

Temporal and spatial dynamics in post-disaster reconstruction: a reflection on multiscale interactions

Dinámica temporal y espacial en la reconstrucción post-desastre: una reflexión sobre las interacciones multiescala

Dinâmica temporal e espacial na reconstrução pós-desastres: uma reflexão sobre interações multiescalares

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Abstract

This study explores the complex interplay between time and space in the context of post-disaster reconstruction and introduces a novel perspective that transcends the traditional static conceptions associated with architecture and urban planning. Through a multiscale analysis integrating temporal dimensions (memory, observation, and projection) with spatial scales ranging from individual buildings to the broader urban fabric, results show that reconstruction is not merely a physical rebuilding process but also an act of resignifying and reinterpreting time and space. The concept of “zero time” is introduced as a moment of stasis preceding reconstruction, while “movement” is analyzed as a metaphor for the journey toward a renewed spatial and social harmony. This article highlights the mutual influence between reconstruction practices and individuals’ temporal and spatial perceptions and suggests planning approaches that value temporality and spatial flexibility. Contributing to the urban resilience debate, this research provides insights for sustainable, inclusive, and community-rooted post-disaster reconstruction approaches. Temporal and spatial dynamics in post-disaster reconstruction: a reflection on multiscale interactions.

Keywords: post-disaster reconstruction, zero-time, space, movement, temporal reflections, multiscale.

Resumen

Este estudio explora la compleja interacción entre tiempo y espacio en el contexto de la reconstrucción post-desastre e introduce una perspectiva novedosa que trasciende las concepciones estáticas tradicionales asociadas con la arquitectura y la planificación urbana. A través de un análisis multiescala que integra dimensiones temporales (memoria, observación y proyección) con escalas espaciales que van desde edificaciones individuales hasta el tejido urbano más amplio, los resultados muestran que la reconstrucción no es meramente un proceso de reconstrucción física, sino también un acto de resignificar y reinterpretar el tiempo y el espacio. Se introduce el concepto de “tiempo cero” como un momento de estasis que precede a la reconstrucción, mientras que el “movimiento” se analiza como una metáfora del viaje hacia una renovada armonía espacial y social. Este artículo destaca la influencia mutua entre las prácticas de reconstrucción y las percepciones temporales y espaciales de los individuos, y sugiere enfoques de planificación que valoran la temporalidad y la flexibilidad espacial. Contribuyendo al debate sobre la resiliencia urbana, esta investigación ofrece perspectivas para enfoques de reconstrucción post-desastre sostenibles, inclusivos y arraigados en la comunidad.

Palabras claves: Planificación Urbana, Ciudades Sostenibles, Resiliencia Comunitaria, Crecimiento Inclusivo, Desarrollo Sostenible, Asociaciones.

Resumo

Este estudo explora a complexa interação entre tempo e espaço no contexto da reconstrução pós-desastre e introduz uma perspectiva inovadora que transcende as concepções estáticas tradicionais associadas à arquitetura e ao planejamento urbano. Por meio de uma análise multiescala que integra dimensões temporais (memória, observação e projeção) com escalas espaciais que vão desde edificações individuais até o tecido urbano mais amplo, os resultados mostram que a reconstrução não é meramente um processo de reconstrução física, mas também um ato de resignificar e reinterpretar o tempo e o espaço. Introduce-se o conceito de "tempo zero" como um momento de estase que precede a reconstrução, enquanto o "movimento" é analisado como uma metáfora da jornada em direção a uma harmonia espacial e social renovada. Este artigo destaca a influência mútua entre as práticas de reconstrução e as percepções temporais e espaciais dos indivíduos, sugerindo abordagens de planejamento que valorizam a temporalidade e a flexibilidade espacial. Contribuindo para o debate sobre resiliência urbana, esta pesquisa oferece perspectivas para abordagens de reconstrução pós-desastre sustentáveis, inclusivas e enraizadas na comunidade.

Palavras-chave: Planejamento Urbano, Ciudades Sustentáveis, Resiliência Comunitária, Crecimiento Inclusivo, Desenvolvimento Sustentável, Parcerias.

