



Journal of Arts & Humanities

Volume 15, Issue 03, 2026: 06-15

Article Received: 06-01-2026

Accepted: 01-04-2026

Available Online: 12-04-2026

ISSN: 2167-9045 (Print), 2167-9053 (Online)

DOI: <http://dx.doi.org/10.18533/journal.v15i3.2653>

Evolution of bas-relief techniques from classical traditions to modern residential space design

Bohdan Bovt¹

ABSTRACT

The article examines the historical evolution of bas-relief techniques from classical stone and plaster traditions to their contemporary applications in modern residential interiors. The study clarifies how technical solutions from heritage conservation, digital modeling, and additive manufacturing expand the possibilities for sculptural wall decoration in living spaces. Within the research, approaches to cleaning and stabilizing historical gypsum and concrete reliefs are examined, as well as recent developments in digital bas-relief generation, ultra-high-resolution laser fabrication, and sustainable casting materials. Particular attention is paid to integrating these technologies into contemporary interior design, where bas-reliefs serve as decorative, acoustic, optical, and zoning elements. The aim is to develop a coherent model of continuity between historical practices and contemporary residential design. The article relies on comparative analysis of international case studies, technical reports, and design-oriented publications. The conclusions systematize practical recommendations for artists, designers, and conservators who integrate bas-relief into contemporary domestic environments as a durable, tactile, and individualized surface solution.

Keywords: Bas-relief, gypsum relief, interior architecture, residential design, digital bas-relief, 3D printing, conservation, sustainable sculpture materials, plaster wall art, tactile surfaces..

This is an open access article under [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/).

1. Introduction

Bas-relief has accompanied architecture from ancient civilizations to present-day domestic interiors, consistently linking building structures with narrative, ornamental, and symbolic sculpture. Shifts in materials, fabrication techniques, and aesthetic preferences over the last century have redirected this tradition from monumental facades and sacred spaces towards intimate residential environments, where relief surfaces address both artistic and functional requirements.

The current resurgence of textured walls, sculptural panels, and custom gypsum compositions in high-end housing and boutique interiors demonstrates that bas-relief no longer belongs exclusively to classical historicism. It now intersects with digital sculpting, parametric modeling, sustainable

¹ Bas-relief artist, PRO Home Repairs LLC, Juneau, Alaska, USA. Gmail: professionalhomerepairsllc@gmail.com

materials, and new lighting scenarios. At the same time, the conservation of historical stone, gypsum, and concrete reliefs continues to yield sophisticated methods for cleaning, consolidation, and documentation that can inform contemporary practice in private interiors.

The study aims to explain how bas-relief continuity operates across material, formal, technological, and cultural dimensions when historical sculptural principles are translated into contemporary residential interiors.

In line with this aim, the article addresses three research tasks:

1. To synthesize historical and conservation-oriented knowledge about traditional bas-relief materials and techniques and to identify their practical relevance for present-day interior work.
2. To analyze current technical innovations in digital modeling, laser fabrication, and additive manufacturing of bas-reliefs, and to outline their potential for customized residential wall compositions.
3. To systematize design strategies for integrating bas-reliefs into modern residential interiors, accounting for functional requirements such as acoustics, zoning, maintenance, and sustainability.

The novelty of the work lies in combining heritage-science literature, technical research on digital and additive technologies, and design-oriented sources into a single analytical framework centered on residential interiors. The study not only summarizes engineering or art-historical information but also interprets it from the perspective of an artist working with gypsum bas-relief for private living spaces, enabling a more practice-oriented reading of the scientific results.

To avoid treating continuity as a purely rhetorical link between historical bas-relief and present-day interiors, this article uses continuity as an analytical category with four interrelated dimensions. First, material continuity refers to the persistence of plaster- and gypsum-based logic: layered build-up, adhesion to substrate, surface finishing, and maintenance regimes. Second, formal continuity refers to the compression of spatial depth into shallow relief, where legibility depends on calibrated protrusion, edge hierarchy, and directional lighting. Third, technological continuity refers not to the repetition of old tools, but to the translation of earlier modeling principles into new media, including digital bas-relief generation, scanning, CNC preparation, and additive prototyping. Fourth, cultural continuity refers to the relocation of relief from sacred and monumental settings into domestic space, where collective narrative gives way to personalization, atmosphere, and everyday tactile experience. On this basis, continuity is treated not as simple stylistic survival, but as a process of selective transfer, adaptation, and refunctionalization across materials, scales, and social meanings.

