

Trans-Form: An Alternative to Formal Perfection in Architecture

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INTRODUCTION

As the proliferation of digital technologies and networks has initiated profound changes in contemporary culture the discipline of architecture has responded by exploiting such technologies to facilitate the speculation, evaluation, and representation of increasingly new and exotic forms. However, the manner in which this is being undertaken continues to pre-suppose the traditional idea of architectural form as the singular, "perfect" formal embodiment that best resolves the various design criteria in question—performative, aesthetic, or otherwise. While this traditional notion of an ideal form perpetuates a long-standing conception of architecture as the creation of a perfect object or reality, it is now problematized by the cultural and technological changes that have resulted from the ascendancy of the digital paradigm. Although the digital revolution has provided software to support and augment the pursuit of formal perfectionism—as well as the post-facto digital manipulation of representations of those forms in order to enhance their sense of perfection—it has also fundamentally changed the relationship that contemporary culture has with form as well as with the very concept of "perfection." Specifically, cultural interests have shifted away from the notion of a perfect singular embodiment and toward the ability of the individual to reconstitute the same digitized information into multiple different forms over time, which allows for an on-going process of ad hoc "perfectionism" in response to changes over time. Such an interest in formal reconstitution is widely demonstrated, for example, in the increased individual participation in the customization and creation of both information content and environmental experience made possible by new technologies and social networks.

So, while new digital technologies have the ability to greatly facilitate a design process that has always capitalized on available technologies (new and old) in the pursuit of the "perfect" architectural form—and have also enhanced the ability to increase the perceived sense of perfection in representations of the work—these may not be the most advisable ways to exploit them. Not only does the continued pursuit of perfectionism in architecture create a damaging contrast with (or denial of) the inescapable real-world irregularities and imperfections of the discipline's built works, but the resulting forms and images do little to satisfy the contemporary individual's interest in experiential multiplicity, variation, participation, and customization. Rather, bearing in mind the architectural discipline's continual need to assert and maintain its relevance within the context of a constantly evolving cultural milieu, this essay questions architecture's long-standing investment in the design and representation of singular and perfected formal embodiments and examines instead the possibility for an alternative, transformable architecture that responds more directly to contemporary culture's growing interests in formal multiplicity, temporal change, and collective authorship by multiple individuals. Since the resulting work would be continually modified through the creative participation of its occupants, its design would not be governed by a futile attempt to resolve all of the anticipated design criteria within a singular, perfect, and permanent formal embodiment. Nor would it continue to fuel a problematic desire within the discipline to digitally falsify representations of the work in order to maximize the public perception of such perfection. Instead, the design would be focused on the creation of an open framework or set of parameters within which creative reformulation by the user or occupant would occur—allowing for the work to be spontaneously and continuously tuned over time to adjust to changing parameters. As a result,

the goals of the initial design process would fundamentally shift away from the quest for formal perfectionism and toward formal multiplicity and potentiality—resulting in an engaging and continually changing reality of the built work that finally surpasses the promises inherent in its visualization and representation.

DIGITAL TECHNOLOGY AND CONTEMPORARY CULTURE

The de-valuation of permanent form is at the very center of the digital revolution that has occurred over the past few decades. After all, to digitize something is to strip it of its form—thereby converting its essential characteristics into information that can, in turn, be re-constituted into multiple different forms. Consequently, the digital paradigm is distinguished by a higher value being placed on the information content itself than on its particular embodiment.¹ Today, rather, the notion of an original, preferred embodiment of this information is an idea that has diminished in value; information *content* now takes precedence over its form(at). What contemporary society values instead is the ability to disseminate, update, and reformulate this content—all of which has been facilitated by the digitization of information.

This rise in user content reformulation, which is a hallmark of the digital paradigm, essentially blurs the boundary that had previously always been assumed to exist between the author of a work and its audience. With the proliferation of software and the availability of access to highly populated networks, the digital era has witnessed the unilateral flow of information from author to audience being supplanted by a multilateral flow—giving rise to what Henry Jenkins refers to as a *participatory culture* with “relatively low barriers to artistic expression” coupled with “strong support for creating and sharing creations with others” including “digital sampling, skinning and modding, fan videos, fan fiction, zines, or mash-ups.”² In particular, the introduction of open-source and open-content databases—such as Wikipedia, Blogspot, Flickr, YouTube, and Twitter—has facilitated and popularized such participation by individuals in the ongoing creation and remixing of information content for consumption by others.

