

7

TOPICALLY EMBEDDED: SURFACE AS GRAPHIC MATERIAL

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Without ornament and its capacity to generate décor, the world would be impersonal and likely uninhabitable.

(ANTOINE PICON 2013)

Introduction

Surface articulation has over the past quarter-century emerged as a critical issue for architecture. As a disciplinary development, such an emergence has been convincingly linked to advancements in digital technologies and their impact on building design and fabrication. In interior design—architecture’s ally and a supplementary other—articulation of surface has always already been at the core of the discipline’s concerns and activities, whether it be as a matter of reflecting subjective identities through interior surfaces or exploring novel methods of upholstery, paneling, or paint. Recent technological advancements have not left the contemporary interior untouched; in fact, to many architects the interior surface has served as a productive site for digitally driven design innovation (Siddiqui 2013: 454–67). Yet scholarship of interior design, in particular scholarly work from within the discipline that centers on creative practice, has not yet sufficiently claimed the technologically transformed surface as its own area of expertise, authority, and expression. The work of ISSStudio, the practice that I direct in relation to academic research and teaching, has over the past several years sought to alleviate this deficiency.

ISSStudio’s primary body of work focuses on articulations of interior surfaces under the influence of technological innovations and shifting cultural values. Considered in its entirety, the work may be described as ornamental, decorative, and patterned. Such attributes are a consequence of a number of interrelated factors including scale, typology, materiality, geometry, and techniques of production. ISSStudio’s projects occupy the scalar gradient between the body and the building, appearing in the form of flooring, lighting, wallpaper,

curtains, furnishings, and accessories. Ranging from customizable products to site-tailored installations, the projects are conceived as soft layers between building walls and human skin, richly articulated through materials whose thinness and pliability are exposed as virtues. In ISSSStudio's work materiality is designed—even reinvented—rather than accepted, an approach enabled by digital design and fabrication at full scale. Digitally generated surface geometries order material thickness, texture, porosity, and assembly, with results that appear ornately differentiated and perceptually engaging. Although not woven, such materials are profoundly textile-like: draped, stretched in tension, absorbent, and responsive to the demands of gravity and air circulation. Framed in this way—as soft, patterned, and seemingly supplementary—the work's function as ornament, as a part of spatial décor, and a participant in the combinatory practice of decoration emerges with conviction. Ultimately, however, the disciplinary value of this work may lie less in how it circulates within established economies of design practice and more when viewed as an exploratory inquiry into advancing the capacity of interior surfaces—and by extension interior design—to transform the built environment in ways that are both technologically innovative and culturally relevant.

Surface as graphic material

Current theoretical distinctions between ornament and decoration are as diverse as the range of contemporary designs (buildings, interiors, installations, products) that are commonly characterized as ornamental and decorative. For Kent Bloomer, “decoration is a pleasurable arrangement of elements that articulate societal values, order, and beauty, while ornament is constituted by motifs that are repetitively distributed about structural and decorative elements to evoke natural cycles, efflorescence, and transformation” (Bloomer 2006: 49). In *Ornament: The Politics of Architecture and Subjectivity*, Antoine Picon defines décor as that which facilitates the interaction between different ornaments, a decorated space that one is able to inhabit (Picon 2013: 123–4). While it has been sufficiently acknowledged that such distinctions are far from stable or consistent (Massey 2013: 498), for ISSSStudio ornament principally refers to the articulation of material surfaces through precise deployment of pattern geometries, the effect of which may be perceived as decorative. In this way ornament shapes experience through the ordering of materiality. Picon observes that today's ornament, however computational in origin it may be, appears strongly tied to inquiries regarding materiality (Picon 2013: 130), a condition that has also already received significant attention in the broader discourse on digital design in architecture.¹ In building design, the promise of contemporary patterns lies in their ability to integrate “sensory, organizational, operational, structural, and environmental domains into a complex entity” (Andersen and Salomon 2010: 14), fulfilling multiple tectonic and performative demands by becoming increasingly thicker, deeper, and stronger.² The absorption of the interior into such a fully integrated architectural entity lacks no precedent in design, historically and today. The work of ISSSStudio, however, exemplifies the belief that while interior design may at times align with holistic architectural intentions, it also has the agency to diverge on its own—amicably, indifferently, or

