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Revealing a Gap in Parametric Architecture's Address of "Context"

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Abstract: "Context" holds a broad meaning in architectural discourse, and its definition and components have evolved over time. A comparison between contemporary parametric design and overall architectural practices reveals a contradictory connotation of context in these discourses. In parametric design, as it is currently practiced, the concept of "context" appears to have shifted primarily toward energy considerations and quantifiable parameters, neglecting the broader range of site forces. However, it raises the question of whether parametric design can still be considered contextual and sustainable design when it overlooks compatibility with broader contextual dimensions such as cultural, social, and historical forces. To answer this question, we establish a clear and comprehensive definition of "context" in overall architectural practices by exploring the different meanings and epistemologies of "context" in cultural, social, historical, physical, environmental, political, and economic domains. This process helps us determine which context components can be incorporated into parametric architecture and which cannot, thereby aiding in the integration of sustainability principles into parametric design. The results show that while physical and environmental components can be included in parametric architecture, intangible parameters such as cultural, historical, social, economic, and political aspects cannot be easily quantified and thus are difficult to incorporate.

Keywords: contextual design; critical regionalism; parametric architecture; context

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1. Introduction

Context originates from the Latin term "contextere", which translates to "to weave together" [1]. According to the dictionary [2], context is defined as the set of situations, events, or concepts that enable a comprehensive understanding and evaluation of a specific subject based on its surrounding circumstances. In textual discourse, "context" encompasses both preceding and following components. It serves to facilitate connections with other elements within a composition, contributing to the creation of a cohesive whole [3]. In this discourse, word meanings are derived from their association with other words, highlighting the significant role of context in language's structure. Consequently, even a slight alteration in one word within a cluster can result in an alteration of an entire phrase's meaning [4]. From a broader perspective, "context" encompasses the fusion of diverse circumstances, phenomena, facts, or events intertwined with others, resulting in an all-encompassing viewpoint. It denotes crafting scenarios by elaborating on preceding and subsequent incidents or situations. In addition, the term can encompass not only the immediate surroundings but also border environments, frameworks, settings, or conditions enveloping an action or circumstance [5].

Heidegger, in his study "Building, Dwelling, Thinking", asserts that genuine "dwelling" and the essence of "being" can only occur within well-defined boundaries. He elucidates that a boundary is not merely where something ends but where its presence initiates [6]. Ref. [7] delved into embodied perception and experience, emphasizing the indispensable role of context. He maintained that our understanding of the world hinges on the interplay

between objects and their context. As we engage with the world through our bodies, context becomes the linchpin in shaping our experiences and interpretations.

As elucidated by Heidegger, Merleau-Ponty, and Smith, context is intricately woven into our experience and sense of place. So, how does context relate to architecture? The relationship between architecture and its context is fundamental, as the location of a building and its interaction with the immediate environment hold great significance [8]. The notion of context in architecture is dynamic and constantly changing due to various factors such as different perspectives, technological advancements, and urban developments [9]. It encompasses a wide range of elements including architectural components, tactile qualities of surfaces, material properties, perceptibility, cues to scale, and evidence of craftsmanship [10].

Architectural contextualism emerged primarily from 1950 to 1980 [11], redefining buildings as integral parts within their site or community rather than isolated entities [12]. It involves interpreting the entire environment or specific attributes related to it [13]. Within contextual design principles lie considerations for form integration with geography, vegetation, street layout, spatial structure, neighboring structures that contribute to cityscapes, architectural style, and intricate architectural details [14]. To truly grasp context requires delving into the essence of a place while respecting tradition [12].

Contextualism, rather than prescribing a particular architectural style, embodies a set of principles, including vernacularism, regionalism, and critical regionalism [15]. Vernacularism pertains to constructions by local residents using locally sourced materials and architectural expertise [16]. Regionalism underscores the idea that architecture should harmonize with the physical, cultural, and political milieu. Critical regionalism serves as a response to the perceived absence of meaning in modern architectural practices [17]. It is rooted in the belief that modern architecture has fallen short when it comes to addressing its physical context, instead adopting universal rules and becoming far too abstract [15].

In summary, context can be understood as the relationship between a building and its immediate site, encompassing various elements such as physical attributes (material properties, vegetation, street layout, spatial structure, neighboring structures) and more intangible criteria (perceptibility, scale, style, etc.). More specifically, Nasr [9] classified context components into three: "man", encompassing non-physical aspects like social, political, economic, and cultural considerations; "site", involving the physical environment and conditions; and "materials", comprising construction materials [15].

The rise of advanced parametric architectural tools has led to a resurgence of modern and international architectural styles, historically distant from contextual concerns. This revival highlights a contemporary disconnection from context. These computer tools have transformed from productivity aids to generators of design solutions, giving birth to parametricism, a novel design paradigm [18]. With a streamlined design process involving a broader range of quantitative parameters, this digitalization has ushered in an international architectural style characterized by bold forms but often incompatible with local contexts. While symbolizing human progress, this globalization threatens traditional cultures and significant cultural hubs [17]. Despite parametric theorists' claims of local adaptation, integrating qualitative contextual elements remains challenging [19]. This challenge leads us to question how contemporary parametric design relates to the historical and overall definition of context.

Answering this question requires a precise understanding of the term "context" and its underlying components. A comprehensive review of this term entails analyzing its denotation, connotation, applications, and interpretations in different architectural styles. Only with this systematic and comprehensive analysis will we be able to evaluate the relevance of context in parametric architecture. Our observations of parametrically designed buildings and a review of the relevant literature led us to hypothesize that there is a gap in the definition of context. Specifically, this gap exists between historical definitions of "context" in architectural design and contemporary definitions of "context" in parametric architecture. The core purpose of current research is to respond to this question: Is there

a discrepancy in the meanings and uses of "context" as elaborated in the literature of parametric design when compared to that of contextual architecture? If so, what are the components and elements that constitute this gap?

In parametric architecture, the predominant focus appears to be on quantifiable parameters, which are easily translatable into computer binary language. However, challenges arise when dealing with more intangible aspects, such as abstract contextual concepts like cultural, social, and historical encounters. Parametric and computerized architecture encounters difficulty in seamlessly incorporating these elements into parametric processes due to their non-measurable nature and resistance to translation into computer binary language. Furthermore, it becomes evident that parametric architecture primarily concentrates on smaller-scale parameters, such as building details and the surrounding block. However, contextual elements encompass considerations at both larger and smaller scales. For instance, the cultural identity of a city on a large scale and the attachment people feel to a place cannot be confined to a single building or its immediate surroundings. The broader contextual landscape encompasses a diverse range of factors, necessitating a more comprehensive approach in parametric design to fully capture the intricacies of both large and small-scale contextual elements. The following section provides a method with which the gaps mentioned in parametric architecture can be revealed. This method aids in validating the preconceived hypothesis of this research.

2. Materials and Methods

The topic's novelty and lack of rigorous previous research in this area were two main challenges in determining an appropriate method to conduct this research. We therefore used a multi-method research approach, combining deductive, and inductive approaches. Three main steps were taken in this process, and they are explained in detail in Figure 1. These three steps include defining and developing a hypothesis, identifying the main pillars and components of context, and assessing how parametric architecture can address these pillars and components.

2.1. Step 1—Defining and Developing a Hypothesis

This research started with the formulation of a general preliminary hypothesis emerging from an investigation and observation of two architectural discourses: that of "context" and that of "parametric architecture". This hypothesis evolved based on criticism directed at digital technology in architecture, particularly within the realm of parametric architecture. The critique posits that the advancement of computer tools often overlooks cultural displacement, distorting the cultural significance of places and eroding city identities. Soulikias et al. [20] exemplify this critique by highlighting how sophisticated digital technologies have distanced architects from the unnoticed changes in cultural and social norms concerning the built environment. The authors shed light on what is lost in the design process as architecture rapidly transitions into the realm of digital technology. Lorenzo [21] argues that the implementation of digital technology results in the removal of cultural significance, relegating architecture's cultural project to technology. One significant consequence relates to the role of the history of the discipline.

Pérez-Gómez [22] argues that parametric design, in its pursuit of innovative forms and structures, often falls short in creating environments that genuinely resonate with human culture. According to him, the emphasis on formal innovation and algorithmic parameters tends to overshadow the social significance of the built environment, neglecting the essence of places. Pérez-Gómez suggests that architecture can truly convey meaning when it engages in a dialogical exchange between the present and the past, functioning as a communicative space for societies. Hadjadji et al. [23] argue that the impact of digital architecture and the emergence of parametric design tools leads to the erosion of cultural identities and the ecological and morphological formation of cities, especially local and Arab cities. The author contends that the globalization and homogenization of these tools contribute to the fading away of local and context-based architecture. Moreover, previous

research [24–26] conducted by the author delved into the concept of parametric design and how forms generated with parametric tools are detached from their immediate and broader context. Based on these claims, we posit the hypothesis that parametric architecture, as practiced today, cannot incorporate deep socio-cultural, historical, and overall intangible and complex contextual forces. In other words, parametric architecture leads to provocative architectural forms that do not address contextual concerns in their full breadth. The initial step in analyzing this hypothesis is to deconstruct the concept of context into meaningful domains and concepts, which will be discussed in the following section.

