Architectural Storytelling through Folding as Narrative Grammar

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Abstract. This paper proposes folding as a means of surface-based storytelling, challenging the dominant visual paradigm where stories are conveyed through symbolic inscriptions of texts and graphics. The research reframes surfaces as materializing gestures, producing form as projections of architectural narratives. Drawing cross-disciplinary insights from fashion, the study transforms five specific pleat typologies into modular alphabetic units. This framework became the basis of a speculative creative project titled "Fold-Alphabet", which develops a corresponding grammar of form built upon principles of rhythm, repetition, and inversion. The resulting system demonstrates how surfaces can become active and performative means of stories, enabling inclusive non-visual communication to be accessible through interactive acts of movement and touch. This design study starts by analyzing case studies of multiple pleats types, followed by exploration of folding as a creative inquiry. Each pleat typology is analytically broken down to determine the structural and communicative gesture that encodes its density and direction, potentially informing spatial form. The study then conducts a geometric analysis of the folding output, studying how different folding logics generate variations that become potential architectural narratives. Through iterations of paper-based experiments, the produced folds are tested as tectonic action that form spatial vocabulary constructing narratives. This creative project contributes to the architectural design discourse by positioning folding as a way to produce narratives, expanding the means of architecture storytelling.

Keywords: Folding, Storytelling, Performative Surface, Material Gesture, Tectonic action.

1 Introduction

This design study explores how architecture rediscovers its new ways of communicating, not only through static inscriptions or forms, but manifested through folding as a form of material gestures. Historically, architectural storytelling has depended on fixed languages such as words carved into stone, drawings on surfaces, or signs embedded in structure (Lyu, 2019). Emerging from structuralist thought of the 1960s, this understanding treated architecture as a system of signs to be read and decoded (Lyu, 2019; Tschumi, 1996). Yet this legacy has also constrained the discipline. When stories

M. Rachmawati and K. Hanifati (eds.), *Proceedings of the International Conference on Architectural Research and Design (ARDC 2025)*, Atlantis Highlights in Social Sciences, Education and Humanities 47,
https://doi.org/10.2991/978-94-6239-632-6_10

rely only on what can be seen or written, they tend to shape the understanding of architectural narrative into something that is static (Wahid et al., 2021) and simply representational (Picon, 2020), overlooking the generative potentials of material gestures that could connect narrative and spatial events (Caetano et al., 2020; Ummah et al., 2022). As a result, architecture faces a paradox in which it is expected to 'speak' through fixed signs, yet the very system it depends on restricts its expressive potential.

The sense of muteness found in materials such as stone, concrete, or brick reflects the possibility of deeper architectural expressions. However, when meaning is confined to representational signs, matter becomes passive, indifferent, and unable to participate in storytelling (Picon, 2020). This condition distances architecture from human experience, reducing buildings to silent objects rather than responsive surfaces capable of dialogue (Lyu, 2019). This estrangement opens a conceptual gap in which new modes of communication may emerge. Instead of relying on symbols, architecture can rediscover expression through the performativity of surfaces, especially through actions and transformations that occur within material itself. Through this shift, architectural narratives become dynamic (Lyu, 2019).

Building on this narrative role of material action, folding emerges as a particularly generative operation because it begins from the inherent capacities of matter itself (Deleuze, 1993)). It shifts architecture's purpose from abstract representation toward embodied storytelling. The fold mediates between interior and exterior, links bodily experience with environment, and transforms matter into narrative potential (Carpo, 1993). This operation arises from continuity rather than rupture, since it connects disparate elements and lends the built environment a sense of ongoing, animated coherence (Lynn, 1998). It works with what the material can sustain, transform, or even express. This attention to material capacity enables the fold to convert surface deformation into a performative one (Picon, 2020; Ummah et al., 2022). When the fold is enacted carefully, it pays attention to the capacity of its material while activating its ability to articulate tension, movement, and relational change.