in defiance to the building. The source of interior design's effectiveness is not always its faithfulness to architecture, but also emerges from its promiscuity. Ornamental patterns that result from such a practice shape surfaces that in turn have the ability to migrate across multiple spaces and whose presence is temporally varied. Materially rich and graphically intensive, the best way to describe such surfaces is as graphic material.

Marks applied to a surface, whether as drawing, image, text, or some other two-dimensional entity, are all forms of graphics. One may colloquially refer to an artifact as graphic when it is explicitly geometric (graphic textile print), overly descriptive (a film depicting graphic violence), or narrated visually (graphic novel). In architecture, graphics encompass the discipline's diverse modes of representation as well as established notational conventions (graphic standards). While in this way central to architectural production, graphics are nonetheless traditionally cast as external to the built artifact, both preceding and succeeding its materialization, but usually not coinciding with it. For example, drawings are a required precondition for the construction of buildings and a building may necessitate the application of graphics as an additional layer (for branding, way-finding), but in both instances it is the building itself that stands out as the primary material construct. Digital technologies in design and fabrication offer the possibility of obliterating this distinction, enabling "a convergence of technique and content, folding representation into the very production of the surface" (Pell 2010: 7). In this paradigm, technique-driven graphic content has the capacity to shape materiality, while materials acquire new graphic properties. Specific to contemporary design production, similarly graphic materials have also appeared, albeit shaped by different considerations, in some of the most canonical modern works of the previous century. The non-load bearing walls of Mies Van Der Rohe's 1929 Barcelona Pavilion, for example, are veneered in green marble and golden onyx, the effect of which is graphically opulent and materially extravagant. Even Adolf Loos, whose influential ideologies advocated the ban on ornament, similarly applied intricately veined marble panels to his interiors, as is the case with Villa Müller from 1930. What differentiates these and similar historical examples from current manifestations of materials as graphically rich with which the work of ISSStudio is preoccupied is the element of authorship. Historically, materials are selected and sourced for their already existing graphic properties, such as veining, grain, and variegation. Digitally designed graphic materials are, in contrast, not found—but are rather made.

However central to the articulation of interior spaces they may be, surfaces have traditionally alluded to a sense of exteriority. Culturally, surfaces are inextricably linked to constructs like depth, substance, mass, and thickness, providing each with a defining boundary or an outer layer. Contemporary explorations across disciplines have sought to challenge such binary relationships, imbuing surfaces with a new culturally significant sense of agency. Mathematically, shifting from Euclidian to topological space provides an updated framework for conceptualizing surfaces from entities that are dependent on three-dimensional form to those that are intrinsic two-dimensional manifolds. Digital technology, in particular modeling software, has allowed designers to explore the articulation of form as a consequence of topological articulation, privileging in this way surface over mass. The realization of digital form through material means, however, inevitably raises the question of thickness. In this context, the work of ISSStudio explores a range

of surface conditions associated with thinness, while producing material resolutions that are robust in technique and effect. The resulting surfaces are thin, but not flat. Materially homogenous, they nonetheless seek to express and amplify dimensional, geometric, and textural differentiation. Digital patterns are integrated into the material, but telescope to their surface as graphic. Like a tattoo, branding, or piercing, they are topically embedded. A selection of the studio's completed projects demonstrates the search for graphic materiality through novel articulations of surface. The organization reflects four distinct techniques of production: ink, tessellation, appliqué, and relief.