Introduction

The aftermath of natural disasters presents a multifaceted challenge that extends beyond the mere physical restoration of infrastructure and buildings; it also encompasses a profound reconfiguration of the social, cultural, and spatial fabric of the impacted communities, thereby necessitating a critical reevaluation of the notions of time and space (Kaniasty, 2020). These elements should not be viewed merely as referential frameworks but as dynamic entities that play a pivotal role in transformational processes. This reflection delves into the interplay between time and space within post-disaster reconstruction, advocating for a perspective that surpasses the static views commonly associated with architecture and urban planning (Boano & Hunter, 2012).

Post-disaster reconstruction presents a fertile ground for exploring temporality and spatiality from a multiscale perspective. The dimensions of time (memory, observation, and projection) along with spatial scales (ranging from individual buildings to the broader urban context) indicate that reconstruction transcends mere physical rebuilding and emerges as a significant act of redefinition and reinterpretation. This conceptualization draws inspiration from Tuan's (Tuan, 1977) discussion on spaces and places as constructs imbued with personal and collective meanings and from Harvey's (Woodward & Jones III, 2008) insights into the condition of postmodernity, thus highlighting the importance of acknowledging a plurality of times and spaces in shaping our urban realities.

In this article, we introduce the notion of “zero time,” which represents a critical pause preceding reconstruction effort. Far from being a void, this moment is laden with potential for reimagining urban futures. Conversely, “movement” is conceptualized as a metaphor

for the transition toward renewed spatial and social equilibrium, evoking the dynamics of stability and change characteristics of reconstruction. The mutual influence between reconstruction practices and individuals' temporal and spatial perceptions underscores the necessity to develop planning approaches that prioritize adaptability and fluidity, which aligns with Lefebvre's (Gregory, 1995) arguments about the production of space as a dynamic and social process.

By contributing to the urban resilience discourse, this article calls for a shift from traditional methods of post-disaster reconstruction toward approaches that are sustainable, inclusive, and deeply embedded in the socio-temporal complexities of communities. In this sense, reconstruction should be envisioned not just as a response to physical destruction but as an opportunity to strengthen community identities, promote spatial justice, and facilitate emotional and psychological recovery.

This reflective approach to post-disaster reconstruction is motivated by the need to address not only the visible scars left by disasters but also those scars etched into the social fabric and collective memory. Acknowledging the complexity of time and space opens a pathway to reconstruction that not only restores but also transforms, thereby offering communities a solid foundation for building a more resilient and harmonious future (Chamlee-Wright & Storr, 2011; Monteil, Simmons, & Hicks, 2020; Rayamajhee & Bohara, 2021).

A key factor in building community resilience is the way through which disasters alter social capital. Research conducted in the Atacama Region of Chile during the 2015 floods and mudflow disasters demonstrates the dynamic nature of social capital, with social networks and trust playing key roles in the processes of resilience building, recovery, and adaptation. Thus, a crucial component of post-disaster recovery is the efficient management of social capital, which underscores the relationship between social structures and catastrophe resilience (Castro-Correa,

Aldunce Ide, Wyndham Vásquez, Mena Maldonado, & Pérez Tello, 2020; Choo & Yoon, 2022; Lin & Chen, 2022).

This reflection seeks to inspire new paradigms in post-disaster reconstruction that recognize the interdependence between humans and their environment and encourage active and conscious community participation in the reconfiguration of their living spaces. In doing so, this article calls for a rethinking of how, in the process of reconstruction, we can reconnect with our surroundings in ways that celebrate the complexity of time and the intricacy of space.

Methods

A qualitative research methodology was meticulously employed in this study to capture the complex interplay of temporal and spatial dynamics experienced in Chamanga, Ecuador, a community profoundly impacted by the 2016

earthquake, during its post-disaster reconstruction. This approach was deeply informed by the authors' own in-situ visits, thereby providing a rich, firsthand perspective on the recovery efforts and their multifaceted impacts on the community (Domingo-Calabuig & Rocchio, 2023).

Through a series of detailed, on-the-ground observations and interactions within Chamanga, the authors immersed themselves in the lived realities of the affected area. This immersion was pivotal for an intimate understanding of the community's recovery process, the spatial rearrangements, and the temporal shifts occurring as a result of its reconstruction efforts. The qualitative nature of this study hinged on capturing the nuanced and often intangible aspects of how space and time were being redefined in the wake of a disaster.

