

Thinking and Doing: Building Social Responsibility by Building a House

FRANK FLURY

Illinois Institute of Technology

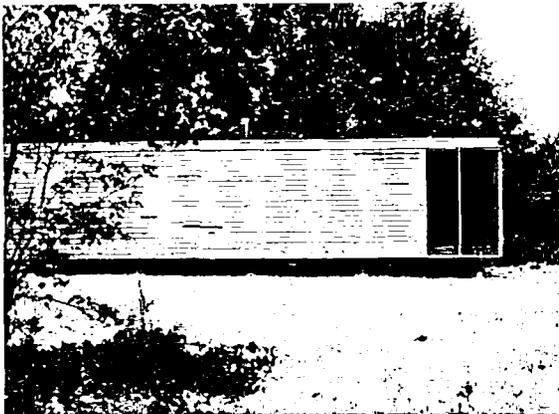


Figure 1. East elevation. Photo by Frank Flury

In architectural practice, thinking and doing cannot be separated. Design and construction are one in an iterative process, the refinement of an idea realized in a drawing and executed into its final, permanent form. Design/build, when formulated as an educational tool, helps the architecture student connect the beginning of an idea with its end by integrating the processes of thinking and doing, the two vital components of architectural practice. This synthesis elevates the quality of the final product by enabling the student to understand the impact of one discipline upon the other.

At a time when the education of an architect is becoming ever more removed from the reality of building and the profession moves deeper and deeper into the digital realm, it is more vital than ever to reinforce the connection between hand and mind. Yet now, the process of design is becoming increasingly removed from the construction process through the widespread use of digital

simulation at the same time that materials and construction methods are becoming more varied and complex along with the aspects of sustainability and energy-conscious design moving further and further to the forefront.

There are different ways of teaching these aspects. A common approach is to lecture about construction types and material properties, design a series of construction exercises, and experiment with material and techniques using models and computer animation. This kind of 'education' limits direct contact with the sensuality of materials and construction processes. It is difficult for a student to understand the sensuality of cutting and crafting a piece of wood; the heat, weight, and odor involved in welding steel; or the excitement and astonishment of opening the formwork of poured concrete without the experience of doing. One must smell the fresh concrete and feel the moist, smooth surface of the material to truly understand what it means to build.

In an attempt to bridge this ever-widening gap in the education of the architect, architectural institutions all over the United States are integrating a sensual or haptic component into their curriculum, which is generally accepted as design/build.

Although the concepts, content, and results of these models vary, the educational objectives and processes are aligned. They include studying the financing, market forces, and budget; participating in the building process from conception through execution; and experimenting with the innovative use of materials. The students learn the importance of teamwork, develop respect for craft and

trades' people; manage the complex problems encountered when working simultaneously in the studio and on the building site; and better comprehend the properties of materials through their direct use in construction.

The concept underlying design/build is two-fold: to educate the architect in a comprehensive manner and to forge a link between design and construction.

Hale County and the Rural Studio.

The Rural Studio was founded in 1992 by Sambo Mockbee, together with D. K. Ruth in Newbern, in a small rural community in Hale County, Alabama, about two hours southwest of Birmingham. With a population of 15,500, Hale County is among the poorest in the state, which itself is among the poorest in the nation. According to the U.S Census Bureau:

- 22% of families live in poverty compared to 9% in the US.
- 27 % of seniors live in poverty compared to 10% in the US.
- 34% of children live in poverty compared to 16% in the US.
- 10% are unemployed compared to 6% in the US.
- 3% have no plumbing compared to 0.6% in the US.
- 33% of persons 21-64 are disabled compared to 18% in the US.
- median family income is \$31,875 compared to \$50,046 in the US.
- it is 60% African-American and 40% Caucasian.¹

Rural Studio plays an important role in the local economy as both an employer and a consumer, not to mention a provider of houses and civic structures otherwise unaffordable to its community. Through its gained international recognition, Rural Studio has also drawn an increasing number of visitors to the County. These 'Rural Studio Tourists' come to see the numerous, widely-publicized projects, such as the 'Hay Bale' and 'Carpet Tile' houses.^{2,3,4}

Mockbee directed Rural Studio from 1992 until his death in 2001. The campus of the Rural Studio, a satellite of Auburn University, lies about two hours west of its main campus. As

a result, it needs only a small faculty, mainly two full-time design teachers along with a handful of part-time faculty to teach classes in material and method, history and contemporary theory. The organization is transparent, unburdened by a bureaucracy that typically sedates the verve of too many institutions. Everyone knows what everyone else is doing. Problems can be solved expeditiously.

