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Urban Programming as an Arbitration Device between Planning and Practices: Sablettes Coastal Urban Landscape, Algeria

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Abstract: Contemporary waterfront projects play a strategic role in urban regeneration and are often framed as showcases of landscape quality. Yet this quality is constructed through a planning rationality that stabilizes the landscape through programmatic orientations, morphological prescriptions, and spatial devices. Drawing on Augustin Berque's distinction between *landscape-object* and *landscape-subject*, Henri Lefebvre's conceived and lived space, and planning theory on institutional arbitration, this article conceptualizes urban programming as a structuring device mediating between planning and practices. Programming is understood as a decisive moment of selection, prioritization, and stabilization of landscape components rather than merely a technical preliminary stage of design. A convergent mixed-methods study of the Sablettes waterfront promenade in Algiers combines semi-structured interviews with institutional actors and an in-situ photo-questionnaire administered to 308 users. Cross-referencing institutional and user assessments through 30 shared criteria reveals three regimes of gaps: formalization gaps, where strongly valued user expectations are weakly stabilized in programming; arbitration gaps, reflecting institutional prioritization; and exploitation gaps, related to management and maintenance. The article proposes a transferable analytical framework for understanding how planning practice selectively stabilizes landscape qualities while conditioning the emergence of lived landscape experience.

1. Introduction

Contemporary waterfront projects occupy a strategic position within international urban regeneration dynamics. Located at the interface between the city and the natural environment, waterfronts concentrate issues of territorial attractiveness, land value enhancement, environmental sustainability, and quality of life. In such operations, landscape quality is frequently mobilized as a structuring objective, whether in the redevelopment of former port areas, the restoration of pedestrian continuities, or the production of new urban centralities. This growing centrality reflects broader shifts in planning theory toward paradigms that integrate sustainability, resilience, and spatial justice. In this regard, Davoudi (2012) shows how resilience – initially developed in ecological sciences – has been progressively incorporated into planning discourse as a way of addressing uncertainty, adaptation, and transformation in spatial decision-making.

However, although landscape quality occupies a prominent place in planning discourse, its effective translation into decision-making processes remains insufficiently examined. Urban planning has historically been shaped by a technical-instrumental rationality aimed at stabilizing space through morphological, functional, and regulatory prescriptions. In Faludi's (1973) distinction between procedural and substantive planning theory, this rational-comprehensive model is conceptualized as a systematic optimization process in which planners define objectives, evaluate alternatives, and select optimal solutions based on rational criteria. Yet this assumption of linear rationality has been strongly challenged. Alexander (1965), for instance, demonstrates in “A City is not a Tree” that planned urban systems tend to impose rigid hierarchical structures that fail to capture the complexity and interdependence of urban environments. Despite these critiques, contemporary planning practice remains influenced by logics of formal stabilization.

Recent developments in planning theory have significantly reconfigured this understanding. Allmendinger (2017) argues that planning should be understood as a field structured by multiple and competing rationalities rather than a unified epistemological system. Davoudi (2015) emphasizes that uncertainty and complexity are not external constraints but intrinsic conditions of planning practice, requiring relational forms of knowing and acting. Similarly, Rydin (2021) highlights the decisive role of institutions, knowledge systems, and governance arrangements in shaping spatial outcomes. Together, these contributions reposition planning as a relational, situated, and contingent process.

Within this framework, landscape is still frequently objectified through plans, regulations, and programming documents. This corresponds to what Lefebvre (1974) conceptualizes as a triad of interrelated spatial dimensions. "Conceived space" refers to space as produced through abstract representations and institutional logics – the space of planners, technicians, and political authorities, encoded in maps, plans, and regulatory documents. "Perceived space," by contrast, designates space as it is materially produced and apprehended through everyday spatial practices. "Lived space" corresponds to the space of representation – the symbolic and affective dimension through which inhabitants invest their environment with meaning. While Lefebvre's triad is often reduced, in subsequent appropriations, to a binary opposition between a dominant "conceived" space and a dominated "lived" one, the present article retains this simplification only as an analytical entry point: it is the tension between the institutionally conceived dimension of landscape and its perceived and lived dimensions, rather than a literal application of Lefebvre's full triad, that grounds the distinction this article draws between *landscape-object* and *landscape-subject*.

This distinction strongly resonates with Berque's theory of *médiance*. In *Milieu et motivation paysagère* (1987), Berque first articulates the idea that landscape is neither a simple object nor a mere subjective representation, but a trajection – a subject/object linkage that functions both as an imprint of ways of seeing and doing, and as a matrix shaping them in turn. This relational conception is developed at greater length in *Médiance: de milieux en paysages* (Berque, 1990/2000b), where Berque elaborates a systemic framework in which milieu occupies a pivotal role: environment in its physical dimension, and landscape in its sensible, perceived dimension, are linked through this same trajective relation, with *médiance* designating the dual – simultaneously objective and subjective – perception of that process. From this perspective, landscape is neither purely objective nor purely subjective, but relational. This conceptualization underpins the distinction made in this article between *landscape-object* and *landscape-subject*.

Recent scholarship has further reinforced this relational turn. Healey (2010) Thireframes planning as an institutional practice oriented toward the production of "better places" through situated collective processes. Sandercock (2003) emphasizes plural narratives and lived experiences in the production of urban space. More recently, Davoudi and Ormerod (2025) argue for an ethics of care in planning, highlighting how dominant rationalist traditions have historically marginalized care as a public value. Together, these perspectives show that planning inevitably involves selection, prioritization, and stabilization of certain spatial dimensions at the expense of others.

This relational turn also intersects with critical and pluriversal approaches that question dominant epistemological frameworks. Santos (2014) calls for cognitive justice through the recognition of multiple ways of knowing. Escobar (2018) extends this critique to design and planning, advocating for pluriversal approaches grounded in situated knowledge and radical interdependence. Watson (2014), in turn, demonstrates how imported planning models in African contexts often produce exclusionary spatial configurations. These perspectives collectively challenge whose knowledge and whose spatial experiences are legitimized in planning practice.

The tension between planned space and practiced space thus refers to a central debate concerning the gap between intention, decision, and lived experience. Pressman and Wildavsky (1973) show how policy implementation is transformed through successive institutional filters and negotiations. This insight has been developed by Hillier (2007), who conceptualizes planning as a multiplanar process structured by overlapping fields of power, and by Flyvbjerg et al. (2003) and Flyvbjerg (2009), who shows how strategic misrepresentation and institutional asymmetries shape the outcomes of large-scale projects. Building on Forester's (1989) analysis of planning in the face of power and Healey's (1997, 2007) relational and collaborative approach, planning can be understood as a political arena in which priorities, interests, and forms of knowledge are continuously negotiated.

Urban programming is therefore not a neutral technical step but a decisive institutional filter where landscape qualities are selected, prioritized, and translated into operational categories.

Despite this recognition, urban programming (the phase in which objectives, requirements, and priorities are defined) remains underexplored. It is often treated as a technical step preceding design, whereas it actually constitutes a strategic arena where competing visions of space are translated into operational categories and institutional priorities.

This issue is particularly salient in waterfront projects, where economic attractiveness, social inclusion, environmental performance, and metropolitan image must be reconciled through complex trade-offs. Bruttomesso (1993), in his edited volume on waterfronts as a new frontier for cities on water, and Marshall (2001), in his comparative study of waterfront redevelopment in post-industrial

cities, have extensively documented the morphological and economic transformations characteristic of these operations. Yet fewer studies have addressed the institutional mechanisms through which public landscape is produced, particularly in Mediterranean Southern contexts. This gap is especially significant in planning systems where landscape has not yet been institutionalized as an autonomous field of public action and where strategic objectives remain difficult to translate into operational decisions.

In the Algerian context, this tension becomes particularly visible. Landscape is not institutionalized as an autonomous field of public action but is instead addressed through sectoral domains such as environmental protection, coastal management, urban green spaces, and heritage policies. This fragmentation limits the emergence of a unified framework for defining and evaluating landscape quality as an integrated planning object.

As Saïdouni (2000) shows, Algerian urban planning remains structured by a normative and regulatory logic inherited from post-independence planning systems, where spatial production is primarily governed by legal compliance rather than project-based or qualitative approaches. Although strategic frameworks such as the *Schéma National d'Aménagement du Territoire* (SNAT 2030) promote an integrated territorial vision, a persistent gap remains between strategic orientations and their operational translation (Berezowska-Azzag, 2011). This gap is particularly evident in coastal and waterfront areas, where multiple sectoral objectives must be reconciled without a fully operational programming layer capable of mediating between territorial vision and project-level decisions.

This institutional fragmentation produces a situation in which landscape is fragmented across sectoral logics, preventing its integrated treatment as a unified planning object.

Rather than constituting an exceptional case, the Algerian situation amplifies a more general planning issue: the difficulty of translating strategic intentions into situated spatial practices. It thus sharpens the central analytical tension between landscape as institutional construct and landscape as lived experience.

Empirical studies focusing on programming as a structuring moment in which this articulation between conceived and lived space is operationalized remain limited. This article therefore seeks to understand how urban programming, beyond its technical function, structures the institutional translation of landscape quality in waterfront projects.

Accordingly, this article addresses the following research question: How does urban programming function as an arbitration device between *landscape-object* (the institutionally planned dimension) and *landscape-subject* (the lived and experienced dimension) in waterfront projects, and what do the observable gaps between these dimensions reveal about hierarchization logics in planning practice?

The central hypothesis is that these gaps should not be interpreted as technical deficiencies, but as outcomes of institutional processes of selection, prioritization, and stabilization embedded in programming practices.

By repositioning urban programming as a central analytical device, this article reveals how institutional decision-making processes actively structure the production of lived landscape experience, rather than merely regulating spatial form.

