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The Paradox of Contextualism in B.V. Doshi's *Amdavad ni Gufa* (1992–1995), India

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Abstract

Architectural accounts often treat symbolic identification with place as evidence of contextual achievement, yet the relationship between symbolic identification and material, spatial, environmental, and social conditions remains underexamined. This tension is examined through *Amdavad ni Gufa* (1992–1995), an underground art gallery designed by Indian architect Balkrishna Vithaldas Doshi (1927–2023) with painter Maqbool Fida Husain (1915–2011). The structure combines ferrocement shells, cave-like spaces, and mosaic surfaces, and is inspired by Indian mythological imagery. This study proposes a heuristic distinction between representational contextualism, which concerns symbolic and cultural associations, and operative contextualism, which concerns their material, spatial, climatic, and program-specific operation. These modes are assessed across four dimensions using documentary research, visual–spatial analysis, field observations, and exploratory interviews conducted during a single visit in June 2023 (n = 17). The field observations and interviews document visit-specific environmental experience rather than measured or long-term performance. The analysis identifies mutually reinforcing material and spatial relationships, and an inconclusive relationship between documented climatic intentions and conditions reported during the visit. Public accessibility, exhibitions, and visitor engagement demonstrate a specialized operative cultural role. The paradox lies in the gap between the *Gufa's* established symbolic contextual reputation and the uneven evidence supporting broader operative integration.

Keywords: B.V. Doshi; *Amdavad ni Gufa*; Contextualism; modern architecture; regional identity

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1. Introduction

The concept of context has long occupied a central place in architectural theory, particularly in debates concerning the limitations of modernism. From the early 1960s, studies associated with Colin Rowe at Cornell University developed an urban-formal understanding of contextualism through figure–ground relationships, solid and void, and the mediation of existing and new urban patterns [1] (1977, pp. 110–111). Within this discourse, Rowe's student Stuart Cohen extended the discussion by distinguishing contextualism's concern with physical organization from inclusivism's emphasis on architectural imagery and symbolism [2] (1974, pp. 3–5). These positions did not establish mutually exclusive definitions of context. Rather, they indicated an overlap between physical organization and architectural meaning.

During the late 1970s, these urban-formal approaches expanded into a broader concern with historical plurality. In *Collage City*, Rowe and Koetter used collage and bricolage to

describe the coexistence and recombination of heterogeneous urban fragments rather than their absorption into a single comprehensive order [3] (1978, pp. 102–105, 138–149). Charles Jencks situated this urban-formal contextualism within a broader postmodern concern with metaphor, historical reference, and architectural meaning [1] (1977, pp. 110–113).

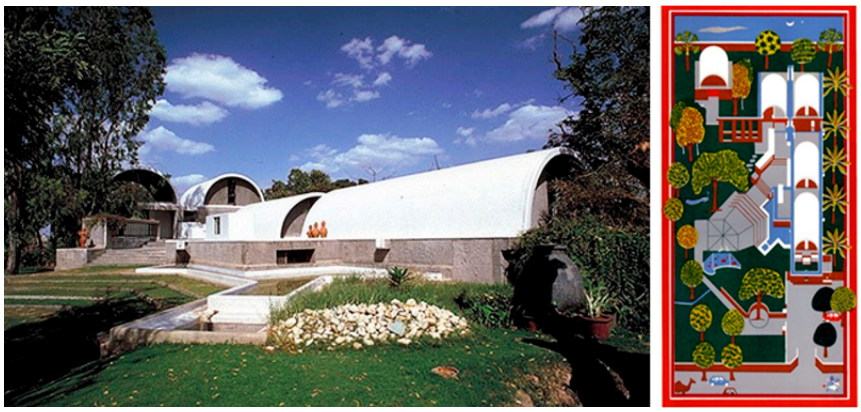
By the early 1980s, "critical regionalism" extended the contextualist debate beyond accommodating architecture to existing physical, historical, and cultural settings. Kenneth Frampton proposed mediating universal technology through topography, climate, light, tectonic construction, and embodied experience to counter the placelessness of global modernization without rejecting modernity or imitating vernacular form [4] (1983, pp. 20–29). Fredric Jameson, nevertheless, situates critical regionalism within postmodernism's "more general contextualism," while recognizing Frampton's resistance to scenographic and commodified architectural expression [5] (1994, pp. 193–199). Critical regionalism is therefore understood here as a distinct development within the broader contextualist field: it shares contextualism's concern with place while directing it against cultural and spatial homogenization.

These debates were not confined to the West. Through the 1990s and 2000s, ARCASIA's Asian Congress of Architects articulated related but contextually distinct concerns. Kurokawa's 1996 keynote advocated an "age of life" rooted in ecological symbiosis, while Tay Kheng Soon's 2000 keynote called for Asia to distinguish its modernity from Western history and rediscover its own roots [6] (2025). William S. W. Lim [7] (2008) argues that colonial and early modernist architectural discourses frequently imposed Western categories on Asian traditions and calls for contemporary practice to engage with local cultural specificity. Peter Rowe and Yun Fu [8] (2022) identify a related tension in Southeast Asia between vernacular climatic intelligence and symbolically oriented contemporary architecture, as illustrated by Ken Yeang's Menara Mesiniaga (1992). These positions demonstrate that contextualism in Asia cannot be understood simply as the application of a Western theoretical model; it must also be examined through colonial histories, locally situated forms of modernity, climatic knowledge, and cultural agency.

In South Asia, these concerns are particularly evident in the work of 2018 Pritzker Prize laureate Balkrishna Vithaldas Doshi (1927–2023). His professional relationships with Le Corbusier and Louis I. Kahn, discussed further in Section 3, contributed to an architectural approach that negotiated modernist order with India's climate, material practices, and cultural meanings. Sangath Studio (1979–1981; Figure 1) provides an illustrative reference for this approach. Its vaulted concrete forms reflect modernist influences, while its partially subterranean configuration, reflective tiled surfaces, water channels, and integrated landscape demonstrate documented climate strategies [9] (2019). *Amdavad ni Gufa* (1992–1995; Figure 2), designed by Doshi in collaboration with painter Maqbool Fida Husain (1915–2011), pursues different programmatic and architectural objectives. As an underground art gallery, it foregrounds artistic and symbolic expression through its biomorphic forms, cave-like spaces, and mythological imagery.

Scholars have frequently interpreted Doshi's architecture as a negotiation between modernist principles and locally situated cultural meanings. Ghosh [10] (2016) presents Doshi as a mediator who adapted Le Corbusier's cosmic iconography through Indian symbolic traditions. Ashraf [11] (2017) describes Sangath as a laboratory of critical regionalism in which modernism developed into a "mythopoeic" language connecting architecture, landscape and spirituality. Pandya [12,13] (1993, 2000) documents the *Gufa's* collaborative origins and identifies its increased emphasis on artistic abstraction. Kishnadwala [14] (2020) and Van den Heuvel [15] (2015) examine Doshi's Ahmedabad projects through urban conservation and the intersection of local and global architectural knowledge, respectively. Collectively, these studies establish the cultural and symbolic significance of

Doshi's architecture but do not systematically distinguish symbolic interpretation from operative conditions.