Semi-structured interviews conducted with a diverse array of local residents, reconstruction workers, and urban planners formed the cornerstone of the data collection process. These interviews, enriched by the authors'

firsthand observations, provided deep insights into the personal and collective experiences of these participants during the reconstruction phase. The questions were designed to elicit detailed narratives, thereby allowing the participants to share their stories, perceptions, and reflections on the rebuilding process.

Participant observation further augmented the richness of the collected data. By being physically present in Chamanga, the authors were able to observe the daily dynamics and interactions that shaped the community's reconstruction landscape. Through this method, the authors captured spontaneous moments, community interactions, and the subtle yet significant ways through which people adapted to and navigated their transforming environment. Figure 1 and 2 show satellite images of Chamanga in both micro and macro detail.

Documents and personal narratives available from the local media were analyzed for an additional layer of context. These materials, which were analyzed

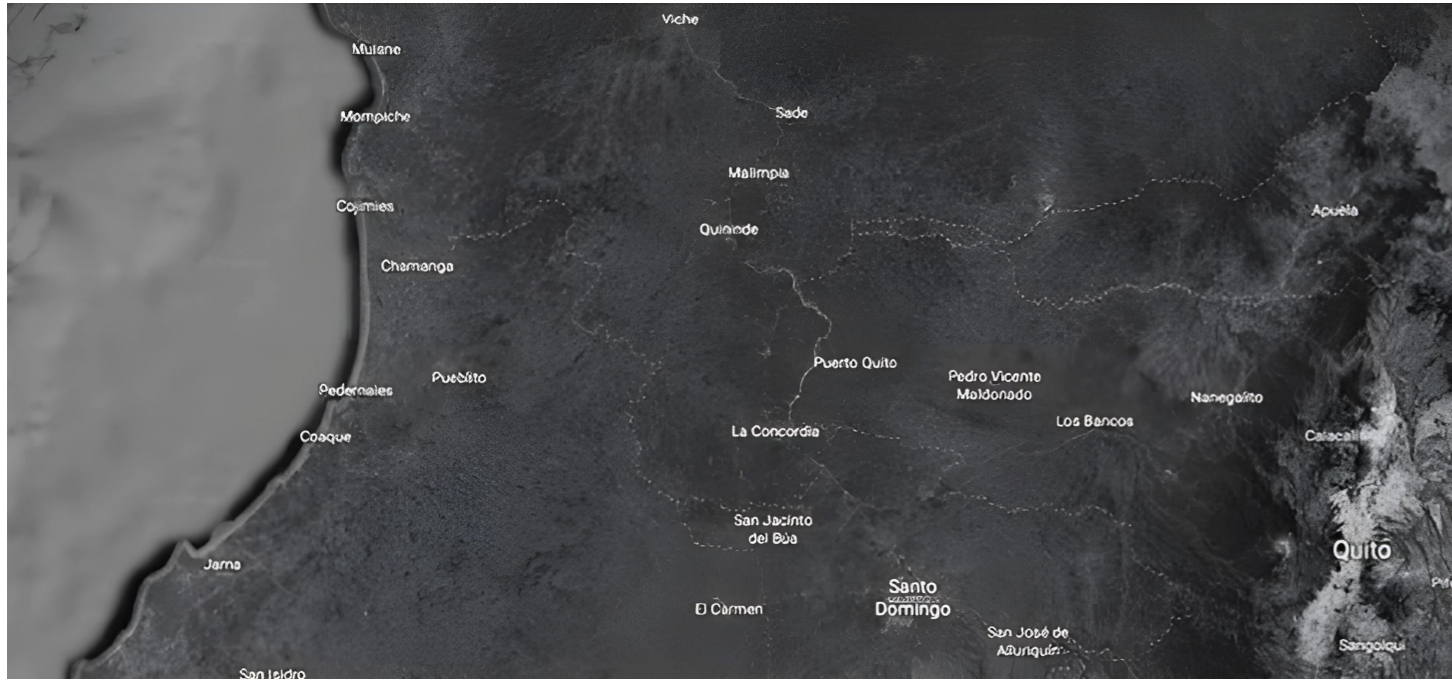


Figure 1. Location of Chamanga, Macro View. Source: <https://earth.google.com>



Figure 2. Location of Chamanga, Micro view. Source: <https://earth.google.com>

alongside the data gathered from the interviews and observations, provided a comprehensive view of the reconstruction strategies, their implementation, and the stories that emerged from the community's journey toward recovery.