Recent studies focusing on content creation by teens are particularly telling—and also particularly consequential for architecture, since this demographic will soon become the dominant culture. Reports in 2005 and 2007 by the Pew Research Center, for example, showed that more than one half of all teens were internet *content creators*, meaning that they “created or worked on a blog or webpage, shared original creative content, or remixed content that they found online into a new creation.” These reports further asserted that “teens and adults alike have embraced the ability to gather, chop, blend, and re-blend content to create new expressive materials,” and that “younger Americans have grown up in a world of media forms that allow them to participate in the production as well as consumption of content.”³

For a discipline such as architecture that has historically been so invested in the production of original, immutable works by a single author (the architect) the digital paradigm therefore presents a particular problem: it has given rise to a culture that expects and values the ability to participate in the ad hoc customization, creation, and reformulation of content, which is a phenomenon that architectural production as it is currently manifested can not satisfy.

EXPERIENTIAL POTENTIALITY VERSUS DESIGN POTENTIALITY

At the moment such reformulation of content can only be said to have manifested itself within architecture in the context of the design process, rather than in the public experience of the built work. Since the process of design has always concerned itself with the fluid evaluation of multiple potential forms and configurations, it is perhaps not surprising that the architectural discipline’s first instincts were to seek to engage the digital paradigm in the arena of design through new tools and practices rather than in realm of cultural expectations and public experience. As a consequence, recent digital technologies such as parametric modeling software and rapid prototyping have been employed to augment the speculative aspect of architectural design, replacing the slower and more labor-intensive practices of studying design alternatives through physical drawings and models with digital processes that have greatly facilitated the architect’s ability to rapidly examine mul-

multiple iterations—including the ability to quickly adjust the parameters and relationships that determine the form of the work.⁴

At the beginning of the design process, the work exists in a fluid state, and it is thus invested with the potential to be manifested in other forms or configurations. However, the design of architecture is ultimately directed toward producing closure and resolution rather than preserving openness and potentiality. Traditionally speaking, design exhausts potential; it converts potentiality into finality. Consequently, even a work of architecture that results from a design process augmented by digital technologies remains incapable of conferring this potentiality to an occupant by means of the experience of the work, since the designed work is merely an ossified, final resultant of such formal speculation—a singular and “perfected” formal embodiment that preserves none of the potentiality that existed during the process of design.

Meanwhile, as noted above, the culture-at-large that architecture presumes to address through its works is one that increasingly values the *experience* of potentiality. Within the context of the digital paradigm, cultural interests have shifted away from the notion of a singular formal embodiment and toward the ability of individuals to continually reconstitute the same digitized information content into multiple different forms or embodiments. As a result, any version of this content carries with it the potential to exist in an alternative form, and its value is measured according to that potential. Consequently, the sequestration of the potentiality for the work to exist in alternative manifestations to the process of design, where only the designer can experience it, as opposed to the public experience of the designed work problematizes architecture’s relevance to a contemporary digital age culture that increasingly values the experience of potentiality within the physical realm.

TRANS-FORMAL ARCHITECTURE

The goal of the work being produced by the author, therefore, is to demonstrate an alternative approach to architecture that is more consistent with the expectations of contemporary digital-age culture regarding experiential customization and content creation, and that is capable of producing work that can remain relevant over long durations by avoiding the

pitfalls of formal and technological obsolescence that plague the recent attempts by the architectural discipline to engage digital technologies. Accordingly, this work eschews efforts to completely resolve design criteria into fixed, immutable, and “perfected” forms and instead seeks opportunities to afford the users and occupants the ability to reformulate the work into multiple different configurations in order to create new experiences and to participate in acts of architectural expression. In this regard the design of the work is guided by four primary principles: *experiential potentiality*, *formal multiplicity*, *user creativity*, and *technological congruency*. Each of these points will be illustrated below by examples from three recently completed projects.

The first principle, as introduced in the previous section, is that of ***experiential potentiality***, in which the experience of content reformulation and potentiality is specifically extended to the individuals who interact with the finished work, rather than restricting such experiences to the architect and the design process only. In so doing, this principle invokes the concept of *affordances*, which describes the relationship between an individual and the physical form or character of an object with respect to potential interactions. Originally introduced by the ecological psychologist James Gibson, this concept has subsequently provided the framework for the design of software and other interactive objects and systems.⁵ In short, the principle of *experiential potentiality* recognizes that the digital paradigm has, through various digital software, devices, and networks, witnessed the proliferation of certain affordances within the larger culture that relate to the individual control and customization of experience and to the creative authoring and editing of content—affordances which that larger culture has subsequently come to value, but which are at present only evident within architecture in the relatively private act of design rather than in the public experience of its built works.

