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**Integrating Nature
in the City to Face
Climate Change**



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The reuse of urban voids as the infrastructure of collective use spaces

Il riuso dei vuoti urbani come infrastruttura degli spazi di uso collettivo

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ABSTRACT AND KEYWORDS

The reuse of urban voids as the infrastructure of collective use spaces

In the context of regeneration and maintenance processes of the built environment, the paper identifies the values of material and immaterial culture as requirements to be respected to guide interventions for the reuse of urban voids as spaces of collective use for the community. Considering the recreational-artistic use as a driver of the transformation of the built environment, the need-performance methodological approach allows to analyze the outcomes of desk research on best practices playground to build, according to a systemic vision of reality, community engagement tools for the regeneration process stages. From the elaboration of the surveys, diversified concerning the tools tracked and international regulation goals, the paper returns a system of requirements to support the transformation processes of the built environment. These outcomes were tested and transferred in the research project 'Playgrounds and Art for Communities in Transition: a pact of care for cities', funded by the University of Naples Federico II.

Keywords: reuse, need-performance approach, collective space infrastructure, urban voids, transgible value

Il riuso dei vuoti urbani come infrastruttura degli spazi di uso collettivo

Nell'ambito dei processi di recupero e manutenzione dell'ambiente costruito, il contributo individua nei valori della cultura materiale e immateriale dei requisiti da rispettare per orientare gli interventi di riuso dei vuoti urbani come spazi di fruizione collettiva per la comunità. Considerando la destinazione d'uso ludico-artistica come *driver* di trasformazione dell'ambiente costruito, l'approccio metodologico esigenziale-prestazionale consente di analizzare gli esiti di una *desk research* di pratiche virtuose di *playground* per costruire, secondo una visione sistemica della realtà, strumenti di *community engagement* per le fasi del processo di recupero per gli spazi di gioco. Dall'elaborazione delle *survey*, diversificate in relazione agli strumenti tracciati e agli obiettivi delle normative internazionali, il contributo restituisce un sistema di requisiti a supporto dei processi di trasformazione dell'ambiente costruito. Tali esiti sono stati testati e trasferiti nella sperimentazione "Playgrounds e Arte per Comunità in Transizione: patto di cura per le città", finanziata dalla ricerca di Ateneo dell'Università degli Studi di Napoli Federico II.

Parole chiave: riuso, approccio esigenziale-prestazionale, infrastruttura degli spazi di fruizione collettiva, vuoti urbani, valori transgibili

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1. Introduction

The system of open spaces of collective use constitutes a key infrastructure for the development of the identity of territories and the cultural diversity of communities (Fairclough et al., 2014). These urban voids represent a connective tissue among the inhabitants, who through cooperation and involvement actions can trigger the construction of public space care pacts (European Commission, 2018). When such spaces sediment urban values, linking to the identity of the users, they can become places where the heritage community is manifested and constituted (A New Industrial Strategy for Europe, 2020).

This link between built heritage and public space is one of the cornerstones of European identity because it can express an aptitude to support social, cultural, environmental, technological, and economic changes in communities over time. As European heritage consists of both historic buildings and the urban voids established between them (European Commission, 2018), the contribution interprets the latter as *baukultur* (UNESCO, 2018), that is, spaces of collective enjoyment - boosters of inclusive growth, social cohesion, and equity. Therefore, the degradation and abandonment of these places can become opportunities for experiments attentive to the impacts of collective and community relevance (Viola et al., 2022). By entrusting urban voids with the potential to be valued as a minor cultural heritage (European Commission, 2014), aligning performance with community needs becomes the vehicle through which to activate exercises in accountability (European Commission, 2015) to preserve and transmit the local identity values of the built environment to future generations. Considering urban voids as an infrastructural system of hinges that, placed in relation to each other, it identifies the social and economic relationships connoting the cultural identity of the European built environment (UNESCO, 2009). In contemporary cities, the aforementioned voids correspond to the infrastructure of the system of open spaces of public use located in historical and cultural contexts, connoted by community use with their own morphological, dimensional, material, constructive, historical, environmental, social, and economic characteristics. They represent the places of collective community life, the expression of its diversity, and the contribution of cultural heritage, for community well-being and economic growth (UNESCO, 2009).

In particular, such urban voids, small and/or lesser known, being present in almost all European cities and regions assume a particularly significant role at a time when the outcomes of the crisis produced by the Covid-19 pandemic are pushing communities to seek the conduct of outdoor activities. Therefore, interventions in public use spaces are at the center of the debate on spatial development policies, considered as potential tools for implementing the Next Generation EU program to cope with pandemic outcomes (European Parliament, 2021).

Indeed, the practices of reclaiming these spaces can take on a formative value for new generations as a driver of the activation of links between the built environment and real life. It is possible to interpret reuse as an iterative process of cyclical negotiation between existing resources and the actions of communities, aimed at regenerating and preserving the stratifications of transforming places of living (Throsby, 2011).

The reuse of these spaces for playful-educational purposes can stimulate creativity, civic engagement, and voluntary caring actions of communities toward spaces of collective use (Hess, 2008). The play can awaken the responsibility of new generations towards the transformations of the places in which they grow up, experiencing in vulnerable contexts actions of empowerment and custodianship of the qualities of the built environment (Viola et al., 2022). In such a vision,

playgrounds represent the potential manifestation of empowerment of individuals and communities in the management of cultural resources. Such operations mark a paradigm shift in the engagement of communities called to express themselves on both the sedimented values and the unfolding potential of these places (Cirugeda, 2007).