Ethical considerations were woven throughout the research process with a particular emphasis on the authors' responsible engagement with the community and the sensitive nature of the research topic. Given their personal involvement in the field, the authors ensured that the research was conducted with the utmost respect for the participants and their experiences. This involved safeguarding the anonymity of individuals and handling the collected data with care, ensuring that no sensitive information from third parties was disclosed. The reflective and empathetic approach taken in this study was not only a methodological choice but also an ethical stance that acknowledges the profound impact of the disaster on the community and the importance of respectful representation in the research findings.

Enriched by the authors' in-situ experiences and ethical engagement with the community of Chamanga, this study offers a unique lens through which the profound changes in time and space brought about by post-disaster reconstruction efforts can be understood. The employed methodology facilitates a deep, empathetic understanding of the recovery process, highlights the resilience of the community, and offers critical lessons for future urban planning and reconstruction initiatives.

Interplay of time in architectural reconstruction

In the realm of post-catastrophe architectural reconstruction, time is viewed as a multifaceted concept that encompasses various phases that distinctly punctuate the recovery process. The time of approach, the time of memory, the time of observation, and the time of projection establish a discontinuous tempo, with

each phase signifying a different facet of the temporal experience within the initial stage of reconstruction. Time is thereby not just a means to measure spatial connotation but also a spatial element itself as a result of procedural developments (Norberg-Schulz, 1979).

The difficulty of conceiving time in a singular manner—interpreted through Litvinoff, D. E. (Litvinoff, 2015)—suggests an abstract consideration of time; in other words, in its ideal form, the world is conceived as sempiternal (Zeyl & Sattler, 2005), a quality that the ephemeral cannot fully embody. Therefore, an endeavor to materialize a semblance of eternity was made, and in ordering the heavens, an eternal image marching according to number—what we call time—was crafted. However, the historical appraisal of a specific multiscale context intrinsically carries the significance of time as an element recognizable from the present standpoint. From this view, observation becomes the representation of the present moment, memory embodies the past with its historical recollections, and projection envisages the future in a procedural form.

When the image is conceived as a project in process, time represents the process itself—from historical valuation in individual and collective memory to projection as the crystallization of “movement” within architecture. Discussing “movement” is to discuss the process and its antithesis. This chapter intends to define the concepts that have given this research its nomenclature, aiming to reevaluate architecture from its procedural essence rather than as a point in stasis. Thus, the architectural object as a processual element, the understanding of the multiscale as a contextual contraction and expansion, the concept of “zero time” proposed by Rocchio and Moya (D. Rocchio & Moya, 2017), the movement that enables a transition from a static object to a dynamic processual element, and time as a determinant in shaping the landscape's imagery are pivotal for grasping the concept of “architecture in movement,” the architectural space, and its subtle transformations (Tschumi, 1996).

The social construction of time shapes the spatial construction of society. This construction takes on scientific significance from a collective valuation that

spans multiple disciplinary fields. Social construction asserts that science does not operate in absolute isolation; instead, each period is lived as much through the sphere of emotion as through the sphere of thought, with any change in one sphere invariably impacting the other. Every era expands its emotions through various modes of expression, and emotions and their means of expression adapt according to the prevailing thoughts of the era. Thus, during the Renaissance, the predominant idea of space allowed action through perspective (Giedion, 2009), whereas in modern times, the space-time concept leads artists to adopt very diverse means of action. To act in the contemporary context is to understand that the backdrop is ever-changing, boundaries are increasingly flexible, thresholds are livable spaces that can expand and contract, environments extend beyond physical limits, spaces are no longer merely physical, distances are not solely material, and everything in this phrase is subject to time, which is understood as a constant process in the definition of space.