In contrast, the new single-family residence illustrated below (Fig. 1) demonstrates a system in which the occupants are afforded the potential to manipulate the relationships between programmatic, affective, and spatial elements in order to continually customize and reformulate the experiential qualities of the house. Nicknamed the *Wormhole House* (for the array of twisting overhead volumes

that tunnel through its thick roof *poché*), this residence is a critical reaction to the typical logic of conflating programmatic elements of the house with specific spaces—such as in the case of the master bed being permanently located in the “master bedroom.” Instead, the *Wormhole House* deconstructs such typical residential program spaces into free-roaming programmatic modules that can be plugged

into a variety of unprogrammed affective spaces: austere spaces, plush spaces, tight spaces, tall spaces, spaces that frame a particular view, spaces that feature a particular material, and so on. This decoupling of program and affect affords the occupant the ability to creatively re-combine these programmatic and affective components into a plethora of new experiential constructs.⁶

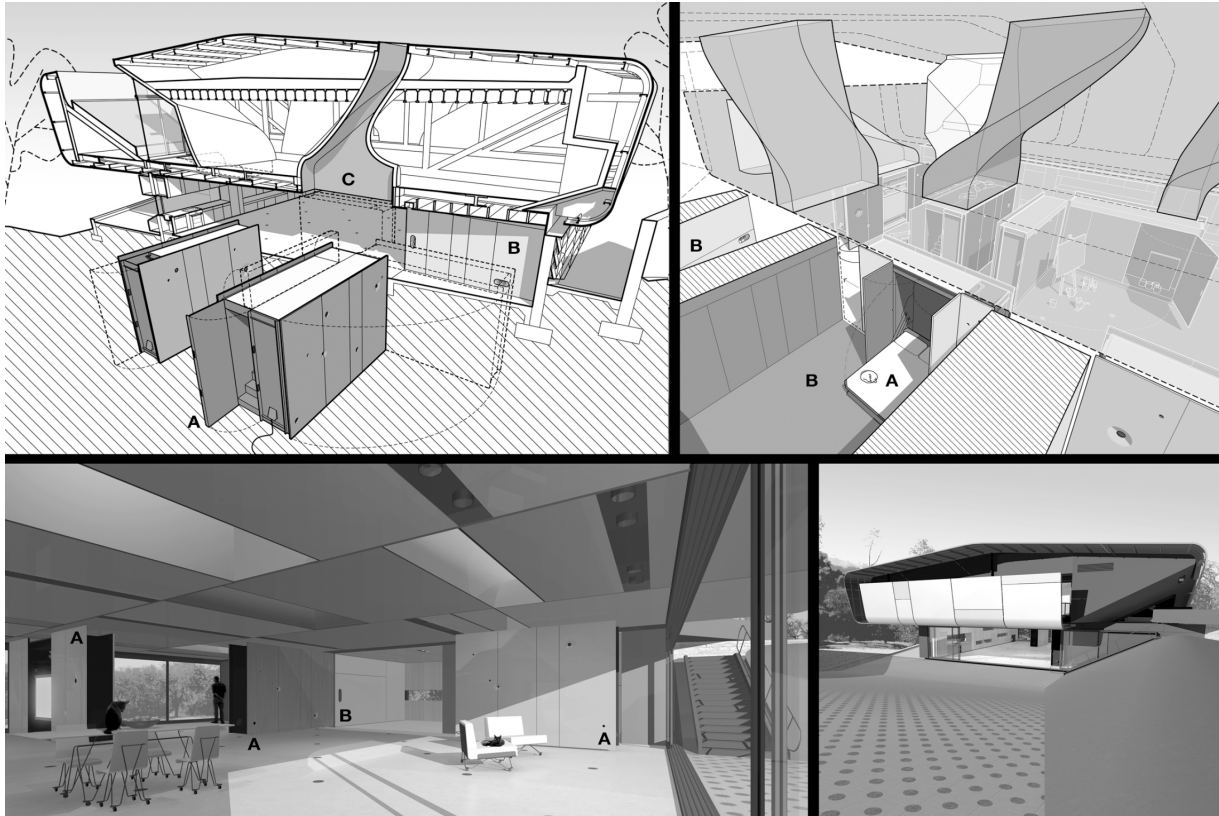


Fig. 1 The **Wormhole House** affords its occupants an increased degree of experiential potentiality by decoupling program elements from affective elements. Mobile program modules (A) can be variously combined with unprogrammed affective spaces (B), allowing the occupants to make new program/affect combinations (A+B) on an ad hoc basis. (image: Doug Jackson)