The goal is to regenerate meaning to the system of spaces of collective use as a common infrastructure that, in turn, can become an engine of emancipation and construction of new material culture (Pinto & Viola, 2016). The outcomes return to how such communities can engage with the built environment under the guidance of expert knowledge and through tools that accelerate the dynamics of dialogue, sharing of values, and collaboration between parties. This exchange can be facilitated through the creative making of communities, stimulated by artistic action as a driver of the transformation of the built environment, aimed at the production of a common space (Viola et al., 2022). Taking responsibility for transformative choices through the cohesion activated by participatory tools, people can determine the development of community places (Pinto et al., 2021).

The community can act on urban voids subject to neglect, abandonment, degradation, and sometimes vandalism through participatory actions that allow the expression of its needs in decision-making processes of reuse of the built environment (Zagato, 2015). Such actions act simultaneously on forms of obsolescence of both the physical and social heritage to mitigate the loss of the services offered to users, environmental quality, and the values of which it is the bearer (European Parliament, 2017). In the need-performance approach, responding to the needs of users enables the construction of shared development scenarios by strengthening social cohesion, knowledge of places, and consequently the community's sense of belonging to the settlement system (Felicati, 2016). Acting in these places redefines the framework of intervention priorities at the urban scale, focusing on experimental measures and pilot actions that regenerate the quality of public space. Placing itself in this scenario, the paper aims to identify values to guide the processes of recovering urban voids for the construction of play spaces for communities.

Starting from the scientific outcomes of the work carried out within the framework of a research fellow, funded by the project "Play_ACT Playgrounds and Art for Communities in Transition: a pact of care for cities," playgrounds are interpreted as systems of presiding over the built environment.-Art becomes a catalyst for raising users' awareness of spaces of collective use (Santagata et al., 2011), as related to the process of involvement and participation of the community of the Rione Sanità in Naples in the phases of regeneration of a Courtyard at the Cristallini 73 Community House. There the co-creation of a collective use space is the result consisting of several participatory tools, distinct about the phases of the regeneration process, the actors involved in it, and the survey methods related to the objectives of European and sector regulations. These tools are useful to identify values that represent the requirements to guide interventions for the reuse and maintenance of collective-use spaces in community-built custom playgrounds.

To this end, the structure of the paper is divided into 5 sections: Section 1 in which the theme of the importance of acting with urgency in the contemporary scenario is introduced. Section 2 concerns the literature review of the theoretical background on the ways and regulations of using these spaces through playful-educational functions. Section 3 describes methods of the need-performance approach for constructing a file of good playground practices on a global scale. Section 4 describes the elaboration of the performance of the good practices and the standards

through which the engagement tools oriented to return the requirements for appropriate integration of playground space in the places of vulnerable communities were established. Section 5 opens the research to new scenarios and perspectives for advancement.

2. Theoretical Background

The potential of reusing urban voids through the playful-educational forms of community empowerment is verified in the collective actions of preserving and enhancing their cultural heritage (Throsby, 2011). Through processes of participation and re-appropriation of physical space, the community can be educated and made aware that the causes of degradation of the urban void system lie in both inappropriate space management and errors in the reuse of neighborhood equipment (Ost, 2009). These causes generate the phenomena of infrequency and insecurity in the use of public space, with consequences on the state of abandonment and degradation, to which civic action is called to respond (Ost, 2012). The processes of reuse of urban voids are reflected in the theory of re-appropriation of the built environment, considering the latter as a shared good (Ostrom, 1990). These reuse actions of the built heritage, through playful-educational functions, stimulate civic engagement and voluntary care actions of public use spaces (Hess, 2008). Beyond the legal nature of public interest that connotes urban voids, it has recognized as a resource, shared by the community and needed by people regardless of an ownership order (ICOMOS, 2011). This is possible through the recognition of a link between the built heritage of public use and the community's cultural identity that determined it over time (Council of Europe, 2005; European Parliament, 2021; ICOMOS, 1996). The function attributable to these spaces must affect the empowerment of communities to build co-management actions and re-appropriation of the system of urban voids (UNESCO, 2019).