2. Theoretical Framework

2.1. From Landscape-Object to Landscape-Subject: A Relational Reading of Landscape

The notion of landscape has progressively evolved into a multidimensional and dynamic concept, moving beyond its initially figurative and aesthetic meaning to incorporate ecological, social, cultural, and perceptual dimensions. This evolution reflects the understanding that landscape is neither an obvious natural given nor a mere backdrop, but a historical and cultural construction continuously reinterpreted according to dominant frameworks of thought and value systems (Roger, 1997; Luginbühl, 2012). From this perspective, landscape may be understood simultaneously as an observable material reality, as representation (artistic, scientific, institutional), and as lived experience.

The definition proposed by the European Landscape Convention marks a decisive step in this institutional recognition. By defining landscape as "an area, as perceived by people" (Council of Europe, 2000), it explicitly places perception at the core of the concept. Landscape thus refers not only to a physical configuration but to a relationship between a milieu and a society, shaped by practices, uses, values, and collective representations. This approach resonates with cultural geography and landscape ecology, which conceive landscape as the product of interactions between natural dynamics and human action (Sauer, 1925; Burel & Baudry, 1999). It also extends the idea of landscape as a "diagonal science," capable of articulating physical, social, and symbolic dimensions within a transversal reading of territories (Bertrand, 1972).

Within this theoretical framework, Augustin Berque's (1987, 1990/2000b) distinction between *landscape-object* and *landscape-subject* provides a particularly operative analytical entry point. The *landscape-object* refers to the material, morphological, and institutionally stabilized dimension of space. It encompasses produced forms – street networks, built fronts, public spaces, infrastructures, technical devices, and city-nature interfaces – as well as the planning and regulatory instruments that frame their production. By contrast, the *landscape-subject* designates the experiential dimension of landscape: sensory perceptions, atmospheres, memories, attachments, everyday uses, and cultural interpretations. Landscape therefore exists not only as spatial configuration but also as lived relation, mediated through perception, practice, and imagination.

However, this distinction does not imply a binary opposition. Berque moves beyond dualism by conceptualizing landscape as a subject–object linkage functioning simultaneously as imprint and matrix. It is an imprint insofar as it materializes, in its forms, technical, political, and cultural choices inscribed over time; it is a matrix insofar as these produced forms subsequently orient practices, representations, and modes of inhabiting (Berque, 1987). This dynamic relationship helps explain why spatially "well-controlled" environments may be experienced as standardized or weakly appropriable, while more ordinary settings may acquire strong landscape value through the meanings and uses attached to them.

In waterfront urban projects, this tension between *landscape-object* and *landscape-subject* becomes particularly salient. The city-sea interface constitutes a strategic space, simultaneously urban showcase, environmental resource, and site of intensified uses. The *landscape-object* takes the form of formalized devices – redeveloped waterfronts, promenades, belvederes, rehabilitated ports, pedestrian continuities, and scenographically designed public spaces – often embedded in logics of

attractiveness, image-building, and land valorization. The *landscape-subject*, in turn, emerges from actual practices (walking, sociability, leisure, informal uses), collective representations (maritime identity, port memory), and sensory perceptions (horizon, light, wind, smells, sounds). Perception mobilizes multisensory registers that contribute to the affective evaluation of places and to their restorative potential (Ulrich, 1984).

In this context, waterfront landscape quality cannot be reduced to the formal conformity of a project. It results from the articulation (or the misalignment) between institutional production, urban materiality, and lived experience. Such gaps must be interpreted in light of the social production of space, shaped by power relations, economic logics, and political arbitration (Lefebvre, 1974; Harvey, 1973). A relational reading of landscape therefore constitutes the ontological foundation of the present analysis: it affirms that urban landscape (and particularly waterfront landscape) emerges from a dynamic process in which institutional intention and social practices intersect within environments subject to specific ecological constraints (erosion, submersion, land pressure).

Recent debates in planning theory further reinforce this relational understanding of landscape by emphasizing the plurality of spatial rationalities involved in its production. In particular, the concept of pluriversal planning developed by Arturo Escobar (2018) challenges the dominance of a single epistemological framework in spatial planning and highlights the coexistence of multiple ways of knowing, inhabiting, and producing space. This perspective resonates strongly with the distinction between *landscape-object* and *landscape-subject*, insofar as it recognizes that spatial configurations are not only materially produced through institutional logics but also continuously reinterpreted through situated practices and lived experiences.

In a complementary critical perspective, Vanessa Watson (2009) underscores the limitations of universal planning models, particularly in contexts where formal planning rationalities tend to marginalize or misinterpret local urban practices. Her work draws attention to the persistent gap between planning as a technical-institutional project and urban space as it is actually lived and appropriated.

Within this theoretical horizon, the relational conception of landscape can be further extended. The *landscape-object* and *landscape-subject* distinction should not be understood as a closed analytical dyad but as a framework that is itself shaped by multiple epistemological and practical rationalities. In this sense, Escobar's (2018) notion of pluriversal planning reinforces Berque's relational ontology by showing that both material forms and lived experiences are grounded in heterogeneous ways of knowing and inhabiting space. Similarly, Watson's (2009) critique of universal planning highlights that the tensions observed between *landscape-object* and *landscape-subject* are not merely experiential mismatches but the expression of deeper institutional and epistemic asymmetries embedded in planning systems.

2.2. Conceived, Perceived, and Lived Space: A Processual Reading of Landscape Production

To translate this tension into an operational analytical framework, Henri Lefebvre's (1974) spatial triad provides a particularly fertile lens. Lefebvre distinguishes between *conceived space* (representations of space), *perceived space* (spatial practice), and *lived space* (representational spaces), emphasizing that space is not a neutral container but a social product resulting from complex interactions between representations, practices, and symbolizations.

Conceived space refers to the representations elaborated by institutions, planners, and designers. It is embedded in master plans, programming documents, regulatory frameworks, spatial schemes, and technical standards. Lived space, by contrast, encompasses symbolic and experiential dimensions: it is the space of attachment, identity, memory, and meanings invested by users. Perceived space constitutes the practical mediation between these two registers. It corresponds to everyday practices – walking, crossing, stopping, meeting – that materialize, adjust, or sometimes subvert initial intentions. When articulated with Berque's distinction, this triad allows for an operationalization of urban landscape analysis. The *landscape-object* can be associated with conceived space insofar as it refers to planned forms and institutional devices. The *landscape-subject* corresponds to lived space, which confers meaning upon spatial forms through experience. Perceived space plays a central mediating role: it is the concrete site where convergences, adjustments, or misalignments between project and reality-between programming and practices-become manifest.

This mediating dimension is all the more important given that urban perception does not take the form of a static image. Rather, it unfolds sequentially through movement. Gordon Cullen's (1961) concept of *Serial Vision* illustrates how urban space reveals itself through successive framings, openings, and transitions. Kevin Lynch (1960) further demonstrates that urban experience stabilizes as a mental image structured by organizing elements – paths, edges, districts, nodes, and landmarks – which condition legibility, orientation, and appropriation. In waterfront environments, these dimensions become particularly significant: the continuity of pedestrian routes, visual access to the maritime horizon, the hierarchy of views, or conversely the presence of barriers and discontinuities directly influence experiential coherence and perceived quality.

The production of waterfront urban landscape may therefore be understood as a chain linking programming, design, implementation, and use. Observable gaps between conceived space and lived space should not be reduced to technical shortcomings; rather, they reflect tensions inherent in the social production of space. From this perspective, urban programming can be conceptualized as an arbitration device. It organizes choices – prioritization of uses, spatial continuities, accessibility, atmospheres, heritage or ecological valorization – and seeks to anticipate conditions of appropriation. Yet it remains shaped by institutional constraints, power relations, and economic valorization logics (Lefebvre, 1974; Harvey, 1973).

Programming thus emerges as a strategic level at which planning objectives and social practices are negotiated and sometimes confronted. In this sense, it constitutes a central link in the transformation of *landscape-object* into *landscape-subject*, and reciprocally, insofar as it conditions produced forms while influencing the range of possible experiences.

Recent contributions in urban planning literature further refine this perspective by conceptualizing urban programming as a structured yet inherently political process of spatial translation. Rather than functioning as a purely technical stage in project development, programming operates as an interface between strategic intentions and spatial materialization, where competing economic, social, and

environmental priorities are progressively negotiated, filtered, and stabilized. In this sense, programming plays a decisive role in shaping the conditions under which spatial forms are produced and subsequently experienced, by selectively translating institutional objectives into operational design choices (Rohani & Ma, 2018).

2.3. Programming within Planning Practice: Arbitration, Filtering, and Stabilization

In planning literature, urban programming is generally defined as the phase during which project objectives, priorities, and functional requirements are established. However, from a process-oriented perspective inspired by planning theory, programming can be understood as a structuring device of arbitration.

Foundational work on the implementation gap (Pressman & Wildavsky, 1973) demonstrated that the implementation of public decisions is not a straightforward technical execution but a succession of decision points involving negotiations, institutional filters, and progressive reconfigurations. Each stage of the process has the potential to transform, reinterpret, or hierarchize initial objectives.

Critical approaches to planning practice reinforce this interpretation. Forester (1989) highlights the asymmetries of information and power relations that structure decision-making processes. Healey (1997) emphasizes the role of institutional frameworks and actor networks in defining priorities. Flyvbjerg (1998, 2014) shows that planning choices presented as technical are often the outcome of implicit political arbitrations.

Within this perspective, programming may be interpreted as a mechanism of institutional filtering. It translates heterogeneous expectations – economic, social, environmental, symbolic – into stabilized orientations under the influence of organizational, budgetary, and political constraints. In doing so, it selects certain project dimensions as priorities while marginalizing others.

Avitabile's distinction between "dessein" (programmatic content), "dessin" (spatial configuration), and feasibility (conditions of realization) further refines this analysis (Avitabile, 2005). Programming corresponds to the moment when the "dessein" is formulated, prioritized, and rendered operational, thereby orienting the "dessin" and conditioning the project's capacity to respond to actual spatial practices.