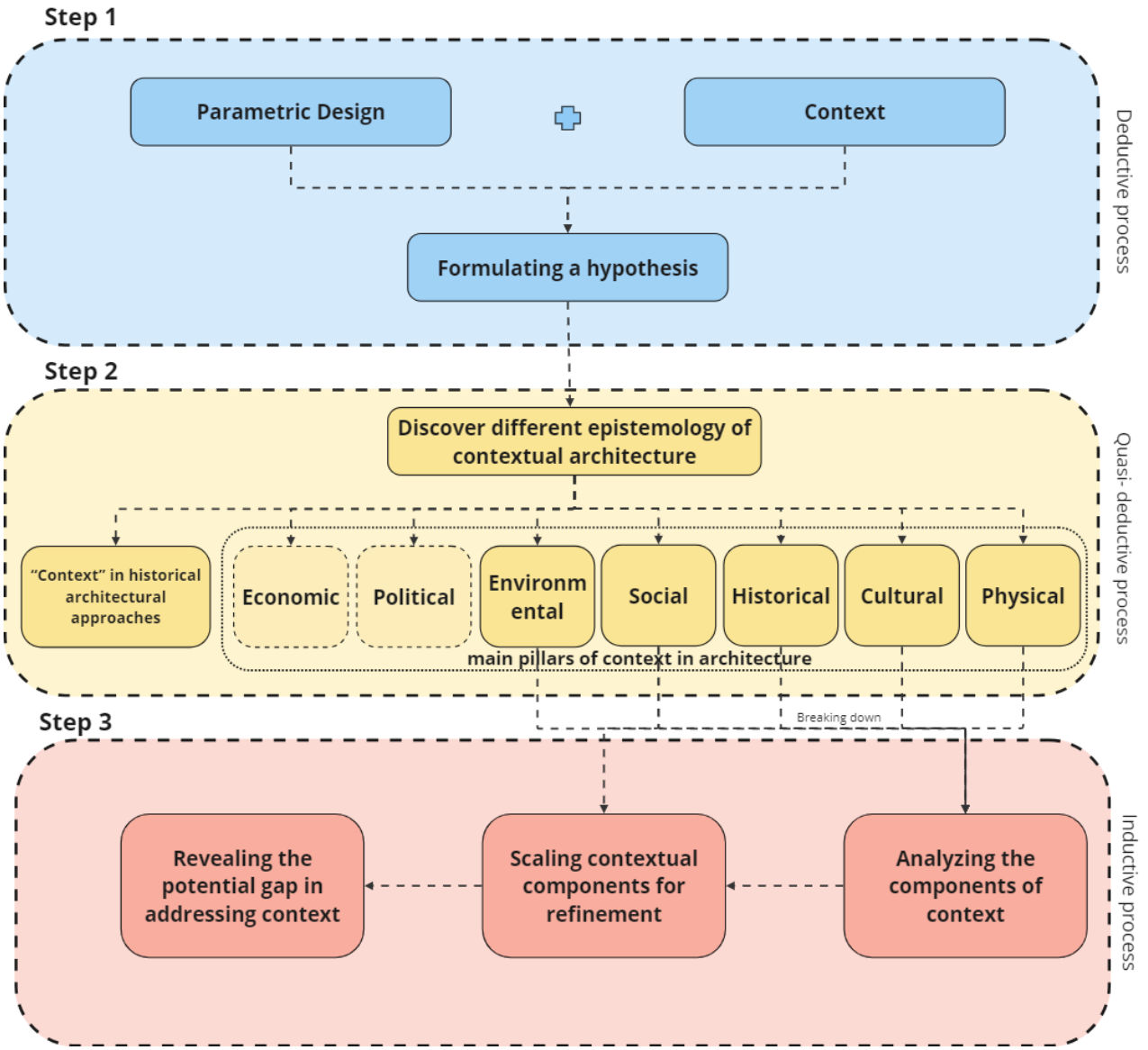

Figure 1. Research steps and methods.

2.2. Step 2—Discovering Different Epistemologies of Context

In the second step, we explored the different meanings and epistemologies of context in architecture with a literature review and qualitative discourse analysis. This process comprises the following steps:

- Identifying the main pillar of context in architecture: Our analysis revealed a proliferation of definitions for the term "context" across various architectural domains, leading to several distinct meanings. Subsequently, we conducted a systematic classification

of these various definitions into clusters of meaning. However, these clusters were preliminary, and after a thorough literature review and revisiting our initial clusters, we refined and synthesized them into seven major domains: cultural, historical, social, physical, environmental, political, and economic. These domains were identified as the key pillars of architectural context.

- Assessing context through historical lenses: After categorizing context into main pillars, we realized that some aspects of context cannot be neatly mapped into the defined pillars. These aspects involve architectural processes and style requirements that, to some extent, influence the context. Understanding these aspects requires a broader knowledge of the processes of architectural styles throughout history and how they evolved over time. Questions arise about what architectural style signifies in the context and whether buildings need to adhere to these forces to be considered contextual. In the second step, we delve into assessing these questions.

2.3. Step 3—Assessing Parametric Architecture's Ability to Address "Context"

In the third step, we evaluated the degree to which context could be integrated into parametric architecture. To achieve this, we carried out three main processes: (I) deconstructing the components of context, (II) evaluating their urban and architectural scale, and (III) revealing the gap (see Figure 1).

I. Analyzing the components of context: In order to enhance our analysis, we broke down seven broad domains of context into specific and tangible parameters. This thorough categorization aimed at evaluating their suitability for parametric design. We meticulously classified and synthesized various definitions of context from the architectural literature to construct a theoretical framework. This framework facilitated an examination of how each element aligns with the principles and characteristics of parametric architecture.

II. Scaling contextual components for refinement: The previous step greatly contributed to gaining a clearer understanding while minimizing the inherent ambiguity surrounding the concept of context. It enabled us to investigate whether these elements could be parameterized or not effectively. However, it is important to note that these components possess distinct characteristics and are associated with different scales, including urban, neighborhood, or building scale considerations. By comprehending the relevant scale for each component, we established a new criterion for classification in order to ascertain their potential for parameterization.

III. Revealing the potential gap in addressing context within parametric design: With systematic classification utilizing our framework, we evaluated which contextual components could be integrated into parametric architecture based on measurability and scale factors. This assessment provided insights regarding contextual relevance within parametric architecture. It also prompted adjustments to our initial hypothesis as it became apparent that diverse relationships exist between context components and parametric design. A comprehensive grasp of context in the architectural literature as well as its connection with parametric architecture was crucial before drawing generalized conclusions.

3. Results and Discussion

Following our research hypothesis, which posits that the definition of "context" in parametric design differs significantly from the definition within the architectural–historical context, we observed that historical architecture, unlike parametric architecture, considers a broader scope. This includes social, cultural, historical, political, and economic factors, in addition to physical surroundings. In parametric architecture, context primarily revolves around quantifiable parameters, such as physical and environmental factors. To validate this hypothesis, we systematically deconstructed the concept of context into various domains based on our literature review.

3.1. Main Pillars of Architectural Context

I. *Cultural Domain*

The cultural dimension of a site extends beyond its physical boundaries, encompassing architectural transformations in the wider region or country. These architectural expressions can be likened to a language with both fixed and dynamic vocabularies, constantly evolving as they interpret the architectural context. This interpretation of culture has the ability to either replicate existing forms or introduce innovative ones [27]. Cultural logic places importance on preserving various cultural archetypes and emphasizes continuity by adapting and reusing traditional construction techniques, building types, and settlement patterns—each carrying a unique local history [28]. Within this cultural framework, engaging with individuals and actively seeking their participation is crucial [29]. Essentially, this context pertains to how architecture manifests itself and establishes connections with people. When architects effectively explore these aspects while enhancing the cultural context of a place, valuable insights into behavioral patterns specific to that culture emerge. Such an approach provides tangible cues for integrating modes of spatial utilization into future projects that go beyond mere imitation of form [27]. Aligned with cultural forces, contextual forces related to the site have a significant impact on shaping the cities.

II. *Historical Domain*

The concept of historical context in architecture pertains to the dynamic relationship between older and newer sections within a city or site. This examination encompasses various time periods, aiming to comprehend how this interaction has influenced and molded the constructed environment [30]. Urban planners consistently strive for seamless integration between these distinct physical realms, creating an alluring setting that bridges past and present [31]. As cities expand and transform, preserving historical structures and heritage becomes imperative in upholding the distinctive character and liveliness of urban spaces. These existing edifices play a pivotal role in shaping both new infill architecture as well as the remaining spaces. The growing emphasis on urban context coupled with an appreciation for historical architecture entices individuals back into previously disregarded urban regions, injecting them with revitalization [32]. It is important to acknowledge that while historical-cultural context holds significant importance, it is equally crucial to explore the social aspect of context, which will be discussed further in subsequent sections.

III. *Social Domain*

Buildings do not merely reflect culture and urban history, they actively participate in perpetuating social relationships. They serve as more than just monuments, they are practical symbols that convey social significance [33]. In fact, buildings can function as "socially classifying devices" [34] and evolve into potent metaphors for representing social interactions [35–37]. Lefebvre's conceptual framework on the production of space posits that space is not only a neutral canvas for human endeavors; rather, it undergoes active construction through intricate webs of social and cultural practices. He proposes that space is produced with three interconnected processes: the lived, the perceived, and the conceived. The concept of lived experience refers to the embodied social experience of space and how individuals interact with and experience space in their everyday lives [38]. The idea that every work of architecture reflects the society that produced it is rooted in Marxism, as noted by Yaneva [39]. This perspective suggests that the built environment reflects the social interaction and conditions of the time and place in which it was created.