The academic program is divided into three segments: 1) undergraduate students in their second year design and build a modest house in one year with the labor split into two teams, 2) undergraduates in their 5th and final year break into small groups of four to design and build civic projects, like the community buildings, park structures and baseball fields so well-known from their publication, and 3) students with various other backgrounds join the outreach program to participate in small community-based projects such as quick fix-ups for people in need or the prototyping of low-cost housing.

In the academic year 2004/2005 Assistant Professor Frank Flury was on a leave of absence from IIT to teach as Visiting Assistant Professor in the second year Program of the University of Auburn's Rural Studio. While he arrived comfortable and confident as a professor, he discovered quickly that teaching and living in a rural environment, such as Hale County Alabama, is quite different than doing the exact same thing in an urban environment. The campus of the Rural Studio loosely reminds Flury of a monastery--there is nothing to do but study. Teaching, living, studying and recreation are all interwoven into one with teachers and students becoming quite familiar with one another on multiple levels. The experience is quite intense.

While the design/build experience lies at the core of the second-year curriculum, students also take history, a materials and methods class (both of which are taught on Thursdays, by Dick Hudgens, History Instructor) and a watercolor class (which takes place on Tuesday evenings after studio, taught by Emily McGlohm, Second-Year Instructor). Saturdays, in general, are off, especially during football season, which is the centerpiece of cultural life in the South.

At the start of the Fall semester, students in the second year join Rural Studio with, at most, one year of architectural education. In general, most of these students have had a very limited exposure to architecture.

In practice architecture is about collaboration—a process of working with and for people to create a product accepted by all. In academia, on the other hand, architecture is taught to the individual in order to strengthen that individual's ability in design and construction. The nurturing of genius is the approach. In this environment, a professor faces a serious challenge when leading 16 individual students, most of whom have had limited experience in designing and building a real house. How does one break down the individualistic tendencies of the students without them losing their identity? How can one weave the creative sparks of 16 individuals into a collective product that is stronger than the sum of its parts? To meld a diverse group dynamic into a unified community is a fundamental goal. The student's first project is designed to do just that.

The first project for this newly formed community of second year students, thesis students, outreach students and staff, is called neck-down. Its goal is to help a person in need by renovating their house. As mentioned earlier, Hale County has an enormous number of elderly people in poverty, many of whom live alone in small shelters, often without insulated walls, hot water or air conditioning, which is more a necessity than a luxury in Alabama.

Finding a client in need is easy; teaching young students to work with them is more delicate. To work for and with people living in poverty is always a very sensitive interaction, but especially for more privileged students, who are unaccustomed to the differences in lifestyle and who are often becoming intimately exposed to this condition for the first time in their lives.

In my experience, people living in poverty just have different priorities. Living in isolation often leads to a different perception of how one is to live day-to-day, a view compounded by a fading of the senses that comes with age, as well as a failing ability to do certain things for yourself when you live alone. For an

outside observer, it seems easy to help, but the reality is quite different. You come to a house and you see spoiled food, but how can you tell somebody for whom food is scarce to throw something away? You come to a house and you see dirty linens and clothes, but how can you tell this person, without being disrespectful, that you would like to clean their clothes? These are just two examples in an endless list of instinctive faux-pas.