2. Materials and methods

The source corpus was intentionally limited to ten publications to construct a focused comparative sample rather than an exhaustive bibliography. The selection followed four inclusion criteria: direct relevance to bas-relief as a material, formal, conservation, digital-fabrication, or residential-design problem; publication within a recent analytical horizon, primarily 2020–2025, with one broader historical source retained for conceptual genealogy; explicit technical, visual, or design-operational content applicable to wall-based relief practice; and sufficient descriptive detail to support cross-source comparison. Publications were excluded when they addressed sculpture in general without relief-specific implications, discussed digital fabrication without surface-depth translation, or offered purely promotional content without identifiable design or technical information.

The corpus's geographic scope is deliberately international and heterogeneous, encompassing Africa, Europe, East Asia, and Southeast Asia. Such breadth was retained because the article does not compare national schools of bas-relief; instead, it compares transferable problem-solving logics across distinct production environments. The comparative logic is therefore thematic rather than regional: historical compression of depth, conservation-compatible material treatment, structural adhesion, digital translation of relief, and residential deployment.

The corpus contains three evidence tiers. The first tier consists of peer-reviewed studies in conservation science, heritage documentation, and computational modeling [1–3; 5–8]. The second tier contains historically oriented interpretive material used to frame long-term formal development [4]. The third tier contains design-journalism sources [9, 10], which are not treated as evidentiary equivalents to conservation or engineering studies; their function is illustrative and practice-oriented,

since they provide access to current residential applications, stylistic tendencies, and designer-led modes of spatial deployment. Their analytical use is therefore restricted to interpreting contemporary interior scenarios rather than to technical proof.

Methodologically, the article combines source-based comparative analysis, typological classification, and structural-formal reading. Comparative analysis identifies points of transfer between heritage practice and domestic interiors; typological analysis organizes residential bas-relief by function; structural-formal analysis focuses on depth compression, layering, substrate logic, and light response. The resulting synthesis is not intended as a statistical generalization but as a conceptually structured model for interpreting residential bas-relief across multiple knowledge domains.

3. Results

The analysis of historical and conservation literature confirms that classical bas-relief traditions provide not only stylistic motifs but concrete technical guidance for present-day interior work. S. Carboni demonstrates that low-relief and mid-relief techniques from Mesopotamia and the Florentine Renaissance were already optimized to convey depth within minimal protrusion, relying on precise control of relief steps and directional lighting [4]. This lineage culminates in perspective bas-reliefs such as Ghiberti's doors, where layered planes and compressive depth are orchestrated to read clearly from a distance. Such historical solutions correspond directly to the spatial limitations of contemporary apartments, where wall thickness and circulation demand shallow but legible relief.

Heritage-science studies on gypsum and cement reliefs refine this historical model with material-specific information. A. Vasilieva and co-authors demonstrate that painted gypsum bas-reliefs possess complex stratigraphy: ground layers, modeling plaster, polychromy, and protective coatings interact in ways that determine cleaning tolerances and mechanical behavior [8]. Optoelectronic techniques such as optical coherence tomography and 3D scanning reveal micro-relief and subsurface defects, enabling targeted cleaning protocols. For an artist working with gypsum for residential interiors, such findings underscore the need to plan layer sequences and surface treatments (primers, paints, varnishes) with future maintenance and potential localized cleaning in mind, especially in areas prone to dust accumulation or exposure to cooking fumes.

Conservation research on modern cementitious reliefs further clarifies how contemporary materials behave under long-term exposure. J.A. Shin and colleagues analyze a twentieth-century relief by Jin-kyu Kwon and show that cement-based matrices often contain multiple aggregates and fillers, exhibit heterogeneous porosity, and are susceptible to cracking [7]. Tailored consolidation and cleaning strategies restore legibility without flattening subtle tool traces, suggesting that a similar sensitivity is required when integrating cement or concrete relief elements into residential interiors, particularly around fireplaces or in semi-outdoor loggias. The study reinforces the idea that material analysis should precede any intervention, whether in heritage objects or newly designed works intended for decades of use.