Ingold's [40] theory on the social construction of space emphasizes that space is not an independent entity that exists separately from humans, but rather it is created and continually transformed through the interactions between humans and their environment. This interaction is not merely occupation or representation, it is a dynamic and ongoing process that involves the active participation of humans and their surroundings [40]. Consequently, buildings and spaces play a vital role in shaping national identity [41]. The built environment serves as a means to express and reinforce various identities [42], enhancing community identity, overall well-being, and quality of life. For instance, when

designing residential complexes, improving social value with architecture involves considering factors that encourage social interactions among residents and address spatial fragmentation [27]. Similarly, utilizing local materials in construction supports community businesses, creates job opportunities for locals, and enhances their quality of life. A deeper approach to improving well-being involves strengthening individual identity and fostering communication between individuals and their built environment. In addition to the mentioned subjective and intangible context characteristics, context may also apply to urban physical and environmental aspects.

IV. *Physical Domain*

The realm of the physical domain encompasses the tangible and concrete aspects of the constructed environment, focusing on sensory experiences rather than cognitive ones. It primarily consists of quantifiable parameters such as materials, dimensions, forms, ratios, utilities, and existing urban structures [27,30]. Architect Tadao Ando's philosophy emphasizes the importance of considering a building's overall composition and seamlessly integrating its various components. He draws an analogy between architectural composition and bodily harmony to underscore how meticulous design ensures that every element aligns with the structure's holistic vision [27,43]. The physical attributes of a built environment are influenced by factors such as surrounding urban context and environmental conditions. For example, structures in densely populated areas may need to be taller and more compact in order to accommodate larger numbers of occupants effectively. Furthermore, construction materials might be selected based on considerations like climate patterns, geographical locations, local building codes, and regulations. The discussion of physical considerations is closely intertwined with environmental-related context parameters, which is detailed in the next section.

V. *Environmental Domain*

The environmental layer integrates a building into its site, forming a dynamic living system that encompasses key factors such as energy use, daylighting, air quality, precipitation, day and night temperature fluctuations, airflow, the sky, solar radiation, and vegetation [30]. With its sustainable design, the new project not only respects the site but enhances its inherent potential, avoiding the imposition of an abstract mechanistic approach. Undoubtedly, the capabilities of the human spirit are remarkable. However, when combined with nature, they become an essential component within a grand cosmic balance [27]. The concept of site environmental design encompasses numerous facets that contribute to this harmony. These include adapting to ecological conditions, strategically positioning and arranging structures, optimizing energy consumption, seamlessly blending into natural surroundings, considering land size and territorial factors, and conserving flora and fauna, as well as mitigating topographical and geological hazards [27]. For example, Rafati [44] emphasizes that even in regions with similar climates, tailored small scale designs are essential to reach environmental design. As a result, projects that embrace partially or fully environmentally friendly designs can serve as exemplars of best practices, catalyzing ongoing collaborations to unlock the embedded environmental potential in other concurrent projects [27]. In contemporary architectural practices, the focus often centers on mitigating adverse environmental impacts. However, historically, architecture and urban design have regarded environmental factors as intrinsic components of the design process, treating climate, site, and building as an interconnected and integrated system.

VI. *Political Domain*

Kenneth Frampton delves into the intricate relationship between architecture as a practice and the external factors that shape it. He argues that while technical methods play a significant role in architectural production, there are also productive forces at play outside of its realm [45]. By embracing Frampton's perspective, the scholarly literature on architecture underscores the diverse and contingent nature of this field by shedding light on various elements such as clients, state regulations, media influence, and land legislation [46]. According

to Goss [33], the creation of architecture can be heavily influenced by politics. The construction and design of buildings are greatly shaped by the intricate system of political power within a society. Additionally, the location and construction of architectural projects are subject to an array of laws, codes, standards, and regulations that mirror the preferences and objectives of various political entities and advocacy groups. In line with this perspective, Lefebvre [47] further posited that space itself is imbued with political significance and ideological underpinnings [47]. It is a political product because it results from contradictory and conflicting strategies, representations, appropriations, and practices. Moreover, urban development is inherently intertwined with political decision-making. This becomes evident when considering the implementation of various public policies at both national and local levels. These policies reflect a particular vision for society's progress and aim to shape cities in accordance with desired outcomes [48]. Architectural forms driven by these forces have political significance and always carry political meaning: it is produced from political conditions and has political effects and consequences [39]. An example of the reflected political system in architecture is Fascist architecture, known for its grandiose and monumental style, with large-scale buildings, squares, and classical motifs. This type of architecture aims to communicate power, strength, and permanence and was used as a tool of propaganda to evoke a sense of nationalism and pride in a regime and its achievements [49]. Therefore, we refer to the legislations, city master plans, and local and national forces reflected or embedded in the built forms as the context of the political domain.

VII. *Economic Domain*

Contextual dimensions are not limited to physical, social, and cultural domains, they also maintain a deep and enduring connection with prevailing economic stakeholders [39]. To put it differently, architecture is not only influenced by rigid state regulations and external factors like the environment but also deeply impacted by the wider economic circumstances in which it is commissioned, conceptualized, and interpreted [39]. These economic factors directly impact urban morphology, land utilization patterns, construction activities within urban areas experiencing growth, as well as population distribution across different parts of a city [50]. For instance, land price can be one of the primary economic forces that significantly affect urban morphology. In areas with high land prices, tall buildings prove to be lucrative ventures as they capitalize on urban space by vertically stacking multiple floors, akin to efficient machinery that ensures optimal utilization of valuable land resources. Conversely, in suburban localities, where land values are comparatively lower than downtown areas, factories use a different approach, whereby expansive plots spanning several acres are utilized for production purposes. In this manner, these industrial establishments generate revenue with the saleable output derived from their sprawling operations while simultaneously making effective use of available land [51]. These economic pressures create distinctions within urban areas, resulting in various sectors like the corporate metropolis characterized by tall office buildings, the declining, outdated industrial city, and the immigrant-populated city [52]. This hierarchy of urban arrangements, from costly parts of the city to the low land price, hints at the economic context of each neighborhood.

Material selection in building construction or renovation can be considered another factor that highly depends on the economic context of the setting. This means that building material values highly depend on the inhabitants' economic situation and the neighborhood's economic status. In some cases, architects use a very modest construction budget and reductive design strategies or a consumerism way of design based on the neighborhood's economic context. In a case study, Michiani and Asano [53] indicate that house material selection in their case study region (Banjarmasin, Indonesia) is significantly influenced by the financial level of the residents, as they tend to opt for cost-effective materials when renovating or enhancing their homes. All the economic factors mentioned—including land value, material selection, the financial situation of inhabitants, and the value of rent in the neighborhood—have a direct impact on the built environment. This impact can often differ significantly from what was originally planned. Therefore, it is crucial to consider the economic context and forces when practicing contextual architecture. Apart from all the

pillars mentioned in this section, the influences from architectural practices in different eras affect the context. This force, which is crucial for ensuring the consistency of architectural forms and designs based on their context, will be discussed in the following section.

3.2. Context Considerations in Historical Architectural Design Approaches

Architectural style plays a crucial role in shaping site composition. However, it cannot be classified exclusively within one of the seven discussed domains as it is a combination of all of them. To shed light on the complexity of the role of styles in the architectural context, we will briefly discuss the dichotomy between definitions of "context" in modern and postmodern styles.

In the modern era, fast urbanization and modern urban planning led to the expunging of human remnants from various locations. While modern cities have established their own distinct order within a designated area, disregarding local history, the social dimension of a place continues to withstand abrupt transformations as it is deeply rooted within a broader communal and territorial context [27]. Consequently, in modernism, the focus on buildings and their physical aspects overshadows the social and cultural context, resulting in structures that may not align with their surroundings but stand independently [4,5]. These modernist buildings tend to lack cultural and social representation, remaining superficial on the physical level [54] and leading to a disconnect from the outside world, decreased social cohesion, and a lower quality built environment [19].

Vernacularism and critical regionalism emerged as responses to this overemphasis on the physical and pragmatic aspects of a site. Fathy, a vernacular architect, challenged modern architecture's inability to create a genuine communal and environmental context [55]. He revealed how modern practices often detached from the spirit of place, reflecting the architect's self-image rather than the community's needs [27]. Frampton [17] criticized modern architecture and advocated for a connection between architecture and regional values to achieve architectural harmony with the context. In his critical regionalism description, he states that architecture became reduced to just an aesthetic skin that facilitates marketing [17]. In contrast to modernism, vernacularism and critical regionalism encompass a broader understanding of context.

