Having It Both Ways: Building as Object, Building as Artifact

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ABSTRACT: *Increasingly (and understandably!) the act of building, along with the buildings we design and build, gain validation through the recognition of the complex systems in which they are conceived, designed, and built. Today, the success of contemporary buildings is determined primarily through their performance, durability, utility, responsiveness to site, context, social responsibility, and interconnectedness to larger, more complex networked ecologies. But these are not the only metrics of a successful project. In the case study design-build program discussed in this paper, it is especially critical that projects also address the learning objectives of the course, contribute to advancing the research agenda of the faculty and program, and of course positively contribute to the needs of the community in which the work is situated.*
The perceived utility of a built project is contingent on its purpose. Multiple utilities are possible; the constraints of one purpose sometimes provides a platform for an alternative understanding. The research generated on-the-ground at the design-build program is applicable to multiple contexts and provides diverse responses that reveal solutions not conceptualized in the original application. The specific informs the universal and, in turn, the universal provides new understanding of the specific. This feedback loop provides a new measure through which to evaluate the utility of the work: if the project provides multiple solution sets, then it demonstrates the strength of the design response.
The authors – who are students, teachers, and critics of the design-build program – examine ways in which prompts enter and exit the studio. Some begin with teaching objectives in mind: the design is an outcome of its teaching process. Others come from a wider field, where a practical need is found to be transferrable into an educational process. This multi-lensed approach allows us to extend the utility of the product beyond the architecture studio and into a broader context. In many ways, designing and building these projects provides a means of illustrating unseen linkages, patterns, and systems.
As Heidegger first described in "Being and Time," it is through utility that a tool, or in this case, a building, disappears as an object, and becomes just a useful bit of equipment, or simply an artifact of production and performance. But often the best, most beautiful buildings are also simultaneously objects that resist utility, and the authors of this paper will attempt to articulate this necessary friction that exists between Building-as-Object and Building-as-Artifact.

KEYWORDS: Architectural Education, Design-Build, Building Performance, Housing

1. INTRODUCTION

Rural Studio is a design-build program in which architecture students spend anywhere from one semester to as many as two years of their undergraduate education. While at Rural Studio, students work in partnership with their neighbors in the local community to purposefully seek out problems, define solutions, fundraise, design, and ultimately build projects. In its initial years, the Studio first became known for establishing an ethos of recycling, reusing, and remaking. Over the past decade, Rural Studio has expanded the scope and complexity of its projects to include the design and construction of community-oriented infrastructure, the development of more broadly attainable small, high-performance home affordability solutions, and a comprehensive approach to addressing insecurity issues relative to income, energy, food, health, and education resources. Altogether, the Studio continually questions what should be built, rather than simply what can be built.

As a hands-on program, Rural Studio was founded around a handful of simple premises. First, we embrace the idea that the best way to learn how to do something is by actually doing it. Rural Studio is action-oriented, and we get things done. Second, we have found that when faced with difficult problems, it is always best to tackle them together; therefore, Rural Studio is extraordinarily team oriented. Combining this belief in the importance of action with our penchant for teamwork, Rural Studio acts not just as a research "think tank," but also as a sort of "do tank." Finally, and perhaps most importantly, we believe that everyone, no matter their circumstance, deserves a safe, durable, healthy, and dignified place to call home.

Our students work directly with real clients, on real projects, with real sites, with real schedules and real budgets, and—hopefully—with real, long-term positive impacts on the lives of our neighbors. In addition to

local clients, the students also work with all sorts of other folks, including community stakeholders and professional consultants such as structural and environmental engineers, healthcare professionals, economists, and social scientists. Through this practice-based process, the students learn everything they need to know about how to both design and build their proposed project, and then of course, they build the project themselves as well.

1.1 SYSTEMIC CHALLENGES DEMAND A SYSTEMS-BASED APPROACH

Rural Studio has always been a “Housing First” organization, which means that before we can begin to address the broader issues faced in our low-wealth communities, we must first make sure everyone is decently housed. That said, over the past three decades, Rural Studio students have designed and built well over 200 projects for our community, including more than just houses. So why do we put so much time and energy into these types of community projects, if we truly believe in the “Housing first” approach?