(**a**) (**b**)

Figure 1. Sangath Studio (1979–1981), Ahmedabad: (**a**) exterior view; (**b**) Doshi's illustration of the relationship between architecture, landscape, and spatial experience (Courtesy of *Vastu-Shilpa* Foundation).



Figure 2. *Amdavad ni Gufa* (1992–1995), Ahmedabad: exterior view (Photographed by the author).

Giamarelos [16] (2022) reframes critical regionalism as a "cross-cultural historiographical agenda" that returns buildings to their specific geographical and historical contexts. Avermaete et al. [17] (2019) similarly challenge its treatment as a fixed architectural style, emphasizing its relationships with historiography, tectonics, material culture, and contemporary practice. Recent studies of embodied heritage and adaptive reuse in modernist buildings [18,19] (2023, 2025) extend this context-sensitive approach but do not directly examine the *Gufa* or the relationship between its symbolic claims and operative conditions.

Existing interpretations of the *Gufa* primarily foreground its artistic collaboration, mythological imagery, cave-like spatial character, and position within Doshi's architectural development [9,12,13]. These interpretations have established its reputation as a contextually significant work, but symbolic identification with place does not by itself demonstrate equivalent material, climatic, spatial, or socio-cultural integration. The paradox examined here lies in the gap between the *Gufa's* established symbolic contextual reputation and the less certain evidence that its representational claims are consistently sustained through operative conditions. The study consequently asks: How do representational and operative modes of contextual engagement reinforce, remain independent of, or diverge from one another in *Amdavad ni Gufa*?

To address this question, the paper examines the interaction between representational and operative contextual engagement across four dimensions: material expression, spatial configuration, climatic responsiveness, and socio-cultural symbolism. Section 2 defines the framework, evidence categories, and assessment criteria. As a single-case investi-

gation, the study offers a provisional interpretation whose wider applicability requires comparative testing.

2. Framework: Contextualism and Four Analytical Dimensions

Contextualism provides a theoretical basis for analyzing the architectural expression of Doshi's *Gufa*, but the literature offers no unified model for evaluating how different forms of engagement with place interact within a building. Cohen provides a useful starting point by distinguishing physical organization from architectural imagery [2] (1974, pp. 21–23). This distinction establishes that contextual meaning may arise through both formal relationships and cultural representation. However, it does not establish how symbolic identification with place relates to material systems, spatial organization, climatic intentions, or program-specific social use. This unresolved association provides the analytical problem this framework addresses.

Rowe and Koetter's contextualism differs from both historicist imitation and modernist rupture. Their concept of collage describes contextual meaning as emerging through the coexistence and recontextualization of heterogeneous forms rather than through stylistic continuity [3] (1978, pp. 102–103). Together with Jencks's concern with metaphor, historical reference, and plural architectural meaning [1] (1977, pp. 110–113), this position explains how architecture may engage with place through association, juxtaposition, and imagery. Such representational engagement, however, does not necessarily demonstrate how a building responds to the material, environmental, or social conditions it invokes.

Frampton's critical regionalism provides a related but distinct development by shifting attention from association toward the mediation of universal technology through local topography, climate, light, tectonics, and embodied experience [4] (1983, pp. 20–29). Critical regionalism is not synonymous with contextualism: it gives engagement with place an explicitly resistant purpose directed against the homogenizing effects of modernization. Frampton's distinction between the "tectonic" and the "scenographic" contrasts the material articulation of construction with image-oriented architectural expression [4] (1983, pp. 27–28). Nevertheless, this distinction is not directly equivalent to the operative-representational framework proposed here. Jameson's critique introduces a socio-economic and representational dimension that complicates any simple opposition between materially grounded and image-based architecture. He situates critical regionalism within postmodernism's "more general contextualism" because both attend to locality, fragmentation, and resistance to totalizing solutions [5] (1994, pp. 193–195). However, Frampton's tectonic emphasis resists the scenographic and commodified tendencies that Jameson associates with postmodern architecture [5] (1994, pp. 193–199). This tension demonstrates that engagement with physical conditions may coexist with representational systems through which locality is produced as an image.

Applying these theories to postcolonial Indian architecture requires methodological caution. Frampton's critical regionalism emerged primarily from debates concerning Western modern architecture and the homogenizing effects of universal technology. Indian modern architecture developed through different historical relationships among colonialism, national modernization, imported professional knowledge, indigenous traditions, climatic practices, and cultural self-definition. Asian architectural debates represented by ARCASIA, Lim, and Rowe and Fu [6–8] similarly demonstrate that regional modernity cannot be understood solely through categories formulated in Europe or North America. Accordingly, this study does not apply critical regionalism as a culturally neutral or universal classification. It uses selected distinctions from Western contextualist debates as provisional analytical points of departure and places them in dialogue with Asian and Indian architectural discourse. These theoretical positions identify different ways in which

architecture may engage with place. To examine their interaction, this study proposes two heuristic modes: representational contextualism and operative contextualism. They are analytical constructs developed for this research rather than concepts adopted directly from any single theorist, and they do not constitute a binary classification. They are relational rather than mutually exclusive categories.

Representational contextualism describes engagement with place through symbolism, metaphor, historical association, cultural imagery, and experiential reference. It draws principally on Jencks's concern with metaphor and plural architectural meaning [1] (1977) and Rowe and Koetter's account of association, juxtaposition, and recontextualization [3] (1978). Operative contextualism describes engagement through construction and material systems, spatial organization, climatic intentions, and program-appropriate patterns of cultural use. Cohen [2] (1974) informs its concern with physical and spatial organization, while Frampton [4] (1983) contributes attention to construction, climate, materiality, and embodied experience. Operative contextualism does not necessarily signify technically verified performance. Where measurements are unavailable, the analysis is limited to documented intentions, architectural features, field observations, and reported experiences.

A partial theoretical parallel appears in Jameson's interpretation of Frampton, in which the tectonic–scenographic distinction is reframed as "ontological" and "representational" [5] (1994, pp. 196–197). This correspondence is limited: Frampton's "tectonic" concerns the material and expressive logic of construction, whereas Jameson's "ontological" category has phenomenological implications. Neither term is equivalent to this study's "operative" mode, which encompasses material systems, spatial function, climatic intention, and program-specific cultural use. Similarly, "representational" in this study does not automatically mean superficial or scenographic; symbolic and experiential strategies may constitute meaningful forms of contextual engagement. The framework therefore adapts selected theoretical distinctions without treating their original categories as interchangeable.