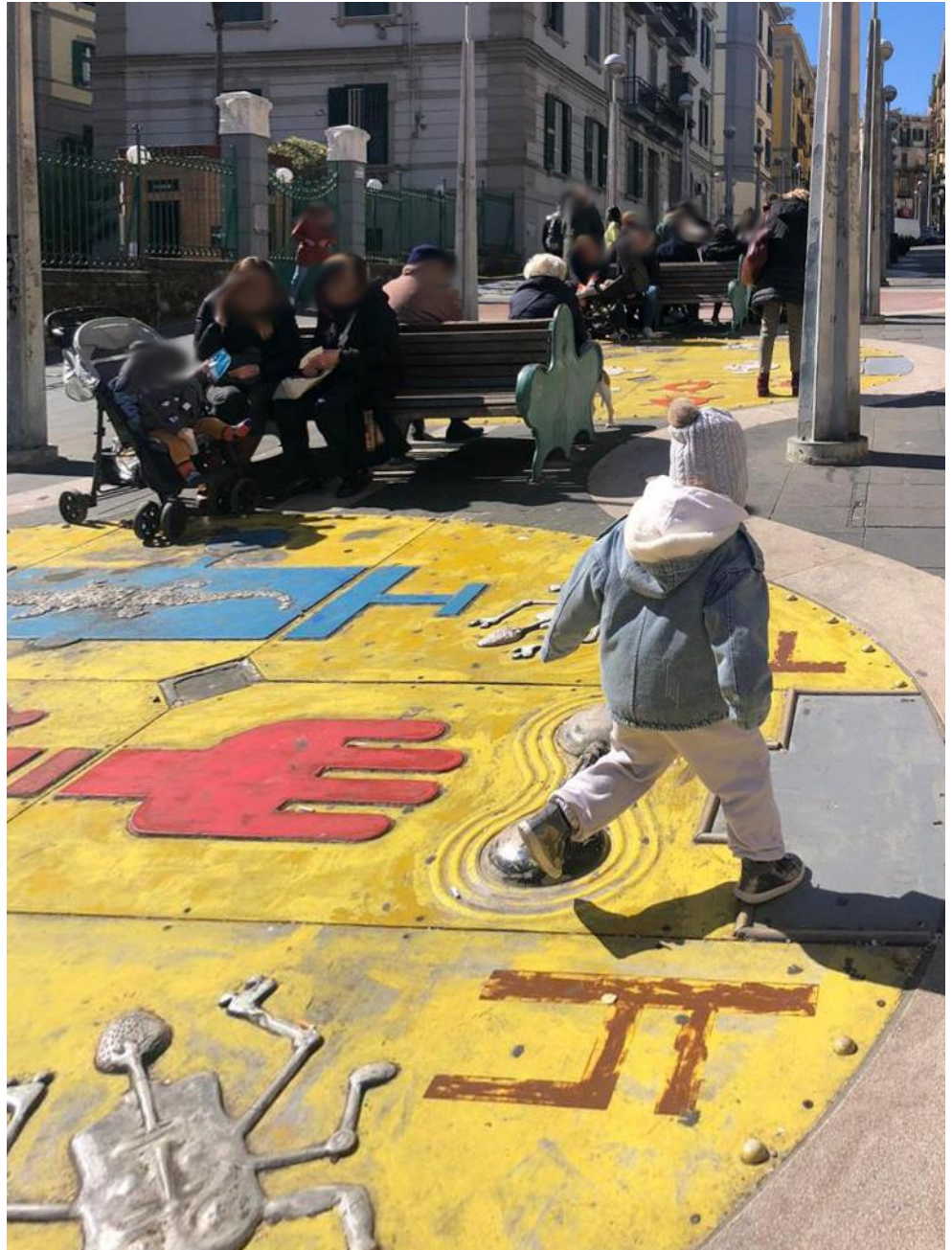
In the scientific literature scenario, these premises migrate the focus of experiments from cultural heritage per se to the process actors acting on it (Van Balen, K., & Vandesande, 2016). For this reason, the reuse of public space with educational functions can be characterized by value and operational aspects, opening up a new perspective on the relationship between cultural heritage, and the built environment community. Thus, the appropriateness of actions to reuse urban voids is measured through the correspondence between the needs of communities (requirements) and the performance of the built environment (Ciampa, 2021).

The quality of interventions improves living conditions and the confrontation of interests, encouraging dialogue and mediation between values that belong to all community members (Florida, 2017). The reuse of urban voids implies the innovation of management policies toward constraints capable of capturing the complexity of community values and responding to new community needs. The shift from centralized to shared management offers an educational form of co-management, mediated between top-down and bottom-up models (Ostrom, 1999; Santagata et al., 2011). The reuse of urban voids recognizes the existence of an intrinsic link between a community's cultural identity, the built environment, its inhabitants, and the culture of which it is a manifestation (Richerson & Boyd, 2008). This highlights the need to identify constraints that direct reuse tools to optimize the maintenance and management actions of public spaces. This, in turn, influences the extension of the useful life cycle of the settlement system that encompasses such spaces. It is significant to encourage experimentation with innovative equipment and instrumentation aimed at improving the effectiveness, safety, and cost of reuse

operations of urban voids for shared growth. Such operations mark a paradigm shift in the engagement of communities called to express themselves on both sedimented values and the potentialities in the making in places (Cirugeda, 2007). Culture represents the resource that is produced and managed in the re-appropriation of the common built environment, which reflects in its physical and spatial dimension, the values of the identity and symbolic dimension - built based on community and territory cohesion and interaction (De Carlo, 2002). The reuse of urban voids allows, on the one hand, the transmission of local know-how and traditions; and on the other, the exercise of community development rights (Casanova & Hernandez, 2014). The recognition of a community's right to benefit from cultural heritage is realized through its full involvement in the site's transformation, preservation, and management activities (Pintossi et al., 2021). In this sense, the urban void system can be identified with all representations of the built environment that figure the memory, identity, and value cohesion of a community (Viola, 2012). The principles it returns to future generations represent the past values of past communities. In reuse operations, it is possible to advance an enrichment of these values by contributing to the collective empowerment of identity heritage at different scales (local and European). The reuse of urban voids, as infrastructure of collective use, aligns with the European sustainability guidelines outlined in the 2030 Agenda (United Nations, 2021), which identifies among the challenges for cities in 2030, the enhancement of built heritage as a driver of inclusive urban growth, an enabler of social cohesion and equity. The same European Recommendations on Historic Urban Landscape (UNESCO, 2011), anticipate the need to associate heritage conservation of contemporary cities with social and economic development, promoting the recognition of their dynamic character and functional diversity. In particular, the focus is on the functions embedded in the built environment by adapting it while preserving values related to collective memory (Pinto, 2016). This allows urban voids to be taken as a resource to be augmented over time through cohesive reuse operations to reduce the loss of matter, and the impact it has on the environment and prolong its existence (Pinto et al., 2020). The reuse of urban voids contains within itself the intrinsic meaning of circular sustainability, resulting from the ability to transform waste into a resource, focusing on the community's ability to attribute a complex social value to the built environment in its identity dimension (Bosone & Ciampa, 2021). The reuse of urban voids intervenes in the relationships that spaces of collective use trigger with communities and their cultural life, determining the social value of the built heritage, which becomes the characterizing element of a community (De Medici et al., 2021). The reuse of urban voids is thus an individual and collective responsibility that is shared by communities with institutions and businesses, promoting integrated governance policies for the administration and management organizations of the built resource (Pintossi, N., Ikiz Kaya, D., Pereira Roders, 2021). The reuse of urban voids part involves the inclusion of appropriate functions, capable of reactivating the link between the community and places. Users educated through playful activities to the actions of enjoyment of open spaces have the opportunity to strengthen their sense of belonging towards the places they frequent. This allows them to generate new skills and professionalism, with direct consequences on the preservation and care of the built environment (Viola et al., 2014). Prefiguring and testing values to guide reuse processes means confronting communities with the marginality present in established settlement systems to promote educational functions of urban voids (Evans & Shaw, 2004). The innovativeness of focusing on these aspects lies in giving the user the ability to influence and act in the entire process of reuse of the built environment. The user has