An architectural project is traditionally seen to have a beginning and an end, but within a processual vision, the progressive and regressive nature of time provides the answer to when an architectural project or work begins and ends. In this regard, time serves as a medium and an element (Kern, 1983) inconsistent in its development. To temporalize is to interpret space from a dynamic perspective, evolving from premises to consequences. Aristotle and Newton believed in absolute time, thinking unequivocally that the time interval between two events could be measured without ambiguity and that this interval would always be the same. From their perspective, time is entirely separate from space. However, within just a few years, we had to radically change our old ideas about these concepts (Hawking, 2009).

Reflecting on this discourse, we are reminded that our understanding of architecture, time, and space is not static but is a rich tapestry continuously woven by the hands of those who dwell within and those who dream of what it may become.

Rethinking architectural objects as processual spaces

Within the continuum of architectural discourse, the interpretation of the architectural object has evolved from a static embodiment of function and aesthetics to a dynamic processual element within the fabric of society. This evolution reflects a fundamental shift in how structures are perceived and engaged with over time. The architectural work, traditionally viewed in four dimensions, gains significance through the temporal engagement of its users, resonating with Pallasmaa's (Pallasmaa, 2024) emphasis on the sensory experience of architecture.

During the aftermath of a disaster, such as the one experienced in Chamanga, the architectural narrative diverges significantly from historical texts and demands a reevaluation of what constitutes an architectural object (Norberg-Schulz, 1979). This narrative becomes

less about the materiality of constructed objects and more about the processes and experiences they facilitate (Heidegger, 1971). The distinction between objects and processes becomes blurred as the focus shifts from the object as an end to the object as a means within a temporal and spatial journey.

Returning to Chamanga revealed not only physical but also emotional and social dislocation, thereby underscoring the intricate relationship among people, place, and time (Lynch, 1964). The structures being dismantled were more than just architectural objects; they were vessels of life stories and histories. This idea is consistent with the phenomenological perspective, which sees buildings as frameworks for human experiences (Merleau-Ponty, 1962).

Considering architecture from the perspective of continuity and change challenges the notion of the architectural object as a static artifact. The concepts of "zero time" and "movement" within architectural theory introduce further challenge this perspective by suggesting that buildings are

not just constructed but are continuously in the process of becoming.

Therefore, the enduring question here is whether it is still relevant to speak of objects in architecture, especially in the context of post-disaster reconstruction, where buildings are atemporal and the concept of object limits the view to a singular moment rather than acknowledging the constant evolution (Brand, 1995). The object as a space for relations underscores the notion of "for," implying that it is a container static in time and function (Alexander, 1979).

After months passed by in Chamanga, the interrogation of the architectural object transformed into an understanding of architecture as an ongoing process. This was not the architecture described in textbooks but a living architecture that needed to be reestablished as habitable and dignified spaces. The transition from "objects" to "processual elements" signifies a paradigm shift, potentially calling for a new "secession" to champion the marginalized and those living in extreme hardship (Harvey, 1996). The language

and terminologies used in architecture create a culture, with the notion of a tent in an emergency transcending the concept of an object to become a processual element encapsulating time and an aggregation factor.

Defining reconstruction through processual elements rather than objects is not merely a stylistic choice; fundamentally, it is a reflection aimed at achieving a conceptual shift necessary to rethink post-disaster intervention from a processual standpoint that cannot be realized if architecture is regarded merely as an object. Objects are ornaments, and in the event of an emergency, ornaments can be a hindrance to the satisfaction of practical and contextual needs (Loos, Rossi, Newman, & Smith John, 1982).

The processual architectural element is a space that is mutable in itself or in relation to its context, existing in "zero time" and in "movement," thereby suggesting that the process of reconstruction is ongoing and ever adapting to the needs and rhythms of the community.

Multiscalarity and interstitial spaces

The intricate relationship between architecture and multiscalarity in post-disaster environments reveals a profound connection between processual architectural elements and the social fabric they are part of. The notion of multiscalarity extends beyond a mere structural or dimensional analysis; it embodies a rich tapestry of human relationships and interactions that occur within and across these scales.