Understood in this way, programming cannot be reduced to a formal document; it constitutes an iterative process of arbitration through which institutional priorities crystallize. It represents the structuring point of the relationship between landscape-object and *landscape-subject*. Observable gaps between these two dimensions may therefore be interpreted as indicators of the mechanisms of prioritization and stabilization inherent in planning practice.

2.4. Landscape-Object and Landscape-Subject: Articulating Planning and Practices

Berque's distinction between *landscape-object* and *landscape-subject* provides an analytical framework for reinterpreting the relationship between planning and practices. The *landscape-object* refers to the stabilized dimension of the project: programmatic orientations, morphological

prescriptions, technical devices, and regulatory norms that translate an institutional representation of landscape. The *landscape-subject*, by contrast, designates its relational and experiential dimension: perceptions, situated uses, forms of appropriation, and meanings produced within public space.
Recent reinterpretations of Lefebvre's spatial triad further reinforce its methodological relevance in empirical spatial analysis (Lariagon, 2025), particularly in operationalizing the relationship between conceived, perceived, and lived space.
This correspondence resonates with Lefebvre's (1974) spatial triad: the landscape-object is embedded in conceived space, whereas the *landscape-subject* pertains to lived space, with perceived space constituting the site of adjustment-or tension- between the two. Within planning theory, such tension is interpreted as the effect of arbitration processes through which certain expectations are rendered visible and operational while others remain implicit or marginalized (Forester, 1989; Healey, 1997). From this perspective, programming emerges as a pivotal moment: it contributes to defining what will be stabilized within the landscape-object while conditioning the margins within which the *landscape-subject* can emerge.
Accordingly, the analysis does not seek to measure conformity between project and use, but rather to identify gaps as indicators of the mechanisms of selection and prioritization inherent in planning practice (Figure1).

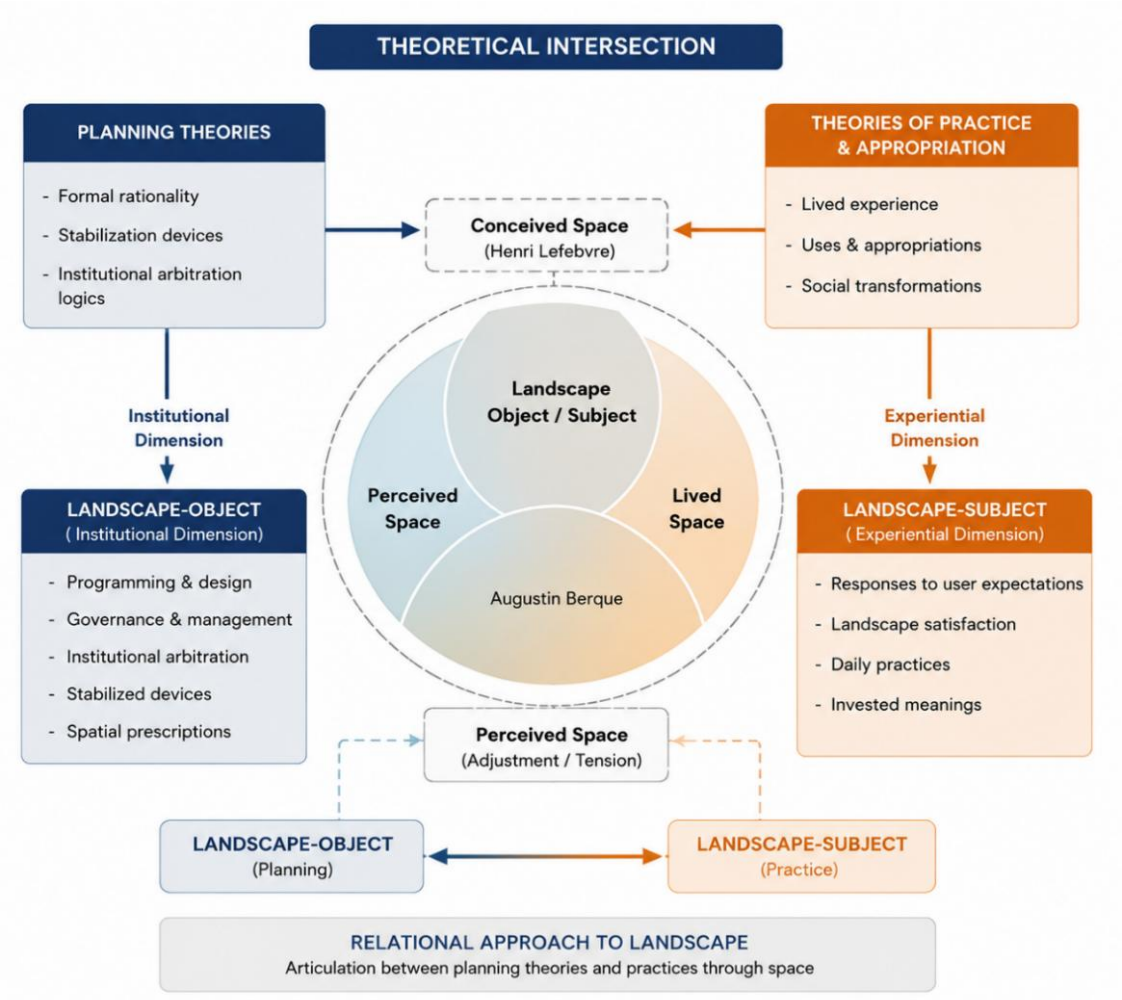


Figure 1 | Theoretical Framework Articulating Landscape-Object and Landscape-Subject Through Planning and Practice. Source: Authors.

3. Methodology

3.1. Research Design: A Convergent Mixed Analytical Framework

This study adopts a convergent mixed-methods design aimed at analyzing urban programming as an arbitration device between the *landscape-object* (the planned and institutionalized dimension of space) and the *landscape-subject* (the lived and practiced dimension).

This methodological choice derives directly from the theoretical framework, which conceives landscape production as the articulation between institutional rationalities and situated experiences. Its analysis therefore requires the mobilization of two complementary empirical registers. The objective is not to normatively evaluate project performance, but to identify the mechanisms through which programmatic priorities are selected, hierarchized, and translated into spatial devices, and subsequently reinterpreted through social practices.

The empirical framework is structured around two components conducted in parallel and then analytically articulated. These are, first, the institutional component (*landscape-object / conceived space*) – that is, the reconstruction of the degree to which landscape components were integrated during the programming and design phases, and, second, the practical component (*landscape-subject / lived and perceived space*) – that is, the analysis of in situ judgments expressed by users based on their sensory and functional experience of the site.

Both components rely on a shared analytical framework composed of 30 criteria (C1–C30), designed not as a normative evaluation tool but as an analytical interface enabling systematic comparison between planned dimensions and lived dimensions. The methodological sequence follows the following logic: (Figure 2)

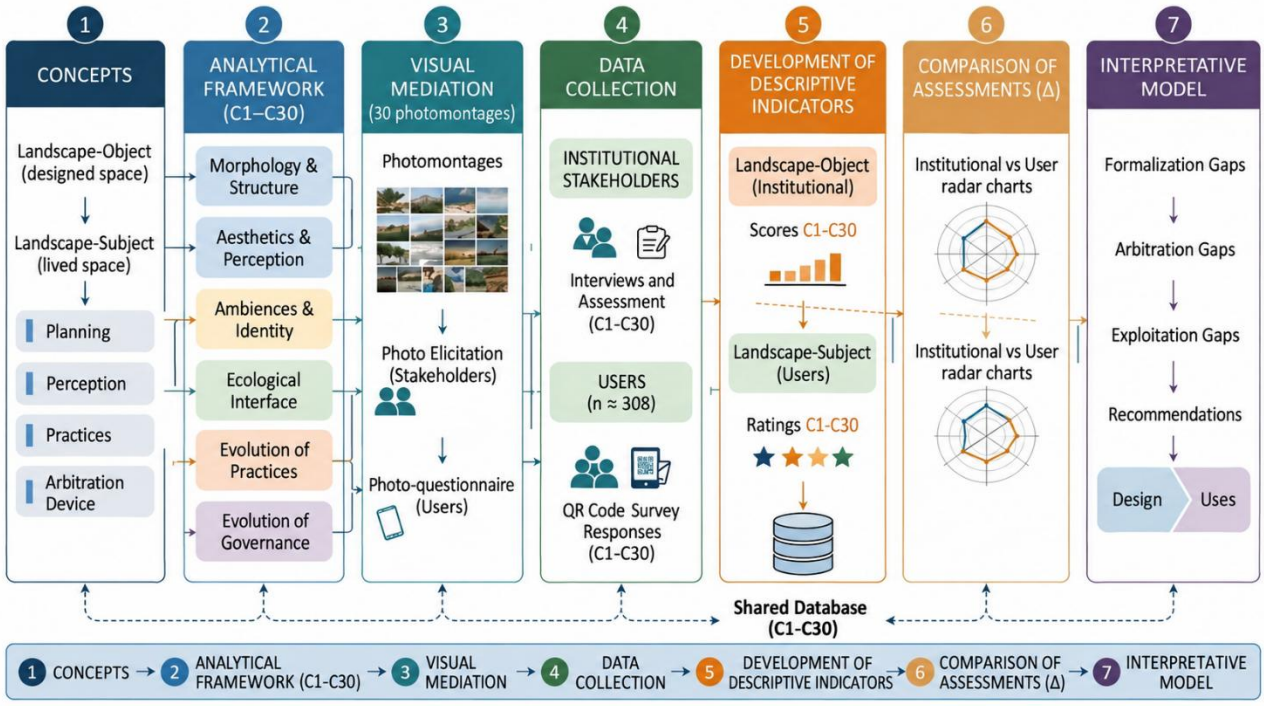


Figure 2 | Convergent Mixed-Method Analytical Design:
From Conceptual Framework to Interpretative Model. Source: Authors.