acknowledged the possibility of side by side with expert knowledge, participating in the cognitive process but also the implementation and monitoring, through the vigilance linked to the exercise and affection due to the appropriateness of the cultural identity of the settlement system in which communities live (Pinto & Viola, 2016).

Figure 1. Example of learning by playing, Materdei square, Naples



Source: Ciampa, 2023.

The partial outsourcing of control and inspection activities, based on the sharing of monitoring procedures between administrating bodies and users increases when the function inserted in urban voids has a social-educational purpose (Gasparoli & Talamo, 2006). This is reflected in the directions of space reused for play purposes

such as playgrounds, which are integrated with the built environment. The playground typology represents a functional category capable of mediating the complexity of the management of common spaces, promoting the culture of preservation from childhood onward. The playground, realized through the artistic tool, can raise awareness among young and adult users towards a more inclusive vision of city spaces (Pinto et al., 2020). The community-built custom playground is a strategy for the reuse of public space that settles in urban voids, a fulcrum of exchange between different generations, and children's play functions with a vocation of collective use (Pereira Roders, A., & van Oers, 2011). In a systemic vision of reality, the reuse of urban voids lays the foundation for the creation of a playground network, characterized by technological solutions that can be guarded by different communities of the time through shared rules of use and management. The play has the potential to stimulate the community dimension of custodianship through processes of participatory reuse based on involvement and education in the responsibility of public space (Patroni Griffi, 2017). By playing, it is possible, on the one hand, the rediscovery of one's cultural identity and, on the other, the creation of new values that define new dynamics of interaction by tying themselves to the public space. The latter reinforces the community's sense of belonging to the places used and identifies education for the care of shared spaces as a new tool for managing the network of reused urban voids. This reconnection also recomposes the social and economic relations of the communities involved, due to the vocation of urban voids to naturally promote changes in territorial policies (European Commission, 2018). The cooperation that is generated by these reuse practices uses play as an engine of community cohesion and solidarity, instilling in communities the safe enjoyment of public spaces, mitigating urban depletion, and strengthening skills in the local economy (Santagata et al., 2011). In this vision, the playgrounds outlined are the manifestation of the empowerment of individuals and communities in the management of cultural resources. The playground identifies interventions to reuse urban voids as an opportunity to preside over the settlement system building a collective infrastructure (Figure 1).

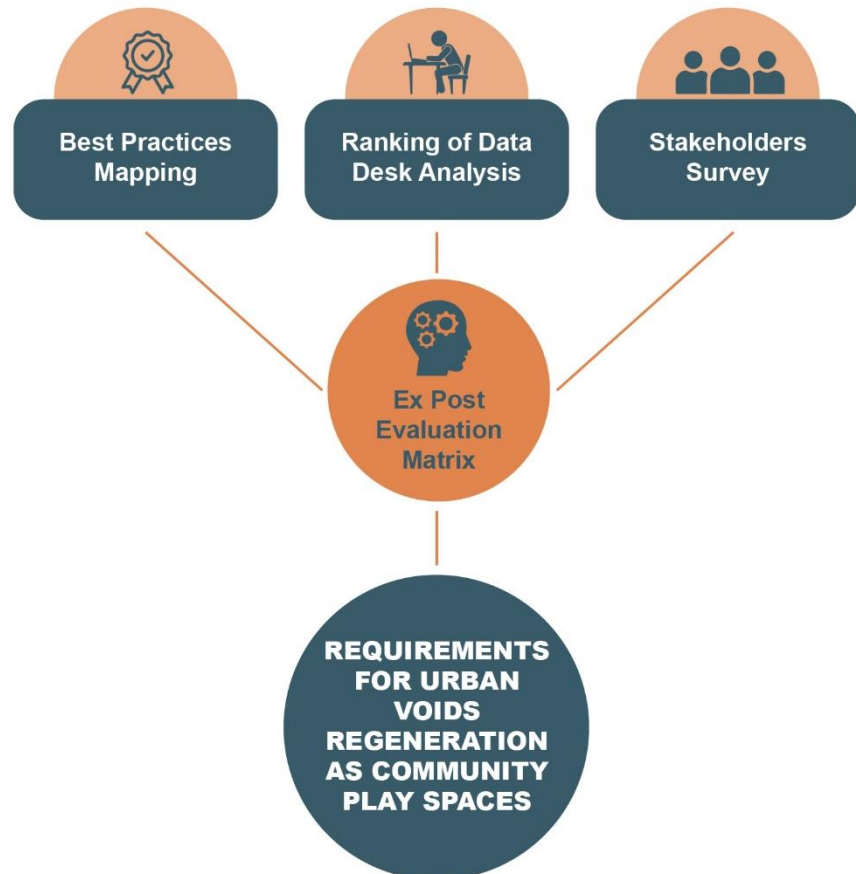
3. Methods and Materials

Public space assumes in this proposal the significant role of an arena in which citizenship is activated forms and tools of social and cultural innovation are sought. The methodology is based on a need-performance approach to break down and read the built environment through a systemic vision of reality (Pinto, 2016). To identify requirements to guide processes for the regeneration of urban voids as spaces specifically for community play, the methodology consists of three main phases (Figure 2).