Practice-oriented sculpture research extends this conservation perspective into construction details. J.E. Appiah documents that relief lettering on cement-rendered walls frequently detaches due to an insufficient mechanical key and poor integration with the substrate [2]. By introducing a sequence of surface hacking, steel nails, binding wire, and cement grout, the author achieves continuous anchorage between the relief and the wall. Photographs of deteriorated and reinforced works show that controlled roughening, internal armature, and intermediate grouting layers significantly increase resistance to peeling and shear forces. These results are directly transferable to large gypsum or cement bas-reliefs in residential stairwells or façades, where weight and thermal cycles impose additional stress.

Alongside structural reinforcement, material innovation shapes how bas-reliefs contribute to sustainable residential design. E. Amisah, D. Ado, and J. Adu-Agyem present palm kernel expeller as a cost-effective and environmentally beneficial casting material for sculptural applications [1]. In their experiments, composites based on this agricultural by-product provide adequate mechanical strength while reducing reliance on conventional cement and minimizing waste. For interior bas-reliefs, such composites suggest a path toward lightweight backing structures, underlayers, or experimental panels that combine sculptural expressiveness with reduced environmental footprint.

Digital technologies introduce a different layer of transformation. Y. Liu and collaborators develop an example-driven framework for modeling portrait bas-reliefs directly in normal-image space [6]. Instead of sculpting exclusively in three-dimensional object space, the method constructs a composite normal map from various sources. Then it solves for a depth field that compresses geometry while preserving facial detail. Style parameters control the degree of flattening, allowing transitions from nearly graphic shallow relief to more sculptural modeling. For interior practice, such approaches provide a tool for generating personalized portrait or botanical reliefs from photographs, which can subsequently be milled in plaster, CNC-carved in wood, or printed as mold masters.

At the frontier of resolution, G.E. Lio and co-authors use two-photon direct laser writing with an ENZ nano-cavity to fabricate a nanometric bas-relief of Leonardo’s “Lady with an Ermine” [5]. In the present study, this source is not treated as direct evidence for standard residential application. Its relevance is more limited and conceptual: it shows that relief logic can be translated into excellent depth modulation, thereby broadening the technological horizon for bas-relief reproduction. For residential design, the most plausible implications lie not in wall-scale deployment but in small architectural details, such as metal fittings, switch plates, decorative inserts, or tactile micro-surfaces where fine relief articulation is desirable.

Heritage documentation projects serve as a bridge between high-tech fabrication and large-scale architectural reliefs. Y. Ardhiati and co-authors reconstruct the Sarinah department store’s concrete reliefs by combining close-range photogrammetry, digital sculpting, and scaled 3D printing [3]. Their workflow includes smartphone-based image capture, dense point-cloud generation, mesh reconstruction, digital retouching, and additive manufacturing of physical maquettes. The comparison between original reliefs and printed models underscores both the advantages and limitations of digital surrogates: overall gesture and depth transitions are captured convincingly. At the same time, subtle textures and facial expressions demand further refinement.

Figure 1 summarizes the continuity between historical bas-relief practice, conservation studies, and digital technologies assembled in the sources.

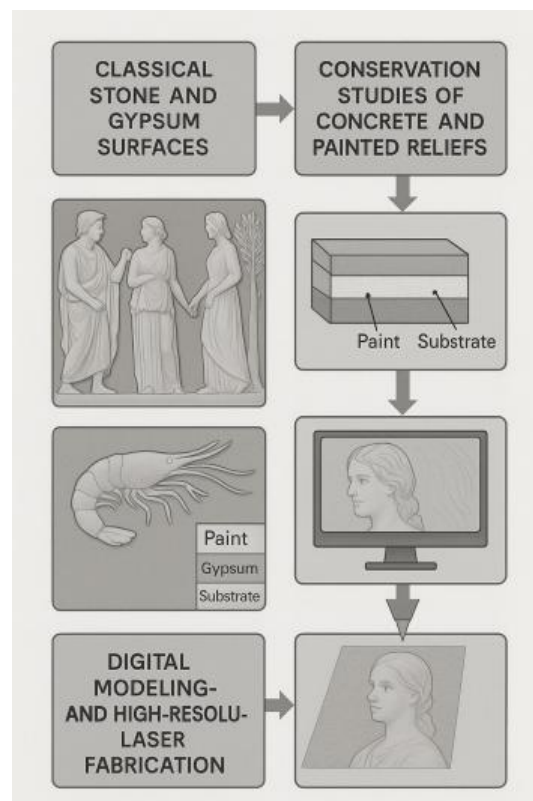


Figure 1. Schematic overview of material and technological transitions in bas-relief, from classical stone and gypsum surfaces through conservation studies of concrete and painted reliefs to digital modeling and high-resolution laser fabrication (compiled by the author based on his own research)