These two modes are examined across four dimensions. Material expression considers construction systems, craft processes, surface treatment, environmental intentions, and symbolic associations. Spatial configuration considers site relationships, circulation, orientation, gallery function, and experiential meaning. Climatic responsiveness distinguishes documented environmental intentions from field-observed and participant-reported conditions; measured performance is not evaluated without instrumented data. Socio-cultural symbolism considers cultural references together with criteria appropriate to an art gallery, including public accessibility, exhibition programming, visitor participation, artistic collaboration, and the building's relationship with CEPT campus life. Each dimension may contain both operative and representational evidence and therefore does not belong exclusively to either mode.

This paper distinguishes four levels of evidence. Documented intention refers to strategies identified in Doshi's accounts, architectural documentation, or other primary sources. Architectural interpretation refers to meanings inferred from plans, forms, spatial sequences, and cultural literature. Field observation records conditions directly visible or perceptible during the site visit. Participant-reported experience refers to the subjective accounts collected during the exploratory interviews. None of these categories is treated as equivalent to measured environmental performance. When evidence from different categories conflicts, the interpretation is qualified rather than resolved in favor of one source.

The analysis proceeds in three stages (Figure 3). First, evidence relating to the *Gufa* is organized across four dimensions using architectural documentation, published literature, visual–spatial analysis, field observations, and exploratory interviews. Second, representational and operative indicators are identified within each dimension. Third, their

relationship is classified as reinforcing, independent, divergent, or inconclusive. A relationship is reinforcing when the same architectural strategy supports both modes through convergent evidence. It is independent when both modes are present, but no direct relationship between them can be demonstrated. It is divergent when operative evidence clearly qualifies or contradicts a representational claim or documented intention. It is inconclusive when the available evidence is insufficient or conflicting. These classifications indicate relationships within individual dimensions rather than assigning the building a single overall label.

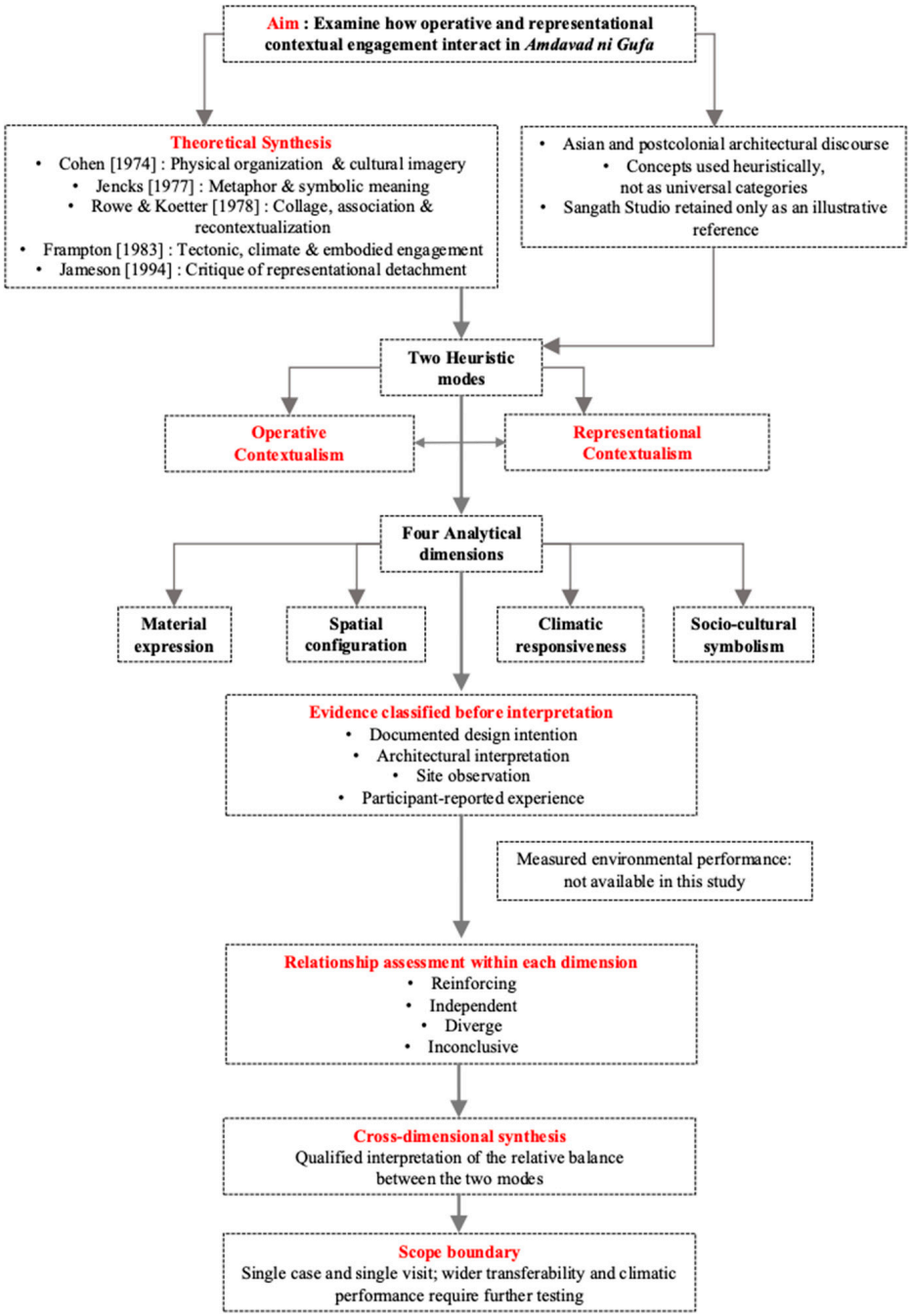


Figure 3. Analytical procedure for classifying evidence and assessing relationships between operative and representational contextual engagement across four dimensions [1–5]. Measured environmental performance lies outside the evidentiary scope of this study. (Source: Author).

During the site visit on 27 June 2023, 17 participants were approached on-site through convenience sampling. Participants were first asked whether they had an architecture-related educational background and were subsequently grouped as architecture students (n = 7) or general visitors (n = 10). Each participated in an approximately 10 min semi-structured conversation guided by questions prepared in advance. The questions and participants' responses were documented as contemporaneous written notes in the author's field diary; no audio or video recordings were made. The questions concerned spatial experience, orientation, daylight, perceived temperature, humidity or dampness, ventilation, odor, and general comfort. Verbal informed consent was obtained before participation, and no personally identifying information is reported.

Responses were organized according to participant group and recurring experiential themes. Because the interviews were conducted during a single visit and environmental conditions were not instrumentally recorded, the responses are used only as exploratory and corroborative evidence of reported experience. They are not treated as representative of all visitors or as evidence of typical, seasonal, or long-term environmental performance. Based on India Meteorological Department information accessed that day, the same field diary recorded Ahmedabad's daily outdoor temperature range as approximately 27–41 °C and a reported relative-humidity value of approximately 76% [20]. These city-level meteorological conditions are provided only to contextualize the visit. They were not measured at the *Gufa* and cannot establish indoor or long-term environmental performance.

Sangath is used as an illustrative reference within Doshi's practice rather than an equivalent comparative case. It is relevant because its partially subterranean placement, vaulted construction, reflective surfaces, water channels, landscape integration, and circulation provide documented examples of Doshi's environmental and experimental intentions [21] (1988).