The first phase deals with a European-scale mapping of good practices found in the literature. The search for these best practices is based on matching and discretizing each case to a data desk form (Ciampa, 2021). The latter constructed in a partisan manner identifies an introductory, a registry, a technological, and an evaluative section. The filing analysis identifies 100 virtuous cases, which were compared according to ranking discretization to quantitatively extrapolate significant aspects of artistic playground redevelopments. The filing analysis was coupled with a survey operation aimed at engaging the communities of users of these practices. The processing of the survey made it possible to extrapolate qualitative ones referring to the satisfaction of users' needs concerning the implementation of the intervention. The elaboration between the quantitative data from the forms and the qualitative data

from the survey submitted during the Play_ACT experimentation returns, through an *ex post* evaluation matrix, values for the appropriate integration of the play space in the places of vulnerable communities to which they have to respond with the regeneration project.

Figure 2. Methodological outline



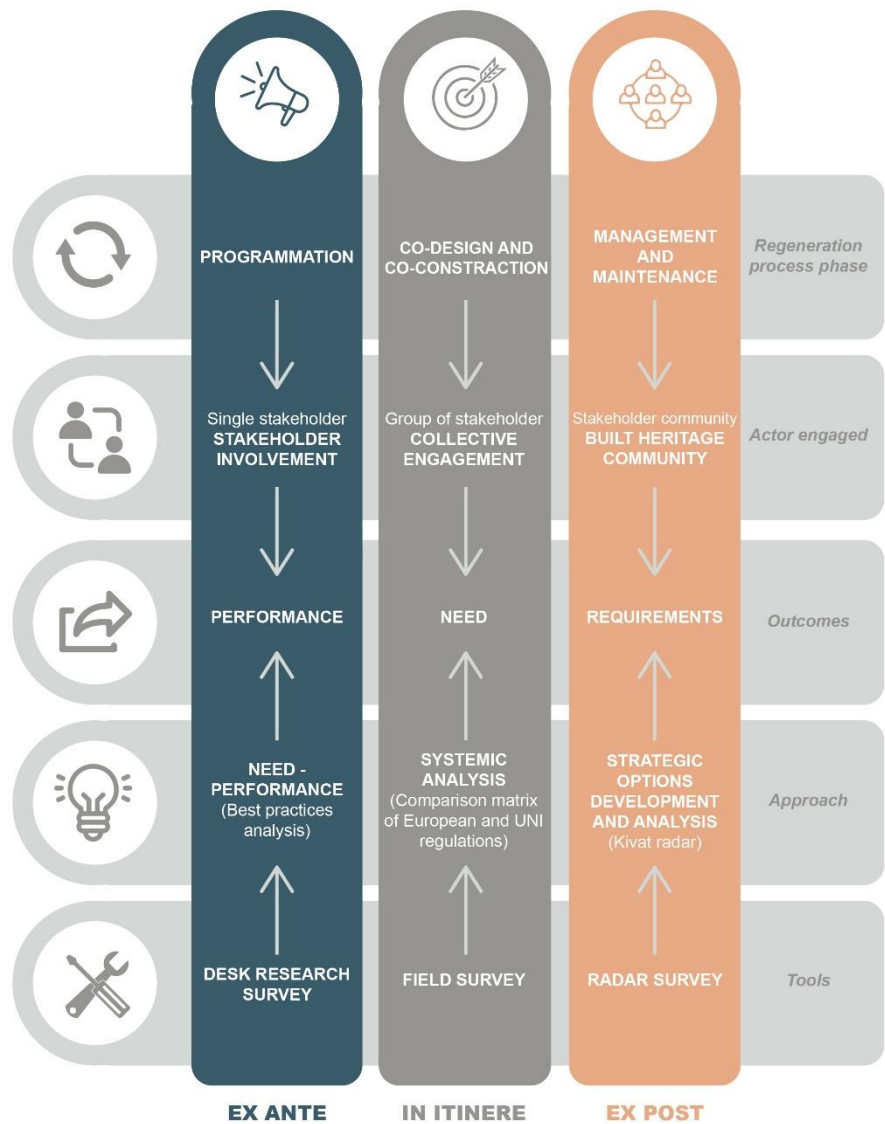
Source: Ciampa, 2023.

3.1 The involvement and participation of stakeholders in the stages of the regeneration process

The methodology experiments iterative and circular community engagement tools for the planning, design and implementation, management, and maintenance phases of the regeneration process for collective use spaces. Expert knowledge can make use of these tools according to the moment of use (*ex-ante*, *in itinere*, and *ex post* realization of the regeneration project); and participation is detailed according to the type of approach, the actor involved, and the technique used. In the case of *ex ante* involvement, participation tools are administered to individual and single users through a desk research survey, that through indirect and large-scale questionnaires addressed to stakeholders of virtuous practices implemented with the same transformative purpose. This tool is used in the planning phase of the regeneration process and, through the need-performance approach (Pinto et al., 2022), allows for the identification of expected performance in the experimentation that will be implemented.

In the case of *in itinere* engagement, participation tools are administered to groups of stakeholders who, by collectively enjoying the site represent the potential community of the transformed built heritage (Ciampa, 2021). Through a field survey, i.e., direct and large-scale questionnaires addressed to the stakeholders of the experimental site, it is possible to verify the fulfillment of their needs for the co-design, and co-construction of the regeneration process, concerning what is allowed by European (United Nations, 2021) and sector regulations (UNI 10838). In the case of *ex post* involvement, participation tools are administered downstream of the experimentation to the built heritage community through a radar survey, i.e., direct and large-scale questionnaires developed through Strategic Options Development and Analysis (SODA) to verify the requirements for appropriate participatory design of a community playground (Figure 3).