While working on designing homes, the students came to realize that one of the significant barriers to affordable homeownership in our community was the lack of adequate fire protection. This was a barrier because houses in the community were burning down at an inordinate rate, which made it difficult—if not impossible—for local residents to get homeowner’s insurance. And this was a barrier because if you can’t get homeowner’s insurance, you can’t secure a mortgage. And of course, that becomes a barrier to affordable homeownership, because if you can’t secure a mortgage, no amount of work that we might do as architects by “designing the house this way” or “building it that way” would ever begin to address this systems-based problem through brick-and-mortar design and construction solutions alone. It is in this way that Rural Studio works across the whole system of housing access, first by revealing and understanding the deeply systemic issues faced in our rural communities, and then by bringing together our stakeholder partners across all areas of influence who, through close collaboration, can begin to address these complex challenges.

The nature of Rural Studio’s housing work has evolved since its inception nearly 30 years ago. The designs of early client homes were specific to the families for which they were built and were often—out of budgetary necessity—composed of found, reused, or repurposed materials. Less focused on replicability or affordability, the homes were a recognition that good housing is not always affordable, but that people deserve it anyway. After years of designing these “custom” homes, the Studio began to question if the resources put into the projects could be utilized to effect greater change. Therefore, the Studio began a program of developing home prototypes, designed and constructed with replicability in mind. These prototypes serve as a growing library of spatial arrangements, assemblies and construction methods, and material palettes and details. Furthermore, the prototype development program introduced an iterative nature to the work. Home designs are built multiple times, to both refine the designs as well as introduce variations that allow greater flexibility (Fig. 1).

Figure 1: Example of a prototype home; this design—Joanne’s House—has been built over 5 times in multiple locations. Source: Auburn University Rural Studio

2. EXPANDING THE FEEDBACK LOOP

As an academic institution, the method and mission of Rural Studio involves the activities of teaching, research, and outreach. This provides us with a unique opportunity to engage with partners across local, regional, and national scales. The relationship between Rural Studio and our partners is one of reciprocal knowledge-building and information sharing.

The design-build nature of the work at Rural Studio creates a natural feedback loop; decisions are analyzed through the act of *building* those decisions. Inputs to the projects include design briefs based on observation of need, aggregated data, and experience gained from preceding student work. Inputs also come from community partner clients, for whom the homes are built. Prompts are both intrinsic and extrinsic. Intrinsically, Rural Studio needs a client with whom to work; this is crucial to fulfilling student learning outcomes. Extrinsically, many community members need access to better housing. Combining these needs, Rural Studio works in a "mutual aid" model; where students design, build, and ultimately provide houses to homeowners that under no circumstance could provide a home for themselves via more traditional means. In return, acting as real-life clients, the homeowners play an invaluable role in the students' architectural education.

With the aim of extending the impact of the housing design and research produced by our students, through the Front Porch Initiative, Rural Studio offers housing products and technical assistance to external housing providers working to deliver homes in their own often under-resourced communities. The Front Porch Initiative takes the knowledge and products developed on the ground in West Alabama and shares them with housing providers so that they in turn can provide the same energy efficient, resilient, and healthy homes in their communities. This process further expands the feedback loop. The object of the house becomes a vessel, or a type of artifact, not only to understand how the design of the home can affect its performance, but also to explore how the procurement of that home affects land tenure and use, zoning, lending, insurance, and more. As Rural Studio's academic program provides outreach to the local community, the Front Porch Initiative expands the field, developing alliances with regional housing providers and organizations in a wider national housing network (Fig. 2). These relationships are based on both application and implementation. And through this variety of partnerships, we examine the universal and the particular: which opportunities and challenges are relatable across varying geographies, and which elements are specific per location, community, client, and context.