3.2. Construction and Structure of the Analytical Framework

Waterfront urban landscape quality was operationalized through a multi-criteria framework composed of 30 criteria (C1–C30), designed as a comparative analytical tool between the *landscape-object*, understood as the conceived and materially produced space, and the *landscape-subject*, understood as the lived and experienced space.

The construction of the framework was based on three complementary foundations. First, a thematic review of literature in urban design, landscape studies, environmental perception, and planning (Lynch, 1960; Kaplan & Kaplan, 1989; Whyte, 1980; Healey, 1997; Carmona, 2019) identified the main dimensions through which urban landscape quality can be examined, including morphological, perceptual, ecological, social, functional, and institutional dimensions. Second, these dimensions were cross-referenced with the conceptual framework of the research, particularly Berque's (2000) distinction between *landscape-object* and *landscape-subject*, Lefebvre's (1974) conception of space as conceived, perceived, and lived, and planning approaches that understand planning as a process of negotiation and arbitration (Forester, 1989; Healey, 1997). This cross-fertilization provided the conceptual basis for translating broader theoretical constructs into observable analytical criteria and for relating planned qualities to their spatial and experiential manifestations. Third, a comparative examination of existing operational assessment frameworks and waterfront regeneration approaches (Marshall, 2001; CERTU & Ordre des géomètres-experts, 2007; Carmona, 2021) helped refine the dimensions and criteria and assess their relevance to coastal urban landscapes. These sources were used as methodological references rather than as a predefined checklist; the criteria were selected and adapted to the specific objective of comparing designed and perceived landscape quality.

The resulting framework is structured according to two complementary analytical logics. The first concerns Designed Quality (DQ) and is organized into five analytical dimensions: (1) morphological, spatial and urban; (2) aesthetic and perceptual; (3) ecological and environmental; (4) social and functional; and (5) governance and sustainability. These dimensions structure the analysis of the main domains through which coastal urban landscape quality is conceived, programmed, and materially produced. They therefore provide the analytical basis for examining how landscape quality is incorporated into the programming process and subsequently translated into spatial design.

The second concerns Perceived Quality (PQ), which is organized into three complementary evaluation levels: visual appraisal, landscape preference, and user satisfaction. These levels correspond to different modes of perceiving and experiencing the landscape. Visual appraisal refers to the immediate visual and aesthetic assessment of landscape characteristics; landscape preference refers to the value or attractiveness attributed to particular spatial and landscape configurations; and user satisfaction concerns the extent to which the spatial environment responds to users' expectations, practices, and experiences (Kaplan & Kaplan, 1989; Purcell & Nasar, 1992).

The 30 criteria are distributed across the five DQ dimensions while being associated, according to their analytical nature, with one of the three PQ evaluation levels. The same set of criteria is therefore used as a shared analytical reference framework for both dimensions, rather than as two separate evaluation grids. This structure makes it possible to examine the same landscape components from the perspective of their conception and production on the one hand, and their perception and experience on the other. The framework consequently facilitates the identification of convergences, discrepancies, and gaps between programmed intentions, spatial implementation, and user experience.

The selection of the criteria followed three methodological requirements: observability, non-redundancy, and interpretability. Observability refers to the possibility of identifying and assessing a criterion through project and planning documents, spatial configurations, photographic materials, or user evaluations. Non-redundancy ensures that each criterion addresses a distinct analytical aspect, while interpretability ensures that it can be meaningfully assessed across the different sources of evidence and actor perspectives. Each criterion thus constitutes an operational expression of a broader conceptual construct while remaining sufficiently specific for empirical assessment.

The framework is conceived as a synthetic analytical reference system rather than as a normative or universal scale of landscape quality. Its purpose is to organize a complex and multidimensional object of study into a common set of clearly identified analytical units, thereby facilitating systematic assessment and comparison. The coding of the criteria from C1 to C30 provides a consistent reference across the different stages of the analysis and actor groups. This common coding structure helps balance the assessment by ensuring that the same analytical criteria are systematically considered, reduces the risk of arbitrary selection during evaluation, and facilitates the traceability and comparison of evidence between Designed Quality and Perceived Quality.

Each criterion is associated with a concise definition and an assessment procedure and is evaluated using a standardized five-point ordinal scale. The scale provides a common basis for organizing and comparing evaluations while preserving the multidimensional character of landscape quality. The numerical coding is therefore not intended to reduce landscape quality to a single aggregate value, but to support the systematic comparison of criteria, evaluations, and actor perspectives. In this sense, the framework establishes a continuous analytical chain from theoretical construct, to criterion selection, to empirical assessment, and finally to comparative interpretation.

The resulting framework provides a common basis for examining the relationship between the *landscape-object* and the *landscape-subject* and for identifying the points at which urban programming may operate as an arbitration device between planning intentions, spatial production, and lived practices.

Table 1| Shared analytical framework articulating landscape-object, landscape-subject, and programmatic arbitration.

Analytical Dimension (Landscape-Object / Conceived Space – Planning)	*Shared Analytical Criteria (C1–C30)*	*Landscape-Subject Evaluation Level (Practice)*	*Programmatic Arbitration Indicator*
Morphological, Spatial and Urban Dimension Lynch (1960), Cullen (1961), Krier (1979), Rossi (1982), Hillier & Hanson (1984), Bentley et al. (1985), Gehl (2011), Carmona (2019)	C1. Integration into the urban context	Satisfaction	Coherence between planned spatial organization and effective spatial experience
	C2. Connectivity and continuity	Satisfaction	
	C3. Architectural typology and formal coherence	Visual appreciation	
	C4. Typology of spaces (private/public)	Landscape preference	
	C5. Spatial organization (calm/active areas)	Satisfaction	
	C6. Coherence of layouts and interventions	Landscape preference	

	C7. Solid/void ratio (urban breathing space)	Satisfaction	
	C8. Legibility and fluidity of layout	Satisfaction	
	C9. Legibility of entrances	Satisfaction	
	C10. Human scale	Landscape preference	
Aesthetic and Perceptual Dimension Cullen (1961), Lynch (1960), Appleton (1975), Kaplan & Kaplan (1989), Norberg-Schulz (1980), Tuan (1977), Relph (1976), Zumthor (2006), Thibaud (2015), Böhme (1993)	C11. Landscape composition	Visual appreciation	Concordance between formal staging and sensory perception
	C12. Visual openness	Visual appreciation	
	C13. Landscape landmarks	Visual appreciation	
	C14. Quality of ambiances	Visual appreciation	
	C15. Temporality and animation	Landscape preference	
	C16. Sense of place / identity	Landscape preference	
Ecological and Environmental Dimension McHarg (1969), Forman (1995), Spirn (1984), Corner (1999), Beatley (2000), Olgyay (1963), Givoni (1998), Emmanuel (2005)	C17. Integration of nature	Visual appreciation	Perceptible translation of ecological strategies
	C18. Climate adaptation	Satisfaction	
	C19. Biodiversity and vegetation cover	Satisfaction	
	C20. Sustainable management	Satisfaction	
Social, Identity and Functional Dimension Jacobs (1961), Gehl (2011), Appleyard et al. (1981), Southworth (2005), Cervero (1998), Whyte (1980), Florida (2002), Madanipour (2003), Speck (2012), Lavadinho (2011)	C21. Accessibility	Satisfaction	Alignment between programmed uses and actual uses
	C22. Social mix	Landscape preference	
	C23. Diversity of uses and functional mix	Landscape preference	
	C24. Heritage enhancement	Visual appreciation	
	C25. Walkability and soft mobility	Satisfaction	
	C26. Safety and user comfort	Satisfaction	
Governance and Sustainability Dimension Healey (1997), Forester (1989), Arnstein (1969), Innes & Booher (2004), Castells (1996), Harvey (1996), Wheeler (2004), Graham & Marvin (2001), Ashworth & Page (2011)	C27. Adaptability	Satisfaction	Adaptive capacity and social legitimacy of the project
	C28. Technical innovation	Satisfaction	
	C29. Governance and citizen participation	Satisfaction	
	C30. Economic development and tourism attractiveness	Satisfaction	

Source: Authors.

3.3. Visual Mediation and Methodological Consistency

In order to stabilize analytical references and avoid an overly abstract interpretation of the criteria, a shared corpus of 30 photographic montages – one for each criterion – was developed. This visual corpus was mobilized in both components of the research: During institutional interviews (photo-elicitation); And within the photo-questionnaire administered to users.
This visual mediation ensures comparability between the two components and strengthens the methodological coherence of the research design.
The C1, C2, C3….C30 coding system thus functions as the methodological pivot, guaranteeing criterion-by-criterion correspondence between the *landscape-object* and the *landscape-subject* (Figure 3).



Figure 3 | Examples of Photo-Montages Used for Visual Mediation Across Selected Landscape Criteria. Source: Authors.

3.4. Case Study Selection: The Sablettes Waterfront Promenade

The present study focuses on the Sablettes waterfront promenade, located in the Bay of Algiers along the eastern façade of the Algerian capital. The project forms part of a broader metropolitan waterfront regeneration strategy aimed at transforming a formerly underutilized and degraded coastal fringe into a structuring public space within the metropolitan fabric. Situated within a strategic context at the scale of the Bay of Algiers, the promenade has become a major destination for leisure and sociability,

attracting high and socially diverse patterns of use. It integrates pedestrian circulation systems, landscaped interventions, and recreational facilities, while contributing to the ongoing symbolic reconfiguration of Algiers' waterfront identity (Figure 4).