Figure 3. A new methodological approach for community participation in regeneration processes



Source: Ciampa, 2023.

3.2. Stakeholder involvement in the planning phase of the regeneration process

In the planning phase of the regeneration process, the contribution intends to define the expected performance through the involvement of individual users related to a European-wide selection of 100 good playground practices implemented in the last 100 years (1920-2020); spaces of collective use recovered for playful-educational purposes with the artistic element (2). Considering the playground as urban equipment, it was possible to assess the performance of the recurring elements by meeting the levels required by the industry standards (EN 1176-1:2017). The disregarded performances are related to surface temperature control (17%), water tightness (16%), and adequate protection in hazardous situations (13%). The most effective performance response was found to be in mechanical resistance to static and dynamic actions (14%), convenience of use and maneuvering (11%), ease of operation (9%), and adequacy to the fall space.

The identification of the performance maintained over time compared to the perception that individual stakeholders have based on daily use allows verifying its alignment with needs over time. The questions were structured to verify the material and construction choices, the degree of reception and acceptance of the experimentation, and any causes of criticality due to errors in design rather than in the organization and management of spaces. The sample consists of 100 stakeholders for each practice surveyed. This returns a scene of fruition in which the main stakeholders are not only children and young people (12.1%) but also, and especially, young parents mostly (75.8%) students (63.3%), and employees (18.2%). The stakeholders involved state that they have an average knowledge of their neighborhood arts playground (51.5%) and that early friendship (39.4% interpersonal skills) and memories with their parents (21.2% emotional skills) are linked to it. Specifically, the stakeholder sample states that their artistic playground for the above reasons is in good condition (36.4%) and that the most damaged elements are the running tracks (33.3%) and the flooring (27.3%), while those in the best condition are the green space contiguous to the neighborhood equipment and access (27.3%).

The sample reveals that they would like their art playground to have more open spaces for collective enjoyment (45.5%) and more attractive games (36.4%), stating that they believe they can rely on art as an engine of neighborhood regeneration aimed at addressing these shortcomings (60.6%). The stakeholders involved believe that art can bring about benefits, transforming the neighborhood into a cultural hub of social cohesion and collective identity development (45.5%) representing a new way of reusing the land with transformations that are more attentive to site values (33.3%), strengthening the city through the reactivation of more vulnerable routes and sites (30.3%), and bringing benefits to themselves and their work (42.4%).

This predisposition to processes involving artistic production is guaranteed by the majority of the sample (33.3%), who are on average willing (30.3%) to carry out spontaneous maintenance operations if involved in processes of artistic transformation of the built environment dedicated to play. This is on the condition that the artistic theme is contemporary in nature and allows the users of the site to recognize themselves in its values (30.3%) as a manifestation of collective identity. The outcomes of the first participatory approach return a scene of the performance, useful for directing *ex ante* choices in the planning phase.

3.3 *Collective engagement in the co-design and co-construction phase of the regeneration process*

The design and implementation phase of the playground concern “co-actions” (Ciampa, 2021). The paper returns the involvement of community by testing a new technique of constructing the participatory tool. The large-scale field survey held together two dimensions of sustainability: environmental and social. The questions posed to the community of Rione Sanità in Naples are placed in the more general framework of the 2030 Agenda, serving as a tool to align the goals of regeneration and maintenance strategies with the requirements of the UNI 1176-1:2018 standard and the targets of Goal 11 on making cities and human settlements inclusive, safe, durable and sustainable (United Nations, 2021). The comparison defines a system of structured questions useful for verifying the quality of collective use spaces, regenerated for recreational-educational purposes. Thus, from a lifelong learning perspective, the methodology makes use of the construction of a systemic matrix aimed at evaluating *in itinere* “education, awareness, communication” operations in support of a “culture of sustainability” (United Nations, 2021). The elaboration of Goal 11 on making cities and human settlements inclusive, safe, durable, and sustainable provides that it can be discretized into specific targets that influence and are influenced by reuse actions of open spaces for collective use. The research selects 7 of them to investigate the most significant aspects of environmental, cultural, and social sustainability that should be considered in reuse actions of the built environment. These targets, from a participatory perspective, can be associated with “sustainability vectors,” i.e., objectives capable of directing cross-cutting areas of action, to be considered as key levers for initiating, guiding, managing, and monitoring the integration of sustainability into policies, plans, and projects (United Nations, 2021). Among the five categories of vectors in the literature, the paper works on the most significant one for interventions in the reuse of urban voids of collective use, namely on vector “Common Knowledge”. UNI EN 1176-1:2018, called “Equipment and surfaces for play areas - General safety requirements and test methods” is a standard that specifies general safety requirements for permanently installed equipment and surfaces for public play areas (playgrounds, equipped play areas for schools, public spaces, etc.). The standard, launched by the Technical Committee dedicated to “Sports and Recreational Facilities and Equipment, Playgrounds” describes additional safety requirements for equipment for play areas for all children to contribute to their appropriate use and management with significant educational input. By identifying existing critical issues related to safety issues using participatory approaches, it is possible to test, at the same time, the ability to deal with a risk, which depends on the skill level of individual users and not on age. Therefore, the questions were submitted to a significant sample of 100 stakeholders from Rione Sanità involved in the Play_ACT project. The sample choice simultaneously returns an expression of need based on expected performance or requirement due to one’s play experience in the neighborhood.