Ink

Ink is a medium through which architectural space is frequently represented, but rarely does it serve as a material for construction. *Zigzag* (2013), a temporary site-specific installation produced for an art fair designed in collaboration with Deborah Schneiderman of deSc, is as much an exploration of ink as a material as it is an attempt to merge graphic representation with the space of corporeal experience. The project considers wallpaper's role in the articulation of interior space and seeks to overcome its conventional limits such as flatness, repetition, and inability to adapt to site conditions. *Zigzag* consists of a continuous 100-foot long wall whose overall form zigzags in plan and elevation in order to sculpt a spatial sequence, define circulatory movement, and strategically reveal or conceal particular views. A composite graphic surface, ink on vinyl, is custom-tailored to the wall's geometry and designed to explicitly engage the circumstances of the site, the program, and the users as they move through. The ink is distributed across the surface according to a series of superimposed layers of content, the role of which is both representational and experiential (Figure 7.1). An alternating gradient of blue and green hues reinforces the repetitive assembly of the wall, while accentuating the depth that is created along its vertical folds (Plate 10). The gradient serves as a richly saturated background for the unleashing of a pair of motif-driven patterns whose juxtaposition highlights differences between pre-digital and digital modes of production.³ While both patterns have the capacity to infinitely expand outward, one does so through mass-repetition, while the other is algorithmically scripted so as to produce a differentiated series of non-repeating motifs. The next graphic layer is vector-based, a five-tier arrangement of white meshes that appear stretched to fit the overall geometry of the installation, expanding and contracting to demonstrate its flexibility. Perceptually, this layer distinguishes itself from the rest and alludes to the surface as a multi-material condition. This is not simply a visual trick, but rather a carefully nuanced distinction between ink and vinyl as composite materials. The mesh, in other words, is rendered through the absence of ink, exposing the otherwise concealed white vinyl substrate beneath. However thin the surface may be, it is indeed neither flat nor immaterial, the evidence of which is the mesh carved into the wall's inked epidermis. The final layer uses principles of anamorphic projection as a means of explicitly linking graphic content with user perception. Wallpaper in this way serves as a drawing that slips in and out of legibility—depending on where one is standing—while also oscillating between representation and materiality.

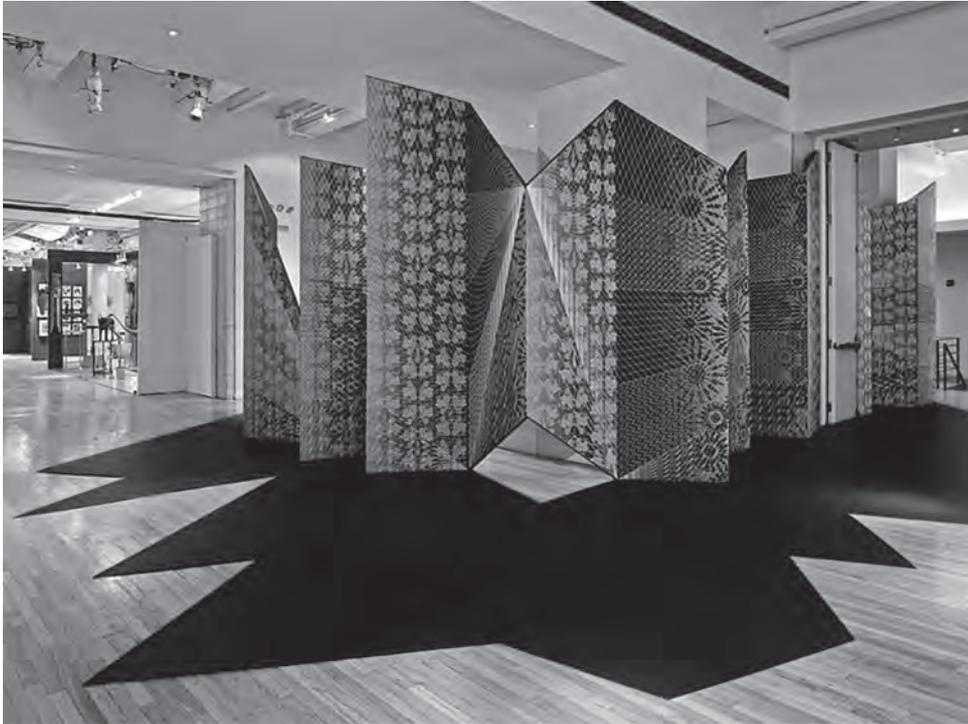


Figure 7.1 ISSSStudio + deSc, *Zigzag* (2013), view from interior. © Igor Siddiqui and Deborah Schneiderman. Photography by Frank Oudeman.