The second guiding principle of the *trans-formal* model is that of **formal multiplicity**, which is a critical reaction to the traditional approach to architectural design in which conflicting design criteria are orchestrated into a singular, immutable, and ostensibly “perfect” formal resolution. Even as more sophisticated software has been introduced to the design process, its use has been almost universally directed at resolving increasingly complex design criteria into increasingly complex but otherwise completely singular and resolved (and therefore unalterable) formal embodi-

ments. As such, the only claim to relevance that these novel formal embodiments have within contemporary digital culture is their aesthetic redolence to the digital processes that produced them. Otherwise, they remain as devoid of the potential for subsequent formal manipulation as any pre-digital work.

This crisis of relevance is due to the fact that, as has been previously observed, the very issue of singular form is problematized within contemporary culture—a *participatory culture* in which individuals increasingly value the

ability to reformulate content into multiple, customizable embodiments. Consequently, while this culture has witnessed profound and paradigmatic changes in the wake of the proliferation and development of digital technologies and networks, it is arguable that recent work being produced by the architectural discipline, in spite of its novel aesthetics and genesis in digital software, has failed to constitute a corresponding paradigmatic shift in its own right given its continuing emphasis on formal singularity.⁷

In contrast, the principle of *formal multiplicity* is intended to mine complex and conflicting design criteria for their ability to motivate individual users and occupants to continually reformulate aspects of the built work in order to arrive at a wide array of customized formal results on an ad hoc basis. This is done by refraining from conceiving of the work at the outset as a perfect formal resolution of design criteria, and focuses instead on conceptualizing the work as a form-producing system that affords its users the ability to continually tune social, spatial, and programmatic relationships.



Fig. 2 The **DRAPE Artist Residence and Gallery** achieves formal multiplicity by means of an operable space-making membrane, which also contains integral power, data, light, and air. In combination with an assortment of inflatable furniture elements, this membrane affords the occupant a high degree of control in how the space is formally redefined with regard to its social, spatial, and programmatic relationships. (image: Doug Jackson)

In the case of the *DRAPE Artist Residence and Gallery*, for example, formal multiplicity is achieved through the agency of a highly reconfigurable space-making membrane (Fig. 2). Proposed for a site on the campus of the University of Nebraska in Lincoln, adjacent to the Sheldon Art Gallery designed by Philip Johnson, the *DRAPE* (which is both an acro-

nym for *Display, Residence, and Art Production Environment* as well as a reference to the character of the operable membrane) contains within a single volume the residential, studio, and exhibition programs associated with a visiting artist. Each of these programmatic functions, rather than being perfectly resolved into a singular formal embodiment, is instead

continually negotiated through the occupant's manipulation of this space-making membrane, which is draped over a series of re-positionable motorized rolling hangers. As these hangers are moved back and forth, the occupant is able to manipulate the overall form of the ½" thick silicone rubber membrane—allowing it to divide, combine, or otherwise characterize the interior volume of the structure. Integral power, data, light, and air

are distributed throughout the membrane in an array of control ports. These features, combined with an assortment of inflatable furniture elements that can be deployed from and returned to a number of floor compartments, allow the occupant a high degree of control in how the space of the *DRAPE* is formally redefined with regard to its social, spatial, and programmatic relationships.⁸