Through this understanding, folding repositions the architectural surface, transforming it from a passive element into an active element that communicates a certain narrative (Picon, 2020). The fold injects a sense of dynamism defined by action. It enables architecture to tell stories not through rigid symbols, but through activation of its surface (Picon, 2020). Also, it becomes equipped for storytelling, in which structure and story are intertwined within the same act of making (Corbo, 2016; Tschumi, 1996). In doing so, folding acts as a grammar that potentially constructs a narrative, shifting architectural means of communication; from symbolic representation toward performative transformation.

Within this framework, narrative operates as the initial input, while the physical act of folding becomes the translation mechanism that embeds the story directly into the material form (Lyu, 2019). Because folding activates the surface through deformation, composition, and transformation, it necessarily requires creativity. As Deleuze (1993) suggests, creativity is the formation of the new, a generative act that brings previously unrealized potentials into existence. Folding, therefore, is not simply a mechanical procedure, it is also a creative negotiation with material capacity.

This study is particularly informed by fashion discourse in expanding folding as a creative negotiation with the material. Fashion exists as a discourse that operates simultaneously through spatial action, bodily engagement, and multidisciplinary design sensibilities (Guo,2020). It can be argued that fashion demonstrates how a particular design narrative can be manifested into material, through the creative manipulation of surfaces. It shows how stories emerge from the careful appreciation of what materials can do. These theoretical premises form the foundation for the design inquiry developed in this study.

Through the practice of making, storytelling evolves as a process that unfolds through material engagement. This practice is deeply embedded in many contexts across Asia, where surface-based material operations play a significant cultural role. Knowledge arises through direct, situated engagement with material and the reciprocal dialogue between matter and making (Riskiyanto et al., 2021). Practices such as folding, weaving, and pleating have long served as embodied material actions within daily life. Many of these techniques developed within craft-based contexts in which communities relied on situated forms of making to preserve identity and transmit knowledge (Atmodiwirjo & Yatmo, 2020). These forms of making demonstrate that communication often arises through action rather than symbolic abstraction, positioning material operations as narrative media in themselves (Ingold, 2015). They reflect ways of knowing that are cultivated through situated, daily practices embedded in cultural routines (Wigglesworth & Till, 1998), reinforcing the understanding that the language of architecture constructs local identities through culturally embedded practices (Atmodiwirjo & Yatmo, 2021). Understanding this lineage allows this study to situate folding not merely as a geometric or craft technique, but as an embodied cultural operation where stories are articulated through surface transformation (Carpo, 1993). The narratives that emerge from these material gestures produce surfaces that can be experienced more intimately by all kinds of bodies, offering a more direct and integrative form of communication than visual signs or symbolic representations.

This study explores folding as both a tangible material process and an act of communication, investigating its potential as the foundation for architectural storytelling. Through the operation of folding, the study examines how material gestures can act as speculative spatial elements that generate dynamic, narrative-bearing surfaces. Folding is positioned here not only as a method of forming but also as a medium that allows the capacity of the material itself becomes capable of dialogue. It becomes a link that connects material performance and narrative expression. The study aims to establish folding as an alternative literacy that enables architecture to be both readable and writeable, reframing the architectural surface as an active element in communication.

2 Methods

This paper seeks and experiments with spatial action as a means of producing communication, situating the investigation within a multidisciplinary engagement with fashion discourse. The investigation conducts a search using research through design approach, positioning the act of designing as both a method of inquiry and a mode of thinking

(Till, 2012). The method assumes that knowledge in design can emerge through the process of making, where experimentation becomes a medium for reflection and discovery. By doing and engaging directly with material gestures, this research explored how folding can operate simultaneously as a spatial action and as an act of communication. To ensure methodological clarity, the study follows a sequence that moves from the investigation of pleats to material experimentation, documentation, and finally the construction of a speculative narrative system.