Tessellation

A tessellation is an aggregation of tiles that forms a continuous field without holes. Perhaps the most potent method of distributing patterns with tessellations is by articulating seams between constituent parts. Some tessellations are a result of the repetition of a single tile geometry, such as a grid or a hexagonal field, but in more advanced instances their geometries are highly varied. ISSSStudio's digitally fabricated area rug *Tessellated Floorscape* (2010) is a mass-customized product constructed from a non-repeating pattern of carpet tiles.⁴ Commissioned by a flooring company whose inventory included non-recyclable carpet remnants, the project aims to convert material waste into a desirable commodity. To do so, an animated digital pattern was designed, the geometry of which serves as a template for cutting. In order to depart from more regular shapes that typically order modular rugs, the tiling pattern maximizes the geometric intricacy of the seams while minimizing material waste. As a result, the tiles interlock with one another in a fashion that resembles a jigsaw puzzle (Figure 7.2). A cluster of tiles, cropped to the desired footprint size, forms a single rug. Each rug in the series, produced on demand, is differentiated not only by the particular array of materials from which it is fabricated, but also by the specific iteration of the animated pattern. Conceptually time-based—capturing the momentary availability of the material as well

as the animated sequence—the production of each rug is roulette-like, merging the high degree of geometric control in the fabrication process with the chance-based alignments of digital data and available material resources. The array of remnant materials, varying in texture, color, pattern, thickness, and fiber type, is synthesized by the pattern into a single highly graphic floor surface. The mutual relationship between material and graphic content is in this way demonstrated through an important reversal: material surface takes on graphic nature, while the pattern—conceived as a purely abstract graphic construct—is manifested as a material condition, revealing and negotiating differences among constituent materials along the seams. *Tessellated Floorscape* functions as a framework for managing waste and by redirecting materials from the landfill to the homes of future users and art collectors. While the project deals with remnants that are inherited from other applications, it effectively introduces a digital process through which materials are transformed—made new.

Appliqué

Native to textile design, appliqué techniques require a substrate surface layer to which smaller parts are topically applied. Although crafted to form a single composite surface, the layers are nonetheless perceived as distinct from one another—embellishing ornament applied to a structural surface. *Millefleur* (2013), a site-specific curtain produced for a gallery exhibition, explores a more reciprocal relationship between the



Figure 7.2 ISSStudio, *Tessellated Floorscape* (2010). © Igor Siddiqui.

substrate surface and the applied ornament and as such between material and graphic content. Constructed from soft Tyvek fabric, the surface in this project is articulated through addition, but also subtraction; for an element to be applied to the surface, in other words, requires that it first be removed from it. Surface articulation is in this way produced through material displacement with zero waste, a substrate that also generates its own ornament. Pattern registers as both perforation and appliqué, rearticulating a thin material through double deployment. The outcome is not only a heightened difference between absence and presence of material across the surface, but also between its front and the back.

