frameworks and territorial images (De Bonis *et al.*, 2020).

Such platforms foster interaction between users, facilitating the integration of different approaches and competences. They can be understood as socio-technical learning environments, which transcend the sectoralisation of specialised territorial knowledge production and incorporate other forms of spatial intelligence (Mattern, 2017).

GeoSocialWeb is therefore a tool to enable the production of cartography through collaborative approaches, and it is designed to facilitate decentralised and collaborative, bottom-up map-making processes that combine expert knowledge, contextual awareness, and creative expression from all kinds of users.

The system, currently under development, is conceived as an integration of existing tools for the production and sharing of geographic information with those that facilitate social interaction among users. It represents an environment of extensive online interaction aimed at sharing territorial knowledge and collective visions of the future: at the same time, a digital infrastructure and social space for encouraging action and interaction among researchers, territorial communities, and any user interested in contributing their vision of a place.

GeoSocialWeb functions as an environment of online interaction for territorial communities, aimed at experimenting processes of co-produced mapping apt to strengthen sense of place and “place consciousness” (Magnaghi, 2010), encouraging the drafting of bottom-up future scenarios oriented towards community self-government, thus overcoming the fragmentation typical of various “participatory planning” approaches.

While the initial population of the platform (i.e. the first set of maps) could be provided by the members of the research group, the key feature of the GeoSocialWeb lies in its openness to contributions from all registered users.

These users can create and share data about the territory and interact with other users around uploaded content. The platform is developed as a digital environment for the collaborative creation and management of interactive forums, based on the sharing of text (comments, discussion) and various media types (images, videos, audio). Use of the platform is open to any user, but full functionality (such as the ability to comment or modify content) is reserved for registered users.

Each forum is necessarily linked to a map embedded into the webpage (Figure 3). The platform under development is being optimised to allow interaction on cartographic bases generated through the uMap application⁷, which enables the creation of interactive and shareable maps based on OpenStreetMap.

⁷ <https://umap.openstreetmap.fr/>



Figure 3 - Map embedding in a test forum page within the alpha version of the GeoSocialWeb under development. Courtesy of M. Daniele

Forums also include dynamic fields for inserting descriptive texts, external links, multimedia files, and customised iFrames (Figure 4). The platform integrates functionality for storing and displaying the history and attribution of changes to the forum, thereby allowing users to track the evolution of interactions around specific territorial issues.