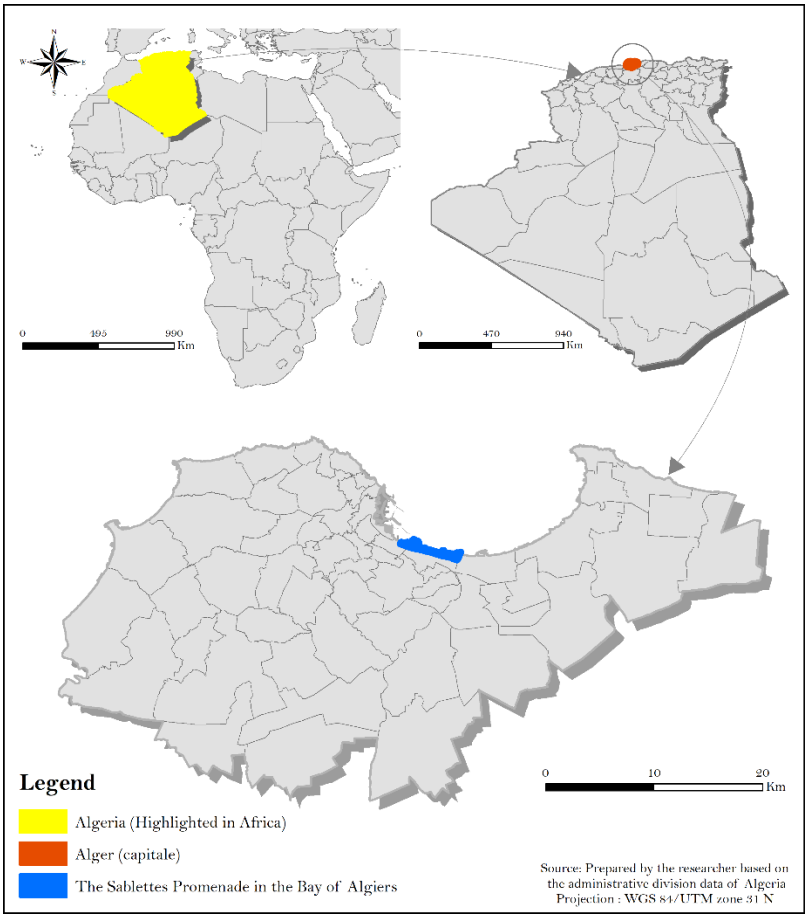


Figure 4 | Multi-Scale Location of the Study Area: Algeria, Algiers, and the Sablettes Coastal Promenade. Source: Authors.

The Sablettes project is institutionally embedded within the broader framework of Algiers' metropolitan planning and coastal redevelopment policies. It constitutes one of the flagship operational components of the Bay of Algiers regeneration programme, coordinated by the Wilaya of Algiers in articulation with national planning instruments, including the *Plan Directeur d'Aménagement et d'Urbanisme* (PDAU), the *Programme de Développement Urbain et Touristique d'Alger* (PDUA), and the *Strategic Development Plan for Algiers 2035* (PSDA 2035). Within this framework, the reconquest of the waterfront represents a central axis of metropolitan restructuring and territorial upgrading.

From an institutional and operational perspective, the project is characterised by a multi-actor governance system involving decision-making, design, implementation, and management stakeholders. The Wilaya of Algiers, through its Directorate of Public Works, acts as contracting authority. The design was entrusted to an international consortium led by Arte-Charpentier, while technical coordination was ensured by specialised institutions such as the Maritime Studies Laboratory (LEM). Construction works were carried out by MEDITRAM, and the operation and management of the site are currently ensured by the Office of Parks, Sports, and Leisure of Algiers

(OPLA). The project was implemented through a negotiated procedure (gré à gré)[1], without a fully consolidated terms-of-reference document at its initial stage, reflecting a flexible, adaptive, and context-driven institutional configuration.

Table 2 | Key Characteristics of the Sablettes Coastal Promenade Project.

Category	*Key Data*
Location	Bay of Algiers – eastern façade of the capital
Length	4.5 km
Area	67 hectares (including maritime extension)
Capacity	50,000–60,000 users per day (summer period)
Design Process	International competition (Arte-Charpentier consortium)
Implementation Procedure	Negotiated procedure (*gré à gré*)
Programming Framework	No single consolidated terms of reference – evolving and negotiated process
Contracting Authority	Directorate of Public Works (Wilaya of Algiers)
Design Team (Studies)	Arte-Charpentier consortium
Technical Coordination	Maritime Studies Laboratory (LEM)
Main Contractor	MEDITRAM (Maritime Works)
Management / Operation	OPLA (Office of Parks, Sports and Leisure of Algiers)
Funding Structure	Public–Private Partnership (Wilaya 70% / private sector 30%)
Primary Objectives	Waterfront reconquest, accessibility, diversification of uses, metropolitan attractiveness

Source: Author's elaboration based on interviews with project stakeholders (2025).

Before its redevelopment, the Sablettes site was characterised by a highly degraded coastal environment, functioning as a marginal and underused waterfront fringe. It was marked by abandoned spaces, waste accumulation, wastewater discharge, and a pronounced physical and visual discontinuity between the city and the sea. This condition reflected a long-term marginalisation of the coastal interface, shaped by successive phases of uncontrolled urban expansion, infrastructural fragmentation, and industrial pressure along the bay.

The redevelopment project therefore represents not only a spatial intervention, but also a process of environmental rehabilitation and symbolic reconquest of the waterfront. By transforming a formerly neglected and inaccessible coastal wasteland into an open and accessible promenade, the project aimed to restore urban continuity, enhance public access to the shoreline, and reaffirm the coastline as a central component of Algiers' metropolitan identity. The contrast between the pre- and post-intervention states highlights the magnitude of this transformation and reinforces the relevance of the Sablettes promenade as a case study for analysing the production and perception of coastal urban landscape quality (Figure 5).

[1] Under Algerian public procurement law, *gré à gré* refers to a direct award procedure without a formal competitive tender, defined as an exceptional alternative to open competition under Presidential Decree No. 15-247 (2015). It exists in two forms: *gré à gré simple* (direct award without consultation) and *gré à gré après consultation* (award after limited written consultation of operators). In the case of the Sablettes project, the procurement logic corresponds to a *gré à gré* approach due to the absence of a formal competitive tender and the implicit nature of programming, although the exact subtype cannot be confirmed due to lack of administrative documentation.



Figure 5 | Selection of photographs illustrating the condition of the Sablettes Promenade before and after its urban and landscape redevelopment. Pre-redevelopment images: photographs shared by participants during photo-elicitation interviews in 2025. Post-redevelopment images: video frames captured by Chater.h, Composite figure prepared by Chater.h

Within this configuration, programming does not appear as a fixed preliminary phase, but rather as an evolving and temporally distributed process shaped by successive institutional arbitrations between the contracting authority, technical bodies, and design actors. Priorities were progressively defined, negotiated, and adjusted according to technical, financial, and political constraints. This negotiated dimension enhances the heuristic value of the case, as it allows programming to be understood not only as a normative framework preceding design, but also as a decision-making arena where spatial and landscape configurations are gradually constructed.

The selection of this case study is based on three main arguments. First, the existence of an institutional programming process – although not consolidated within a single formal document – provides a relevant setting for analysing real decision-making and arbitration mechanisms. Second, the high and socially diverse levels of use enable the observation of multiple practices and lived experiences, which is essential for addressing the *landscape-subject* dimension. Third, the observable tensions between designed spatial prescriptions and actual uses reveal significant gaps between planned and lived dimensions of the landscape.

The Sablettes promenade thus constitutes a privileged heuristic site for examining how programming – whether explicit or implicit – contributes to shaping the *landscape-object* while simultaneously conditioning the emergence of the *landscape-subject* through situated practices and social appropriations. The multiplicity of actors involved in the design, implementation, and management phases further underscores the negotiated and evolutionary nature of the programming process, reinforcing the analytical value of the case for studying institutional arbitration mechanisms.

Beyond its empirical relevance, the Sablettes promenade has been widely used as a case study in academic and professional research on urban transformation in Algeria, particularly within the broader framework of the Bay of Algiers metropolitan project. Srir (2016) highlights its role as a key example of coastal requalification and waterfront restructuring, emphasising its contribution to redefining the relationship between Algiers and its coastline. Similarly, Hannoufa (2024) provides a

detailed analysis of the spatial, functional, and perceptual dimensions of the promenade within the dynamics of urban renewal along the Bay of Algiers.

However, despite this growing body of literature, most studies remain descriptive or primarily focused on urban planning, governance structures, or morphological transformations. To date, no research in the Algerian context has operationalised an integrated analytical framework for coastal urban landscape quality based simultaneously on the three interrelated dimensions of conception, perception, and lived experience, while explicitly engaging with Berque's theory of landscape as both object and subject. The articulation between these theoretical perspectives remains largely unexplored in Algerian research.

For this reason, the present study adopts the Sablettes promenade not only for its representativeness as a flagship project of the Bay of Algiers redevelopment strategy, but also because it provides a relevant empirical field for implementing an original evaluation framework of coastal landscape quality. This framework bridges project conception, user perception, and lived experience within a theoretical approach combining Designed Quality/Perceived Quality dimensions with Berque's landscape theory.

3.5. Institutional Component: Analyzing the Landscape-Object (Conceived and Stabilized Space)

The institutional component aims to reconstruct the *landscape-object*, understood as the spatial and programmatic configuration institutionally stabilized through planning, programming, and design processes. Data collection was based on three complementary sources: seven semi-structured interviews (four representatives of the contracting authority and three members of the design team); photo-elicitation sessions mobilizing the shared corpus of 30 visual montages (C1–C30); and analysis of available documents (plans, technical descriptions, monitoring materials, and coordination documents).

The interviews were conducted on April 13, May 29, July 2, and October 16, 2025. Their average duration ranged between 60 and 90 minutes. To ensure freedom of expression, all participants were anonymized.

Each interview was structured into two sequences: narrative reconstruction of the decision-making process, including project genesis, successive arbitrations, and technical, financial, and institutional constraints; and criterion-based evaluation (C1–C30), involving systematic discussion of the degree to which each dimension was integrated during the programming phase (definition of priorities) and the design phase (spatial translation).

For each criterion, respondents assigned a score on a five-point ordinal scale (1 = very low level of integration; 5 = very high level of integration).