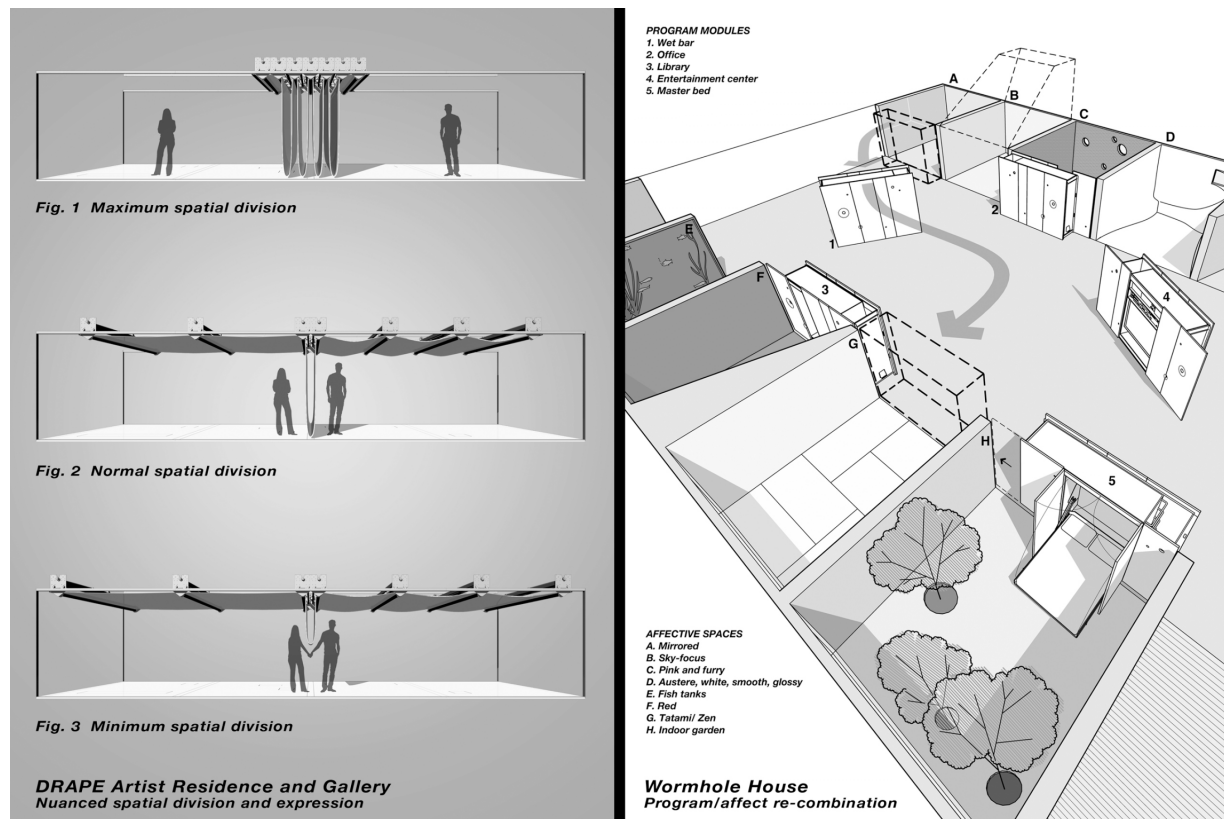


Fig. 3 Both the **DRAPE Artist Residence and Gallery** and the **Wormhole House** allow their occupants to be creative and inventive, and to thereby contribute to the architectural expression of the work. At left, the *DRAPE*'s operable membrane can be manipulated in a nuanced fashion so that acts of spatial or programmatic framing and division can take on additional meaning. Meanwhile, at right, the *Wormhole House*'s decoupling of program and material/spatial affect affords its occupants the ability to spontaneously create new combinations, and to implicate the creation of these new constructs into the evolving social and spatial contexts of the house. (image: Doug Jackson)

Both the *Wormhole House* and the *DRAPE Artist Residence and Gallery* demonstrate the third principle of the *trans-formal* model, which is that of **user creativity**. As opposed to existing architectural strategies of flexibility or responsiveness, this principle emphasizes the user's role as a co-author of the work.⁹ Accordingly, both the *DRAPE* and the *Wormhole House* provide a broad spectrum of possible physical manifestations that allow the

individual the opportunity creatively participate in acts of architectural expression (Fig. 3). In the case of the *DRAPE*, the flexible space-making membrane allows the resident artist to act as a creative author of the work's architectural character or content: activities can be segregated or conflated through the manipulation of the folds of the membrane, the membrane can impart spatial and programmatic hierarchy or status through its

ability to act as a frame, and the character of the boundary condition between adjacent spaces or activities can be tuned in order to define the character and degree of relationship between them. In its capacity as a partitioning element, for example, the membrane can be configured to express varying *degrees of separation* ranging from barely separated to extremely separated according to the number and depth of folds. In the case of an argument between two individuals, therefore, the volume of the *DRAPE* can be *maximally* divided in order to express the gulf of the disagreement. Consequently, the manipulation of the membrane allows the artist to create relatively nuanced statements about the social, spatial, and programmatic (inter-)relationships that occur within the *DRAPE*—and to employ architecture’s capacity to temporarily monumentalize these statements—while retaining the ability to revise them over time through the reformulation of this architectural element.

In the case of the *Wormhole House*, meanwhile, the ability to recombine program and experiential affect at will affords the occupants the opportunity to not only create a wide array of possible new programmatic/affective constructs, but to implicate these constructs into the evolving social and spatial contexts of the residence. The disconnection of the master bed program cabinet from the “austere white space” and its subsequent connection to the “fuzzy intimate space,” for example, might be more than simply the indulgence of a whim but rather could be intended as a message or suggestion from one occupant to the other, depending on the context.