In-between spaces act as the nexus where the multiscalarity of urban environments converges, fostering diverse social interactions and contributing to the resilience of communities. They serve as vital connectors within the urban fabric, facilitating the fluid exchange of ideas and experiences across various scales of human activity. This concept was observed clearly in Chamanga, where the urban layout seamlessly integrated in-between spaces such as narrow alleys and communal courtyards (see Figure 3).

The "in-between spaces" in Chamanga, such as narrow alleys and communal courtyards, have proven to be key elements for community resilience. These interstitial spaces, far from being mere urban voids, serve as vital nexuses where essential social interactions take place during the reconstruction process. In the post-disaster context, these spaces have facilitated meetings among residents, fostering networks of support and collaboration that are critical to resilience. The flexibility and adaptability of these spaces allow them to become hubs of social and emotional exchange, playing a crucial role in the cohesion and recovery of the community. (Porreca, R., Geropanta, V., Barberá, R.M., Rocchio, D. 2020).

The narrative of Chamanga, which was informed by extensive fieldwork and scholarly reflection, illustrates a locale emblematic of the macro (the collective and the societal) and the micro (the individual and the personal) (Lefebvre, 1991). Chamanga emerges as a living, breathing



Figure 3. The "in-between" in Chamanga, 2016 – photograph - Source: Authors' photo.

multiscalar entity where identity is forged in the interplay of differences. By reflecting on the intense initial engagement with the area, it is clear that the passage of time has allowed for a deeper contemplation over impulsive action, thus shaping a nuanced understanding that to speak of multiscalar might be too simplistic for such a complex web of interactions.

The tripartite scale of micro, meso, and macro is indicative of specific realities within an ecosystem, each with its unique relational dynamics. In this light, architecture transcends the realm of the physical to become a relational system without definitive beginnings or ends, analogous to the rhizomatic structures described by Deleuze and Guattari (Deleuze, 1987). This multiscalar approach offers a flexible methodology for analyzing place identity, recognizing that a rigid, linear process cannot sufficiently capture the fluidity of spatial relationships (Massey, 2005).

Within months after the disaster, governmental interventions that neglect the multiscalar connections intrinsic to the community were proposed. Such oversight highlights the disregard for the socio-spatial relationships and identity that are essential to post-catastrophe reconstruction, thereby raising questions about the efficacy of such top-down approaches.

The multiscalar factor symbolizes progressive and regressive processes and encompasses temporal and spatial dimensions. This factor echoes the sentiment that analyzing a context requires an ability to zoom in and out, akin to expanding and collapsing scales in digital interfaces, thereby offering multiple perspectives with varying levels of detail (D. Rocchio, Ponce, & Calderón, 2024).

Understanding multiscalar reflection is pivotal to recognizing the “in-between” (Van Eyck, 1959) spaces that constitute semi-private and semi-public realms. These thresholds become spaces of transition, negotiation, and habitation that define the interstices between the individual and the collective.

The identity of place is intricately linked to these “in-between” spaces that facilitate and reflect community life. The semi-public and semi-private realms serve not merely as transitional zones but as active participants in the shaping of communal identity and memory.

Chamanga, with its complex post-earthquake urban fabric, provides concrete examples of how time and space intertwine in the reconstruction process. The reconfiguration of public and private spaces, such as plazas that became temporary shelters and streets that assumed new social functions, highlights this dynamic interaction. As time passes, these spaces are transformed not only physically but also in their meaning to the community. Thus, the reconstruction in Chamanga is not merely a physical act of building but a process of spatial re-signification, where past experiences and future projections influence how urban environments are reorganized. (D. Rocchio & D. Domingo C., 2023)

In sum, the reconstruction narrative underscores the importance of understanding architecture not as a collection of static objects but as a dynamic, relational process embedded within a multiscalar and temporal framework, which is essential for fostering a truly inclusive and responsive rebuilding strategy.

Notion of “zero time”

In the wake of architectural metamorphosis, the concept of “zero time” emerges as an important moment of stasis, a concept that finds resonance in Kafka’s transformation of Gregorio Samsa, who awoke to find himself in an unanticipated form, symbolizing the sudden arrest of the familiar and the beginning of an uncharted existence. This notion of awakening into a new reality parallels the juncture at which architectural works, often idolized as immutable and perfect, are forced to confront the inevitability of change (Kafka, 1996).