Photo-elicitation is used as a qualitative visual method that enables stakeholders to comment on images of the Sablettes site in order to express perceptions and clarify spatial and design meanings (Harper, 2002). It also serves as a shared evaluation tool to discuss each criterion of the analytical grid and harmonize stakeholders' judgments. Recent studies confirm its value in urban research as a method that enhances participation, interpretation, and understanding of lived spatial experience (Bignante, 2010; Poku et al., 2019; Gautam et al., 2018).

The *landscape-object* refers to the evaluation of urban coastal landscape quality as constructed by project stakeholders, including the contracting authority and the design team. It reflects the

institutional assessment of the degree to which each criterion (Ci) is integrated within the programming and design processes.

More specifically, the *landscape-object* is operationalized through the assessment of the level of integration of each criterion during two key phases of the project: the programming phase, where priorities and functional requirements are defined; and the design phase, where these requirements are translated into spatial configurations.

For each criterion Ci, three levels are distinguished: Programmed *landscape-object* (Designed Quality – programming phase), defined as the mean score attributed by representatives of the contracting authority, reflecting the degree of integration of each criterion within the programming process; Designed *landscape-object* (Designed Quality – design phase), defined as the mean score attributed by members of the design team, reflecting the degree of translation of programmed requirements into spatial design decisions; and Global *landscape-object* / Designed Quality (DQmean), an aggregated value synthesizing both perspectives. This aggregation procedure operationalizes the concept of *landscape-object* by combining institutional programming decisions and design-based spatial translation into a single indicator of designed landscape quality, thereby enabling a unified assessment of the conceived dimension of the landscape.

The global Designed Quality indicator for *landscape-object* is calculated as follows:

$$L.object\ (Ci) = \text{DQ mean (Ci)} = \frac{\text{DQ}\ programming\ (Ci) + DQ\ design\ (Ci)}{2}$$

Where: L. object (Ci) represents the designed landscape quality (DQ mean) derived from institutional and design evaluations; DQ programming (Ci) refers to the evaluation of criterion Ci during the programming phase by institutional actors; and DQ design (Ci) refers to the evaluation of criterion Ci during the design phase by the design team.

This aggregated indicator reflects the overall degree of institutional and professional stabilization of each landscape criterion. The use of mean values applied to ordinal scales is adopted as a descriptive and comparative tool, enabling systematic criterion-by-criterion comparison with the *landscape-subject* indicators.

This approach allows the *landscape-object* to be operationalized not as a static physical outcome, but as the result of a structured planning process in which programmatic intentions are progressively translated into spatial configurations and anticipated uses.

3.6. Practical Component: Analyzing the Landscape-Subject (Lived and Perceived Space)

The practical component aims to analyse the *landscape-subject*, understood as the set of experiences, perceptions, and forms of appropriation produced by users within public space.

Data were collected through a photo-questionnaire administered in situ via QR code. A total of 600 flyers were distributed on site in two successive phases in order to capture different periods of attendance. A first quota of 300 flyers was distributed on June 12, June 26, July 10, and August 7, 2025, during the peak summer period. A second quota of 300 flyers was distributed on August 21,

August 23, September 4, September 11, and October 11, 2025, in order to extend data collection over time.

The survey yielded 308 complete responses, exceeding the minimum sample size calculated for a finite population estimated at approximately 54,000 daily users ($n \geq 271$ at a 95% confidence level).

The questionnaire mobilized three perceptual registers consistent with the analytical framework. This design draws on research in environmental psychology and landscape perception studies (Kaplan & Kaplan, 1989; Purcell & Nasar, 1992), which emphasize the interrelation between visual perception, evaluative judgment, and functional experience in the assessment of urban environments.

Accordingly, the three registers capture complementary dimensions of landscape experience: Visual appreciation (BeauVis scale, 1–5), referring to immediate aesthetic judgment and sensory perception of the landscape (He et al., 2023); Landscape preference (five-point Likert scale), indicating the comparative value attributed to a place in relation to alternative spatial experiences (Likert, 1932); and Usage satisfaction (five-point Likert scale), reflecting the degree of correspondence between spatial configuration and actual user practices (Likert, 1932).

Each item explicitly corresponds to one of the analytical criteria (C1–C30), ensuring analytical symmetry with the institutional component.

The *landscape-subject* value was operationalized for each criterion Ci as a Perceived Quality indicator PQ(Ci), calculated through a weighted mean of user responses:

$$\text{L.subject (Ci)} = \text{PQ (Ci)} = \frac{(1 \times \text{n1}) + (2 \times \text{n2}) + (3 \times n3) + (4 \times n4) + (5 \times n5)}{\text{N}}$$

Where: n1…n5 represent the number of responses corresponding to each scale category, and N=308 is the total number of valid responses.

This indicator represents the user-based evaluation of landscape quality for each criterion Ci. It functions as a descriptive measure of central tendency, allowing criterion-by-criterion comparison with the *landscape-object* indicator. While derived from ordinal data, the weighted mean is used here as a comparative descriptive tool rather than as a strict metric measurement.

3.7. Analytical Convergence: Gap Analysis Between Landscape-Object and Landscape-Subject

The convergence between the *landscape-object* and the *landscape-subject* is operationalized through a simple difference indicator:

$$\Delta\,(\text{Ci}) = L.object\ (Ci) - L.subject\ (Ci)$$

where the *landscape-object* corresponds to the designed landscape quality (QC), derived from interviews and photo-elicitation conducted with project stakeholders (contracting authority and design team), and the *landscape-subject* corresponds to the perceived landscape quality (PQ), derived from user-based questionnaire responses.

The gap indicator (Δ) is not conceived as a measure of performance or failure. It is used as a descriptive analytical tool to quantify the difference between the landscape as institutionally and professionally constructed (*landscape-object*) and the landscape as experienced and perceived by

users (*landscape-subject*). In this sense, Δ expresses the degree of alignment or misalignment between planning intentions and lived spatial practices.

The interpretation of gaps is structured into two complementary analytical levels. At the quantitative level (computed difference), Δ(Ci) expresses the numerical distance between the *landscape-object* (QC) and the *landscape-subject* (PQ). It provides a systematic, criterion-by-criterion comparison of designed and perceived landscape quality. $\Delta > 0$ indicates that the *landscape-object* (QC) is higher than the *landscape-subject* (PQ), reflecting stronger institutional or design-based valuation; $\Delta < 0$ indicates that the *landscape-subject* (PQ) exceeds the *landscape-object* (QC), reflecting stronger experiential valuation by users; and $\Delta \approx 0$ indicates convergence between designed and perceived evaluations. This level provides a direct empirical measure of the relationship between planning-based construction and lived experience of the landscape.

At the interpretative level (gap classification), numerical deviations are interpreted as meaningful indicators of planning-practice relations. Arbitration gaps ($\Delta > 0$) refer to dimensions strongly prioritized and stabilized within planning and design processes but less strongly reflected in user perception. Formalization gaps ($\Delta < 0$) refer to dimensions more strongly expressed in the *landscape-subject* than in institutional and design representations. Convergence ($\Delta \approx 0$) refers to dimensions for which *landscape-object* and *landscape-subject* evaluations are aligned.

This classification is grounded in the conceptual distinction between *landscape-object* and *landscape-subject*, where institutional representations and lived experiences may diverge. It is supported by qualitative insights derived from stakeholder interviews and user responses.

Exploitation gaps (interpretative extension) are not directly derived from the sign of Δ but constitute an additional interpretative category. They are identified through the combination of high values of *landscape-object* (QC) and variable or context-dependent values of *landscape-subject* (PQ). These cases reflect the dependence of certain landscape components on conditions of use, management, maintenance, and temporal occupation.

This analytical framework combines quantitative difference analysis with interpretative classification. It allows gaps to be understood not as technical deficiencies but as empirical indicators of the relational dynamics between the *landscape-object* (designed landscape quality) and the *landscape-subject* (perceived landscape quality). More broadly, it reveals how urban programming operates as a mediating process between planning intentions and lived spatial practices in urban coastal environments.

3.8. Methodological Positioning within Planning Practice

The approach adopted does not aim to validate an evaluative tool for measuring landscape quality. Rather, it seeks to analyse the production of urban landscape as a process of arbitration structured by planning practice. It does this by articulating the reconstruction of the *landscape-object* (planning as a rationality of stabilization), an analysis of the *landscape-subject* (practice as situated production of meaning), and the criterion-based gap analysis. The methodology reveals the mechanisms through which programming selects, prioritizes, and stabilizes specific dimensions of landscape, while conditioning – without fully determining – the emergence of lived experience.

In this sense, the methodological framework operates not as an assessment model, but as a relational analytical device designed to reveal how institutional decision-making processes shape the articulation between planned space and practiced space (Figure 6).

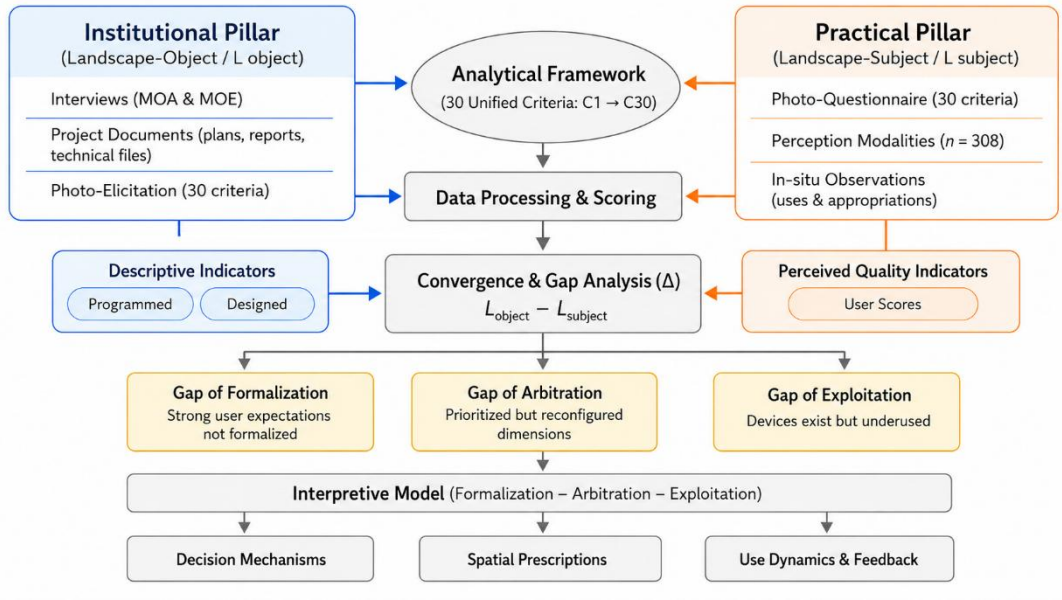


Figure 6 | Convergent Mixed-Method Framework Linking Landscape-Object and Landscape-Subject through Gap Analysis. Source: Authors.