In contrast, these movements are seriously criticized for how they refer to architectural context. For instance, Koolhaas describes contextualism in the postmodern era as a set of stylistic manifestations, which is a common characteristic of many co-opted ideas in architecture. This way of contextualism consideration is related to buildings with brown brick being built in brown brick neighborhoods and gingerbread-style architecture in areas with similar structures [56]. Essentially, Koolhaas regards context as a historical concept primarily concerned with preserving specific buildings and their right to remain. From his perspective, emphasizing contextual relevance involves applying outdated conceptual frameworks that widen the gap between urban planning as a discipline and the actual contemporary influences shaping our surroundings. Furthermore, Koolhaas suggests that clinging to old urbanism theories, which are ill-suited for understanding the present, acts as inhibiting barriers that prevent us from experiencing and comprehending the authentic realities of our time [57]. However, context encompasses more than merely tailoring buildings to their physical setting or urban morphology. It refers to a connection between the new and the past that makes the built environment more understandable for communities. For instance, Melhuish [54] explains that local populations understand Bilbao's Guggenheim or Helsinki's Kiasma as influential visual representations crafted to transcend local circumstances and engage with a global audience. In terms of architecture aimed at appealing to popular tastes and lower market segments, contextualism can be interpreted as a reaction to conventional architectural concepts, involving the mass production and superficial replication of familiar images disseminated through media channels. These images symbolize recognizable lifestyles and shared societal aspirations, essentially functioning as forms of brand recognition. With this false understating of context, Wright's Guggenheim Museum, Kahn's Yale University Art Gallery, and Pei's

Hancock Tower (to name a few) may have never been built. While these projects may seem like disconnected elements within the community, they stand as iconic landmarks in the urban landscape and represent invaluable milestones in architectural history. Thus, while the main goal of contextualism is to maintain a sense of harmony within a specific context, it also serves as a vital means of recording the evolution of architectural styles as manifested in tangible structures [12]. Having already discussed the rules of architectural style, the next section delves one level deeper into contextual pillars to break them down into more fine-grained details and components.

3.3. Components of Context

In our analysis, we thoroughly examined the concept of context and its various dimensions. However, these definitions are still subjective in nature and lack tangibility. Is it feasible to simplify them by breaking them down into objective parameters? While the idea of context in historical design approaches and political–economic domains may appear abstract and intricate, other domains can be further dissected into specific details. To this end, we concentrate on five tangible domains that lend themselves to a more detailed examination: social, cultural, historical, physical, and environmental. Our goal is to define these components with precision rather than relying on vague overall definitions of context. By differentiating and comprehending these components individually, we can then proceed toward a comprehensive understanding of "context". This approach emerged from our meticulous data collection process where we attempted to categorize our findings. Tables 1 and 2 present an overview of the defined context domains alongside their respective components and descriptions. It should be noted that not all components can be exclusively assigned to one domain due to intersections and overlaps between them. For instance, while the sense of belonging or symbolic codes predominantly fall under the cultural domain's purview, they can also emerge from social aspects within the broader contextual framework.

Table 1. Three highly subjective and intangible context domains: components and descriptions.

DOMAINS	Context Components	Descriptions
CULTURAL	Tectonic forms (language of forms)	Tectonic architecture, originated with Karl Bottiche, elevates construction to an art form, harmonizing function and design. It also involves the poetics of construction, emphasizing methodological awareness [58]. This duality preserves cultural continuity and symbolizes human existence [59]. Frampton underscores its role in restoring cultural richness to cities [17]. Frascari and Gregotti argue that tectonics are evident in how architectural elements relate to the overall structure, expressing cultural and contextual specifics [60]. Rapoport suggests that a building's tectonic properties encode cultural messages in the built environment [61].
	Site heritage	The concept of "site heritage", which includes archaeological elements, often goes overlooked in the design process. In today's pursuit of modern architectural designs, archaeological aspects of a site and heritage tend to be treated as static elements, often excluded from consideration [27].
	Symbolic codes	Culture communicates with symbols and signs [62], and in urban settings, buildings and city structures are its language. Beyond organization, the urban environment should express poetry and symbolism and convey the complexities of society, history, and the environment [63]. Architectural forms collectively create a visual language, assigning a unique sign to each building type [64]. In "*Learning from Las Vegas*", Venturi explores postmodern architecture rooted in signs and symbols, recognizing their role in architecture's cultural significance [65]. Lynch highlights that urban symbols serve as identity markers and structural cues as one becomes familiar with a place [63].

Table 1. *Cont.*

DOMAINS	Context Components	Descriptions
CULTURAL	Authenticity and sense of place	According to Jackson [66], "sense of place" pertains to the atmosphere, environmental quality, and the inexplicable sense of well-being that draws people back to a location. Isaacs [67] extends this concept to perceptions and urban design quality. However, our reliance on zoning, legal structures, planners, and construction practices often leads to the creation of disconnected structures that fail to form cohesive places, ultimately eroding the overall sense of place [68].
	Assimilation and richness	In the cultural context, "assimilation" denotes a user's capacity to form and integrate their personal mental representations of a place, essentially, how easily they can comprehend it [29]. The quality of urban space is evaluated based on its capacity to offer users a variety of enjoyable activities [29].
HISTORICAL	Site history	Every site, whether pristine or previously occupied, holds a history and a narrative of its use. This includes a discernible or imperceptible pattern of social utilization. The visible aspect encompasses physical traces ranging from simple paths to intricate settlements. The intangible aspect resides in the stories and myths woven by inhabitants over time, as philosopher Paul Ricoeur terms it, the "mythical and ethical" and the "creative nucleus of great cultures" [69]. It is essential to engage in a conversation with the project's site in order to reveal its usage patterns, which will profoundly influence the subsequent design direction [27].
	Memorable and landmark buildings	Historic structures serve as iconic landmarks within urban landscapes [63]. Consequently, new constructions should aim to seamlessly blend with their historical surroundings rather than disrupting the existing composition's equilibrium [70].
	Totality (unity of the entity)	The urban planning and architectural design approach of the 1960s–1970s perceives a city as a whole, emphasizing that the city's experience transcends individual components. It underscores the need for all architectural elements to seamlessly integrate with, interact with, and reconcile their surroundings [71].
SOCIAL	Individual identity	Identity distinguishes individuals, groups, or cultures from one another, representing unity, solidarity, and uniqueness within societies or nations [72]. In an urban context, individual identity pertains to elements introduced by users to express themselves, driven by the desire for development and the shaping of the mental image of urban spaces [29]. The concept of place identity emerged in architectural discourse during the 1960s, highlighting the importance of attaching meaning to space to transform it into a place [73].
	Sense of belonging	Accumulated mental impressions shape the cultural significance of a location, transforming physical elements into touchstones of personal or collective recollections. For instance, the repeated or ceremonial utilization of a space can foster a profound feeling of attachment [27]. This cultural sense of attachment often entails a strong sense of unity within the neighborhood and community, where residents perceive their way of life and internal community as distinct (or superior) compared with other areas [74].
	Communication	Charles Moore's definition characterizes communication as the act of sharing a characteristic among several entities [75]. While community and communication typically pertain to human interaction, Capon [76] extends the concept, suggesting that communication can also occur between buildings or between individuals and structures. Capon [76] illustrates that buildings engage in a form of conversation with each other, echoing Le Corbusier's analogy of buildings behaving like a multitude of individuals engaged in simultaneous conversation [76].

Table 2. Two highly objective and tangible context domains: components and descriptions.

DOMAINS	Context Components	Descriptions
ENVIRONMENTAL	Climate factors/nature	Contextual awareness extends beyond site boundaries, encompassing global environmental considerations. This involves conscientious material choices and responsible resource usage, as advocated by Steane and Steemers [77]. Ignoring climatic factors like wind, solar aspects, humidity, and ventilation in design leads to uncomfortable indoor conditions or increased reliance on artificial climate control [78]. In nature, Christian Norberg-Schulz asserts that greenery, rocks, and water imbue a place with meaning, functioning as spatial reference points and contributing to spatial structure [79].
	Topography	Mario Botta, as cited by Hirst [80], asserts that architectural projects not only build structures but also define the surrounding site. Architecture, in Botta's view, is the creator of the site, deeply rooted in its unique location [80]. Frampton [17] emphasizes the significance of site topography. Flattening uneven terrain erases its character, resulting in a placeless environment. In contrast, shaping a site to accommodate a building's form is an act of nurturing and cultivating the land [17]. Vernacular architecture adeptly utilizes topography for comfortable interiors [81,82].
PHYSICAL	Proportionality	Proportion systems in architecture hold significant sway over the aesthetic choices governing the arrangement of building shapes and masses in a harmonious manner. Vitruvius defines proportion as the correspondence between the dimensions of the various elements within a complete work and the whole, with reference to a specific part chosen as a standard [83]. Alberti, on the other hand, characterizes beauty as the harmony among all the components, regardless of the subject, assembled with such balance and connection that nothing can be added, removed, or altered without diminishing its quality [84,85].
	Scale	Johnson [78] stresses designing with a broader context, where each element fits into a larger framework: a chair within a room, a room within a house, a house within a surrounding environment, and an environment integrated within a city's layout. This means that understanding local context requires recognizing the broader context [86]. This approach extends from the urban skyline to the smallest interior details [32]. For architects and urban planners, it emphasizes evaluating urban and architectural patterns carefully and maintains a proportional size–scale relationship for enduring architecture over fleeting aesthetics [27].
	Material and composition	Determining the contextual nature of materials like wood, glass, and stone, as well as aspects like building shape, can involve various forms of expression that may not be readily apparent in the physical environment [87]. Using locally sourced materials helps establish a visual connection with the surroundings.
	Coherency	Coherence involves an often subconscious evaluation in which multiple pieces of information, such as conceptual representations and images, are harmoniously combined [88]. Alexander [89] defines spatial integrity as a quantifiable quality present in various parts of a spatial composition. Achieving spatial coherence requires proportionality, balance, and the integration of independent elements into a unified whole [90,91]. An individual building must fit into its environment to create a coherent overall picture [92]. Coherence exists both within a building itself and in its relationship with other buildings and its surroundings [76].
	Skyline	The city skyline has a critical function in maintaining the visual coherence and uninterrupted flow of the cityscape. The continuous presence of features like the city skyline and the proximity of composite elements like clusters of buildings aid in perceiving the intricate physical environment as a unified entity or interconnected segment. These characteristics contribute to the creation of a singular identity for the cityscape [93].
	Harmony/fitting	The architectural elements x and y achieve harmony through their spatial proximity, resulting in a favorable aesthetic quality for the entire composition [94]. Harmony, as defined in Merriam-Webster's collegiate dictionary, entails the fitting and proportional arrangement of parts to form a cohesive whole, generating a unified effect [1]. Le Corbusier characterizes it as the pursuit of creating a heavenly environment on earth, driven by humanity's innate quest for divine perfection [95].