Analytically, Figure 1 clarifies that continuity in residential bas-relief is not reducible to stylistic quotation. The diagram separates four transfers: historical relief provides the grammar of shallow spatial compression; conservation studies provide knowledge of stratigraphy, compatible cleaning, and surface preservation; structural studies provide attachment logic and durability; and digital workflows provide controlled translation, scaling, and prototyping. Read in relation to the first and second research tasks, the figure shows that residential bas-relief emerges through cumulative transformation rather than the simple revival of classical ornament.

Design-oriented publications illustrate how these technical possibilities are applied in authentic interior spaces. The Waldeco article describes gypsum bas-reliefs as multifunctional elements for living rooms, bedrooms, and offices, improving sound insulation, smooth zoning transitions, and visually correct room proportions [9]. Relief panels conceal wiring and surface irregularities while responding dynamically to changing daylight through shifting shadows. Descriptions of flora- and fauna-inspired compositions, children's room panels, and office logos indicate that bas-relief functions simultaneously as an ornament, a branding tool, and a spatial element.

V. Woodcock's analysis of mid-century "wonder walls" and their contemporary reinterpretations in luxury residences reinforces this multifunctionality [10]. Ceramic, concrete, and plaster bas-reliefs are used around fireplaces, in the entrance hall, and behind seating areas, where they interact with indirect lighting and natural materials. Designers commission bespoke wall sculptures from specialized studios, combining artisanal modeling with industrial fabrication (casting, CNC, 3D printing). The article notes a clear shift from purely decorative panels to surfaces that structure the room's atmosphere, controlling intimacy, texture, and light.

4. Discussion

The synthesis of conservation research, sculptural practice, and design journalism suggests that current residential bas-relief work benefits most when it consciously adopts a "heritage-aware yet future-oriented" position. Classical bas-reliefs developed an efficient grammar of planes and depths; heritage studies refine knowledge of how traditional materials age; technological research supplies tools for adaptation and innovation; interior design narratives reveal how clients respond to such surfaces in real homes.

A central theme that emerges from the studies of J.E. Appiah and E. Amissah is the material and structural robustness of reliefs integrated into the building fabric [1, 2]. In residential settings, this robustness is not merely a technical requirement but a condition for economic and ecological viability. Extensive wall-mounted bas-reliefs in stairwells, living rooms, or bedrooms are expected to last for decades, surviving minor substrate movement, cleaning, occasional mechanical impact, and even rearrangements of lighting. Reinforcement strategies based on mechanical anchorage, interlocking profiles, and controlled composites inspired by these studies reduce the risk of detachment and premature replacement. When combined with sustainable binders or fillers, such as palm kernel expeller [1], the relief becomes both durable and environmentally considerate.

Conservation work on gypsum and cement reliefs introduces another important thread: the value of reversibility and diagnostic precision. For historical objects, these properties are ethical imperatives; for contemporary residential bas-reliefs, they are pragmatic advantages—pre-planning of layer structures, priming systems, and finishing coats in line with the insights of A. Vasileva et al. and J.A. Shin et al. allow future localized cleaning or repainting without destroying sculptural detail [7, 8]. In apartments where occupants may change or their tastes evolve, the ability to adjust color schemes while preserving relief modeling becomes a compelling argument for bespoke plaster work over flat paint or wallpaper.

The design-oriented sources reinforce this argument by illustrating how bas-relief aligns with current expectations regarding multisensory interiors. Waldeco's overview frames gypsum reliefs as elements that enhance acoustic comfort, thermal performance, and visual dynamics in everyday rooms [9]. Sound-absorbing textures, softly shadowed floral or abstract motifs, and concealed flaws in existing walls are not marginal benefits but part of a comprehensive design strategy. Similarly, V. Woodcock's examples of mid-century inspired "wonder walls" illustrate how international designers treat bas-relief as a device for building atmosphere and identity, rather than as an optional decoration

[10]. Relief surfaces engage touch, peripheral vision, and movement, encouraging inhabitants to interact with walls rather than ignore them.