4. Results: Programming as a Device Articulating Landscape-Object and Landscape-Subject

The cross-analysis of the institutional pillar (reconstruction of the *landscape-object*, L-object) and the practical pillar (analysis of the *landscape-subject*, L-subject), based on a shared framework of 30 criteria (C1–C30), reveals structurally significant gaps between designed and lived dimensions of the urban coastal landscape. These gaps do not merely reflect perceptual divergences. Rather, their configuration reveals distinct modes of articulation between conceived space and lived space, highlighting how planning processes mediate between institutional representations and user-based experiences.

The analysis of the variations Δ (L-object − L-subject) allows the identification of three interpretative configurations: Formalization gaps; Arbitration gaps; and Exploitation gaps.

These categories are not defined by the statistical magnitude of the gaps but by their processual meaning in relation to how programming operates. In other words, gaps are interpreted as empirical indicators of institutional mechanisms of selection, prioritization, and stabilization embedded within planning practice, rather than as measures of project success or failure.

4.1 Joint Analytical Framework of Landscape-Object and Landscape-Subject (C1–C30)

To support the structured interpretation of the results, a joint analytical table was constructed across the 30 criteria (C1–C30). This table integrates the values of *landscape-object* (L-object), *landscape-subject* (L-subject), and the resulting gap indicator (Δ), enabling a systematic criterion-by-criterion comparison of designed and perceived landscape quality.

Table 3 | Joint analysis of landscape-object and landscape-subject and gap distribution across 30 criteria (C1–C30)

Criteria for the assessment of urban coastal landscape quality		Landscape- object			Landscape subject	Quantitative gap level	Interpretative gap level
Code	Criterion	DQ programming	DQ design	DQ mean	PQ	Δ (DQ –PQ)	Gap Typology
C1	Integration into the urban context	4	3	3.50	3.42	+0.08	Arbitration gap
C2	Connectivity and continuity	3	4	3.50	3.03	+0.47	Arbitration gap
C3	Architectural typology and formal coherence	2	3	2.50	3.01	−0.51	Formalization gap
C4	Typology of spaces (public/private)	3	4	3.50	3.50	0.00	Convergence
C5	Spatial organization (calm/active areas)	3	3	3.00	3.15	−0.15	Formalization gap
C6	Coherence of urban design elements	3	4	3.50	3.23	+0.27	Arbitration gap
C7	Built/open space ratio	2	3	2.50	3.07	−0.57	Formalization gap
C8	Legibility and circulation clarity	4	5	4.50	3.35	+1.15	Arbitration gap
C9	Legibility of entrances	5	4	4.50	2.99	+1.51	Arbitration gap
C10	Human scale	2	5	3.50	3.00	+0.50	Arbitration gap
C11	Landscape composition	3	3	3.00	3.34	−0.34	Formalization gap
C12	Visual openness	3	4	3.50	3.44	+0.06	Convergence
C13	Landscape landmarks	2	3	2.50	3.43	−0.93	Formalization gap

C14	Quality of atmospheres	3	4	3.50	3.38	+0.12	Arbitration gap
C15	Temporality and animation	4	4	4.00	3.28	+0.72	Arbitration gap
C16	Place identity	3	2	2.50	3.01	−0.51	Formalization gap
C17	Integration of nature	4	5	4.50	3.29	+1.21	Arbitration gap
C18	Climate change adaptation	4	3	3.50	2.83	+0.67	Arbitration gap
C19	Biodiversity and vegetation cover	2	3	2.50	3.10	−0.60	Formalization gap
C20	Sustainable management	2	3	2.50	3.68	−1.18	Formalization gap
C21	Accessibility	5	5	5.00	3.33	+1.67	Arbitration gap
C22	Social diversity	3	3	3.00	3.33	−0.33	Formalization gap
C23	Diversity of uses	5	5	5.00	3.63	+1.37	Arbitration gap
C24	Heritage valorization	1	1	1.00	2.99	−1.99	Formalization gap
C25	Walkability and soft mobility	5	5	5.00	3.60	+1.40	Arbitration gap
C26	Safety and user comfort	4	4	4.00	3.70	+0.30	Arbitration gap
C27	Adaptability	2	4	3.00	2.87	+0.13	Arbitration gap
C28	Technical innovation	2	3	2.50	3.36	−0.86	Formalization gap
C29	Governance and participation	1	1	1.00	2.81	−1.81	Formalization gap
C30	Economic development and attractiveness	4	3	3.50	3.05	+0.45	Arbitration gap

Source: Calculations derived from interviews and questionnaire data (2025), developed by Chater.h

4.2 Formalization Gaps: Under-Formalized Lived Dimensions

Formalization gaps ($\Delta < 0$) occur when L-subject exceeds L-object, indicating dimensions that are more strongly invested in lived experience than institutionally stabilized in programming and design. The most significant negative values concern: C24 (Heritage enhancement), $\Delta = -1.99$; C29 (Governance and citizen participation), $\Delta = -1.81$; C20 (Sustainable management), $\Delta = -1.18$; C13 (Landscape landmarks), $\Delta = -0.93$; and C28 (Technical innovation), $\Delta = -0.86$.

In several cases, the differences exceed one full point on a five-point scale, indicating a strong divergence between institutional stabilization and user evaluation.

These results show that certain symbolic, ecological, and participatory dimensions are weakly formalized within the programming process (e.g., L-object = 1.00 for C24 and C29), while being significantly more recognized in lived experience (L-subject ≈ 3.00).
This suggests that programming operates through selective mechanisms that tend to under-formalize non-operational dimensions of landscape quality. Rather than being absent from institutional logic, these dimensions emerge primarily through user practices.

4.3 Arbitration Gaps: Strong Institutional Prioritization

Arbitration gaps ($\Delta > 0$) concern dimensions that were strongly prioritized and stabilized at the institutional level through programming and design.
The highest positive gaps are observed for: C21 (Accessibility), $\Delta = +1.67$; C9 (Legibility of entrances), $\Delta = +1.51$; C25 (Walkability and soft mobility), $\Delta = +1.40$; C23 (Diversity of uses), $\Delta = +1.37$; C17 (Integration of nature), $\Delta = +1.21$; and C8 (Legibility and circulation clarity), $\Delta = +1.15$.These values indicate a high degree of institutional stabilization of the *landscape-object* (L-object values ranging from 4.50 to 5.00), while user-based evaluations remain comparatively moderate (L-subject ≈ 3.00–3.60).
Functional and morphological dimensions are therefore strongly emphasized in programming priorities. However, this institutional investment does not always translate into proportional experiential intensity.
These arbitration gaps reveal how planning practice hierarchizes operational dimensions of landscape quality, producing a strongly stabilized *landscape-object* that is only partially reflected in lived experience.

4.4 Structuring Convergences

Certain criteria exhibit minimal gaps ($|\Delta| < 0.20$), indicating strong alignment between institutional and experiential dimensions: C4 (Public/private typology), $\Delta = 0.00$; C1 (Urban integration), $\Delta = +0.08$; and C12 (Visual openness), $\Delta = +0.06$.
These convergences primarily concern morphological and spatial organization dimensions, suggesting a high degree of coherence between planned spatial configurations and user perception.
In these cases, *landscape-object* and *landscape-subject* appear relatively aligned, indicating successful translation of planning intentions into lived spatial experience. Such convergences function as points of equilibrium within the broader gap structure.

4.5 Cross-Cutting Structuring of Gaps

Beyond the categorical distinctions of formalization, arbitration, and exploitation, the overall distribution of gaps reveals a systematic structuring of priorities within urban programming. Positive gaps (L-object > L-subject) are predominantly associated with functional and operational dimensions

such as accessibility, mobility, and spatial organization. These reflect strong institutional emphasis during programming and design phases.

Conversely, negative gaps (L-subject > L-object) are concentrated in symbolic, participatory, and ecological dimensions, including heritage, governance, biodiversity, and sustainability. These dimensions appear more strongly expressed through lived experience than through formal institutional representation.

This distribution is not random; it reflects a differentiated logic of stabilization within planning practice. Programming tends to privilege measurable and operational qualities, while relational and symbolic dimensions emerge more prominently through use.

Overall, the findings suggest that the gap between *landscape-object* and *landscape-subject* does not represent a binary opposition but rather a structured and differentiated process of prioritization embedded within urban programming mechanisms.