The fourth and final principle of the *trans-formal* model for architecture is that of **technological congruency**. This is an issue that is particularly consequential when discussing contemporary approaches to architecture that attempt to foreground user-engagement and user-interactivity, since such concepts typically invoke images of cutting-edge technology as the means by which such effects are achieved. This is problematic, however, since works of architecture are for the most part comprised of extremely low-tech materials, systems, and assemblies—which makes it difficult to achieve a technological congruency when more sophisticated technologies are introduced.

The *WTF? Device*, shown in Figure 4 below, demonstrates how the principles of experiential potentiality, formal multiplicity, and user creativity can all be achieved while adhering to the principle of technological congruency. Designed for an existing and under-utilized five-story circulation/atrium space in the School of Architecture at the University of Nebraska-Lincoln, the *WTF? Device* is a transformable object of ambiguous use. Although it is suggestive of both basketball and video projection, intentionally designed surface imperfections resist easy assumptions and normative uses. Instead, these intentional imperfections as well as the reconfigurable nature of its rail-mounted rolling panels encourage the school’s students to create new activities and new forms of social interaction that continually activate and redefine this disused circulation space. However, in order to extend this potential to the entire space (instead of restricting it only to the installed object) the installation intentionally employs forms and materials that echo those of the existing architectural context, borrowing the materiality of its backboard/display surfaces from those of the adjacent vertical circulation cores and conforming the transformability of these rolling surfaces to the linearity of the mezzanine guardrails. Likewise, this device is intentionally restrained in its use of technology to achieve its effects, sacrificing the greater experiential or formal potential that might have been offered by more sophisticated interactive systems for the higher degree of congruency with the existing architectural space achieved by the use of an extremely low-tech system already familiar to architecture: rolling panels with guide tracks.

Absent such a technological congruency, any architectural work risks becoming merely a backdrop for the more sophisticated technology in question. This is problematic from a disciplinary standpoint, since such a dichotomous relationship between any higher-tech elements that are responsible for the primary effects and the lower-tech remainder of the work casts architecture in an unfavorable light, insofar as it undermines the discipline’s ability to demonstrate value through the more conventional means that are typically associated with its preferred medium of building.¹⁰ The *trans-formal* model, however, would neither require nor benefit from an injection of technological sophistication. Rather than invoke new and sophisticated technologies, its

purpose is simply to present a new model for the way that individuals relate to architecture—one that is more meaningful and relevant to contemporary society—and this can be achieved through rather modest means by identifying techniques that allow the relatively simple materials and assemblies that architecture is already made of to be tuned and manipulated by those that occupy it in order to produce varying architectural effects.

The projects that have been used to illustrate this essay, for example, employ readily available and relatively commonplace technologies, ranging from casters to electric motors. However, they each achieve effects that are highly interactive, that enable the architecture to be reconfigured by its occupants in order to re-

late it more specifically to the way that they intend to occupy it, to allow the occupants to conceive of and create new manners of occupation and use, and to allow the occupants to employ the architecture as a means for individual expression—all of which relate to recent emphases on participation and content reformulation specific to contemporary digital-age culture. Furthermore, in each case the primary architectural affect is independent of the formal aesthetic, which is advantageous to the discipline in that it decouples architectural value from formal novelty. Instead, works produced in this fashion can assert value across a wide range of formalisms, and moreover can sustain that value over a long duration even in the face of a loss of interest in a particular form.



*Fig. 4 The **WTF? Device** is a small-scale installation that demonstrates the issue of technological congruency. While affording individuals the ability to spontaneously create new activities and experiences within a previously under-utilized five-story atrium space, it intentionally forgoes the greater formal and experiential possibilities that sophisticated technological agents might have allowed in exchange for a much higher degree of continuity with the surrounding architectural context afforded by a relatively unsophisticated system of panels affixed to rail-mounted rolling frames. Despite this relatively low-tech approach, however, the clever use of intentional surface imperfections as well as the provision for formal multiplicity serve to resist normative uses and instead encourage the ongoing, creative participation with the device.*