These tendencies are conceptually aligned with S. Carboni's discussion of tactile bas-reliefs for visually impaired visitors [4]. Although the museum projects she describes belong to public cultural institutions, the underlying idea—using relief to translate complex visual information into a tactile, spatial language—resonates strongly with inclusive residential design. Bas-relief compositions in private homes can be conceived not only as visual statements but as navigational or mnemonic devices, especially for occupants with reduced vision. In this regard, tactile clarity, coherent depth step, and carefully managed edges become as important as visual refinement.

In monumental settings, relief usually organizes collective memory, public symbolism, or ceremonial narrative. In domestic settings, by contrast, relief is more often tied to intimacy, self-representation, lifestyle coding, and sensory atmosphere. This shift alters both iconography and function: the collective narrative frieze gives way to personalized botanical, abstract, portrait, or monogrammatic compositions; durable public legibility gives way to close-range tactile and optical experience; and civic permanence gives way to curated domestic identity. In this sense, residential bas-relief participates in the broader transformation of sculptural surfaces into markers of distinction, authorship, and luxury consumption.

Digital bas-relief modeling and high-resolution fabrication introduce further layers into the design process. Y. Liu et al. propose a workflow that uses normal maps and depth optimization to provide fine-grained control over a compressive spatial representation [6]. For residential practice, this enables iterative design: an artist can sketch a composition by hand, translate it into a digital bas-relief model, test various degrees of flattening and cropping, and then either carve the final work manually or use CNC milling or 3D printing as a starting point. G.E. Lio and co-authors take this logic to the limit by demonstrating that bas-relief can be generated at nanometric scales without compromising recognizable imagery [5]. Although such extreme resolutions exceed typical architectural needs, they point toward hybrid objects—such as door handles, luminaire shades, and switch plates—where micro-relief carries narrative or ornamental content.

In this context, scaled 3D-printed models used in the Sarinah relief project provide a conceptual model for prototyping residential bas-reliefs [3]. Homeowners and designers can handle scale models, test lighting and placement, and evaluate compositional balance before committing to full-size gypsum or concrete installations. Such maquettes reduce the risk of visual overload or functional obstruction in narrow corridors and compact rooms, a concern highlighted in both Walldeco's and Woodcock's descriptions of authentic interiors [9, 10].

The interaction between hand modeling and digital tools remains a crucial question for contemporary practice. Conservation and sculptural case studies emphasize the expressive value of tool traces, surface irregularities, and individually resolved transitions between elements [2, 7, 8]. In contrast, digital bas-relief techniques tend to produce smoother, more controlled surfaces [5, 6]. A balanced approach treats digital outputs as frameworks rather than final products: CNC-milled or printed relief bases can be selectively re-worked by hand, reintroducing tactile nuances and adapting generic patterns to the unique geometry of a specific room (corners, window reveals, existing niches).

This manual-digital tension opens a broader theoretical question about authorship and authenticity in post-digital interior practice. Hand-modeled relief preserves the traces of bodily decision-making: pressure variation, imperfect transitions, and local corrections remain legible in the surface. Digital workflows, by contrast, intensify repeatability, symmetry control, and dimensional predictability. Residential bas-relief occupies a productive threshold between these poles. Its strongest contemporary form is not purely artisanal and not purely computational; instead, it emerges where digital precision is deliberately interrupted by manual editing, allowing the finished wall to retain both technical fit and tactile singularity.

Figure 2 illustrates one possible hybrid workflow derived from the Sarinah relief study and digital bas-relief research, adapted to residential practice.