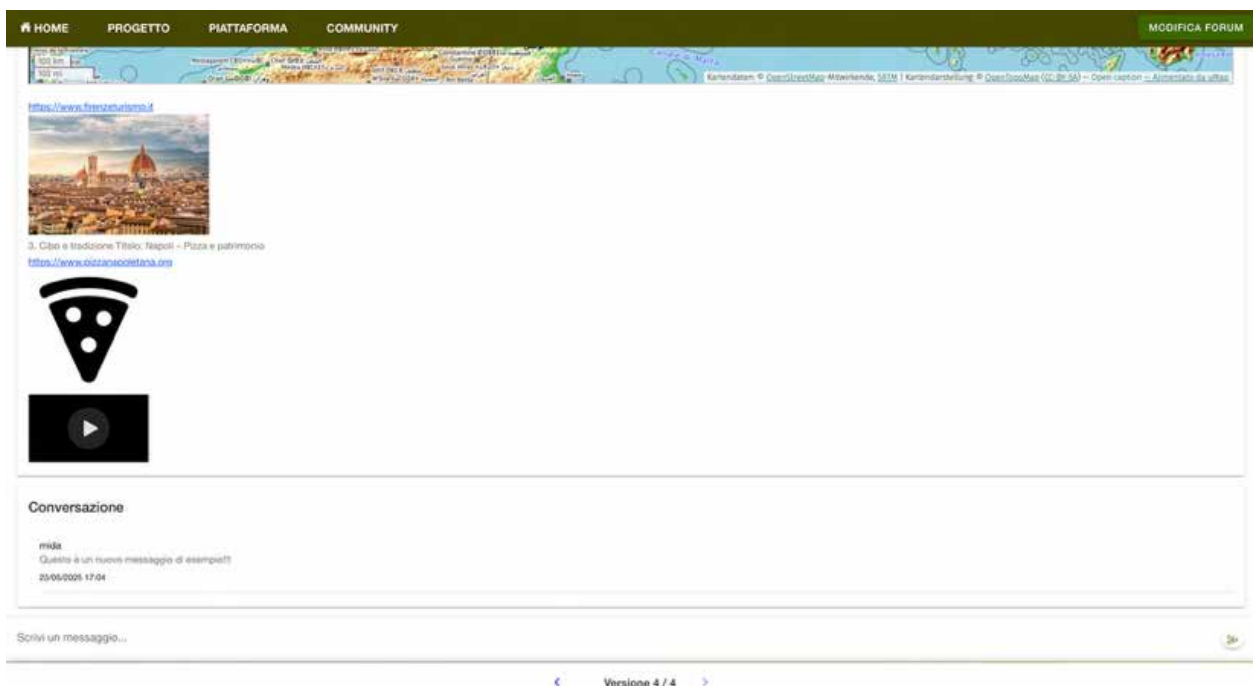


Figure 4 - Media sharing in a test forum page within the alpha version of the GeoSocialWeb under development. Courtesy of M. Daniele

7. Conclusions

Having as a general reference the theoretical insights expressed in paragraph 2, 3, and 4, the ongoing research in the Aniene River basin has revealed a number of elements worthy of deeper analysis and further development. Among these, the experience of the River Contract stands out as an example of an agreement tool that, although still largely framed within institutional logics, shows the potential to act as a complementary instrument to formal planning.

This is also demonstrated by the geometries of interaction between the actors, in which there is a greater involvement of subjects progressively as one moves towards the lower scale, with a particularly relevant role of local associations.

We suggest that the River Contract can be interpreted as a flexible and inclusive framework that may serve as a connection level between institutional planning and community-driven forms of self-governed territorial action. The process that led to the Aniene River Contract, from the wide engagement of associative networks to the subsequent institutionalisation of a participatory governance structure, highlights the complex dynamics behind subsidiary territorial governance.

The Action Programme of the River Contract, with its 94 project initiatives and over 160 involved actors, reflects both the strengths and limitations of the current participatory planning configuration. The prevalent focus on tourist-recreational valorisation suggests a relatively narrow interpretation of territorial enhancement, often disconnected from deeper, more transformative engagements with local socio-ecological systems.

On the other hand, certain project proposals (particularly those aimed at reactivating sustainable production cycles, e.g., local food and phytotherapeutic supply chains, local energy systems) and ongoing practices outside the formal framework (such as farmers' markets, urban gardens, and emerging energy communities) indicate a latent potential for self-organised, co-evolutionary planning practices. These initiatives, although still fragmented, offer promising ground for experimentation of territorial self-government.

In this evolving context, the GeoSocialWeb platform could support decentralised, collaborative mapping and the co-production of territorial images, fostering place awareness and the networking of place-based initiatives. In doing so, it may contribute to addressing one of the main challenges highlighted also by the Aniene case: the need to shift from participation understood as consultation or project delivery toward active forms of self-government that are grounded in local knowledge, relational engagement, and shared responsibility.

Acknowledgment

The research presented in this paper is funded by the European Union - Next Generation EU, Mission 4 Component 1, CUP H53D23009520001.

Author contributions

Although this work as a whole arises from the close collaboration between the authors, the writing of § 3 and 6 is by Giovanni Ottaviano, the writing of § 2 is by Luciano De Bonis, the writing of § 4 is by Giovanni Ottaviano and Luciano De Bonis, the writing of § 5 is by Giovanni Ottaviano and Francesca Giangrande, and the the writing of § 1 and 7 is shared by all authors.

References

Baudrillard, Jean (2019) Notizie catastrofiche. In Félix Guattari, Franco La Cecla, *Le tre ecologie*, pp. 101-114. Milan: Sonda. Orig. Ed. Guattari, Félix (1989) *Les trois écologies*. Paris: Editions Galilée.

Becattini, Giacomo (2009) *Ritorno al territorio*. Bologna: Il Mulino.

Becattini, Giacomo (2015) *La coscienza dei luoghi. Il territorio come soggetto corale*. Rome: Donzelli.

Berg, Peter (1978) *Reinhabiting a separate country. A bioregional anthology of Northern California*, San Francisco: Planet Drum.