Pamela Dorr director of H.E.R.O. housing resource center found our client and discussed with us how to interact appropriately with people in poverty—how to navigate between these different frames that define an acceptable life.⁵ After that the process of rehabilitating the house was begun by emptying the house. We removed all the furniture, repairing and cleaning where necessary, and stored it in a container. Then we repaired damage to the house, added insulation to the walls and ceiling, installed new windows and replaced the roof. We also updated the electricity, and installed new heating and plumbing systems. We added front and back porches, including a handicapped ramp to offer our client the option of sitting outside in the shade.

In just 4 days the client got what she would consider a completely new house. But since there was little architectural design involved, what did the students learn? More than they will ever fully know. They learned to find beauty within the sour smell of poverty and to see somebody living differently without judging who they are or analyzing the circumstances of how they arrived at this point in their lives. These lessons, in my opinion, form our basis of respect for one another and, in a bigger context, anchor us as responsible members of a community.

I will never forget the image of two young students, not yet even twenty, scrubbing a very old and very dirty refrigerator that, quite obviously, had not been cleaned for years—a task which they completed with determination, without any strange looks or rude jokes about it. They learned two lessons: 1) even an old, almost-broken refrigerator can be vital for somebody in extraordinary circumstances and, 2) it is not up to us to judge this.

There is an obvious difference between designing for class credit and actually building a house for a person. The first one is an exercise on paper. The second one holds real impact for the daily quality of peoples' lives.

For our second project we chose to build a house for an older couple. The site is Mason Bend, a small trailer community near Sawyerville, Hale County, which originated decades ago as a settlement for laborers from the nearby cotton fields. This tight-knit, stable community includes about 100 people all rooted within 4 extended families. Our client, the Harris family, owns a 5-acre lot with an amalgamation of three trailers still functioning long past their expected lives. Their new house would stand in tandem on this lot along with house designed by a thesis team for the couple's daughter.

Willie Bell Harris, the matriarch of this family and our client, has an amazing life-story behind her. Now a 43-year old mother of 6 grown children, she was first pregnant when she was thirteen. At 16, with two children in tow, her home exploded from a gas leak; but as luck would have it, no one was inside. The gas company settled with her for \$3,000, though it took years in coming—a period during which her growing family had to move from shack to shack in order to live. Finally, when her settlement came through in the mid-eighties, she bought a used trailer. This is the home where she raised her 6 children and the same home she lives in today. At the present she is helping to raise 3 of her grandchildren while her daughter tries to put her life back together after a failed marriage.

Creativity, in my opinion, is directly related to knowledge and experience; and as I mentioned, second-year students have only a small cache of it. So how do you design and build a house in just one year with 16 young and inexperienced individuals? The Second Year Fall 2004 team started by interviewing Willie Bell and her family, spending time in her home to understand her living circumstances in order to develop a program for her house. We soon figured out that, as matriarch of the family, everything revolves around Willie Bell. She makes the final decisions.

We spent more than a month analyzing and measuring the site, as well as talking with the client and the thesis team. We studied

antebellum houses extensively to understand the low-cost, low-tech attributes common among these old vernacular structures, such natural airflow through the hallways and the transoms above the doors. The history class, helped enormously in understanding natural ventilation and sun protection. The history professor spent almost every Thursday afternoon visiting old plantations and churches to explain to students the relevance of these typologies in the rural context. In addition, our studio explored old barns and depots to study their structure and use of materials.

The context of Mason Bend made us acutely aware of the design and construction of trailer homes. We found their floor plans to be efficiently designed, but the actual trailers to be poorly built. Many of the residents live in old, used trailers, which we used as a means to study where and how the trailers failed.