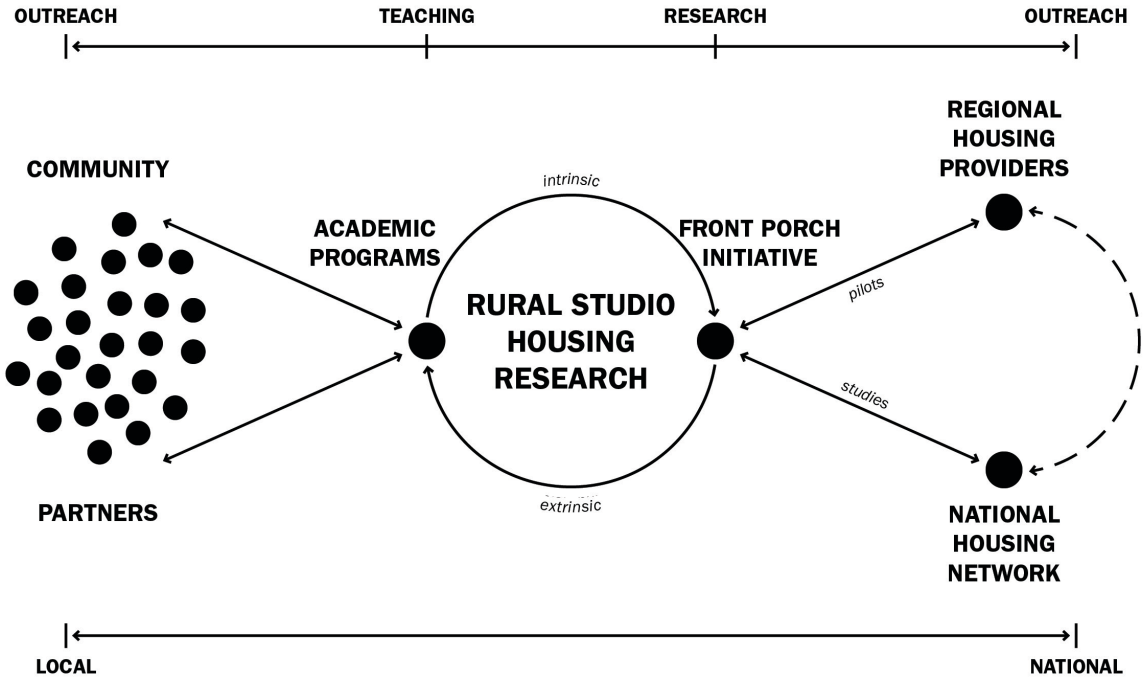

Figure 2: Diagram of housing research at Rural Studio. Source: Auburn University Rural Studio

This expanded field provides both frictions and opportunities. Prior to Front Porch Initiative, prompts for the academic program were localized – coming from within Rural Studio itself (intrinsic) or from the local community (extrinsic). When Front Porch Initiative first began, generally products were pushed from the academic side toward the broader field. However, as the work of the Initiative has grown, inputs and outputs have become increasingly bi-directional. Through Front Porch Initiative, extrinsic prompts can originate regionally, and sometimes even nationally. However, if undertaken by Rural Studio's academic programs, those prompts must be deemed to both a) offer suitable learning objectives for the students and b) serve the needs of the local community.

2.1 Building as artifact

Today, the success of a contemporary building is most often determined primarily through its performance, durability, utility, responsiveness to site, context, social responsibility, and interconnectedness to larger, more complex networked ecologies, and in relationship to the process through which these issues are addressed. In other words, buildings gain validation through the recognition of the complex systems in which they are conceived, designed, and built. To qualify a building as "sustainable," or "LEED Certified," or "beyond code" is to express something about the "goodness" of the resultant artifact of the building, with little consideration of the resultant constructed object. In the work of Rural Studio this is equally true: it is essential that all projects be designed to be efficient, durable, weatherproof, secure, and buildable. But these are just the minimum of performance requirements. We also believe that successful proposals must perform as a system of aspirations as well. Buildings should directly express a sense of presence and dignity for the occupant, and they should intentionally foster a sense of community and engagement in their design. Buildings should also actively contribute to the health and well-being of those that build them, as well as those that inhabit them. Buildings should be accommodating to all, and no matter the circumstances in which they exist, they must be well crafted. Necessary to overcome the systemic inequities found in the communities we serve; it is perhaps these aspirational performance requirements that begin to blur the boundaries and distinctions between the artifact and object of a building.