Throughout the process, folding is treated not only as a tangible operation but also as a way of thinking. Each act of folding opens a possibility for observation and reflection, revealing how a simple gesture can shift perception, construct new spatial relationships, and even reframe the role of architectural form for communication. Drawings and models serve as both representational and reflective tools that record the transformations. Each step informs the next, generating a cyclical process of observation, adjustment, and reconfiguration that builds theoretical understanding through material engagement. Observations are documented through field notes, photographic logs, and iterative diagramming that capture changes in tension, directionality, curvature, and surface thickening. These observations are then reviewed and organised thematically to identify recurrent spatial behaviors that contain narrative potential.

To ground this inquiry in a practice that expands folding techniques creatively and relationally, the exploration turns to Issey Miyake's work. Issey Miyake is one of the Japanese fashion designers, who was known for his collection called Pleats Please. His collection used folding to its cloth material as the operation to tell its stories. Each story is manifested by performing different folds throughout the collection (Pramudyarini, 2024). These pleats are examined not as fashion details but as material systems that organize rhythm, movement, and elasticity. This process focuses on the geometric analysis of folding outcomes, studying how different folding logics generate variation and become narrative potential. From this study, five primary pleat types were identified, which are accordion, box, zigzag, knife, and fan. Each type was reinterpreted through drawing and physical modeling to examine how the fold behaves structurally and spatially. These experiments revealed how repetition, compression, and release within a fold could generate tactile rhythm in spatial form. The investigations employ paper, metal rulers, and controlled angle lighting to reveal subtle surface deformation and ensure consistent observation of material behavior.

The following stage translates these material explorations into a speculative language framework. Here, each pleat type becomes the foundation for a series of alphabetic forms. Each 'letter' is generated through a distinct folding pattern. The process involves iterative folding and unfolding, both manually and reflectively, to test how non-verbal communication might emerge through spatial form rather than through written or spoken text. Folding thus becomes a gesture of communication. Each letter acts as a small spatial unit that can expand, contract, and connect with others to construct meaning as a sentence. These units are examined through a gesture mapping approach that compares the tendencies and rhythms produced by each fold, and the findings are synthesized into a coherent narrative grammar that reveals folding as a medium of architectural communication.

3 Result and Discussion

3.1 Reading Fold as Rhythmic and Structural System

This study began with an analytical exploration and deconstruction of pleating techniques by the works of Issey Miyake. These pleats were observed as material systems that carry within them the principles of transformation. Through this observation, five primary pleat typologies were identified: accordion, box, knife, fan, and zigzag (see Fig. 1). Each type revealed distinct rules, rhythm, and behavior, supporting the research to understand folding as structural and rhythmic operation. The analysis showed that pleating is an act of organizing matter through repetition and release, forming a continuous dialogue between motion and stillness.

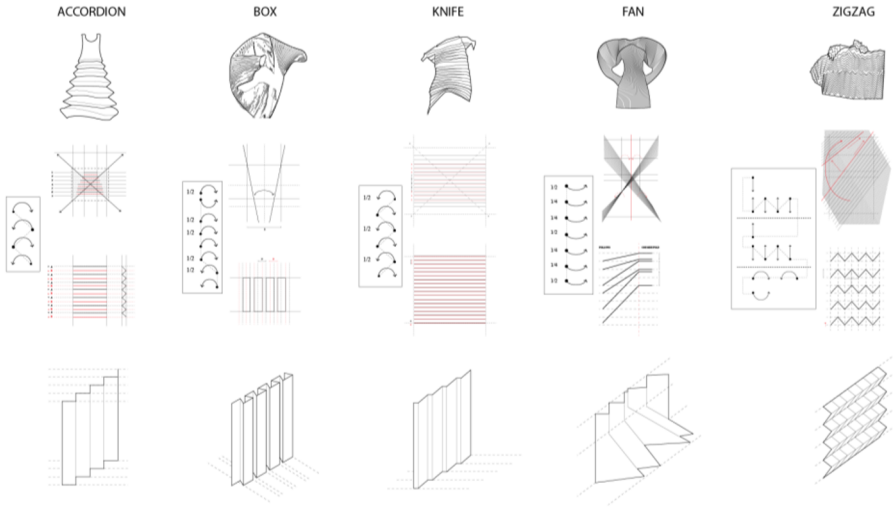

Fig. 1. Issey Miyake's Pleat typologies exploration.