The contrast is limited to the material, spatial, climatic, and symbolic roles of these strategies because Sangath is a working architectural studio, whereas the *Gufa* is an underground art gallery. Differences in ventilation requirements, occupation patterns, curatorial function, and social use are therefore not interpreted as evidence that one building performs better than the other or that the *Gufa* demonstrates a comprehensive shift in Doshi's architectural trajectory.

3. *Amdavad ni Gufa* Within the Architectural Context of Ahmedabad

Ahmedabad, in western India, became a UNESCO World Heritage City in 2017 for its historic urban fabric and living vernacular traditions [22]. Its vernacular types include *pol* houses (traditional courtyard-based residential clusters) and *vavs* (stepwells), which exemplify the integration of climatic adaptation with everyday social and ritual practices (Figure 4). *Pol* houses' compact forms, shared walls, shaded lanes, courtyards, and controlled openings moderate solar exposure and support domestic and communal activities [23] (2011). *Vavs* respond to water scarcity and heat through subterranean terraces and thermal mass while accommodating ritual and social activities. Table 1 summarizes these precedents alongside the *Gufa*.

Doshi worked at Le Corbusier's atelier (1951–1954) in Paris before returning to supervise Le Corbusier's Ahmedabad projects. He later assisted Louis Kahn with the Indian Institute of Management, Ahmedabad (1961–1964) and adapted these architects' modernist principles to Indian climatic and cultural conditions. Sangath illustrates Doshi's integration of modern construction with documented climatic and landscape strategies [24] (2017), while the *Gufa* pursues a different program of immersive artistic experience.



(**a**) (**b**)

Figure 4. Contextual architectural references in Ahmedabad: (**a**) *pol* houses; (**b**) *vav* or stepwell. The examples illustrate locally developed relationships among enclosure, climate, and social use but are not treated as program-equivalent comparisons with the *Gufa*. (Photograph by the author).

Table 1. Contextual comparison of architectural strategies in Ahmedabad's *pol* houses, *vavs*, and *Amdavad ni Gufa*.

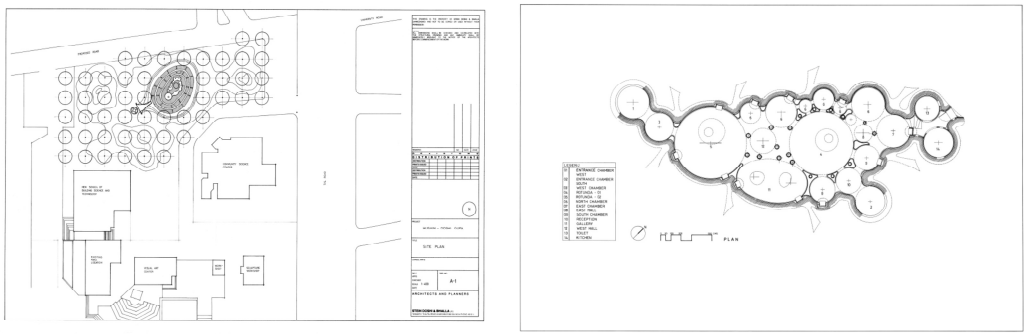
Feature	*Pol* Houses	*Vavs* [Stepwells]	*Amdavad ni Gufa*
Building type & program	Courtyard- based residential clusters	Water infrastructure with social and ritual functions	Underground art gallery
Placement & Enclosure	Dense inward-facing courtyard clusters	Descending subterranean terraces	Partially Subterranean interconnected domes
Materials strategy	Brick & stone masonry with substantial thermal mass	Thick stone walls, substantial thermal mass	Thin ferrocement shells with reflective mosaic surfaces
Documented Environmental Strategy	Shading, shared walls, courtyards and controlled openings	Depth, shading, masonry mass & contact with ground	Reduced surface exposure, reflective cladding & daylight openings
Program specific-social use	Domestic life, festivals, communal gatherings	Water collection, water worship, seasonal activities, gatherings	Public access, exhibitions, artistic experience and visitor participation
Comparative limitation	Residential program	Water-related civic & ritual program	Specialized cultural program; environmental performance not measured

Husain approached Doshi in the early 1990s to design a permanent gallery exploring the integration of art and architecture. The design evolved through dialogue: Husain contributed mythological and animal imagery and the symbolic language of caves, which Doshi translated into undulating ferrocement domes, skylights, mosaic cladding, and murals. The name *Gufa* (cave) signals its ambition to evoke primordial archetypes. Doshi recalled a vision of *Kurma*, the cosmic tortoise of Hindu mythology, whose shell informed the rising domes (Figure 5). In the myth, *Vishnu* (a Hindu God) assumes the form of a tortoise to support Mount Mandara during the churning of the cosmic ocean, associating the domes with cosmic stability and creation [9] (2019). The layout resembles a cellular formation, creating a non-hierarchical spatial network rather than a linear gallery sequence (Figure 6). Its low-profile domes provide limited external indication of the entrance or internal organization [25,26].



(**a**) (**b**)

Figure 5. *Kurma* and the conceptual form of *Amdavad ni Gufa*: (**a**) depiction of *Kurma* (Courtesy of Victoria and Albert Museum); (**b**) conceptual model of the project showing the undulating ferrocement dome (Courtesy of *Vastu-Shilpa* Foundation).



(**a**) (**b**)

Figure 6. Architectural layouts of *Amdavad ni Gufa*: (**a**) site plan illustrating the cave's integration within the CEPT campus landscape; (**b**) floor plan illustrating the interconnected cellular organization of dome structures and non-linear circulation patterns. (Courtesy of *Vastu-Shilpa* Foundation).

The modest entrance, retained site contours, and informal interior circulation reinforce the cave-like experience [27] (2018, pp. 289–306). The curved surface integrates Husain's murals directly with the ferrocement structure, while the subterranean placement and skylights contribute to the building's spatial and environmental strategies [26,27]. The following subsections examine these relationships across four dimensions, with Sangath serving as a contextual reference.

3.1. Material Expression

In the *Gufa*, Doshi employs an experimental material system combining technological innovation with symbolic meaning. Ferrocement shells, supported by steel rods and wire mesh, produce fluid domes and a cave-like geometry. The exterior domes are covered with broken ceramic mosaics crafted by local artisans and animated by a black serpent motif referencing *Sheshnag*, the cosmic serpent of Hindu mythology [9] (2019). Together with the shell-like *Kurma* imagery, these elements associate the structure with primordial creation. Although technically innovative, the system departs from Ahmedabad's vernacular traditions. *Pol* houses use brick and stone masonry, providing substantially greater material mass and a different tactile character. Sangath employs reinforced-concrete vaults, ceramic-tile cladding, earth berms, and water channels as interconnected environmental and landscape strategies [24] (2017).