CONCLUSION

Rather than viewing architecture as the creation of a perfect formal resolution to a fixed set of design criteria, the *trans-formal* model for architecture instead envisions architecture as a kind of physical palimpsest, affording individuals the potential to manipulate and rearrange architectural form and space in order to spontaneously produce new and different experiences. In so doing, it provides a means for architecture to engage, in its constructed works, the most salient aspects of contemporary digital-age culture: the interest in individual customization, creation, and control of content and the corresponding interest in the formal multiplicity that is necessary to afford such potentiality to the individual. Moreover, the four primary principles of the *trans-formal* model outlined above—*experiential potentiality*, *formal multiplicity*, *user creativity*, and *technological congruency*—are all qualities that are transparent to any particular aesthetic or form, and are also capable of being realized without resort to sophisticated, obscure, and potentially incongruous materials and technologies. This decoupling of architectural value from formal and technological novelty is advantageous to the discipline since it allows work to be produced that can assert its value across a wide range of formalisms (and moreover can sustain that value over a long

duration even in the face of a loss of interest in a particular form) and can do so through the use of familiar and proven technologies that are congruent with the relatively low tech materials and techniques which have always constituted and continue to constitute the majority of the discipline's built works. This allows it to uniquely challenge the issues of formal and technological obsolescence that would otherwise quickly de-value ostensibly "perfected" works premised on novel forms and technologies.

The *trans-formal* model therefore offers a strategy to architecture that not only allows it to once again be culturally relevant, but will also enable it to preserve this relevance in the face of the rapid succession of aesthetic trends and across the long lifespan of its built works. And it demonstrates a more appropriate way for the discipline to address the digital paradigm—not through enlisting digital tools to augment the design of works that otherwise adhere to a pre-digital logic of the singular, perfectly resolved formal embodiment authored by the architect—but rather through a fundamental rethinking of architecture and the character of its form and its authorship based on the new experiential expectations that digital technologies have cultivated within contemporary culture.

ENDNOTES

1. In an age of digital information, the value placed on an original embodiment has both lessened and also adopted a nostalgic connotation—such as, for example, the lingering sub-cultural value ascribed to vinyl records in the face of the overwhelming cultural adoption of digital music files (and the increasing manipulation of the latter by individuals through sampling, mixing, editing—often in combination with sampled or individually recorded video—in order to create new content for consumption by others.)

2. Henry Jenkins, *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century* (Cambridge, MA: The MIT Press, 2009), 5.

3. Amanda Lenhart and Mary Madden, "Teen Content Creators and Consumers," Pew Internet & American Life Project (November 2, 2005), 1-2, <http://www.pewinternet.org/Reports/2005/Teen-Content-Creators-and-Consumers.aspx>. While this 2005 report noted that 57% of online teens (or, 50% of *all* teens) were content creators, by 2007 the numbers had risen to 67% of online teens (which is 59% of *all* teens). For these later numbers please see Amanda Lenhart, Mary Madden, Alexandra Rankin Macgill, and Aaron Smith, "Teens and Social Media," Pew Internet & American Life Project (December 19, 2007), 10, <http://www.pewinternet.org/Reports/2007/Teens-and-Social-Media.aspx>.

Although these studies emphasize a trend in the teen population, an earlier report demonstrated that of those who currently create content for the internet, nearly half are between the ages of 30 and 49, which indicates that this cultural dynamic is already a demographically broad one. See Amanda Lenhart, John Horrigan, and Deborah Fellows, "Content Creation Online," Pew Internet & American Life Project (February 29, 2004), 6-7, <http://www.pewinternet.org/Reports/2004/Content-Creation-Online.aspx>. Meanwhile, a follow-up report in 2010 confirmed that while content creation has remained steady among young adults, it has also increased among older adults. Please see Amanda Lenhart, Kristen Purcell, Aaron Smith, and Kathryn Zickuhr, "Social Media & Mobile Internet Use Among Teens and Young Adults," Pew Internet & American Life Project (February 3, 2010), 22-23, <http://www.pewinternet.org/Reports/2010/Social-Media-and-Young-Adults.aspx>.

4. An example of this would be the Generative Components software designed by Bentley Systems. According to the product brochure, the software facilitates the "quick exploration of a broad range of 'what if' alternatives" through an approach to modeling that offers "complete control of parametric object attributes and the associative network of relationships between objects." This allows the designer to graphically manipulate these parameters

and relationships in order to quickly evaluate the formal and geometric consequences, resulting in what the software developer describes as "active designs that react to changes within the model." See <http://ftp2.bentley.com/dist/collateral/Web/Building/GenerativeComponents/ProductDataSheet.pdf>.