Each typology performs differently and brings its own spatial character. The accordion pleat expands and contracts through oscillating lines, producing moments of compression and extension. Box pleats create alternating voids that give depth and thickness to the surface. Knife pleats align the surface in ordered layers of motion. The fan pleat opens radially, dispersing the pattern outward, while zigzag pleats redirect movement through angular turns. Together, these pleats reveal the fold as a living system of rhythm and transformation. It is neither purely technical nor decorative but rather an act of blurring the boundaries between inside and outside, structure and narrative. In this understanding, folding becomes a spatial language that communicates through motion, and it is shaped by its own action (Deleuze, 1993; Tschumi, 1996).

In this way, each fold operates as a constructive logic and a gesture of communication, demonstrating how material behavior can carry narrative through its own dynamic order. Considered together, these observations open a broader theoretical implication.

by showing that pleating cannot be understood only as technique but as an active participant in meaning-making. Matter is never passive but participates actively in shaping meaning through its tendencies and transformations (Ingold, 2013; Picon, 2020). By foregrounding the capacity of pleats to generate rhythm and structure, the study positions folding as a medium in which form and action shape narrative together rather than represent it.

3.2 Translating Pleats into a Fold-Alphabet System

Continuing on the analytical study of pleats, the next phase translated these typologies into a speculative system of spatial language. Each pleat type was systematically codified and assigned as a distinct alphabetic unit, thereby functioning as a fundamental communicative character (see Fig. 2). This idea repositions folding to operate as a material act and a linguistic device. This phase was done through a series of manual folding experiments with paper and aimed to explore how the operational logic of each pleat could be transformed into spatial characters that construct a structure of communication. Here, the paper surface is treated as an active field that reveals creases. Each crease is an evidence that shows structural and narrative information.

TYPE OF PLEAT	LETTERS	1x	2x	3x	4x	5x	6x
ACCORDION	A - F	A	B	C	D	E	F
KNIFE	G - L	G 1/2	H	I 1/2	J	K 1/2	L
BOX	M - R	M 1/2	N	O 1/2	P 1/2	Q	R 1/2
FAN	S - X	S	T	U	V	W	X FLIP
ZIGZAG	Y - ?	Y 1/2	Z 1/4	. 1/4	, 1/2	! 1/4	? 1/4
	SPACEBAR	( ) 1/2					

Fig. 2. Alphabetic Unit System Rules.

Interpreting these creases as inscriptions of movement aligns the experiment with theories of embodied cognition, in which meaning emerges from the interaction between body, material, and gesture. In this sense, the fold alphabet becomes a material archive of gestures that register direction, force, and sequence.

Folding thus became a way of writing, in which gestures replaced words and movement became vocabulary; also it could be assembled and rearranged (see Fig. 3) (Tschumi, 1996). The units were then tested, arranged, and assembled. Each letter had the potential to expand, connect, or collapse, forming compositions that resembled words and sentences, producing what could be described as spatial vocabulary (Deleuze, 1993; Picon, 2020) . The resulting system demonstrated that the fold here, transforms the flat surface into a storyteller that performs gestures as the stories. Architecture, viewed through this experiment, enacts linguistic operations by allowing language to speak through its body and replaces the conventional tools of writing (Deleuze, 1993).