The *Gufa's* ferrocement shells introduce a comparatively thin industrial construction system that enables sculptural plasticity and differs materially from the load-bearing masonry of the referenced *pol* houses and *vavs*. Although this comparison establishes a difference in material mass, it cannot by itself determine the *Gufa's* thermal behavior. The

shells were ultimately hand-finished by workers familiar with mud-plastering techniques because the curved wire mesh provided no conventional lines, levels, or shuttering [24] (2017). This construction process connected an industrial structural system with local craft knowledge. The below-grade placement limits the area directly exposed to solar radiation; the ceramic mosaic cladding was chosen to reflect direct sunlight and limit heat absorption [24] (2017). The skylights admit daylight, but their environmental effects were not measured. The material system therefore combines environmental intentions with a departure from the load-bearing masonry of *pol* houses and the earth-bermed vaults of Sangath.

During the author's June 2023 site visit, localized surface moisture was visible on parts of the interior material, and a wet, earthy odor was perceptible in some enclosed portions of the gallery. These unmeasured, visit-specific observations are considered alongside the participant reports in Section 3.3. Mosaic cladding, meanwhile, combines artisanal craft with solar reflectivity; its contextual role therefore operates simultaneously through environmental intention, craft association, and surface expression rather than through vernacular structural continuity.

Frampton's critical regionalism positions tectonic and tactile expression as mediators between architecture and place [4] (1983, pp. 26–29). Read through this framework, the *Gufa*'s ferrocement system combines operative material and environmental intentions with representational functions derived from sculptural form, craft, and mythological imagery. Its construction system therefore supports both material experimentation and symbolic expression, producing a reinforcing relationship between the two modes.

3.2. Spatial Configuration

In the *Gufa*, Doshi rejects the linear circulation and orthogonal geometry typical of modern galleries in favor of a fluid network of domes that encourages exploration rather than movement along predetermined paths (Figure 7). Within CEPT's predominantly exposed-brick, orthogonal campus, the *Gufa's* low-profile domes remain visually close to the surrounding ground plane while contrasting with the geometry of the surrounding buildings.

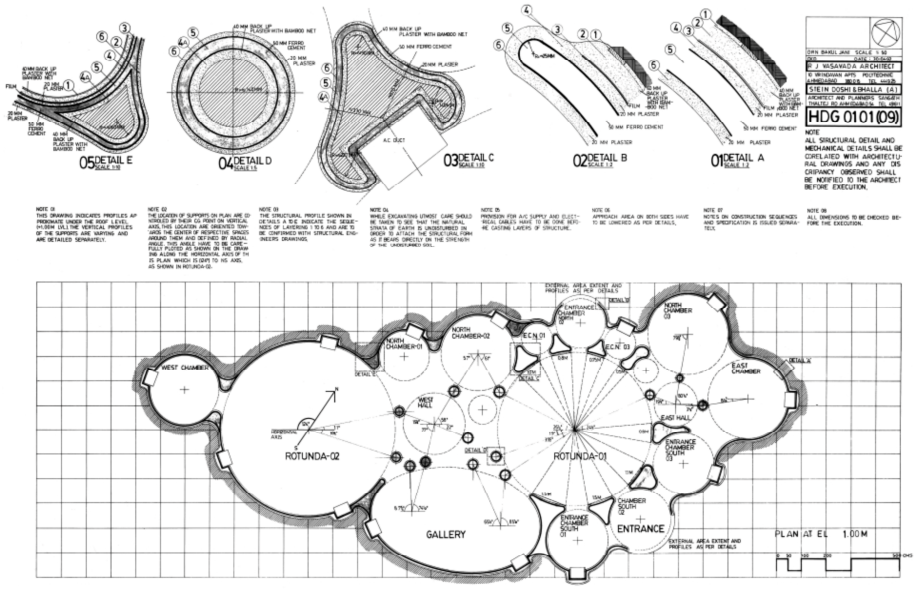


Figure 7. Detailed Plan of *Amdavad ni Gufa*: diagram illustrating the spatial layout of interconnected domes and circulation routes (Courtesy of *Vastu-Shilpa* Foundation).

The entrance is located in the north-eastern area of the plan. In *Vastu Shastra*, the north-east is associated with spirituality, knowledge, virtue, and sacred orientation [28] (1998). The entrance position can therefore be interpreted through the concept of *Ishana Kona*. However, because the available primary documentation does not confirm that Doshi selected this location according to *Vastu Shastra* principles, this association is treated as an interpretive reading rather than a documented design intention.

During the June 2023 visit, the entrance was not immediately legible, appearing as a modest descending stair rather than a conventional gallery threshold. The movement from the landscape into the underground interior may recall the introspective spatial experience of cave architecture. Inside, sloping columns and undulating surfaces replace flat walls and right angles, producing curved passages and irregular enclosures that prioritize sensory exploration [23] (2011). The interior was experienced as a continuous network without a clearly prescribed route or flat walls providing conventional points of orientation. Circular skylights cast changing patterns of light across the domes and Husain's murals. This controlled illumination can be read as recalling the atmospheric qualities of sacred cave architecture, although it does not by itself establish a deliberate religious intention.

Husain's figures, horses, and serpentine forms are painted directly onto the ferrocement surfaces, reducing the visual separation between structure and artwork. The serpent motif winds across multiple domes, contributing to the interpretation of the interior as a *Gesamtkunstwerk*, or total work of art. The non-hierarchical organization supports immersive movement and integrates Husain's murals with Doshi's architecture, but the absence of flat walls and a prescribed circulation route may limit conventional display arrangements and curatorial sequencing. These characteristics should not be treated solely as functional deficiencies because they arise from the *Gufa's* specific conception as an integrated environment of art and architecture.

Sangath circulation serves an architectural studio, whereas the *Gufa's* less prescribed movement supports an exploratory gallery experience. Read through Cohen's distinction between physical organization and architectural imagery [2] (1974), this configuration demonstrates that the two modes overlap: the same non-linear organization produces representational intensity and supports exploratory movement and mural integration, although it may constrain conventional exhibition arrangements. The relationship between operative and representational contextualism in the spatial dimension is therefore predominantly reinforcing rather than divergent.

3.3. Climate Responsiveness

Ahmedabad's climatic conditions have historically generated adaptive strategies, including the shaded courtyards of *pol* houses, the subterranean thermal mass of *vavs*, and Sangath's earth berms, reflective tiles, and water channels [23,24]. The *Gufa* employs some related strategies through its below-grade placement, mosaic cladding, and skylights.

Recent scholarship interprets the *Gufa's* subterranean configuration as climate-responsive, particularly in moderating Ahmedabad's severe summer heat [29] (2024). Its ferrocement shells contain less material mass than the thick masonry construction of the referenced *pol* houses and *vavs*. This difference alone, however, cannot determine the *Gufa's* thermal behavior. The environmental behavior of an underground gallery also depends on soil coupling, burial depth, roof construction, moisture migration, ventilation, occupancy, and operation. The skylights admit daylight into the underground interior. Although they visibly function as daylight openings, their contribution to airflow could not be established because the ventilation system and air movement were not measured or documented (Figure 8). The below-grade placement, reflective mosaic surfaces, and daylight openings

consequently demonstrate identifiable climatic intentions, but their environmental effects cannot be determined from architectural form alone.