- Bookchin, Murray (1970) *Toward an Ecological Society*. Montreal: Black Rose Books.
- Bracalente, Bruno, Maurizio Di Palma, Claudio Mazzotta (1993) *Infrastrutture «minori» e sviluppo territoriale*. Milan: Franco Angeli.
- Conti, Giorgio, Tecla Soave (2006) I paesaggi bio-culturali delle Alpi: una coevoluzione interrotta. *Planum*, 13/2006, pp. 1-25.
- Crosta, Pier Luigi (2003) Reti translocali. Le pratiche d'uso del territorio come 'politiche' e come 'politica'. *Foedus. Culture economie e territori*, 7, pp. 5-18.
- Crosta, Pier Luigi (2007) Interazioni: pratiche, politiche e produzione di pubblico. Un percorso attraverso la letteratura, con attenzione al conflitto. *CRU - Critica della Razionalità Urbanistica*, 19. Florence: Alinea.
- Dalmasso, Etienne (1972) *Milano, capitale economica d'Italia*. Milan: Franco Angeli.
- Dematteis, Giuseppe (2011) *Montanari per scelta*. Milan: Franco Angeli.
- Dematteis, Giuseppe (2021) "Il principio territoriale" di Alberto Magnaghi. *Documenti geografici*, n. 1, pp. 193-196. DOI: 10.19246/DOCUGEO2281-7549/202101_14
- De Bonis, Luciano (2009) Is Planning 2.0 a Mashup? In Giovanni Rabino, Matteo Caglioni (eds.), *Planning, Complexity and New ICT*. Florence, Italy: Alinea, pp. 205-214.
- De Bonis, Luciano (2019) Le innovazioni possibili e utili: il caso del Piano per il Parco Nazionale del Gran Sasso e Monti della Laga. In Anna Marson (ed.), *Urbanistica e pianificazione nella prospettiva territorialista*. Macerata: Quodlibet.
- De Bonis, Luciano (2024a) Dalla bioregione urbana alle 'unità bioregionali minime' di pianificazione territoriale e paesaggistica. In Alberto Budoni, Antonio Saccoccio (eds.), *Conoscenze, idee e proposte per l'autosostenibilità della Bioregione Pontina*, pp. 31-38. Sermoneta, Italy: Avanguardia 21 Edizioni.
- De Bonis, Luciano (2024b) Individui, collettivi e comunità territoriali. In Piero Lacorazza, Gianni Lacorazza (eds.), *Comunità Appennino. Superare l'"internità"*, pp. 155-175. Soveria Mannelli, Italy: Rubbettino.
- De Bonis, Luciano (FC) Strumenti pattizi territoriali come nuove istituzioni di azione collettiva. In Angela Barbanente, Rossano Pazzagli, Daniela Poli (eds.) *Il territorio soggetto vivente. La figura e le opere di Alberto Magnaghi*. Florence, Italy: FUP.
- De Bonis, Luciano, Francesca Giangrande, Giovanni Ottaviano, Stefano Simoncini (2020) La costruzione interattiva di immagini per la valorizzazione del patrimonio territoriale. In *Atti della XXII Conferenza Nazionale SIU. L'Urbanistica italiana di fronte all'Agenda 2030. Portare territori e comunità sulla strada della sostenibilità e della resilienza*, Matera-Bari 5-6-7 giugno 2019, pp. 1674-1679. Roma-Milano: Planum Publisher.
- De Bonis, Luciano, Giovanni Ottaviano (2024) *Dalla protezione alla coevoluzione. Pianificazione e progettazione territoriale dei parchi naturali*. Ricerche e studi territorialisti, vol. 10, Florence: SdT Edizioni.
- De La Blache, Vidal, de Martonne, Emmanuel (1903) *Principes de géographie humaines*. Paris: L'Harmattan.
- Fabbri, Paolo (2019) La puzza delle balene. In Félix Guattari, Franco La Cecla, *Le tre ecologie*, pp. 115-123. Milan: Sonda. Orig. Ed. Guattari, Félix (1989) *Les trois écologies*. Paris: Editions Galilée.
- Friedmann, John, Weaver, Clyde (1979). *Territory and function: the evolution of regional planning*. Berkeley: University of California Press, 1979.