In the context of architecture, “zero time” is characterized by a hiatus in the progression of built form where projects are often conceived as static entities that are suspended in a contextual vacuum—an approach that has been criticized for overlooking the innate dynamism of living spaces.

The concept of zero “time” in Chamanga is tangibly visualized through the temporary shelters erected after the 2016 earthquake. Although initially designed as ephemeral solutions, these structures remained in use far beyond the planned period, reflecting a state of stasis in the reconstruction process. This temporal lapse, where communities adapted to an intermediate solution without advancing toward a definitive improvement, exemplifies how time and inertia impact post-disaster reconstruction. Instead of a swift transition to permanent structures, the temporary shelters encapsulated a forced pause in the spatial reconfiguration process.

By contrast, there are edifices that embody imperfection and mutability, embrace adaptability as a virtue, and reflect a human-centered design philosophy that prioritizes well-being over self-celebration (Alexander, 1979). These structures eschew the rigidity of “zero time” and advance beyond to meet new needs and orders, which is aligned with Jacobs’ (Jacobs & Cities, 1961) advocacy for buildings that respond to the life within and around them.

“Zero time” in the architectural vernacular can be described as the embodiment of linearity, constancy, and routine—a temporal straightjacket that holds the built environment in a state of inertia resistant to the evolving needs of its inhabitants (Lefebvre, 1991). This concept has been interpreted as a critique of the immutability and static nature of certain architectural practices, where the act of creation becomes a mere replication of the status quo and fails to progress toward a meaningful engagement with the temporal and spatial fabric (Tschumi, 1996).

This notion of stasis versus transformation becomes particularly pertinent when reflecting on the outcomes of good intentions in the form of projects launched in areas such as Chamanga. These projects often become self-celebratory than contextually responsive, thereby leading to creations that are static and “gattopardiani” (Di & Giuseppe, 1958), that is, seemingly changing but fundamentally remaining the same, thus perpetuating the concept of “zero time.”

Figure 4 shows the the emergency shelter provided by the government in Chamanga, Ecuador, one year after the earthquake, serves as a tangible representation of the concept of „zero time” in architecture. This image depicts a situation that was meant to be temporary but has persisted, seemingly frozen in time. Despite the passage of a year, the emergency shelter remains, highlighting a lack of progression or adaptation to changing circumstances. In the context of „zero time,” this static state mirrors the architectural stagnation described in the text. Just as certain architectural practices fail to evolve to meet the evolving needs of their inhabitants, the persistence of the emergency shelter reflects a reluctance or inability



Figure 4. Emergency shelter provided by the government, one year after the earthquake. Chamanga.

to move beyond the initial response phase. This imagery underscores the importance of embracing adaptability and human-centered design principles in architecture, to ensure that structures can respond effectively to the dynamic needs of their users and environments, rather than remaining trapped in a state of inertia

In the grander scheme, the ability to govern time within architecture is questioned. Rather than wielding control over it, time should be embraced as an element that is either static or dynamic relative to the subject and context in question—a perspective shared by (Kuhn, 1997) regarding the progress of scientific paradigms, which could also be applied to the evolution of architectural theory and practice.

“Zero time” is not an absolute in architectural thinking; it is a phase, a temporal pause before the next wave of change. It is within these pauses that reflection takes place, allowing for the assessment of what has been and the anticipation of what is yet to come. The dynamic nature of architecture calls for a constant reevaluation of space in relation to time, recognizing that every built environment, every community such as Chamanga, is a living organism that is ever evolving, and that the static “zero time” is only a fleeting moment in its lifecycle.

Essence of movement

Architecture is understood not merely in its spatial dimension but as a four-dimensional experience where time becomes an essential factor in its existence, usage, and perception. This temporal aspect has been foundational since the pre-Socratic era, where philosophers contemplated time as a critical element—structuring movement, noting its potential for infinite divisibility and its intrinsic relationship with space. In Chamanga, the post-catastrophe rebuilding of homes reflects an innate drive for survival, a movement toward continuity despite the lingering specter of past destruction. This instinctual response to create and

recreate in the face of adversity echoes Aristotle’s notion of time as a measure of change that ceases to exist without movement (Charlton, 1983).