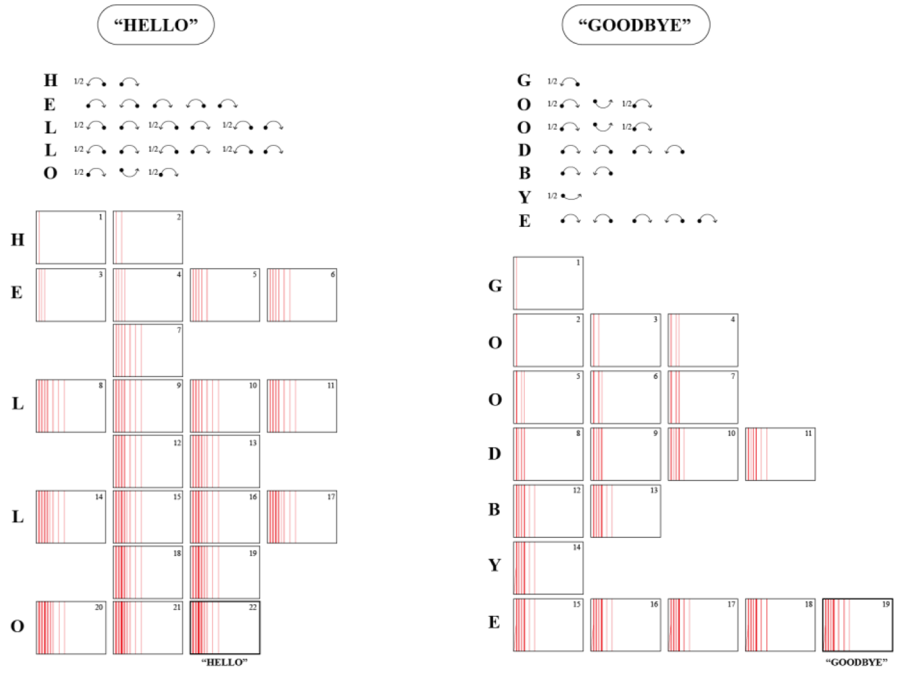

Fig. 3. Composing the unit as words.

3.3 Folding as Material Gesture towards Inclusivity of Architectural Narrative

The final stage of the exploration revealed folding as a gesture that carries material and communication depth. Each fold became a material gesture, a physical action that simultaneously constructs form and meaning (Picon, 2020; Tschumi, 1996). It transforms the surface into an active entity that communicates. In this understanding, folding exceeded its technical function and began to act as a linguistic mechanism, an act of translation that allows material to speak through its rhythm and transformation, turning thought into matter and matter into thought (Deleuze, 1993). This shift positions folding within a broader theoretical discourse in which communication is not imposed upon form, but generated from the intrinsic operations of material itself. Such a view reframes architectural meaning as something enacted, rather than represented, expanding the field of what counts as practice of communication in architecture.

From this perspective, the experiment demonstrates that architectural communication can emerge from bodily gestures inscribed in material form. Through the act of folding paper into letters, the act of writing and the surface becomes spatial and performative. It transforms abstract symbols into tactile sequences of folds that carry information through direction, density, and rhythm. Architecture is not only about space but about the events that occur within it (Tschumi, 1996). Folding, in this perspective, becomes both event and language, as a material act that performs and communicates through transformation. Folding embodies an in-between condition between inside and outside, idea and matter, language and space (Deleuze, 1993). The fold-alphabet system manifests this threshold, connecting bodily gestures with spatial articulation. Through its physicality, folding translates linguistic abstraction into tangible experience, turning language into something that can be read, touched, and reconfigured. In this regard, the fold-alphabet system suggests that meaning can be produced through gradients of movement, proximity, and spatial rhythm rather than through fixed symbolic codes. This expands communication beyond literate or disciplinary audiences and opens the possibility for more plural, situated forms of architectural understanding.

From this understanding, the study proposes folding as a means of surface-based architectural storytelling, challenging the paradigm in which architecture conveys meaning through static representation, text, or symbolic inscription. The fold-alphabet system reveals how architectural surfaces can generate narrative through rhythm, repetition, and inversion, transforming language into spatial interaction. Meaning thus no longer resides in fixed symbols but unfold through movement and touch, creating architecture to be readable and writable. This way, the study suggests that architecture can rediscover itself as both, communication and a gesture of inclusion (Rancière, 2005).