Table 2. *Cont.*

DOMAINS	Context Components	Descriptions
PHYSICAL	Orientation/urban morphology	Goethe viewed morphology as a discipline focused on the fundamental characteristics of forms [96]. In contrast, urban morphology pertains to the physical arrangement of urban spaces and the connections between urban form and function. It delves into the intricate physical aspects of urban structures at different scales, ranging from individual buildings and parcels to street blocks and the overall street layouts that shape towns. Urban morphology provides insights into the evolution and growth of urban areas [97].
	Color	Urban colors, a crucial aspect of context, serve as a vibrant representation of a city's image. When a city's colors are coordinated and coherent, they create a distinctive and captivating visual landscape, enhancing the overall city image [98]. Individuals choose colors in their environment, showing preferences for specific combinations while avoiding others. These choices appear to be guided by a collective sense rather than individual inclinations. Colors are integral and self-contained elements of the urban environment, akin to the significance of signs and symbols in cities [99].
	Building density/ pattern of topology	In urban planning, density often denotes the relationship between an area's size and the number of elements within it. Yet, it also serves as a key factor in shaping preferred urban configurations [100]. This concept encompasses how urban structures are arranged, influencing a city's spatial characteristics. Variances in urban fabric density give rise to diverse urban layouts. Beyond a numerical measure, urban density captures the lived experience, perception, interactions, and conflicts within the urban environment as inhabitants navigate and reside in the city [101].

3.4. Potential Overlaps and Synergies between Context Domains

As discussed earlier, context domains and components are highly connected, exhibiting synergy and overlap. One might argue that assigning components to specific categories might not be the correct approach, as they possess a significant degree of commonality and relate to different domains, making it impractical to limit them to just one domain. However, acknowledging the similarities and interconnectedness and classifying and assigning them to domains is the only way to streamline this complex concept. These similarities and overlaps are evident in context components, where cultural, historical, and social domains are intricately woven together, with subtle boundaries and synergies in several ways. For instance, site heritage, belonging to the cultural domain, has a direct correlation with site history in the historical domain. These two components contribute to identity and a sense of belonging in the social domain, illustrating that historical monuments empower cultural and social encounters. Furthermore, the connections between authenticity, sense of place, and sense of belonging confirm that the cultural, social, and historical aspects of the built environment are closely intertwined. On the other hand, the physical and environmental domains are highly connected, as even slight changes in the physical attributes of a building can significantly impact environmental aspects. For example, material, proportionality, and density directly affect environmental factors. To further analyze these components and their interrelationships, we assess their scale of concern in the next section.

3.5. The Varying Scales of Context

In our analysis of contextual elements, we realized that they encompass various magnitudes. Some pertain to the broader scope of a city or country, while others delve into finer details such as blocks and buildings. Koolhaas' "Bigness" theory [102], places great emphasis on scale when evaluating constructed environments. He introduces the equation "Bigness = urbanism vs. architecture" as a means to illustrate how clusters of large structures impact collective spaces in cities. According to his viewpoint, these immense edifices are less amenable to architectural manipulation and instead necessitate autonomous

components that contribute harmoniously yet retain their individuality within the overall composition. Similarly shedding light on the concept of scale is Alberti's metaphorical portrayal of a city as an expansive house [103]. In this analogy, he likens each room within a house to a miniature building and views the entire house as an amalgamation of diverse parts working together cohesively. Conversely, by depicting the city itself as a grand dwelling place, Alberti underscores its unified nature composed of elements that may vary in magnitude but ultimately form a cohesive whole. This perspective emphasizes the interconnectedness of urban and architectural scales, recognizing that diverse elements within the city contribute to its overall function. Significantly, scale alters a building's function within a city. For example, large structures are no longer judged as good or bad based on their impact, which is separate from their quality [102]. Given the importance of scale in urban cohesion, urban qualities need to be considered on an appropriate scale; otherwise, they might lose their meaning. This highlights that built environment qualities, especially contextual relevancy, must be understood and considered on a reasonable scale. Sotoudeh and Abdullah [25] explain the multifaceted nature of contextualism, encompassing various scales that span from the grandeur of urban skylines to the intricate nuances found within interior spaces. Nasr [9] proposes the determination of "the physical and non-physical attributes" of the immediate context (i.e., the near surrounding) as well as broader regional context (i.e., the distant context).

With that in mind, we examined the scope and interrelation of the context components from previous sections to analyze their importance, clearly understating their role in urban fabrication and, eventually, their compatibility with parametric architecture. Also, this measurement avoids comparing items that are not of the same scale or scope. We classify context components into five scale categories, from country and region to a building detail scale.

- The first category is **"Country & city",** in which buildings should be compatible with their broader context within-country limit and broad geographical context.
- The second category is **"Region & surroundings",** and it considers the relationship between a building and adjacent buildings at a visible distance. For instance, the relationship between historic sites and new layout views in the city would fall under this category [30].
- Third, the **"Different zone of building (exterior/interior)"** context scale considers that the building may not necessarily link with the adjacent environment but instead with its own zones. Finally, the last category considers a smaller scale that addresses **"Building elements and details"**. This scale confirms that a building can be complete within itself, meaning that the relationship among buildings within the context of its form [76] (see Table 3).

Table 3. Scope and scale of "context" components. (Bullets determine the scale at which components of context fall.).

Context Domain	Components of Context	Country & City	Region & Surroundings	Different Zone of Building (Exterior/Interior)	Element of Building/ Details
Social	Individual Identity	•	•		
	Communication	•	•	•	
	Sense of Belonging	•	•		
Cultural	Tectonic forms (language of forms)	•	•		•
	Heritage	•	•		
	Symbolic Codes	•	•		
	Authenticity and the Sense of Place		•	•	
	Assimilation and Richness		•	•	

Table 3. *Cont.*

Context Domain	Components of Context	Country & City	Region & Surroundings	Different Zone of Building (Exterior/Interior)	Element of Building/ Details
Historical	Site History	•	•		
	Memorable and Landmark Buildings	•	•		
	Totality (Unity of the Entity)	•	•	•	•
Environmental	Climate Factors/Nature	•	•		
	Topography		•		
Physical	Proportionality		•	•	•
	Scale		•	•	•
	Material and Composition	•	•	•	•
	Coherency	•	•	•	•
	Skyline	•	•	•	
	Harmony/Fitting	•	•	•	•
	Orientation/Urban Morphology	•	•		
	Color		•	•	•
	Building Density/Pattern of Topology	•	•		

It can be observed in Table 2 that all the elements of context fall within the "Region & surroundings" category. Additionally, a majority of these components are also found in the "County & city" category. This suggests that, as a general trend, context components tend to be associated with larger scales rather than focusing on specific building zones and intricate details. In simpler terms, social, cultural, historical, and environmental factors are closely linked to cities and regions since they possess subjective and intangible qualities. On the other hand, physical parameters exhibit stronger correlations with immediate contexts such as building zones and their specific characteristics. It is important to note that economic and political influences were not taken into account when classifying according to scale due to their abstract nature. It becomes evident that these forces belong more appropriately within broader contexts like "Country & city" or "Region & surroundings."

3.6. What Is the Gap in the Address of Context in Parametric Design?

The exploration of context definitions across eight domains and the categorization of their components on four scales reveals several gaps in addressing context in parametric architecture:

I. Focus on quantifiable parameters: As noted in the literature review, parametric theorists claim that parametricism refers to various ideas that drive the current design culture, including aesthetic, philosophical, and political agendas [104]. They define parametricism as a contextual, cultural, and aesthetic paradigm. However, our research results (see Figure 2) show that when considering a broader definition of context (i.e., one that includes cultural, social, historical, environmental, and political–economic aspects), parametricism can only address quantifiable or measurable factors such as climate and physical site-specific elements since they are quantifiable and measurable.

II. Challenges in incorporating quantified parameters: While certain components are quantitative and could theoretically be parameterized, their integration into parametric design remains a challenge. Some components may seem readily quantifiable,

while others appear less amenable to measurement. Many of the quantitative context components primarily involve aligning with neighboring buildings and replicating their colors and textures. For instance, concepts like coherency, harmony, morphology, and topology present difficulties in terms of parameterization, even though they exhibit rule-based characteristics that could be utilized for this purpose. These concepts often possess a depth of meaning that transcends strict adherence to rules. For example, the notion of harmony, while mathematically formulable to some extent, can still be interpreted as existing within chaotic forms to a certain degree. As a result, even though some context components may seem measurable, parametrizing them reduces their true, rich, and deep meanings.

III. Suitability for Smaller Scale Parameters: As we classify context components based on the scale of concern, we find that most of them fall into broader scales such as region, city, and country. In contrast, small-scale components such as building forms, proportionality, and materials seem more applicable to parametric design. However, large-scale and intangible components such as local identities or sense of belonging, which fall into the neighborhood, city, or country scale, are less likely to be coded and parameterized. While small-scale and tangible information can be directly fed into geometric parameters of building elements by defining codes and parameters, parametric architecture is not capable of considering essential context components on broader scales (e.g., region, city, and country).