2.2 Building as object

But because buildings ultimately exist in the world, they cannot help but be perceived as objects. As architects we have developed a formalized object-oriented language to describe buildings; we speak of elements that create form, form that defines space, and spaces that are ordered by principles, proportion, circulation, and scale. Because these descriptive ordering principles are so highly visual, they can easily subsume even the most basic performance considerations of efficiency, resilience, and constructability. However, we believe that buildings should look like what they do. And if they do that thing well, and that thing they do is good, then the building will be beautiful. In this way, aesthetics as a pursuit is a form of building performance in its own right. With this in mind, we are no longer faced with the false "Artifact/Object" binary and are instead armed with an architectural language by which we might analyze the form of the building through a more formal description of its utility.

3. PROJECT DESIGN

It should now be clear that the responsibilities of projects taken on by Rural Studio are exceedingly complex. In addition to negotiating the multivariate challenges found in systemically disinvested communities, the design of the project must simultaneously address the learning objectives of an accredited program of architecture, contribute to advancing the research agenda of the faculty and program, and must positively contribute to the needs of the community in which the work is situated. None of these concerns can take precedent over the other, but neither can any be left as simply a collateral outcome. Following are two case studies of projects that work to address all of these agendas.

3.1 Intrinsic prompt case study: Rosie's home

Intrinsic design prompts are developed through local observations of need, demographic data, and research inquiries focused on materials, systems, or typologies. Finding a community client with needs that match a project's design criteria is simple, as prompts are designed to address common issues. One example of a project prompted by an intrinsic inquiry is Rosie's Home, which explores a new house typology—the Pole Barn House—to provide room to grow under one roof for families and changing needs and a way to rapidly build a sheltered work site.

Rural Studio projects are named for who they serve and what they are. We name the houses we build after their owner. Rosie's Home is a phased project spanning four semesters. Each semester, a new group of students joins Rural Studio and inherits the last group's work. The students are given a group design prompt for the portion of the project they are responsible for, and must respond to work that is already complete. Houses are designed collaboratively through many iterations of sharing, review, and consensus building, and it is the faculty's responsibility to make sure the project is cohesive from one semester to the next. The nature of building a Pole Barn House is phased, so its delivery method matches with the academic calendar and the exploration of expansion through time.

Our clients are friends and neighbors, and their input is critical for project development. The multiple needs of a client hold our students accountable for their decisions and provide motivation to do the work. Serving clients provides a two-fold benefit: first, there is a shortage of affordable and decent housing in our community and few opportunities to build new or repair existing homes; second, our students need a project. The requirements are simple to qualify for a house: clients must need a house (their current house is bad repair or outlived its useful life), their property (or their family's property) must be in close proximity to our campus, and their space

requirements must meet our abilities (one- and two-bedrooms are most common due to time constraints and skill level). There is no credit check to get started and no mortgage or lien after completion – houses are paid for through donations to the Studio. In return, clients agree to work with our students and faculty throughout the process of design and construction. They allow us into their homes, accommodate questions and interviews, and respond to design proposals; their patience is extraordinary. Most often our clients live on the same property as the house being built, so we see them every day and they become an endeared member of the team. As personal as the process is, the houses are prototypes not custom homes. This means the client's particular needs must match with intrinsic design prompt set forth.

Predictive expansion is an intrinsic prompt conceptualized to help us explore how houses may better respond to the needs of a changing family. Through years of working with community members, we learned that many of our client's original homes started small and were added onto as their families grew and needs changed. Where the additions were attached, shifting soils and inadequate foundations caused connections to fail, water leaked in and damaged the home. A big roof – like a pole barn – provides space as new rooms are added without having to worry about roof connections.

Pole barns are typically agricultural buildings used for storage and covered workspace. They are built from a kit or by a local contractor, often in a couple days. They have width requirements because of the span limitations of a truss but the length is endless, another bay can simply be added. The nature of their construction makes them research-worthy for several reasons: a) they can be built in a couple days giving quick cover for what follows (rapidly built), b) as more is built underneath the roof provides protection from weather (time-saving), and c) a large, inexpensive roof leaves extra space for rooms we cannot predict the homeowners will need in the future (it allows for expansion as it is necessary).