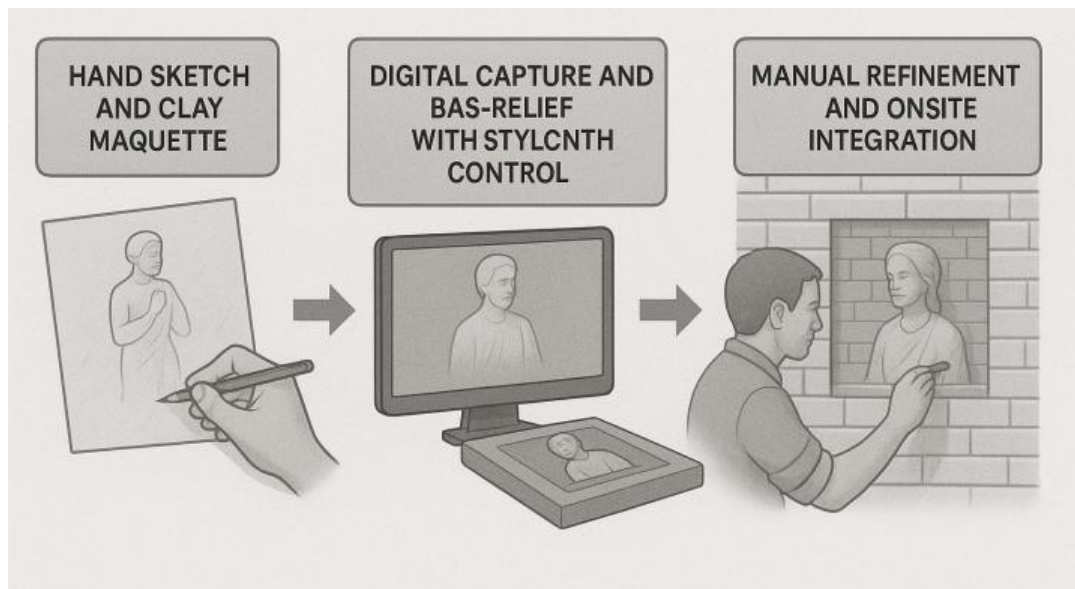


Figure 2. Hybrid manual–digital workflow for residential bas-relief design: initial hand sketch and clay maquette; digital capture and bas-relief modeling with style control; CNC or 3D-printed master; manual refinement and on-site integration (compiled by the author based on his own research)

In this sequence, manual stages retain artistic individuality and tactile richness, while digital stages optimize depth compression, fit to room dimensions, and coordination with lighting and electrical layouts. Such workflows appear particularly suitable for large living-room walls, where composition, human scale, and furniture arrangements must be finely tuned.

In relation to the second research task, Figure 2 shows that digital fabrication is most persuasive in residential practice when it supports iterative adjustment rather than replacing artistic judgment. The figure, therefore, reframes technology as a mediating design instrument between concept, prototyping, and final on-site execution.

The second primary concern addressed by the sources is sustainability. The combination of alternative casting materials [1], careful layer design for conservation [7, 8], and durable reinforcement methods [2] suggests that bas-reliefs can form part of a long-life, repairable interior shell. When reliefs are designed as stable yet accessible components of the wall system—rather than as thin decorative skins—they can withstand multiple repainting cycles and furniture replacements. This differs sharply from many current decorative products, which prioritize rapid installation over long-term maintenance. Woodcock’s survey of luxury interiors suggests that clients are increasingly willing to invest in long-lasting, handcrafted elements [10], particularly when presented as collectible works integrated into architecture.

At the same time, the sustainability claim in this article remains deliberately bounded. The present study does not provide a complete life-cycle assessment, embodied-carbon calculation, or maintenance-cost model for bas-relief relative to paint, wallpaper, ceramic cladding, or polymer panels. Its contribution lies at a more preliminary analytical level: it identifies durability, reparability, substrate compatibility, reduced replacement frequency, and the exploration of lower-impact casting composites as the main criteria for assessing residential bas-relief in environmental terms. This distinction is methodologically necessary because current sources offer promising material and technical indicators but do not yet support a comprehensive comparative environmental accounting for interior wall finishes.

Figure 3 schematically illustrates the functional zones in residential interiors where the bas-relief techniques described in the examined sources are particularly effective.