IV. Ineffectiveness for All Parameters: Although we break down domains into components, there are still some elements that remain too abstract and qualitative to incorporate into parametric architecture, such as individual identity in the social domain. These purely qualitative and intangible context elements are neglected in parametric design because they cannot be converted into tangible and measurable parameters.

3.7. Addressing Gaps in the Definition of Context in Parametric Architecture

In addressing the gaps in the definition of context within parametric architecture, the practical integration of both tangible and intangible parameters is crucial. As discussed in the previous section, the primary challenges in parametric architecture revolve around incorporating intangible and abstract concepts that are inherently immeasurable and resistant to easy translation into numerical parameters. Therefore, achieving a balanced integration of both tangible and intangible parameters is imperative for contextual parametric design. The following steps outline the necessary measures to take within parametric design processes, ensuring the seamless integration of both tangible and intangible contextual factors:

- Compilation of context parameters: Encompassing both intangible (cultural, social, historical) and tangible factors, this step involves listing all site context parameters comprehensively.
- Parametrization of tangible parameters: Prioritizing and parametrizing tangible parameters, such as material and height, which can be easily translated into numerical values.
- Parametrization of semi-tangible parameters: Addressing semi-tangible parameters and integrating them to a certain extent within the parametric process.
- Manual intervention for fully intangible parameters: Acknowledging the more abstract, fully intangible parameters (e.g., cultural, social, historical) that require manual intervention by designers. Here, designers play a crucial role in translating these aspects, which cannot be easily expressed in computer languages, into the parametric process. This involves a thoughtful combination of physical and environmental parameters generated by computers to produce contextual design alternatives.

By diligently following these steps, parametric architects can ensure a holistic approach that incorporates both tangible and intangible context elements.

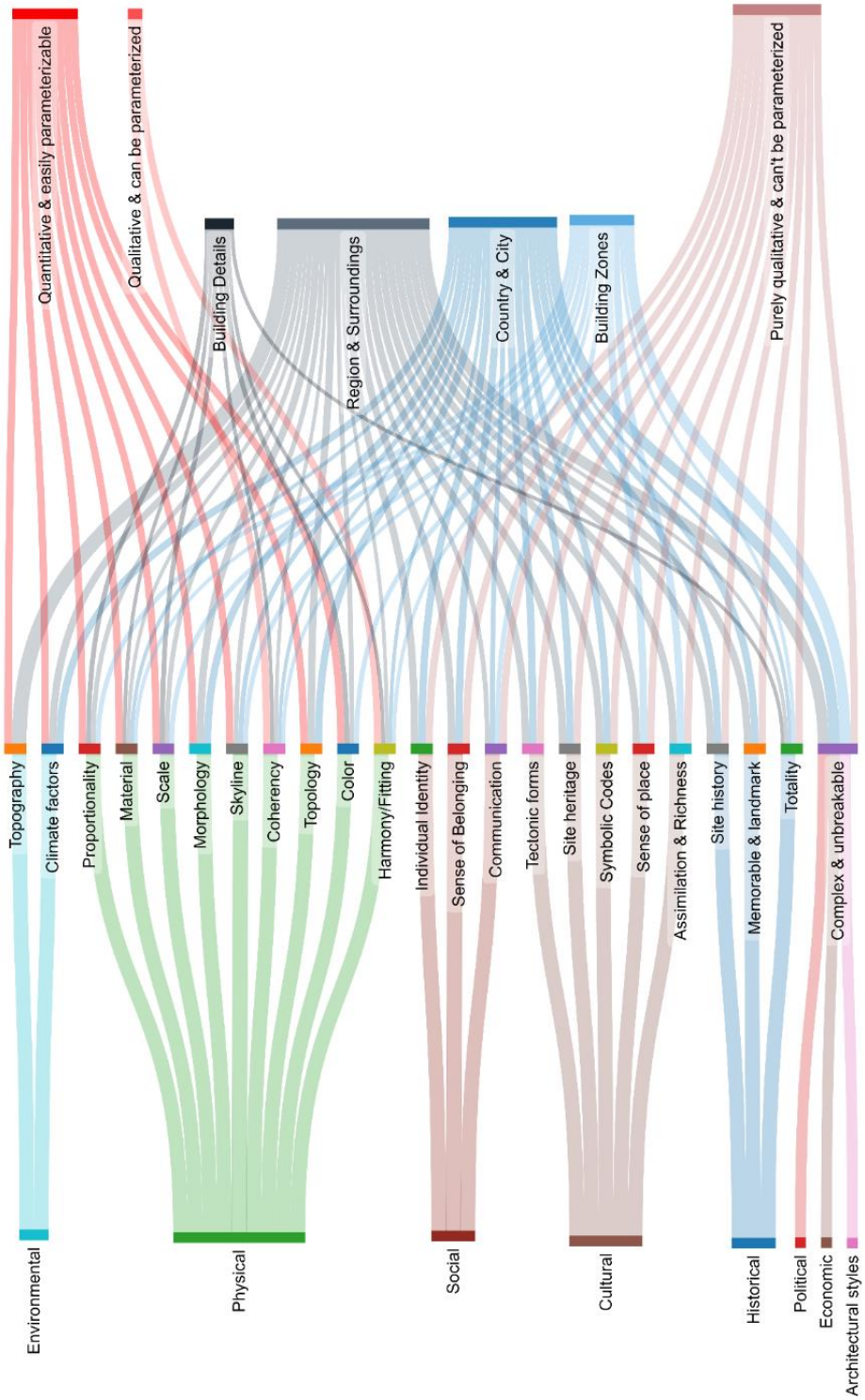

Figure 2. Context domain, components, scales, their parametrizability, and their connections.

4. Limitation

Our research methodology was selected due to the broad, complex, and abstract nature of the concept under assessment in this research. Each step aimed to reduce the ambiguity in the concepts by systematically breaking them down into pillars and components. These categorizations were derived from qualitative content analysis conducted in the relevant literature review. However, this categorization had some limitations:

- Hypothetical nature of domains and components: We should acknowledge that the domains and, subsequently, the components are hypothetical, heuristic, and preliminary classifications that would benefit from a more comprehensive examination and precise definitions.
- Subjective source selection: The selection of sources for the literature review introduced subjectivity into the classification process. While a diverse range of books and research articles were analyzed, a broader spectrum of interdisciplinary sources related to the built environment could have improved precision. Conducting a comprehensive review of these sources would have been resource-intensive.
- Interdisciplinary complexity: The concept of "context" is inherently interdisciplinary, requiring a team of researchers with diverse perspectives. Qualitative domains like political and economic factors, though partially quantifiable, involve complexities beyond the authors' expertise in architecture. They demand deeper interdisciplinary research within political–economic studies due to their non-linear interrelationships and latent complexities. Consequently, these domains were intentionally excluded from the scope of this research.
- Hermeneutical interpretations: The hermeneutical interpretations of latent content during the classification process and the conversion of abstract concepts into tangible components could yield varying results based on individual researcher interpretations. Given the abstract and interpretive nature of "context", establishing credibility and authenticity in the analysis is challenging. To mitigate this limitation, this research heavily relied on previous research to guide categorization and minimize intervention to enhance credibility.

5. Conclusions

This research explored the concept of "context" in architecture and urban design, mapping out and assessing the broad concept by encompassing criteria. It also investigated the shift in the definition of context from historical architectural practices to more contemporary ones, specifically, parametric architecture. This study explored how different aspects of context, including intangible and human-related elements (cultural, social, and historical) and tangible and non-human-related aspects (physical and environmental), contributed to this understanding. The findings support the notion that qualitative and, to some extent, quantitative aspects of context are exceptionally complex to codify and measure. However, physical and some environmental context aspects can be quantified and parametrized to a certain extent. This conclusion was reached after a comprehensive study of the "context" discourse, including an analysis of the different domains and components of context. Our study shows that certain conceptual aspects of context cannot simply be degraded to tangible and codified parameters. It was revealed that context encompasses a wide range of meanings, each representing a different epistemological world, and their essence cannot be accurately captured, translated into the binary language of computers, or parametrized. Integrating these human and broader aspects of context requires a conventional, non-linear, and complex architectural process. Simply ticking boxes of included context components in design process is thereby an insufficient endeavor. Moreover, simplifying parametric design to the extent that it merely replicates surface-level forms and patterns does not align with a contextual approach. Therefore, current parametric architecture primarily engaging with diminished, inconsequential, and concrete facets of context may not qualify as "context-oriented architecture".

6. Future Research

Future research should delve deeper into the concept of "context" by extending investigations to other disciplines, such as sociology or anthropology. This is crucial because context goes beyond the boundaries discussed in this paper and holds more interdisciplinary connotations. Additionally, the economic and political dimensions of context have not been adequately addressed in this research. Therefore, new research should further

explore these aspects and examine the interrelationships between different connotations of context. In particular, there is a need to investigate the impact of a broader contextual definition on the evaluation of this term within architectural discourse. Moreover, future research could delve into parametric design buildings with a case study method, examining the extent to which parametric buildings were successful in incorporating contextual intangible parameters and assessing their contextual relevance. The outcomes of these case studies will help confirm or refute the hypothesis of this research, which argues that parametrically designed buildings may fall short in partially or fully integrating intangible parameters. Another potential avenue for future research could involve parameterizing quality based on the quantification of intangible context components. This research might encompass several quantification steps, such as breaking down the components of the context into finer details, ranking these components based on their level of impact, and investigating their connections with other context components using a bilateral matrix while assigning numerical values to them. In addition to quantification, streamlining the broad and complex term "context" could involve conducting interviews on inhabitants' lived experiences and ranking context components. This may also include utilizing AI for quantifying context and conducting participatory design workshops where participants elaborate more on the context of the built environment. These workshops could involve a comparison of how non-parametrically designed buildings and parametrically designed buildings address context in their designs. These approaches could contribute to quantifying and understanding the broad and complex term "context" and how it is considered in parametric architecture.