The installation's title refers to a traditional method of crafting decorative surfaces from densely distributed floral motifs, common to both medieval Flemish tapestry and Persian rug designs. The project aims to develop a series of non-repeating floral motifs whose distribution across the larger surface is also a non-standard pattern. Taking into account both opportunities and limitations afforded by available design and fabrication tools, the intention was ultimately achieved by linking algorithmically scripted digital processes with participatory modes of making. A digital script devised for the project recursively generates an infinite series of non-repeating floral motifs, 300 of which were captured for inclusion in the installation. Varying in size and geometry, the digital "flowers" were laser-cut into templates used for manually perforating the curtain. A group of twenty-two makers collaborated on this task, not only performing the cuts, but also collectively deciding how the overall pattern would unfold across the surface. The flower-shaped material remnants were stitched back onto the perforated Tyvek, using color thread to index individual authorship. The resulting stitches were accentuated by extending thread from the stitch all the way to the floor, producing a fringed material layer on top of the substrate. Resembling a multi-color drawing this side of the curtain faces the gallery entrance. Visitors are enticed to walk up to the surface to discover its intensely material quality, while also invited to discover its alternate side—a richly textured silver surface produced from an aggregation of hundreds of flower petals (Figure 7.3). *Millefleur* oscillates between intricate graphics and sensuous materiality, the perception of which depends on where one is standing and how they are looking.

Relief

Originating from the Latin verb *relevo*—to raise—relief refers to a surface in which parts are raised beyond its base plane, plastically elaborating on its depth and thickness. In the work of ISSStudio, relief functions as a technique for casting surfaces with topically embedded patterns within. Following the tradition of bas-relief sculpture, surfaces are articulated through dimensionally minimal yet significant sectional differences, creating an ambiguous space between two- and three-dimensionality. Through a number of different projects, the studio has explored novel methods of producing soft textile-like surfaces cast from shallow-relief formwork. *Bayou-luminescence* (2011), a site-specific installation designed in collaboration with Matt Hutchinson of PATH for an urban site in



Figure 7.3 ISSSStudio, *Millefleur* (2013). © Igor Siddiqui.

New Orleans, is constructed from a set of translucent rubber panels custom-tailored to fit a self-supporting steel armature. A highly differentiated mesh pattern organizes the overall surface, distributing material thickness according to structural and atmospheric demands. Inhabited primarily at night, the illuminated skin-like surface glows from within while casting intricate shadows beyond its footprint. Cast from liquid rubber, the surface is monolithic but appears as if it were constructed a composite, an outcome of layered vector geometries that make up the embedded pattern (Figure 7.4). The integrated approach between design and fabrication techniques devised for the project yields a thorough synthesis between graphic and material content. While the material makes the pattern physically tangible, it is the meshed pattern that acts as a binder that keeps the material together.

A more recent application of the same technique is evident in the project *Protoplastic* (2014), installed at Tops Gallery in Memphis. A three-pronged form suspended from the ceiling is fabricated using biodegradable plastic made from scratch by ISSStudio. Triangulated panels are seamed to one another without suppressing the material's wilder tendencies, encouraging it to curl, flap, and unfurl. Such behavior is influenced by the embedded pattern which calibrates surface thickness and density (Figure 7.5). Like *Bayou-luminescence* the project focuses on surface effects that result from the interaction of intricately fabricated formwork and liquid material, but is more advanced than its predecessor in one particular area: *Protoplastic* exemplifies an approach in which a surface—its form, pattern, and material—is truly made from scratch and thus



Figure 7.4 ISSStudio + PATH, *Bayou-luminescence* (2011). © Igor Siddiqui. Photograph by Laura Davis.

demonstrates the possibility of a fully customizable design workflow from the initial conception to its final material state. Such technical capability transforms the conceptual underpinnings of the contemporary surface—graphic material in this way exemplifies synthesis rather than contradiction.

Conclusion

Thus far surface articulation in the work of ISSSStudio has been sufficiently discussed in relation to technique, material, and effect. These criteria reflect the broader discourse within which the work situates itself, linking historically enduring design theories with technological innovation. As this chapter has demonstrated, the widespread emergence of digital technologies has not only had a profound impact on materiality and spatial effects in design, but has also at least significantly transformed how designers generate, develop, and realize their creative work. The emphasis on technology and technique provides a legitimate alibi for graphic expressions impressed upon materials, but what about the designer's agency? While it is certainly evident that the designer's intention drives the digital process toward productive outcomes, conceiving contemporary ornamental surfaces based on overtly subjective criteria is nonetheless somewhat of a taboo.