Reconstruction is not just about the rapidity of physical changes but also about their strategic significance within a community’s recovery narrative. The cases of L’Aquila, Mirandola, and Amatrice in Italy stand as cautionary tales of delayed reflections on identity and socio-spatial relations, hindering the timely fulfillment of rebuilding efforts (Castro-Correa et al., 2020).

By wandering through the streets of Chamanga (see Fig. 5), engaging with its inhabitants, and observing the ongoing reconstruction efforts, one can see the embodiment of time as a multidimensional and multiscale phenomenon. This observation aligns with the concept that human activity, especially in response to disasters, is a symbol of architectural movement across scales, where architecture is an outcome of this movement (D. Rocchio, Narváez, S., Beltrán, A., Simbaña, P., Jaramillo, P. I., Jácome, W., Álvarez, J., 2023).



Figure 5. Spontaneous settlement in public squares, Chamanga, Ecuador. Source: Authors’ photo.

In this context, time is not just a factor to be governed but an element that binds together the past, present, and future within the spatial domain. Recognizing the importance of memory in this matrix allows us to comprehend space with all its peculiarities, shaping its habitability and projection.

“Movement” within the post-disaster reconstruction process should not be understood as a metaphor, but also as a tangible phenomenon. In this sense, movement is not only physical but also social and emotional, marking the process through which inhabitants begin to reconfigure their spaces.

Therefore, the concept of “movement” is not only about the physical restructuring of space but also the continuous progression and regression that define the reversibility of time and influenced by the collective memory and future aspirations of a place. This dynamism is vital in the architectural process, particularly in reconstruction, where the past justifies the present and paves the way for future development (Halbachs, 1992).

Reflecting on the reconstruction efforts in Chamanga is to understand the ongoing process of evolution and perception. Being part of this reconstruction, even minimally, symbolizes a commitment to progress, a conscious effort that intertwines perception and movement without losing the essence of time (Casey, 2009).

Conclusions

The exploration of movement, time, and their impact on the landscape encapsulates a profound understanding of architectural and environmental change. The notion of “zero time”—a state of stasis before transformation—parallels the philosophical inquiries into time and space that have intrigued thinkers since antiquity. The experiences of Chamanga and the reflections on disasters exemplify the continuous interplay among time, memory, and spatial dynamics.

The immediacy of post-disaster response underscores the essence of “movement” not merely as physical reconstruction but as a manifestation of survival, resilience, and an instinctual drive toward continuity. This reaction to catastrophes embodies a conception of time as a measure of change where movement, or the lack thereof, defines the temporal landscape.

The distinctions among the short-, medium-, and long-term planning phases reveal a spectrum of temporalities that influence the post-disaster landscape. The “post” and “post-post” phases highlight a progression from immediate survival to strategic recovery and the eventual reimagining of the community’s socio-spatial fabric. This process testifies to the resilience and adaptive capacity of human settlements in the face of adversity.

The recovery journey, from the immediate aftermath of the earthquake to the gradual healing of the community, underscores an intrinsic link between time and landscape transformation. The landscape is a physical and metaphysical entity that changes with the rhythms necessary for the community to retain its identity.

This exploration underscores the significance of time as a binding factor whose progressive and regressive characteristics allow for a dynamic understanding of space and its habitability. Time facilitates a comparison of diverse “before” and “after” states within the landscape and provides a lens for interpreting the multiscale diversities that emerge after a catastrophe.

In conclusion, the interrelation among time, movement, and landscape transformation reveals the complexity of reconstructing spaces that respond to human needs and environmental contingencies. Such interrelation highlights the importance of considering the temporal dimension in architectural and planning practices and advocating for a resilient and adaptive approach to the built environment that accommodates the ever-changing tapestry of human existence.

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Fuente de ilustraciones

Figura 1. Source: <https://earth.google.com>

Figura 2. Source: <https://earth.google.com>

Figura 3. Authors' photo

Figura 4. Authors' photo.

Figura 5. Authors' photo.