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References

1. Staff, M.-W. *Merriam-Webster's Collegiate Dictionary*; Merriam-Webster: Springfield, MA, USA, 2004; Volume 2, ISBN 0877798095.
2. Oxford. *Oxford Dictionaries. Language Matters*; Oxford University Press: Oxford, UK, 2014.
3. Motallebzdeh, D.; Rashid, H.; Bagherzadeh, N.; Shahizare, S. Survey Correlation between Contextualism and Architecture with Emphasis on Sustainability-Case Study-Kazaj Village. *Trends Life Sci.* **2014**, *12*.
4. Beaver, R. *The Architecture of Adrian Smith, Som: Toward a Sustainable Future*; Images Publishing Group Pty Ltd.: Chadstone, VIC, Australia, 2006.
5. Çizgen, G. *Rethinking the Role of Context and Contextualism in Architecture and Design*; Eastern Mediterranean University (EMU): Gazimağusa, Cyprus, 2012.
6. Heidegger, M. Building Dwelling Thinking. *Vis. Cult. Crit. Concepts Media Cult. Stud.* **1951**, *3*, 66–76.
7. Merleau-Ponty, M.; Smith, C. *Phenomenology of Perception*; Routledge: London, UK, 1962; Volume 26.
8. Thomas, R.; Garnham, T. *The Environments of Architecture, 1 ed.*; Taylor & Francis: Abingdon, UK, 2007; ISBN 978-1-134-23608-4.
9. Nasr, T. Criteria for Contextualism in Architecture. Available online: https://www.linkedin.com/pulse/criteria-contextualism-architecture-tracy-nasr/ (accessed on 12 April 2021).
10. Johnson, P.-A. *The Theory of Architecture: Concepts Themes & Practices*; John Wiley & Sons: Hoboken, NJ, USA, 1994; ISBN 0471285331.
11. Kömez Dağlioğlu, E. Reinterpreting the Contemporary Architectural Practice in Turkey in the Light of Context Debate. In Proceedings of the 5th Annual International Conference on Architecture, Athens, Greece, 6–9 July 2015.
12. Tan, Y.-K.L. Contextualism and Fragmentation: A Dualistic Guideline to the Design of Urban Architecture. Doctoral Dissertation, Massachusetts Institute of Technology: Cambridge, MA, USA, 1992.
13. Miao, L.I. Exploration of Architectural Context from Aesthetics View. *Stud. Sociol. Sci.* **2012**, *3*, 75.
14. Jing, Z. *Leoh Ming Pei and Reconstruction Project*; China Construction: Beijing, China, 2005.
15. Jon-Nwakalo, C.C. Discourse on Contextualism in Architecture and Design: The French Hotels and the African Paradigm. *Discourse* **2018**, *8*, 8–22.

16. El-Shorbagy, A.-M. Contextualism: Architecture and Context. *Urbanisme, Architecture and Design—UA*, 15 March 2015.
17. Frampton, K. 20 Toward a Critical Regionalism: Six Points for an Architecture of Resistance. In *Postmodernism*; Taylor & Francis: Abingdon, UK, 1993; p. 268.
18. Picon, A. *Digital Culture in Architecture: An Introduction for the Design Professions*; Birkhäuser: Basel, Switzerland, 2010; ISBN 9783034602594.
19. Schumacher, P. Parametricism: A New Global Style for Architecture and Urban Design. *Archit. Des.* **2009**, *79*, 14–23. [CrossRef]
20. Soulikias, A.; Cucuzzella, C.; Nizar, F.; Hazbei, M.; Goubran, S. We Gain a Lot. . . but What Are We Losing? A Critical Reflection on the Implications of Digital Design Technologies. *Open House Int.* **2021**, *46*, 444–458. [CrossRef]
21. Lorenzo-Eiroa, P.; Sprecher, A. *Architecture in Formation: On the Nature of Information in Digital Architecture*; Routledge: London, UK, 2013.
22. Pérez-Gómez, A. *Attunement: Architectural Meaning after the Crisis of Modern Science*; MIT Press: Cambridge, MA, USA, 2016.
23. Hadjadji, N.; Toulan, N.; Dorra, M. Impact of Digital Architecture: The Impact of Digital Technology on Ecological Formations and Its Effect on Determinants of Identity and Culture in Architectural Design. *J. Eng. Res.* 2023, in press. [CrossRef]
24. Hazbei, M. Parametric Architecture from Context and Livability Challenges to Optimization Complexity. Ph.D. Thesis, Concordia University, Montreal, QC, Canada, 2023.
25. Hazbei, M.; Cucuzzella, C. Comparative Analysis of Architectural Aesthetic In Façade Verses Interior Space in Parametric Designed Building. In Proceedings of the 182nd IASTEM International Conference, Paris, France, 12 May 2019.
26. Soulikias, A.; Cucuzzella, C.; Nizar, F.; Hazbei, M.; Goubran, S. A Critical Exploration of the Implications of Digital Design Technologies on Sustainable Architecture. In Proceedings of the 9th International Conference of the Arab Society for Computer Aided Architectural Design, American University in Cairo, Egypt, Virtual, 2–4 March 2021.
27. Radoine, H. *Architecture in Context: Designing in the Middle East*; John Wiley & Sons: Hoboken, NJ, USA, 2017.
28. Julian, M. 6 Competing Logics of Sustainable Architecture. 2011. Available online: https://architectureintlprogram.wordpress.com/2011/03/30/6-competing-logics-of-sustainable-architecture/ (accessed on 12 August 2023).
29. Hussein, W.H.A. Flexible Design and Its Effect on Developing the Urbanism and Architecture, A Comparative Study of Parametric Design and Its Role in Promoting the Development of Regionalism in Design. *Int. J. Arts* **2020**, *10*, 1–12.
30. Tabarsa, M.A.; Naseri, Y. The Role of Contextualism in Architectural Design of Museums. *J. Hist. Cult. Art Res.* **2017**, *6*, 354. [CrossRef]
31. Tavalayi, N. *City Coherence Form*; Amirkabir University: Tehran, Iran, 2007; 212p.
32. Sotoudeh, H.; Abdullah, W. Affected Variables on Successful Infill Design in Urban Historic Context. *Arts Des. Stud.* **2012**, *3*, 7–11.
33. Goss, J. The Built Environment and Social Theory: Towards an Architectural Geography. *Prof. Geogr.* **1988**, *40*, 392–403. [CrossRef]
34. King, A.D. Notes towards a Global Historical Sociology of Building Types. In *Re-shaping Cities How Global Mobility Transforms Architecture and Urban Form*; Routledge: London, UK, 2010; pp. 24–41.
35. Dovey, K. *Framing Places: Mediating Power in Built Form*; Routledge: London, UK, 2014.
36. Markus, T.A. *Buildings and Power: Freedom and Control in the Origin of Modern Building Types*; Routledge: London, UK, 2013.
37. Sennett, R.; Nicholas, D. Flesh and Stone: The Body and the City in Western Civilization. *Hist. Rev. New Books* **1995**, *24*, 28. [CrossRef]
38. Lefebvre, H. From the Production of Space. In *Theatre and Performance Design*; Routledge: London, UK, 2012; pp. 81–84.
39. Yaneva, A. *Five Ways to Make Architecture Political: An Introduction to the Politics of Design Practice*; Bloomsbury Publishing: London, UK, 2017.
40. Ingold, T. *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*; Psychology Press: London, UK, 2000.
41. Delanty, G.; Jones, P.R. European Identity and Architecture. *Eur. J. Soc. Theory* **2002**, *5*, 453–466. [CrossRef]
42. Vale, L.J. Mediated Monuments and National Identity. *J. Archit.* **1999**, *4*, 391–408. [CrossRef]
43. Ando, T.; The Spirit of Modernism. Architectural Record. 2002, p. 1. Available online: https://archrecord.construction.com/people/interviews/archives/0205Ando.asp (accessed on 5 September 2023).
44. Rafati, N.; Hazbei, M.; Eicker, U. Louver Configuration Comparison in Three Canadian Cities Utilizing NSGA-II. *Build. Environ.* **2023**, *229*, 109939. [CrossRef]
45. Frampton, K. Reflections on the Autonomy of Architecture: A Critique of Contemporary Production. *Out Site A Soc. Crit. Archit.* **1991**, *1*, 17–26.
46. Jones, P. Putting Architecture in Its Social Place: A Cultural Political Economy of Architecture. *Urban Stud.* **2009**, *46*, 2519–2536. [CrossRef]
47. Lefebvre, H.; Rabinovitch, S.; Wander, P. *Everyday Life in the Modern World*; Routledge: London, UK, 2017.
48. Busquet, G.; Lavue, U. Political Space in the Work of Henri Lefebvre: Ideology and Utopia. *Spat. Justice* **2013**, *5*, 1–12.
49. Taylor, R. *Fascist Architecture and Urbanism: An Introduction*; Routledge: London, UK, 2016.
50. Zhao, L.; Wong, W.B.; Hanafi, Z.B. The Evolution of George Town's Urban Morphology in the Straits of Malacca, Late 18th Century-Early 21st Century. *Front. Archit. Res.* **2019**, *8*, 513–534. [CrossRef]
51. Zimmerman, C. If the Price Is Right: The Hard Currency of Architecture. *The Architecture Review*, 24 September 2019. September.
52. Sassen, S. Rebuilding the Global City: Economy, Ethnicity and Space. In *Re-Presenting the City*; Springer: Berlin, Germany, 1996; pp. 23–42.