Figure 8. Interior spatial environment of *Amdavad ni Gufa*: interconnected ferrocement domes, irregular columns, and murals by Husain (Photographed by the author).

The visit occurred on 27 June 2023. The author's contemporaneous field notes, based on India Meteorological Department information accessed that day, recorded Ahmedabad's daily outdoor temperature range of approximately 27–41 °C and relative humidity of approximately 76% [20]. These city-level data contextualize the conditions surrounding the visit but were not recorded at the *Gufa* and do not represent its indoor conditions.

Published visitor accounts mention perceived humidity and ventilation concerns [30]. Comparable experiences were reported in the exploratory site-visit interviews. During the visit, the author observed localized visible surface moisture and perceived a wet, earthy odor in some enclosed areas. These were visual and sensory observations rather than instrumentally measured conditions. Five of seven architecture students described the interior as damp or humid, and two raised concerns about ventilation and the potential effects of moisture on the ferrocement surfaces and artworks. Among ten general visitors, three reported stuffiness, two a musty odor, two described the interior as cooler but still humid, two noted uneven daylight, and one reported no discomfort.

These accounts represent subjective, visit-specific perceptions. The hot and humid outdoor conditions may have influenced the reported experiences, but the absence of simultaneous indoor and outdoor measurements prevents this relationship from being determined. Preceding rainfall, building operation, exposure duration, and individual sensitivity may also have affected the responses. The small convenience sample is not statistically representative and cannot distinguish temporary conditions from seasonal or long-term patterns. The evidence therefore identifies conditions requiring further investigation rather than establishing the *Gufa's* typical or long-term environmental performance.

Studies of underground and earth-sheltered buildings identify soil contact, construction characteristics, humidity, and ventilation as variables that may influence indoor environmental conditions [31,32] (2026). These studies provide technical context but do not verify the *Gufa's* performance. A systematic post-occupancy evaluation, supported by instrumented environmental measurements and conservation records from the *Vastu-Shilpa* Foundation and CEPT University, is recommended to test these indicative findings. Such an evaluation should simultaneously record indoor and outdoor temperature, relative humidity, air movement, surface moisture, seasonal variation, occupancy, and maintenance conditions.

The *Gufa* therefore evokes caves and stepwells through its underground form while incorporating identifiable climatic intentions through below-grade placement, reflective

surfaces, and daylight openings. However, the relationship between these intentions and the conditions observed or reported during the visit remains inconclusive without longitudinal environmental measurements. The climatic dimension therefore identifies a question for post-occupancy investigation rather than a demonstrated divergence or failure of operative contextualism.

3.4. Socio-Cultural Symbolism

Cultural symbolism can connect architecture to collective memory and identity, but Jameson cautions that historical and regional differences may be transformed into consumable images detached from the conditions they appear to represent [5] (1994, pp. 193–199). Norberg-Schulz, by contrast, understands place as a meaningful environment shaped by cultural and existential values [33] (1980). Together, these positions raise the question of whether the *Gufa's* cultural references operate primarily as imagery or are also sustained through spatial experience and program-specific cultural participation.

The spatial devices examined in Section 3.2, including the north-eastern entrance, the subterranean descent, and the patterned illumination of Husain's murals, may be interpreted through cultural and cosmological associations. These devices may also recall the threshold conditions of ancient cave temples, in which descent and controlled light can be associated with movement from the material toward the metaphysical. These connections are interpretive readings rather than evidence of a directly documented religious intention.

The *Kurma* imagery introduced above (Figure 9) can be read through Jameson's account of the symbolic act, in which aesthetic form offers an imaginary resolution to contradictions that cannot be resolved at the level of social reality [34] (1981, pp. 355–356). Rowe and Koetter's discussion of recontextualized objects offers a related, but distinct, account: transferred elements retain associations with their source while acquiring a new effect in a changed context [3] (1978, pp. 138–139). Read together, these positions suggest that myth gives formal coherence to the interaction among technological construction, cultural association, and artistic autonomy. The *Gufa's* combination of Hindu cosmology, ferrocement, industrial mosaic, and mural painting may therefore be understood as an associative assemblage rather than as a literal continuation of tradition. These references represent particular mythological and cosmological traditions and should not be treated as a comprehensive expression of a singular Indian cultural identity.

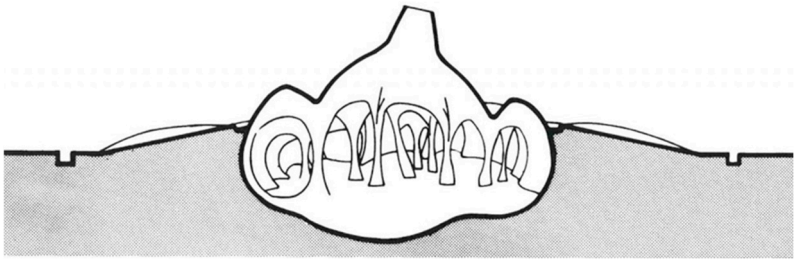


Figure 9. Section of *Amdavad ni Gufa* illustrating the underground gallery spaces, ferrocement dome structures, and skylight openings (Courtesy of the *Vastu-Shilpa* Foundation).

The *Gufa* functions as a specialized cultural building whose operative social role should be evaluated according to its program as an art gallery. It is open to the public from Tuesday to Sunday and hosts exhibitions on portraiture, architectural abstraction, and environmental awareness [35–38]. During the author's June 2023 visit, participants engaged with the *Gufa* through viewing, photography, discussion, and brief spatial exploration. Although a single visit cannot establish long-term patterns of use, the documented exhibition program and observed visitor activity demonstrate public access and program-specific

cultural participation. Its operative socio-cultural engagement is expressed through public accessibility, exhibition programming, visitor participation, artistic collaboration, and its relationship with CEPT's cultural environment. The evidence therefore indicates strong representational engagement alongside an active but specialized operative cultural role. These modes are partially reinforcing: the *Gufa's* symbolic and artistic character is sustained through public access and cultural programming, although the available evidence is insufficient to determine the frequency, diversity, local participation, or long-term social reach of these activities.

4. Discussion: Operative and Representational Modes of Contextual Engagement

The four dimensions reveal an uneven relationship between operative and representational contextual engagement. The material and spatial dimensions are predominantly reinforcing: ferrocement construction supports sculptural expression, while the non-linear configuration supports both exploratory movement and mural integration. The socio-cultural dimension is partially reinforcing when the *Gufa* is assessed according to its program as a public art gallery. The climatic relationship remains inconclusive because documented intentions and reported experiences cannot substitute for measured performance. Table 2 synthesizes these relationships across the four dimensions.

Table 2. Evidence-based assessment of operative and representational contextual engagement in *Amdavad ni Gufa*. Relationships are classified according to the criteria established in Section 2.