4.6 Comparative Reading of the Radar Profiles: A Visual Synthesis

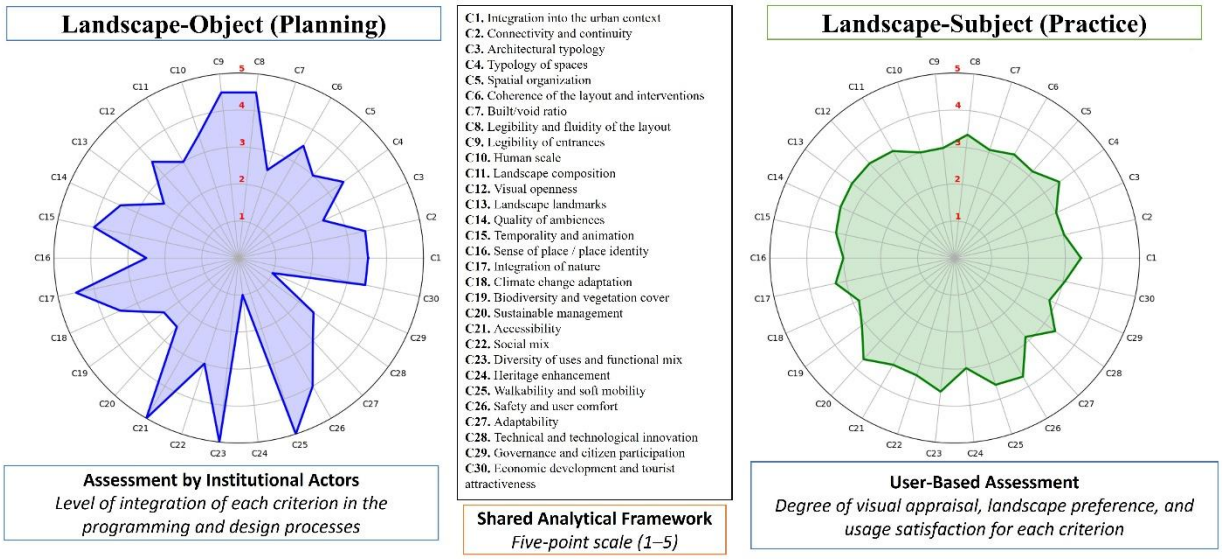


Figure 7 | Criterion-by-Criterion Comparison Between Planned and Lived Landscape Dimensions (Five-Point Scale). Source: Authors.

The superimposition of the radar diagrams representing the *landscape-object* ($L_{(object)}$) and the *landscape-subject* ($L_{(subject)}$) provides a synthetic visual interpretation of the results.

The *landscape-object* profile appears polarized, with pronounced peaks in functional and organizational dimensions such as accessibility (C21), diversity of uses (C23), walkability (C25), legibility (C8, C9), and integration of nature (C17). These high values (ranging from 4.50 to 5.00) reflect strong institutional stabilization and confirm the prioritization of operational and measurable components within the programming process.

By contrast, the *landscape-subject* profile is more homogeneous, with values generally ranging between approximately 2.8 and 3.7. Rather than exhibiting strong peaks, the experiential evaluation appears more evenly distributed across dimensions, indicating a differentiated but less hierarchized lived perception of the space.

The visual comparison highlights three key patterns: pronounced positive gaps in functional dimensions, revealing strong institutional prioritization; negative gaps in symbolic and participatory dimensions, reflecting under-formalization of identity-related and governance aspects; and areas of convergence in certain morphological components, suggesting alignment between planned configuration and experiential recognition.
The radar profiles thus provide a synthetic representation of the differentiated hierarchization embedded within programming. They confirm that the articulation between *landscape-object* and *landscape-subject* operates through selective stabilization rather than uniform correspondence.

5. Discussion

5.1. Gaps as Indicators of a Selective Programmatic Rationality

The findings confirm the central hypothesis of the article: the observed gaps between the *landscape-object* ($L_{(object)}$) and the *landscape-subject* ($L_{(subject)}$) do not primarily reflect design failure, but rather the structural functioning of programming as a selective rationality.
Programming operates as an institutional filter that transforms heterogeneous expectations – social, symbolic, environmental, and economic – into stabilized and operational priorities. This transformation necessarily entails choices: certain dimensions are foregrounded (accessibility, walkability, functional diversity, integration of nature), while others are backgrounded (heritage, governance, identity, and some ecological aspects).
Formalization gaps make this selectivity visible. Dimensions strongly invested in lived experience yet weakly stabilized institutionally (heritage, governance, sustainable management) indicate that the *landscape-subject* mobilizes symbolic and relational registers that exceed the prescriptive language of planning. These components are not absent from the project, but they remain weakly translated into explicit programmatic priorities. The gap thus functions as an indicator of hierarchical structuring rather than as an anomaly.

5.2. Arbitration and Asymmetry Between Stabilization and Lived Intensity

Arbitration gaps demonstrate that strong institutional stabilization of the *landscape-object* does not guarantee equivalent experiential intensity. The most institutionally prioritized dimensions – accessibility, legibility, walkability, and functional diversity – display the highest positive gaps. In other words, programming may successfully produce coherent and structured spatial devices without these necessarily becoming salient experiential resources for users.
This finding provides nuance to an implicit assumption in many waterfront projects: the accumulation of functional devices and spatial scenography does not automatically generate an intensified lived landscape. Arbitration is not merely a technical selection of priorities; it constructs an institutional structure of attention – what is measured, stabilized, and valorized – which may diverge from the users' structure of attention – what is perceived, appropriated, and symbolically invested. This

asymmetry highlights the political dimension of planning practice: programming organizes the visibility and legitimacy of certain landscape qualities while marginalizing others.

5.3. Exploitation: The Temporal Extension of Landscape Production

Exploitation gaps shift the analysis toward the temporal dimension of the project. They demonstrate that landscape production does not end at the stages of program formulation (dessein) and spatial design (dessin) but continues through regimes of occupation, maintenance, and regulation.
Qualities such as atmosphere, climatic comfort, safety, and sustainable management emerge as conditional attributes, dependent on modes of operation and long-term governance. The *landscape-object* may be formally stabilized, yet its effectiveness as a matrix of practices depends on its continued functionality over time.
In light of Berque's (2000a) distinction, the spatial imprint becomes a matrix of practices only insofar as devices remain operative. The observed gaps suggest that arbitration is not confined to the upstream phase of programming; it is continuously renegotiated in management and everyday use.

5.4. Programming Without a Stabilized Brief: The Contribution of the Case Study

The Sablettes case is heuristically significant due to its negotiated and evolving mode of programming. The absence of a single, formally stabilized brief does not imply the absence of programming. On the contrary, it reveals programming as a distributed and iterative process structured through successive institutional arbitrations.
Despite this processual configuration, certain priorities – particularly functional dimensions – were strongly stabilized. This confirms that programming operates as a mechanism of prioritization even when not consolidated in a unified document. The case thus moves beyond the conventional opposition between formalized programming and improvisation. Programming may be implicit yet structurally effective, as it manifests in the priorities that are actually produced, maintained, and regulated.

5.5. Analytical Implications for Waterfront Projects

Without adopting a normative stance, the findings suggest three transferable analytical implications.
First, we must acknowledge the difficulty of formalizing the sensible. Identity, memory, and participatory dimensions are not easily translated into spatial prescriptions. Their under-formalization reveals the limits of conventional programmatic instruments. Second, we must make arbitration processes explicit. Arbitration gaps demonstrate that prioritization structures the divergence between institutional stabilization and lived intensity. Documenting these trade-offs would clarify the asymmetries produced by programming.
Third, we must integrate exploitation as a constitutive project phase. Regimes of management condition the transformation of *landscape-object* into *landscape-subject*. Programming should

incorporate temporal and operational dimensions rather than focusing solely on initial spatial configuration.

5.6. Limitations and Future Research

Several limitations must be acknowledged. First, the measurement of the *landscape-subject* is based on an in-situ survey conducted at a specific moment, whereas lived experience varies across seasons and temporal rhythms. Second, aggregation through mean values may smooth the diversity of user profiles. Third, the common analytical framework, while enabling comparability, also frames what becomes analytically visible. These limitations open avenues for further research, including longitudinal analyses, finer user segmentation, and qualitative investigations into symbolic and affective registers in order to better understand what resists programmatic formalization.

6. Conclusion

This article set out to analyze urban programming as a device of arbitration between planning and practices by articulating the *landscape-object* / *landscape-subject* distinction (Berque), Lefebvre's conceived and lived space, and key contributions from planning theory concerning decision-making and power relations.

Based on a convergent mixed-method design applied to the Sablettes waterfront promenade, the analysis demonstrates that the gaps observed between planned and lived dimensions should not be interpreted as isolated design shortcomings. Rather, they function as indicators of how planning practice itself operates and how institutional rationalities are translated into spatial outcomes.

Three regimes of gaps structure this interpretation: (i) Formalization gaps reveal symbolic and relational dimensions that are strongly invested in use yet weakly stabilized institutionally; (ii) Arbitration gaps make visible programmatic hierarchizations that do not necessarily generate equivalent experiential intensity; And (iii) exploitation gaps show that landscape production extends beyond design into the temporal realm of management and operation, where spatial performance is continuously reconfigured.

The contribution of this research is twofold. Theoretically, it proposes a transferable relational framework for analyzing programming as a mechanism of selection, prioritization, and stabilization of landscape qualities, thereby strengthening the dialogue between planning theory and landscape studies. Empirically, it demonstrates that in a negotiated and evolving programming context, arbitration permeates the entire project trajectory – from conception to operation – highlighting the continuity between institutional decision-making and lived spatial experience.

By repositioning programming at the core of analysis, the article clarifies what becomes stabilized, what is transformed, and what remains implicit in the transition from *landscape-object* to *landscape-subject*. This perspective is particularly relevant for waterfront projects, where tensions between strategic urban image, everyday practices, and environmental constraints are structurally embedded, and where the articulation between designed intentions and lived realities remains inherently dynamic.

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H.C.: Conceptualization, Methodology, Investigation, Formal Analysis, Writing – Original Draft. S.B.: Supervision, Writing – Review & Editing, Validation.

Use of AI tools
Artificial intelligence tools were used solely for translation from French into English and language editing. All AI-assisted text was reviewed and validated by the authors.

Declaration of competing interest
The authors declare no competing interests.

Data availability
The data supporting the findings of this study are not publicly available. Participants took part anonymously and shared photographs of the sites during the interviews. These visual materials were used solely for the purposes of this research and, through photo-elicitation, enriched the interviews by encouraging participants to reflect on and elaborate their perceptions and experiences.

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