Contemporary conceptions of technique-based design in many ways originate from Gottfried Semper's nineteenth-century writings. Semper, who devoted a significant

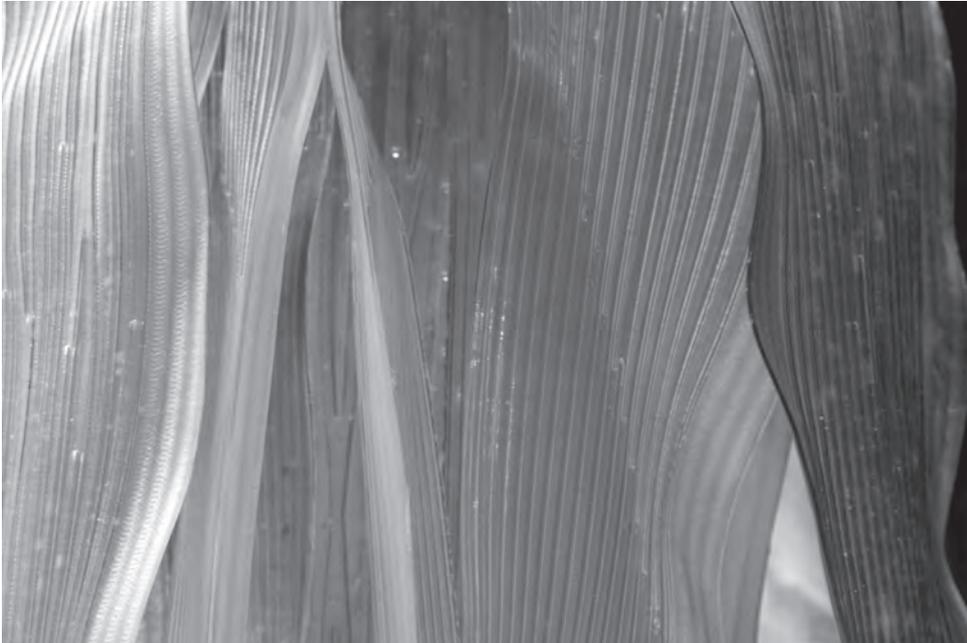


Figure 7.5 ISSSStudio, *Protoplasic* (2014). © Igor Siddiqui. Photograph by Matt Ducklo.

portion of his theoretical work to questions regarding origins of architecture, sought to explain artistic expression as a consequence of technique, material, and function. In this way, creative work could be evaluated in a scientific manner, focusing on its external factors rather than solely as an outcome of individual creative impulse (see Semper 2004). His widely influential technical-materialist approach was challenged by Alois Riegl, whose historical research claimed that decorative pattern-making predates material technique, privileging in this way human expression over technology (see Riegl 1992). The two competing theories are summed up as two types of topically embedded patterned surface: for Semper it was the woven textile that protects the body, while for Riegl it was the tribal tattoo that adorns it. The tension between performance and aesthetics is as relevant today as it was two centuries ago, and the articulated surface is a potent locus for the debate. The agency of today's patterned surfaces indeed is in their ability to mediate between the collective and the individual, negotiating, as Antoine Picon has suggested (Picon 2013: 154), between public interest and private subjectivity. Design has an opportunity in this way to engage with broader audiences, not as a matter of popularity, but rather as public engagement at the personal level.

Notes

- 1 For further scholarship that is indicative of the associated contemporary discourse in this area of architectural design, see Kolarevic and Klinger 2008.
- 2 For a representative discussion of decorative manifestations of structure in contemporary architecture, see Rappaport 2006: 96–105.
- 3 Such distinctions are a result of the project's broader thematic approach to the context and content of the art fair, contrasting traditional and contemporary artifacts, handmade and digital modes of production, decorative and functional objects, and so on.
- 4 For an extended discussion of the project, see Siddiqui 2010: 45–53.

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