Rosie's Home is simple in plan—a 16'x48' rectangle under a 26'x48' pole barn roof—but lofty in section (Fig. 3). The pole barn roof sparked an exploration of the ceiling form that raised questions about the healthfulness of indoor environments. The overhead space is used for a variety of purposes: in the living and bedroom vaulted ceilings provide high ventilation and daylight and over the bathroom core additional conditioned storage is created. Along the front of the house two front doors lead to two different conditions, the living room and the utility room. Although they are only 12' apart, they give two options for future additions to be added under the 10' porch provided by the pole barn roof while leaving one front door.

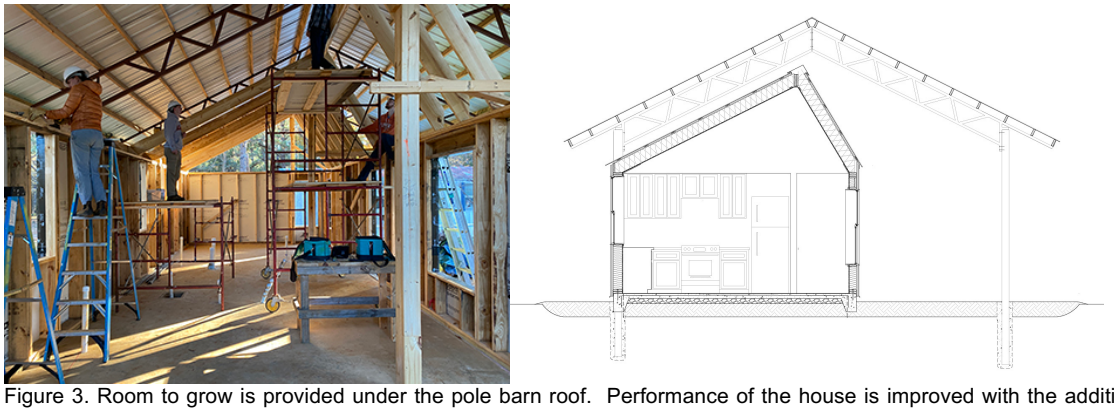

Figure 3. Room to grow is provided under the pole barn roof. Performance of the house is improved with the additional overhead space. Source: Auburn University Rural Studio

Responding to concerns found on the ground in Hale County, the Pole Barn House was initially conceived to have a rapidly constructed roof (to provide a more controlled environment in which to build) and a modular series of core enclosures that could be expanded and modified as a rural family grew into the home over time. But considering the object of the Pole Barn House, several of the Front Porch Initiative partners who are working to provide more affordable, high-performance housing alternatives in "high-hazard" areas quickly recognized a different use: that of disaster recovery replacement housing. While the overall form and delivery process of the Pole Barn House was an artifact defined by the particular needs of rural families living in intergenerational kinship networks, these partners quickly came to realize that the rapid construction of a roof coupled with prefabricated, thermally secure modules that were then expandable could meet the needs of rapid-recovery housing in disaster areas. In this scenario, the displacement of a family from their property (the single largest financial impact when disaster strikes) could be significantly decreased, federal recovery resources could be leveraged to fund the temporary stabilization provided by the installation of the primary core elements, and conventional funding could be utilized to expand the home into a more permanent, long-

term configuration. While the initial resultant form of the Pole Barn House was simply an artifact of the need for more adaptive, long-term, rural housing options, the resultant object lent itself to an unpredicted function as much-needed rapid recovery housing in a disaster scenario. We find the ability for the Pole Barn House prototype to transcend the intrinsic and extrinsic prompts, as well as to act as both artifact and object simultaneously, to be a fundamental measure of the "goodness" of the proposal.

3.2 Extrinsic Prompt Case Study: 18x18 House

The feedback loop offers the applied research and learning generated by student teams out to external partners in the form of housing products and technical assistance, yielding an influx of feedback from external partners in response to their implementation of that technical assistance. In some instances, partners respond back with acute needs identified in their communities.

One extrinsic prompt for a Rural Studio project originated with a Front Porch Initiative partner sharing such a need; this partner was eager to increase housing inventory but stymied by lack of available land. Offered a small parcel of buildable property, the affordable housing developer approached Rural Studio to ask whether housing units could be designed for an 18' x 18' footprint. This dimensional constraint comes from the size of two parking spaces, as some cities are negotiating with developers to reduce parking requirements in exchange for housing units that are affordable.