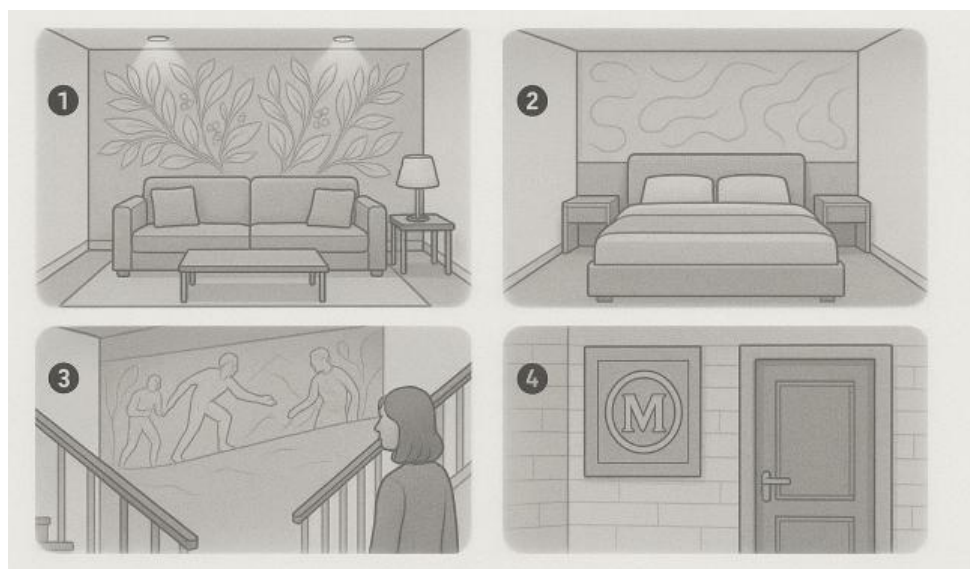


Figure 3. Typical residential applications of bas-relief: (1) living-room feature wall combining shallow gypsum foliage with integrated lighting; (2) bedroom headboard zone with soft abstract relief for acoustic damping; (3) corridor or stairwell narrative frieze; (4) entrance area with logo or monogram for private houses or small offices (compiled by the author based on his own research)

In each case, bas-relief responds simultaneously to spatial, functional, and narrative requirements: emphasizing focal points, controlling reverberation, guiding movement, and embedding personal or cultural references in the fabric of the home. Read against the third research task, Figure 3 indicates that residential bas-relief should be classified not by motif alone but by spatial deployment and performance: focal-wall articulation, acoustic softening, movement guidance, and identity marking. The figure, therefore, converts descriptive examples into a functional typology of domestic relief placement.

The case studies by J.A. Shin et al. and A. Vasilieva et al. remind us that the long-term success of such interventions depends not only on design intentions but also on a meticulous understanding of materials and compatibility between substrates, relief bodies, and finishes [7, 8]. Without this, even the most compelling digital design or sophisticated casting composite will deteriorate prematurely. Conversely, when structural reinforcement, surface treatments, and environmental conditions are considered from the outset, bas-relief can serve as a remarkably resilient and adaptable component of modern residential architecture.

Documented Authorial Example: Hand-Crafted Gypsum Bas-Relief in a Private Interior

A practice-based example helps to ground the proposed continuity model in an actual mode of production. In the author's professional work, hand-crafted gypsum bas-relief is developed not as an applied ornament detached from the wall, but as an integral sculptural surface designed for close-range domestic perception. Such works are typically commissioned for living rooms, entrance areas, stairwells, or bedroom focal walls, where the relief must operate simultaneously as an artistic composition, a spatial accent, and a durable material intervention.

From a material standpoint, this mode of work preserves continuity with historical plaster traditions through direct modeling on gypsum-based grounds, layered build-up, manual texturing, and careful finishing of edges and transitions. The wall is treated not as a neutral support but as part of the sculptural system, which requires attention to adhesion, substrate preparation, local reinforcement, and the future behavior of primers, paints, and protective coatings. In that sense, conservation-based knowledge discussed earlier in the article becomes directly relevant to contemporary studio practice.

From a formal standpoint, the authorial gypsum bas-relief for private interiors relies on controlled shallow-depth modeling rather than on monumental projection. The composition is calibrated for domestic viewing distance, oblique lighting, and prolonged everyday contact. This changes the logic of relief construction: instead of public monumentality and long-distance readability,

the work is organized through tactile nuance, delicate texture, compressed depth, and intimate shadow play. The result is a sculptural wall language suited to apartments and private houses, where excess projection would conflict with circulation, furniture placement, and visual comfort.

From a technological standpoint, the practice confirms that contemporary continuity does not depend on replacing handcraft with digital fabrication. Digital tools may assist during the preparatory stage by performing compositional testing, adjusting references, or verifying scales. Yet, the final artistic value of the work remains tied to manual sculpting, surface responsiveness, and the singularity of hand-shaped detail. This preserves authorship at the finished wall level and prevents the relief from becoming a mechanically smooth decorative product.