5. Gibson's seminal work on affordances can be found in his essay "The Theory of Affordances" in Robert Shaw and John Bransford, eds. *Perceiving, Acting, and Knowing* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1977), 67-82. His subsequent development of this theory can be found in James J. Gibson, *The Ecological Approach to Visual Perception* (Boston: Houghton Mifflin, 1979). Gibson's concept broadly concerns the realm of all possible actions permitted by the form of an object. However, this broad framework was subsequently narrowed by Donald Norman, who instead emphasized only those affordances inherent in the form of the object that are actually perceived by the actor. See Donald Norman, *The Design of Everyday Things* (Cambridge, MA: The MIT Press, 1988). This latter emphasis on "perceived affordances" frames the issue as a dynamic, reciprocal, and temporal relationship between the user(s) and the object in question. This relationship is typically considered in regard to function and use—and it is in this sense that the concept of affordances becomes important for the design of interactive objects and interfaces. However, the affordances of objects and individuals' perception thereof can also be important considerations in objects related to play and other *creative* activities. The *trans-formal* approach to architecture proposed in this essay includes this latter sense, in which the work is designed to engage the user in such a way as to solicit a degree of creative participation within the parameters suggested by the work.

6. Despite the reference to the plugging in of program modules, this project differs significantly from the earlier plug-in type architecture demonstrated by Archigram, Cedric Price, and others. While their work imagined frameworks that supported activities, programs, and experiences that could be manipulated over time, the plug-in or catalogue-like effects described in their projects frame the users more as consumers or channel surfers selecting from among a very limited set of prescribed options, rather than as freely creative authors of architectural experience. For an example of Archigram's definition of the creative act as one of mere "selection," see Warren Chalk, "Architecture as Consumer Product," *Perspecta*, Vol. 11 (1967): 135-137. In contrast, the *Wormhole House* allows its occupants to creatively re-assemble deconstructed programmatic and affective constructs into new and unanticipated ones, and to thereby create new architectural experiences.

7. This work—variously referred to by such labels as "emergence," "bioformalism," "new materialism," "morphogenesis," "parametricism," and others—is

often cited as evidence of a paradigm shift within the architectural discipline. See, for example, Neil Leach, "Digital Morphogenesis," *Architectural Design*, vol. 79, no. 1 (January 2009): 34-37. However, it seems inappropriate to regard this work as paradigmatically new, instead of simply a new manifestation of architecture's pre-digital practices. Despite its focus on the exploitation of novel technology and its resulting formal novelty, work such as this is actually the continuation of a long-standing, traditional approach to architectural production—one characterized by the continually evolving technical mastery of new materials and techniques for the on-going production of formal, material, or technical spectacle (such as an arch, or a dramatic cantilever, or a continuously varied form). Meanwhile, despite its formal or aesthetic novelty, such work remains oblivious to the actual paradigmatic changes in cultural practices engendered by digital technologies—changes which undermine the relevance of such an approach to architecture that is so indebted to the production of singular, permanent form authored by the architect. This essay contends that any corresponding paradigm shift within the architectural discipline would necessarily be marked by trends toward formal multiplicity and a multilateral authorship that would include ongoing creative input by the occupant.

8. Again, the formal multiplicity demonstrated in the *DRAPE Artist Residence and Gallery* is fundamentally different from the work of such architects as Archigram and Cedric Price. While their work allowed manipulations by the occupant(s), such actions were relatively one-dimensional (on/off, open/closed, etc.) In contrast, the *DRAPE's* operable membrane can be tuned more finely across a broad spectrum of formal possibility, thereby allowing for a greater degree of creative freedom on the part of the occupant.

9. The principle of *user creativity* recognizes the degree to which digital-age culture values individual authorship and content creation, and moreover the degree to which these are distinct from previously valued affordances such as the ability of the individual to select from multiple pre-fixed options (which is the basis for strategies of "flexibility"), or the ability of the work to respond automatically to the user (which is the basis for recent propositions for "responsive" architecture). Rather, the principle of *user creativity* avoids architectural propositions that are merely flexible or responsive, since neither of those approaches affords the individual the ability to decisively manipulate the work in order to engage in a conscious act of architectural expression.

10. When unusual and/or sophisticated technologies are invoked to produce the primary architectural affect of a work of architecture, then there are two primary ways in which the resulting work can be considered—both of which are problematic from a disciplinary standpoint: either the architectural work is understood to be subordinate to and distinct from

the featured technology (in which case the primary value of the work problematically resides in the non-architectural elements) or the featured technology is considered to entirely constitute the work of architecture (which relegates the constructed space that supports this featured technology to a lower, non-architectural status and thus problematizes the discipline's continued engagement with the low-tech medium of building).