53. Michiani, M.V.; Asano, J. Influence of Inhabitant Background on the Physical Changes of Banjarese Houses: A Case Study in Kuin Utara Settlement, Banjarmasin, Indonesia. *Front. Archit. Res.* **2016**, *5*, 412–424. [CrossRef]
54. Melhuish, C. From Dematerialisation to Depoliticisation in Architecture. In *This is Not Architecture*; Routledge: London, UK, 2005; pp. 242–250.
55. Steele, J. A Tribute to Hassan Fathy. *Archit. A Chang. World* **1992**, *51*, 53–59.
56. Nesbitt, K. *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965–1995*; Princeton Architectural Press: New York, NY, USA, 1996; ISBN 156898054X.
57. Otero-Pailos, J. Bigness in Context: Some Regressive Tendencies in Rem Koolhaas' Urban Theory. *City* **2000**, *4*, 379–389. [CrossRef]
58. Sekler, E.F. Structure, Construction, Tectonics. In *Structure in Art and in Science*; George Braziller: New York, NY, USA, 1965.
59. Byun, T.H. *Mythos of Poie-Sis and Poie-Sis of Mythos: Towards a Mythopoetic Configuration of Tectonic Form for Architectural Representation*; University of Pennsylvania: Philadelphia, PA, USA, 1993.
60. Al-Ansari, M. Irreducible Essence: Tectonics and Cultural Expression in Traditional Forms of Kuwaiti Dwelling. Ph.D. Thesis, University of Cincinnati, Cincinnati, OH, USA, 2011.
61. Rapoport, A. On the Cultural Responsiveness of Architecture. *J. Archit. Educ.* **1987**, *41*, 10–15.
62. Eco, U. Function and Sign: The Semiotics of Architecture. *Signs Symb. Archit. Broadbent* **1980**, *11*, 11–69.
63. Lynch, K. *Good City Form*; MIT Press: Cambridge, MA, USA, 1984.
64. Arnheim, R. Symbols in Architecture. *Salmagundi* **1977**, *36*, 69–75.
65. Shi, N. The Application of Chinese Traditional Cultural Symbols in Architectural Design. In Proceedings of the 2018 4th International Seminar on Education, Arts and Humanities (ISEAH 2018), Zhuhai, China, 8–9 December 2018.
66. Jackson, J.B. *A Sense of Place, a Sense of Time*; Yale University Press: New Haven, CT, USA, 1994.
67. Isaacs, R. The Urban Picturesque: An Aesthetic Experience of Urban Pedestrian Places. *J. Urban Des.* **2000**, *5*, 145–180. [CrossRef]
68. Rudolph, P. *Writings on Architecture*; Yale School of Architecture: New Haven, CT, USA, 2008.
69. Ricoeur, P. Universal Civilization and National Cultures. *Hist. Truth* **1965**, *271*, 284.
70. Arnoth, A. New Architecture in Historic Context. In Proceedings of the Scientific Symposium (ICOMOS General Assemblies), Xi'an, China, 17—21 October 2005.
71. Burden, E. *Illustrated Dictionary of Architecture*, 3rd ed.; McGraw-Hill: New York, NY, USA, 2012.
72. Moharami, T. *Our Islamic-Iranian Identity*; Research Institute for Humanities and Social Science, Jihad University: Tehran, Iran, 2004.
73. Uraz, T.U.; Balamir, A. Themes of Place and Space in Design Teaching: A Joint Studio Experiment in Amasya (1). *METU JFA* **2006**, *23*, 1–18.
74. Jørgensen, A. The Sense of Belonging in New Urban Zones of Transition. *Curr. Sociol.* **2010**, *58*, 3–23. [CrossRef]
75. Moore, C.W. *You Have to Pay for the Public Life: Selected Essays of Charles W. Moore*; MIT Press: Cambridge, MA, USA, 2004.
76. Capon, D.S. *Architectural Theory Volume 2: Le Corbusier's Legacy*; John Wiley and Sons: New York, NY, USA, 1999.
77. Steane, M.A.; Steemers, K. *Environmental Diversity in Architecture*; Routledge: London, UK, 2004.
78. Bodach, S.; Lang, W.; Hamhaber, J. Climate Responsive Building Design Strategies of Vernacular Architecture in Nepal. *Energy Build.* **2014**, *81*, 227–242. [CrossRef]
79. Norberg-Schulz, C. The Phenomenon of Place. In *The Urban Design Reader*; Routledge: London, UK, 2013; pp. 292–304.
80. Hirst, P. Foucault and Architecture. *AA Files* **1993**, *26*, 52–60.
81. Hazbei, M.; Adib, Z.; Nasrollahi, F. Natural Ventilation Effect on Shavadoons in Dezful by Applying CFD Modeling. *BAGH-E NAZAR* **2014**, *11*, 43–54.
82. Hazbei, M.; Nematollahi, O.; Behnia, M.; Adib, Z. Reduction of Energy Consumption Using Passive Architecture in Hot and Humid Climates. *Tunn. Undergr. Space Technol.* **2015**, *47*, 16–27. [CrossRef]
83. Rowland, I.D.; Howe, T.N. *Vitruvius: 'Ten Books on Architecture'*; Cambridge University Press: Cambridge, UK, 2001.
84. Corso, I.D.A. *Leon Battista Alberti*; Harper and Row: New York, NY, USA, 1977.
85. Weber, R.; Larner, S. The Concept of Proportion in Architecture: An Introductory Bibliographic Essay. *Art Doc. J. Art Libr. Soc. N. Am.* **1993**, *12*, 147–154. [CrossRef]
86. Tugnutt, A. *Making Townscape: A Contextual Approach to Building in an Urban Setting*; Mitchell: London, UK, 1987.
87. Taurens, J. *'Meaning'and 'Context'in the Language of Architecture. Place and Location: Studies in Environmental Aesthetics and Semiotics*; Institute of Art History, Estonian Academy of Arts: Tallinn, Estonia, 2008; p. 353.
88. Çalışkan, O.; Mashhoodi, B. Urban Coherence: A Morphological Definition. *Urban Morphol.* **2017**, *21*, 123–141. [CrossRef]
89. Alexander, C. *The Nature of Order: An Essay on the Art of Building and the Nature of the Universe*; Taylor & Francis: Abingdon, UK, 2002.
90. Hazbei, M.; Cucuzzella, C. Coherence of Interior and Exterior Formal Qualities in Parametrically Designed Buildings. *Int. J. Des. Eng.* **2021**, *10*, 10–28. [CrossRef]
91. Smith, M.E. The Archaeological Study of Neighborhoods and Districts in Ancient Cities. *J. Anthropol. Archaeol.* **2010**, *29*, 137–154. [CrossRef]
92. Johnson, P.-A. *Theory Architecture Concepts Principles: Concepts, Themes and Practices*, 1st ed.; Wiley: Hoboken, NJ, USA, 1994.
93. Lynch, K. *The Image of the City*; MIT Press: Cambridge, MA, USA, 1964.
94. De Clercq, R. Modern Architecture and the Concept of Harmony. *Br. J. Aesthet.* **2011**, *51*, 69–79. [CrossRef]

95. Corbusier, L. *The Modulor: A Harmonious Measure to the Human Scale, Universally Applicable to Architecture and Mechanics*; Birkhäuser: Basel, Switzerland, 2000; Volume 2.
96. Bullock, A.; Stallybrass, O.; Trombley, S.; Eadie, B. *The Fontana Dictionary of Modern Thought*; Collins: London, UK, 1977.
97. Larkham, P. Understanding Urban Form. *Urban Des.* **2005**, *93*, 2005.
98. Li, L.Y. Investigation on Urban Color and City Image in Wuhan. In *Energy, Environment and Green Building Materials*; CRC Press: Boca Raton, FL, USA, 2015; pp. 69–71.
99. Swirnoff, L. *The Color of Cities: An International Perspective*; McGraw-Hill Companies: New York, NY, USA, 2000.
100. Berghauser Pont, M.Y.; Haupt, P.A. *Space, Density and Urban Form*; Technische Universiteit Delft: Delft, The Netherlands, 2009; Volume 29.
101. McFarlane, C. The Geographies of Urban Density: Topology, Politics and the City. *Prog. Hum. Geogr.* **2016**, *40*, 629–648. [CrossRef]
102. Koolhaas, R. *Delirious New York: A Retroactive Manifesto for Manhattan*; The Monacelli Press, LLC: New York, NY, USA, 2014.
103. Alberti, L.B. *On the Art of Building in Ten Books*; Mit Press: Cambridge, MA, USA, 1991.
104. Poole, M.; Shvartzberg, M. *The Politics of Parametricism: Digital Technologies in Architecture*; Bloomsbury Publishing: London, UK, 2015.