The partner's request prompted Rural Studio to consider the utility of a small-footprint house in rural areas that might better address limited buildable space. While land may be abundant in some rural areas, many rural properties often have obstacles such as standing ground water, septic fields, power lines, or abandoned structures that can drastically reduce the buildable footprint. A small-footprint house can be built on family properties that may not have usable space for a larger home. The 18x18 House might provide extra space for a growing family or can maintain the kinship network in situations where space may not exist for additions or new construction.

This extrinsic prompt enabled Rural Studio to respond to both urban and rural needs while offering the students challenging learning objectives. Moreover, the constraint of a maximum footprint proved stimulating for the student team; faced with this constraint, their investigations quickly sharpened around the possibilities inherent within this spatial constraint. While the first iteration will be built for a local client on rural family land, students remain aware of the additional urban context for which the project is intended and consider both settings when making decisions (Fig. 4).

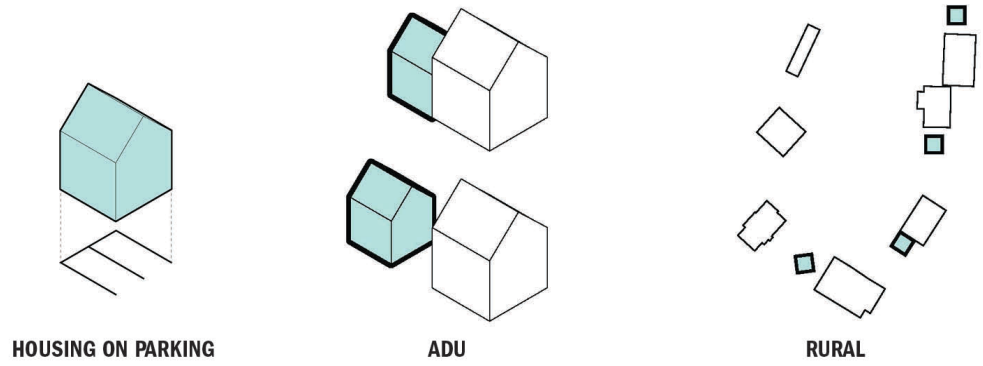

Figure 4. Multiple contexts for 18x18 House prototype include housing in lieu of parking, detached or attached dwelling units (ADU) common in urban areas or scattered detached housing typical of rural areas. Source: Auburn University Rural Studio

The goal of maximizing interior living space led to a multi-story prototype, with a stair as a design opportunity bridging living and sleeping areas. Consideration of a potential need for accessibility prompted study of sleeping and toilet facilities on the ground floor, with living spaces able to capitalize on higher ceilings of the upper floor; this exercise led to consideration of the quality of each space when inverted. Mindful of both rural and urban site settings, the students ultimately evaluated schematic proposals on dignity of space, efficiency, adaptability, and ability to aggregate (Fig. 5).

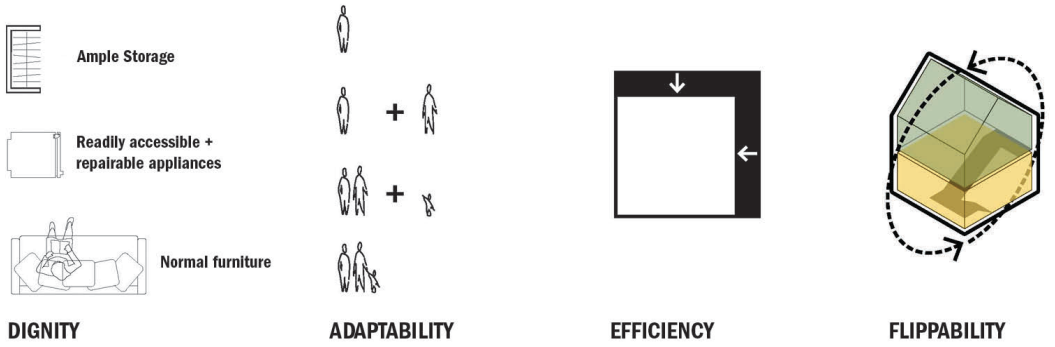

Figure 5. Four criteria developed by student team for evaluating design proposals. Source: Auburn University Rural Studio.