The outcomes reveal a high degree of dissatisfaction with the existing facilities in the neighborhood (81%), the need to regenerate them (69%), make them safe (85%) in order to be useful spaces for the leisure time of children and the elderly (85%). The need for intervention is also revealed by stakeholders’ readiness for participation in the planning (96%) and management (59%) of the regenerated space. The sample would be willing to monitor the integrity of the playground should it be handcrafted (88%), preferring assembled games (81%) on which they can intervene in case of failure (80%) with unskilled personnel (53%). This stems from seeing the regeneration operation as a potential means of protecting the built heritage from

degradation (76%) and environmental impacts (63%), improving waste management (64%), offering an improvement in neighborhood quality of life (68%) and air (51%), as well as an opportunity for integration for vulnerable residents (67%). The playground is designed as a facility that is accessible (86%) and usable to all (77%). Based on their experiences, the sample returns that the playground should connote certain characteristics that are prioritized over others. Specifically, resisting weight, children's impacts (91%), weathering (74%), as well as being equipped with a space for sitting, climbing, descending (75%), and falling (90%) while guaranteeing both surface temperature control (85%) and material capacity to inhibit mold growth (77%).

The most significant responses reveal how participatory tools can serve to build an order of priorities in governance strategies and transformation operations of the built environment, defined by experiences and needs. This information returns directives and directions for the realization of the artwork based on prior and disregarded needs and expectations. This aspect has a twofold significance: the first is to innovate the way requirements are transferred, through a codified participatory tool, to common knowledge such as that of the artist. The second relates to the possibility, through this information, of supporting technical knowledge and the artist in the realization of a functional piece of equipment to meet user needs.

3.4 Building a neighborhood community in the management and maintenance phase of the regeneration process

In the management and maintenance phase of the playground, *ex post* participatory evaluation tools of the experimentation were distributed on all occasions of use of the experimental site: such as the inauguration of the Play_ACT pilot site, the international conference, and the Fall and Halloween Neighborhood Parties organized by the Rione Sanità community in the recovered site (Figure 4).

To the goal of investigating the impact of the project, each question concerned the level of openness, level of receptivity, level of benefit, type of perception, level of expectation, and level of care and fondness for artistic production.

The analysis reveals that almost all of the sample (93.9%) believe that art, applied to processes of transformation of the built environment, can improve the city but only 81.8% would like to be involved in these dynamics on a creative basis. The same percentage believe that given project experience, art can effectively bring about benefits to the urban context. Specifically, almost all of the sample, 93.9%, believe that art can increase both the social cohesion and environmental value of the site where it occurs.

Conversely, less than half, about 48.5%, believe that these kinds of projects can result in economic opportunities. The 72.7% of respondents believe that they can benefit from the project imagining that no negative influences themselves or the community will result from it. What is significantly striking among impacts is the data from the last questions revealing that 87.9% would suggest other community members participate in this type of project. The questionnaires do not reveal a willingness to care for and maintain an environment that still has vast areas of degradation and neglect. Each category of responses was associated with a value using radar representation, which is a method of representation that holds together the three significant variables of the questionnaire (question, response, impact). It can be inferred that, downstream of a trial maturity time of 3 months, the population involved increased their degree of openness, their social cohesion, and their attention to environmental value, recognizing that the project fully met their expectations. Similarly, the degree of receptivity, the level of benefit and expectation on the

individual as well as participation, and the level of empowerment and care for the built environment evolved.

Figure 4. Inauguration of the Play_ACT pilot site



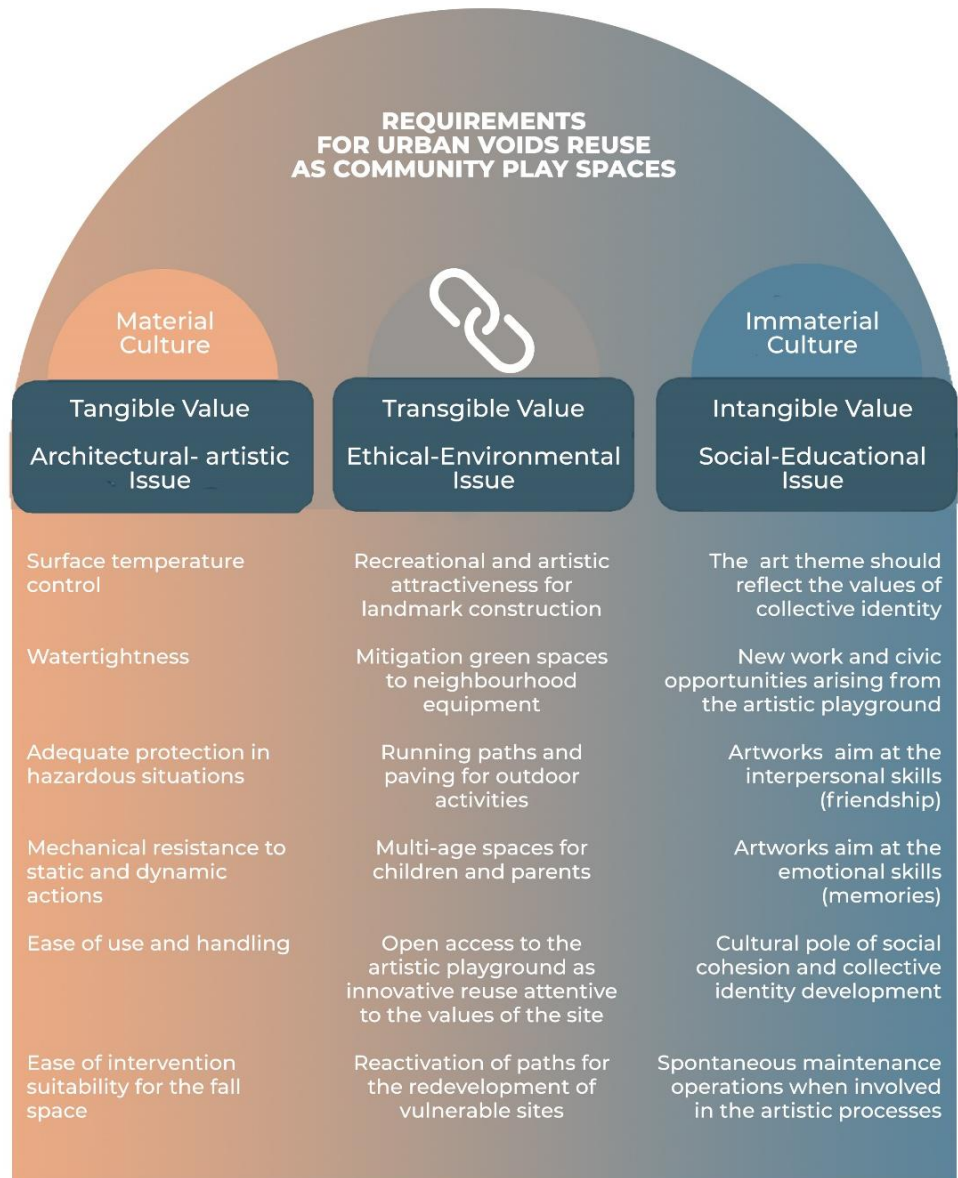
Source: Ciampa, 2023.