Gauquelin, Thierry, Geneviève Michon, Richard Joffre, Robin Duponnois, Didier Genin, Bruno Fady, Magda Bou Dagher-Kharat, Arezki Derridj, Said Slimani, Wadi Badri, Mohamed Alifriqui, Laurent Auclair, Romain Simenel, Mohamed Aderghal, Ezekiel Baudoin, Antoine Galiana, Yves Prin, Hervé Sanguin, Catherine Fernandez, Virginie Baldy (2018)

Mediterranean forests, land use and climate change: a social-ecological perspective. *Regional Environmental Change*, 18 (3), pp. 623-636. DOI: 10.1007/s10113-016-0994-3

Giangrande, Alessandro (1998) Comunità locali: scelta sociale e criteri di razionalità ecologica. In Alberto Magnaghi (ed.), *Il territorio degli abitanti: società locali e sostenibilità*. Milan: Dunod.

Gorz, André (2015) *Ecologia e libertà*. Naples: Orthotes. Orig. Ed. *Écologie et liberté* (1977). Paris: Editions Galilée.

Kitchin, Rob (2014) *The data revolution. Big data, open data, data infrastructures and their consequences*. London: Sage.

Kitchin, Rob, Tracey P. Lauriault, Matthew W. Wilson (eds., 2017), *Understanding Spatial Media*. London: Sage.

Magnaghi, Alberto (2010) Dal Parco al progetto di territorio: evoluzione o discontinuità?. *Ri-Vista - ricerche per la progettazione del paesaggio*, luglio-dicembre, pp. 25-29.

Magnaghi, Alberto (2010) *Il progetto locale. verso la coscienza di luogo*. Turin: Bollati Boringhieri.

Magnaghi, Alberto (2014a) Il progetto della bioregione urbana. Regole statutarie e elementi costruttivi. In Alberto

Magnaghi (ed.), *La regola e il progetto. Un approccio bioregionalista alla pianificazione territoriale*, pp. 3-42. Florence: Firenze University Press. DOI: 10.36253/978-88-6655-624-4

Magnaghi, Alberto (2014b) *La biorégion urbaine. Petit traité sur le territoire bien commun*. Paris: Eterotopia France.

Magnaghi, Alberto (2015) Mettere in comune il patrimonio territoriale: dalla partecipazione all'autogoverno. *Glocale*, 9-10, pp. 139-157.

Magnaghi, Alberto (2023) La bioregione urbana, strumento multidisciplinare del progetto eco-territorialista. In

Alberto Magnaghi, Ottavio Mazzocca (eds.), *Ecoterritorialismo*, pp.89-102. Florence: Firenze University Press. DOI: 10.36253/979-12-215-0116-2.12

Mattern, Shannon (2017) Mapping's Intelligent Agents. *Places Journal*, September 2017 (Last visited: June 2026). <https://doi.org/10.22269/170926>

Micciarelli, Giuseppe (2014) I beni comuni e la partecipazione democratica. Da un "altro modo di possedere" ad un "altro modo di governare". *Jura Gentium*, XI, 1/2014, pp. 58-83.

Mumford, Lewis (1961) *The City in the History: Its Origins, Its Transformations, and Its Prospects*. New York: Harcourt, Brace & World.

Nebbia, Giorgio (2012) Prefazione. In Michele Ercolini (ed.), *Acqua! Luoghi, paesaggio, territorio*. Rome: Aracne.

Ottaviano, Giovanni, Luciano De Bonis (2021) L'autoresponsabilità della governance: forme volontarie di pianificazione e programmazione territoriale. In Federica Corrado, Elena Marchigiani, Anna Marson, Loris Servillo (eds.), *Le politiche regionali, la coesione, le aree interne e marginali*. Atti della XXIII Conferenza Nazionale SIU DOWNSCALING, RIGHTSIZING. Contrazione demografica e riorganizzazione spaziale, vol. 03, pp. 286-291. Roma-Milano: Planum Publisher.

Poli, Daniela (ed., 2012) *Regole e progetti per il paesaggio. Verso il nuovo piano paesaggistico della Toscana*. Florence: Firenze University Press.

Sale, Kirkpatrick (1985) *Dwellers in the land. The Bioregional Vision*. San Francisco: Sierra Club Book.

Todd, J. Nancy, John Todd (1984) *Bioshelters, Ocean Arks, City Farming. Ecology as the Basis of Design*. San Francisco: Sierra Club Books.