Dimension	Operative Engagement	Representational Engagement	Evidence	Relationship Identified
Material expression	Below-grade placement; reflective mosaics; daylight; ferrocement construction	Ferrocement plasticity; *Kurma* & Sheshnag references; craft & surface expression	Documents, literature & observation	Reinforcing: the construction system supports structural experimentation & symbolic expression
Spatial configuration	Site relationship; circulation; exploratory movement; gallery organization	Cave archetype; sacred associations; mural integration	Plans, literature & field observation	Predominantly reinforcing: exploratory movement supports artistic integration, although conventional exhibition flexibility may be limited
Climatic responsiveness	Reduced solar exposure; reflective surfaces; daylight openings	Cave & stepwell associations	Documented intentions, field observations & participant reports; no measurements	Inconclusive: climatic intentions are identifiable, but measured performance is unavailable
Socio-cultural symbolism	Public access; exhibitions; visitor participation; relationship with CEPT	Mythology; cosmology; artistic narrative	Institutional information, media reports & field observation	Partially reinforcing: symbolic meaning is supported by program-specific cultural participation

The central finding is that the two modes cannot be treated as mutually exclusive categories or as an automatic hierarchy. Within the *Gufa*, their relationship varies across the four dimensions. The ferrocement shell and non-hierarchical spatial configuration demonstrate how the same strategies can support construction, exploratory movement,

mural integration, and symbolic expression. The building's introspective, artistic character is constitutive of, not incidental to, its spatial logic.

Sangath clarifies selected material, spatial, and environmental strategies within Doshi's work but does not establish a comprehensive transformation in his architectural trajectory. The comparison suggests a different balance of priorities rather than the abandonment of Doshi's earlier environmental concerns. This relative balance can be read alongside Frampton's paradigmatic case for critical regionalism, Utzon's Bagsværd Church, where a universal construction system is mediated by a culturally borrowed vault form that remains legible as both structure and symbol [4] (1983, pp. 22–23). The *Gufa's* ferrocement shell, by contrast, places stronger emphasis on sculptural and experiential expression, complicating Frampton's closer alignment between tectonic construction and cultural mediation. Following Jameson, the *Gufa* can be interpreted as mediating modern construction through mythic and experiential expression [5] (1994, pp. 200–201). The comparison tests how a concept formulated through Western architectural debates may illuminate, but cannot fully define, the *Gufa's* specific context.

The *Gufa* should therefore not be understood either as a failure of contextual architecture or as evidence that symbolic contextualism necessarily lacks operative substance. Instead, it provides a critical case through which different relationships among modes of contextual engagement can be examined. Cohen recognized the overlap between physical and cultural contextualism while cautioning against treating either as an exclusive model [2] (1974, pp. 22–23). The analysis identifies predominantly reinforcing material and spatial relationships, partially reinforcing program-specific cultural engagement, and an inconclusive climatic relationship. The findings qualify the *Gufa's* established symbolic contextual reputation by demonstrating that its contextual relationships differ across operative dimensions. Rowe and Koetter offer a complementary interpretation: the *Gufa's* assemblage of myth, ferrocement, mosaic, landscape, and artistic collaboration can be understood as bricolage rather than evidence of contextual decline [3] (1978, pp. 91, 103). From this perspective, representational intensity constitutes a meaningful mode of contextual engagement rather than an architectural shortcoming. The case nevertheless shows why symbolic interpretation must be evaluated in relation to the type and limits of the available operative evidence.

5. Conclusions

Amdavad ni Gufa occupies a distinctive and paradoxical position within Doshi's architectural work. Developed with Husain, the project expands the expressive possibilities of modern Indian architecture by integrating art, mythology, experimental construction, and immersive spatial form. The analysis demonstrates that representational and operative contextual engagement neither consistently coincide nor remain opposed: their relationship varies across material, spatial, climatic, and socio-cultural dimensions. These differences represent an uneven interaction between contextual registers rather than discrete architectural shortcomings.

The significance of this finding lies not in treating the *Gufa* as a failure of contextual architecture but in demonstrating that contextual engagement operates through different and sometimes overlapping modes. Material and spatial strategies predominantly reinforce symbolic expression, while public access, exhibitions, and visitor engagement support a specialized operative cultural role. The relationship between climatic intentions and experienced conditions remains inconclusive. The framework thereby shifts evaluation from whether a building is contextual to examining how different forms of contextual engagement interact within the building.

The framework's transferability requires testing across buildings with different programs, material systems, and patterns of use. Comparative application to works by Charles Correa, Raj Rewal, and Laurie Baker could investigate whether similar relationships characterize twentieth-century Indian regional modernism or remain specific to Doshi's work. Such research could also examine whether critical regionalism requires reinterpretation in postcolonial South Asian contexts. These are directions for future research rather than conclusions established by this single case.

The study is limited by its single-case design, one site visit, a convenience sample of 17 participants, and the absence of instrumented environmental measurements. Its climatic findings identify visit-specific conditions requiring further investigation rather than typical or long-term performance. The analysis provides case-based evidence suggesting that representational and operative modes may develop unevenly within a celebrated modernist building.

By distinguishing representational from operative contextual engagement, this paper offers a provisional framework for testing how architectural claims to place are produced, experienced, and sustained. In this sense, the *Gufa's* paradox lies in the gap between its established symbolic contextual reputation and the uneven evidence that this achievement extends equally across all operative dimensions. A systematic post-occupancy evaluation should therefore investigate the following question: To what extent do longitudinal environmental measurements confirm or challenge the relationship identified here among the *Gufa's* climatic intentions, representational associations, and reported environmental experiences?

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Informed Consent Statement: All participants provided verbal informed consent before the interviews. Participation was voluntary, and the questions were limited to architectural and environmental experience. No personally identifying information was recorded. The author used verbal rather than written consent because the conversations were brief, minimal-risk, and documented anonymously through written field notes.

Data Availability Statement: The data supporting the findings of this study are contained within the article. Additional anonymized field notes are available from the corresponding author upon reasonable request, subject to ethical and privacy considerations.

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References

1. Jencks, C. *The Language of Post-Modern Architecture*; Rizzoli: New York, NY, USA, 1977.
2. Cohen, S. Physical Context, Cultural Context: Including It All. *Oppositions* **1974**, *2*, 1–40.
3. Rowe, C.; Koetter, F. *Collage City*; MIT Press: Cambridge, MA, USA, 1978.
4. Frampton, K. Towards a Critical Regionalism: Six Points for an Architecture of Resistance. In *The Anti-Aesthetic: Essays on Postmodern Culture*; Foster, H., Ed.; Bay Press: Port Townsend, WA, USA, 1983; pp. 16–30.
5. Jameson, F. *The Seeds of Time*; Columbia University Press: New York, NY, USA, 1994.