4. Discussion and results

The merging between the quantitative data from the forms and the qualitative data from the survey returns, through an *ex-post* evaluation matrix, values for the appropriate integration of play space in the places of vulnerable communities. The category of values is tripartite in the initial issues, reiterated to architectural-artistic, ethical-environmental, and social-educational, to which it corresponds spheres of tangible, intangible, and “transgible” value. In the first case, the elements pertaining to the architectural-artistic issue can be traced back to the tangible values of the material culture of the site, that is, to those traditional processes to be followed because of a mixture of technical awareness, practical skills, and creative intuition (Settis, 2010). These are values related to the technological aspects of the reuse intervention and therefore they pertain to: Surface temperature control; Water tightness; Adequate protection in hazardous situations; Mechanical resistance to static and dynamic actions; Ease of use and handling; Ease of intervention; Suitability for the fall space. The elements pertaining to the Social-educational issue can be traced to the intangible values of the immaterial culture of the site (Tubadji & Nijkamp, 2015), that is, the beliefs, values, traditions, performances, and artistic works in the public domain (Bucci et al., 2014). These elements are related to the value aspects of the users involved in the reuse intervention and therefore they pertain to: The art theme should reflect the values of collective identity; New work and civic opportunities arising from the artistic playground; Artworks aim at the interpersonal skills (friendship); Artworks aim at the emotional skills (memories);

Cultural pole of social cohesion and collective identity development; Spontaneous maintenance operations when involved in the artistic processes. Finally, the elements pertaining to the Ethical-environmental issue can be traced to the “transgible” values, common to both tangible and intangible culture.

Figure 5. Requirements for urban voids regeneration as community play space: a new collective infrastructure



Source: Ciampa, 2023.

The transgible values recognize the existence of a temporal vision of culture that can be associated with the built environment of collective heritage, posing as elements of continuity between past and present in cultural capital. These values aim to extend the concept of cultural heritage to include processes that are still in place. This is precisely to affect the dynamics of the process and to build, use, and modify the built environment. These are values related to the collective urban aspects in the reuse intervention and therefore they pertain to: Recreational and artistic attractiveness for

landmark construction; Mitigation of green spaces to neighborhood equipment; Running paths and paving for outdoor activities; Multi-age spaces for children and parents; Open access to the artistic playground as innovative reuse attentive to the values of the site; Reactivation of paths for the redevelopment of vulnerable sites (Figure 5).

Transgible values therefore not only serve as a link between tangible and intangible ones but also ensure the advancement of the built environment to future generations through a cultural sign of the community that appropriated it at that time to affirm its collective identity.

5. Conclusions

The research offers a new approach to establish the requirements for the reuse of open spaces for collective use, constituting a system of directions for the development of the identity of territories and the cultural diversity of communities. In the need-performance approach, the correspondence between quantitative data of the built environment and qualitative data of stakeholders enables the construction of shared development scenarios, strengthening social cohesion and knowledge of places. The innovativeness lies both in the methodological introduction of a new mode of systemic discretization of the built environment and in the identification of a third value, the “transgible” value, for the advancement of studies in the field of Architectural Technology. In the context of urban void regeneration processes, the contribution concerns the experimentation of participatory approaches useful for guiding interventions in the reuse of such spaces in the dual sense of being both places of collective enjoyment infrastructures and play for communities. Interpreting public space as an incubator of creativity and innovation, the research builds, through the experimentation of different types of large-scale surveys, multiple participatory tools that can support expert knowledge in the involvement of the community in the various stages of the process of cultural production and regeneration. In this way, the research returns effective and efficient tools for *ex ante*, *in itinere*, and *ex post* stakeholder engagement. Regardless of the sequence of repetitions, the research validates a methodological path by the empirical application of participatory tools to the development of shared and custodial operations in the built environment. The monitoring of short-term outcomes, in particular, highlights the reactivation of local creativity, the promotion of social cohesion, and the commitment to the regeneration of the built environment. The transferability of the tools to other fragile contexts can offer involved stakeholders the opportunity to learn to be custodians of sedimented qualities, representing, moreover, a strategy for the empowerment of resident communities in the regeneration process of the built environment.

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Conflicts of Interest

The author declares no conflict of interest.

Originality

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The author also declares that the manuscript is not currently being considered for publication elsewhere, in the present of any other language. The manuscript has been read and approved by all named authors and there are no other persons who satisfied the criteria for authorship but are not listed. The authors also declare to have obtained the permission to reproduce in this manuscript any text, illustrations, charts, tables, photographs, or other material from previously published sources (journals, books, websites, etc).

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