The 18x18 House aims to fulfill the need for a small, adaptable, multistory house in both urban and rural settings. For rural sites with limited buildable area, the small-footprint prototype offers an alternative to manufactured housing. In the case of rural family-owned land, it allows flexibility for housing multiple households on the same parcel. In an urban context, the ability to create housing either as an ADU (accessory dwelling unit) or housing units in place of parking spaces adds housing inventory by increasing density. In the case of the 18x18 House, the initial form (object) of the house was simply the artifact of an urban condition. But when considered in a rural context, the urban object quickly revealed a rural need that was invisible even to us, leading us to better understand the need for a new rural prototype house that could be more responsive to small-parcel land holdings. It is in this way that the feedback loop becomes particularly adroit at negotiating the building as object, building as artifact dichotomy.

4. CONCLUSIONS

The authors of this paper do not pretend that the observations made in this paper are particularly novel, or even new. Over time we have simply come to better articulate the primary attributes of Architecture that make a building "good." Of course, these attributes were first recognized by Vitruvius over two millennia ago as *Firmitas, Utilitas*, and *Venustas,* (strength, usefulness, and beauty). In the 17th century, architect and philosopher Sir Henry Wotton recognized that the forms of architecture in Vitruvius' time were rather limited materials and construction methods, and therefore the notion of architectural principles of "Beauty" were bound by formal aesthetic constraints. In "The Elements of Architecture" (and amplified in the 20th century by Robert Venturi and Denise Scott Brown in "Learning from Las Vegas") Wotton expands our understanding of *Venustas* by reframing it as "Delight," which refers to the cognitive associations a "good" building must intentionally provide, or more simply, its "meaning." This reframing is important, as it allows us to move beyond formal, object-oriented aesthetics, and to consider these cognitive associations more broadly through the same pragmatic, scientific lens as we do the evaluative criteria of strength and usefulness when determining whether a building is "good" or not. While today we seldom think of the primary attributes of Architecture through this tripartite framework, we do consider that buildings have the responsibility to be efficient and to perform well *(Firmitas)*, to steward the environment *(Utilitas),* and to be socially impactful and relevant *(Venustas)*. Considered in this way, we find that Vitruvius' notion that "…Architecture is composed of two things: the manual work and the reasoning behind it," resonates perhaps more today than ever before. Just as in Vitruvius' day, the three responsibilities of a) building performance, b) environmental stewardship, and c) social relevance act in synthesis with one another and cannot be taken to pieces. Moreover, in the introduction to The Architecture of Humanism, author Geoffrey Scott argues that these three "purposes" are separate and distinct, but converge—or are synthesized—through the act of making Architecture. He states, "They are blended in a single method; they are fulfilled in a single result; yet in their own nature, they are distinguished from each other by a deep and permanent disparity." In this way, architecture is in a way simply the side effect (artifact) of the act of reconciling the seemingly disparate responsibilities of performance, stewardship, and meaning in built form (object).

So, clearly the design of a "good" building is a complex challenge. But as educators, we have learned that the *design of the design* of a good building is perhaps even more so. We clearly understand that the purpose of utilizing the design-build method in architectural education is a way to leverage the knowledge gained in the classroom and, through direct experience, transfer that knowledge to know-how. But what is sometimes less clear is the knowledge concerning what, and the know-how to do what, and why, and for whom? It is only through the live experience of designing-to-build that this friction generated by the contingent and often conflicting purposes of building performance, environmental stewardship, and social relevance ultimately become visible, and must be synthetically resolved as both an artifact of this struggle as well as an object to be built in its own right. By coupling project prompts around both the intrinsic requirements of educating

knowledgeable, well-prepared architects with the extrinsic needs of our clients and communities, students must grapple with the pragmatic concerns of thermodynamics, building control layers, and constructability, while simultaneously considering the impact of housing programs and policies, and their aspirations for long-term positive impact in the communities we serve. Through this reconciliation, our buildings do look like what they do; form does indeed follow, or become an artifact, of function. But when coupled with the feedback loop provided by working with housing partners well beyond the service area of Rural Studio, and in radically different contexts from what we find on the ground in Hale County, do the linkages between these three disparate purposes truly become clear. For when we apply new intrinsic and extrinsic prompts to the object of our buildings, we often find that even more useful functions might follow form.

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