From a cultural standpoint, the domestic bas-relief differs substantially from its monumental predecessors. In private interiors, relief no longer serves civic narrative or sacred representation; it becomes a medium of personalization, atmosphere, and collector-oriented distinction. Botanical motifs, abstract compositions, portrait-derived imagery, and decorative panels function as markers of taste and identity, while retaining the historical grammar of compressed sculptural depth. In this sense, the shift from monument to home does not terminate the bas-relief tradition but relocates it into a new social and spatial regime.

This practice-based example strengthens the article's main argument: continuity between classical bas-relief and contemporary residential design is neither purely stylistic nor purely technological. It is sustained through the transfer of material logic, shallow-depth formal organization, selective use of digital preparation, and the redefinition of relief from public monumentality to individualized domestic experience.

5. Conclusion

The article has argued that continuity between classical bas-relief and contemporary residential design operates across four interconnected dimensions: material logic, formal depth compression, technological translation, and cultural refunctionalization. From this perspective, residential bas-relief is better understood not as a decorative survival of historical ornament but as a reconfigured surface practice shaped by conservation knowledge, structural detailing, digital mediation, and domestic modes of use.

Within that framework, historical relief contributes principles of shallow spatial legibility; conservation research contributes diagnostic and maintenance intelligence; structural studies contribute attachment and durability strategies; and digital workflows contribute controlled variation, prototyping, and customization. The residential interior reinterprets this inheritance by relocating bas-relief from collective monumentality toward tactile atmosphere, private identity, and spatial calibration at close range.

The study, therefore, supports a more precise understanding of how sculptural wall surfaces are adapted to present-day living environments. It proposes a conceptually differentiated model of continuity, clarifies the methodological status of mixed source types, and identifies a hybrid manual-digital pathway as the most convincing route for contemporary residential bas-relief practice.

References

- Amissah, E., Adom, D., & Adu-Agyem, J. (2022). Reducing cost and ensuring environmental sustainability: Palm kernel expeller as an alternative sculpture material for casting in Ghana. *Journal of African History, Culture and Arts*, 2(3), 146–157.
- Appiah, J. E. (2022). Reinforcing relief sculpture work: A key to proper adhesion. *Journal of African History, Culture and Arts*, 2(3), 124–131. <https://doi.org/10.57040/jahca.v2i3.204>
- Ardhiati, Y., Hasan, A., Rushintadevi, F., & Alfiano, R. (2024). Identifying, restoring, and remastering of the Sarinah relief sculpture in Jakarta of Indonesia: The limitations of time, space, and technology. *npj Heritage Science*, 12, Article 1346. <https://doi.org/10.1038/s40494-024-01346-7>
- Carboni, S. (2022, May 26). The evolution of the bas-relief. *Europeana*. Retrieved from Europeana website. <https://www.europeana.eu/en/stories/the-evolution-of-the-bas-relief>
- Lio, G. E., Ritacco, T., Ferraro, A., De Luca, A., Caputo, R., & Giocondo, M. (2020). Hyper-resolution two-photon direct laser writing using an ENZ nanocavity. *arXiv* (2007.13509).

- Liu, Y., et al. (2020). Example-driven modeling of portrait bas-relief. *Computers & Graphics*, 90, 1–10. <https://doi.org/10.1016/j.cagd.2020.101860>
- Shin, J. A., Park, H. S., Jung, C. H., & Kwon, H. H. (2023). A study on scientific conservation treatment of modern and contemporary relief sculptures based on their production technique: A case study on “Shrimp” by Jin-kyu Kwon. *Journal of Conservation Science*, 39(3), 246–256. <http://dx.doi.org/10.12654/jcs.2023.39.3.07>.
- Vasilieva, A., Kareva, A., Zhankasheva, G., Danilovich, D., & Parfenov, V. (2023). Complex study of a painted gypsum XVIII century bas-relief by optoelectronic methods to develop a combined cleaning technique. *Heritage*, 6(2), 1891–1902. <https://doi.org/10.3390/heritage6020101>
- Walldeco. (n.d.). Bas-relief in interior design. *Walldeco.am*. Retrieved 2025, from Walldeco website. <https://walldeco.am/blog/basrelief-in-interior-design/>
- Woodcock, V. (2025, February 7). From A-list to Bas-relief: The return of the mid-century wonder wall. *Financial Times*. <https://www.ft.com/content/c91d9ee8-1712-45bc-8e59-337499b39c6c>