6. Zhang, Y.; Kim, D.; Kojima, M.; Matsubara, S.; Kita, M. Study on Trends of Contemporary Asian Architectural Thought by Discourses of ARCASIA: Analysis on Content Transitions in Asian Congress of Architects of ARCASIA from 1984 to 2021. *J. Archit. Plan. AIJ* **2025**, *90*, 2325–2336. [CrossRef]
7. Lim, W.S.W. *Asian Alterity: With Special Reference to Architecture and Urbanism Through the Lens of Cultural Studies*; World Scientific: Singapore, 2008.
8. Rowe, P.G.; Fu, Y. *Southeast Asian Modern: From Roots to Contemporary Turns*; Birkhäuser: Basel, Switzerland, 2022.
9. Doshi, B.V. *Paths Uncharted*; Mapin Publishing: Ahmedabad, India, 2019.
10. Ghosh, N. Modern designs: History and memory in Le Corbusier's Chandigarh. *J. Archit. Urban.* **2016**, *40*, 220–228. [CrossRef]
11. Ashraf, K.K. Sangath: Balkrishna Doshi. In *The Companion to the History of Architecture, Vol. IV: Twentieth-Century Architecture*; Leatherbarrow, D., Eisenschmidt, A., Eds.; Wiley: Hoboken, NJ, USA, 2017; pp. 42–48.
12. Pandya, Y. Architecture for a place and people. *Archit. Des.* **1993**, *10*, 21–28.
13. Pandya, Y. Hussain–Doshi Gufa. *Archit. Des.* **2000**, *17*, 99–104.
14. Kishnadwala, S. Urban conservation as sustainable development: The work of B.V. Doshi at Ahmedabad. *A+ArchDesign* **2020**, *6*, 61–73.
15. Van den Heuvel, D. Cross-pollination in the Doshi habitat: A report from Ahmedabad. *DASH Delft Archit. Stud. Hous.* **2015**, *12–13*, 70–76.
16. Giamarelos, S. *Resisting Postmodern Architecture: Critical Regionalism Before Globalisation*; UCL Press: London, UK, 2022. [CrossRef]
17. Avermaete, T.; Patteeuw, V.; Szacka, L.-C.; Teerds, H. Revisiting critical regionalism: Critical regionalism revisited. *OASE J. Archit.* **2019**, *103*, 1–10.
18. Pandya, S.; Moors, M. The house as a work in movement: The living heritage of LIC Housing by B.V. Doshi in India. In *Design for Resilient Communities: Proceedings of the UIA World Congress of Architects Copenhagen 2023*; Rubbo, A., Du, J., Thomsen, M.R., Tamke, M., Eds.; Springer: Cham, Switzerland, 2023; pp. 749–765. [CrossRef]
19. Desai, J.; Rawal, R. Restoration vs redevelopment: Embodied carbon in conserving a twentieth-century heritage in India. In *Embodied Carbon for Sustainable Building Conservation*; Prizeman, O., Ed.; Routledge: Abingdon, UK, 2025; pp. 35–62. [CrossRef]
20. India Meteorological Department. Current Weather Information: Ahmedabad. Available online: https://mausam.imd.gov.in/ (accessed on 27 June 2023).
21. Curtis, W.J.R. *Balkrishna Doshi: An Architecture for India*; Rizzoli: New York, NY, USA, 1988.
22. UNESCO. Historic City of Ahmadabad. World Heritage Centre. Available online: https://whc.unesco.org/en/list/1551 (accessed on 15 July 2025).
23. Mukerji, C. *Postcolonial Modernism in Indian Architecture*; Cambridge University Press: Cambridge, UK, 2011.
24. Gangwar, G. Fusion of Ancient and Contemporary Design Principles in the Works of B.V. Doshi. *J. Civ. Eng. Environ. Technol.* **2017**, *4*, 11–16.
25. India Today. Cave of serenity: M.F. Husain, B.V. Doshi Juxtapose Reality and Dreams in Their Latest Creation, Gufa. *India Today*, 16 February 1995.
26. Institute for Public Art. Amdavad ni Gufa. Available online: https://www.instituteforpublicart.org/case-studies/amdavad-ni-gufa/ (accessed on 8 July 2025).
27. Swaranjali, P. Architectural Storytelling: The Subjunctive Mode of Architectural Conceptualization and Experience in the Works of Balkrishna Doshi. *Archit. Cult.* **2018**, *6*, 289–306. [CrossRef]
28. Chakrabarti, V. *Indian Architectural Theory: Contemporary Uses of Vastu Vidya*; Curzon Press: Richmond, UK, 1998.
29. Omićević, N.; Zaninović, T.; Bojanić Obad Šćitaroci, B. Integrating Underground Space into the Groundscape Resilience Concept. *Buildings* **2024**, *14*, 2406. [CrossRef]
30. Prabhakar, N. The Underground Husain–Doshi ni Gufa in Ahmedabad. *Paper Planes*, 29 September 2023. Available online: https://www.joinpaperplanes.com/the-underground-husain-doshi-ni-gufa-in-ahmedabad/ (accessed on 1 July 2026).
31. Kandel, A.A.; Elnaggar, A.H.; Abdelrahman, A.A.; Abbas, E.M.; Ramadan, I.A.; Hamed, M.H.; Salem, S.A.; Abdelmoez, M.S. Ventilation, thermal comfort, and energy strategies for underground shelters. *Int. J. Heat Technol.* **2026**, *44*, 75–87. [CrossRef]
32. Nasiri, N.; Mofidi-Shemirani, S.-M.; Rahbar, N.; MoradiNasab, H.; Khaksar, A. Sensitivity analysis of key architectural parameters affecting thermal comfort in vernacular underground residential spaces in hot-arid climates: A case study from Semnan, Iran. *Indoor Air* **2026**, *2026*, 8576608. [CrossRef]
33. Norberg-Schulz, C. *Genius Loci: Towards a Phenomenology of Architecture*; Rizzoli: New York, NY, USA, 1980.
34. Jameson, F. *The Political Unconscious: Narrative as a Socially Symbolic Act*; Methuen: London, UK, 1981.
35. Ahmedabad Municipal Corporation. Amdavad ni Gufa. *AMC Heritage City*. Available online: https://heritage.ahmedabadcity.gov.in/details/5/heritage_site/all_heritages/en (accessed on 8 July 2026).
36. Times of India. Exhibition traces Indian portraiture's evolution. *The Times of India*, 4 November 2025. Available online: https://timesofindia.indiatimes.com/city/ahmedabad/exhibition-traces-indian-portraitures-evolution/articleshow/125066825.cms (accessed on 5 July 2026).

37. Times of India. What's up Amdavad? *The Times of India*, 20 March 2026. Available online: https://timesofindia.indiatimes.com/city/ahmedabad/whats-up-amdavad/articleshow/129686078.cms (accessed on 5 July 2026).
38. Times of India. What's up Amdavad? *The Times of India*, 3 April 2026. Available online: https://timesofindia.indiatimes.com/city/ahmedabad/whats-up-amdavad/articleshow/129987614.cms (accessed on 5 July 2026).

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