Inclusivity, in this context, the surface-based narratives that become the results can be experienced more intimate with all types of body in comparison to sign. By grounding meaning in material action rather than predetermined linguistic systems, folding also allows architectural communication to be engaged through multiple modes of interpretation, acknowledging diverse forms of knowing and making (Cross, 2006; In-

gold, 2013). While the experimental framework is speculative, it demonstrates a pathway toward systems of communication that are less dependent on textual literacy and more open to embodied, materially situated participation. Such a shift invites further inquiry into how architectural languages might evolve toward more inclusive and less hierarchical modes of expression (Freire, 1990).

4 Conclusion

This study set out to explore folding as a tangible material process and an act of communication, positioning material gestures as speculative spatial elements for inclusive systems of communication. Through this exploration, folding is proposed as a way to develop dynamic, narrative-bearing surfaces that allow architecture to be both, readable and writable. By translating pleating logics into a fold-based alphabetic system, the research sought to reveal how architectural form can perform as language, especially how the act of folding can transform surface into story, gesture into vocabulary, and material into medium.While the scope remains exploratory, the study establishes a conceptual foundation for understanding folding as a communicative operation with the potential to broaden access to architectural meaning.

The investigation began with an analytical study of pleating typologies to understand their operational logics of rhythm, repetition, and inversion. These findings were then translated into a series of paper-folding experiments that became the basis for constructing a fold-alphabet system. Each prototype operated as a material articulation of how surfaces could become performative, such as expand, contract, and connect structurally and semantically. The experiments revealed that folding can generate a spatial vocabulary through physical gestures, creating a potential for communication that can emerge from form and meaning. At the same time, the study demonstrates how architectural surfaces may act as performative storytellers, capable of expressing narrative through tactile engagement rather than visual or textual representation. In this perspective, folding reframes material behavior as a generator of meaning, expanding how we understand communication in architecture. These findings contribute not only to formal and tectonic discussions but also to broader questions of communication, challenging representational models that privilege literacy, drawing conventions, or disciplinary expertise.

Each fold functioned as a material gesture, encoding rhythm, direction, and density into a structure of communication. This understanding opens the possibility that architectural communication can be reframed as an inclusive and multisensory literacy, by seeing that meaning becomes accessible through all types of body. The study therefore proposes a model of architectural storytelling that is embodied, situating design as an act of communication rather than representation. The fold-alphabet system positions itself within the discourse of performative and tectonic storytelling, suggesting that form can act as language and gesture as vocabulary. Later on, the study suggests that systems of communication grounded in material action may resonate with forms of knowledge rooted in craft, embodied practice, conditions prevalent in many Asia contexts. Such an orientation indicates how folding may support more plural modes of

architectural interpretation, moving agency for communication beyond established hierarchies of representation.

However, this exploration remains limited in scale and medium, as the experiments were conducted primarily through paper models and did not extend to full-scale spatial or environmental applications. While the prototypes successfully articulate conceptual and tactile possibilities, they have yet to be tested in architectural contexts that involve human occupation, environmental forces, or material resistance. As a result, the inclusive potential of the fold-alphabet system remains conceptual, pointing toward its ability to operate within lived spatial conditions.

Future investigations may explore folding through different materials, digital simulations, or interactive media to examine how the system performs within larger and more complex environments. Such inquiries could deepen the understanding of how bodies, gestures, and materials intertwine to produce inclusive and non-visual forms of spatial storytelling. Folding, as proposed in this study, becomes not only a design technique but also an epistemic tool. It is a way of knowing and communicating through material gesture transformation. In this perspective, architecture can rediscover itself as a continuously unfolding medium of communication, one that speaks through motion, matter and the gestures of making. Future work may also involve participatory engagements or community-based folding practices to examine how diverse groups interpret and produce meaning through folding, thereby testing the system's communication in real contexts.

Disclosure of Interests. The authors have no competing interests to declare that are relevant to the content of this article.

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