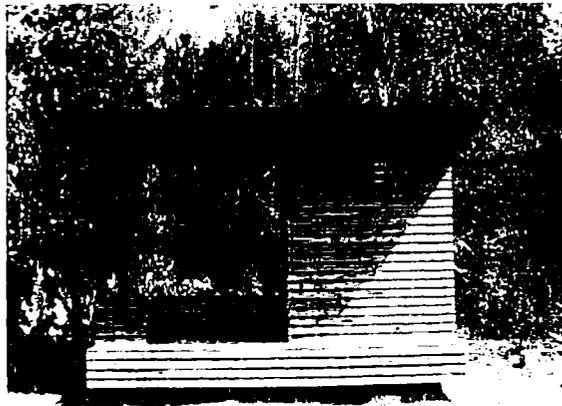


Figure 2. Tool shed. Photo by: Flury

Our first project on site in Mason Bend was the design and construction of a shed to lock up our tools and, later—after building the house—to function as a garden room. (fig 2) We had not yet decided where to position the main house on the site, so we had to build the shed where it would not be in the way. The educational value of this mini-project was to train the students in basic carpentry. Better that they make mistakes on the 'model' rather than the real house. The shed also served as a kind of experimental lab where we could try unusual things. We gave the students two lengths of siding and one dimension of floorboards and instructed them to design within these 3 parameters. Their solution was a simple cube on a small open platform with

an adjoining bench with shovel storage underneath and an almost-flat roof. The siding of the cube had a gap in the dimension of the width of the floor board, which generated much discussion. Some were worried about water penetration, but after a year of observation, it's clear that even with just a small overhang, very little water comes into the building and then, only in heavy storms.

While building the shed, we also learned about the sun's relationship to the site, a critical factor in choosing the best position for our house. We found that the strongest sun hits in the afternoon from the west, which led us to nestle the house along the site's eastern border protected by a clump of trees.

In talking with Willie Bell, we found that, on one hand, she likes to see the street and her little community but, on the other hand, she likes the privacy of being on her own or with her family. She spends most of her time in the kitchen, either cooking or supervising her grandchildren. This was a key factor, not only in positioning the house but also in laying out its plan.

Another key factor in the design was minimizing the need for electricity, which accounts for almost half of the Harris' monthly income, a burden all the more harsh because of its unpredictable fluctuations. Also, electrical service is unreliable in Mason Bend, often failing during storms. So a low-tech house, which makes the most of natural ventilation, with high energy efficiency is critical.

After endless discussions, with all these thoughts swirling at times into ugly fights, we came up with a floor plan we thought to be appropriate to both the program and client. The students developed a design for the house that could best be described as a contemporary fusion between a 'shotgun house' and a 'dog trot.' Conceptually, the floor plan is composed of two trailers set beside one another lengthwise, with a gap between them about the width of a narrow hallway. The trailers are then shifted length wise, to create offsets on both ends big enough for screened porches. (fig 3) By a thoughtful positioning of the openings and designing a modern transom over the interior doors, the house enjoys a surprisingly refreshing breeze.

A used wood stove, positioned in the heart of the building, is the only heating source. Wood is cheap and easy to find so this heating solution helps the client manage their limited budget. Highly insulated floors, walls, and ceilings help raise energy efficiency. In addition, the students created a horizontal screen out of 2x6 cedar boards to protect the walls from solar gain. The gap between the interior skin and this outer screen creates a chimney effect to protect the interior space from overheating.

The local folks in Mason Bend have already nicknamed the house the 'Double Wide', because it remains them of a double-wide trailer. We see this as a compliment and as sign of the success of our efforts.

By the end of the fall semester in December 2004, the foundation had been completed and a wooden platform was built on top. The next group of students arrived in January to the project at this stage and were handed a floor plan and the goal of completion by the end of the Spring term. Of course no designer—not even a novice student—can enter a project mid-stream without making some mark of their own, therefore minor revisions were made to the floor plan, the wall and window systems, and the roof scheme. This was a long, sometimes painful process, but nonetheless invigorating for the project and its team.

In the real world, architects hand off construction drawings, but the tight design/build schedule of Rural Studio allows for no such luxury. The students design until the end. We never had a final drawing.

The second Year spring team started framing on February 1 and finished rough framing within two weeks. We nailed the complete frame together by hand—no nail guns—because I think, then, it raises the students' appreciation of craft, similar to drawing by hand. As an architect, it helps to have done it at least once in your life to better appreciate the subtleties and variations within 'quality'. It is unbelievable how fast an untrained person can perfect a task, especially the women. After two weeks of nailing and blocking in between the studs, they were just

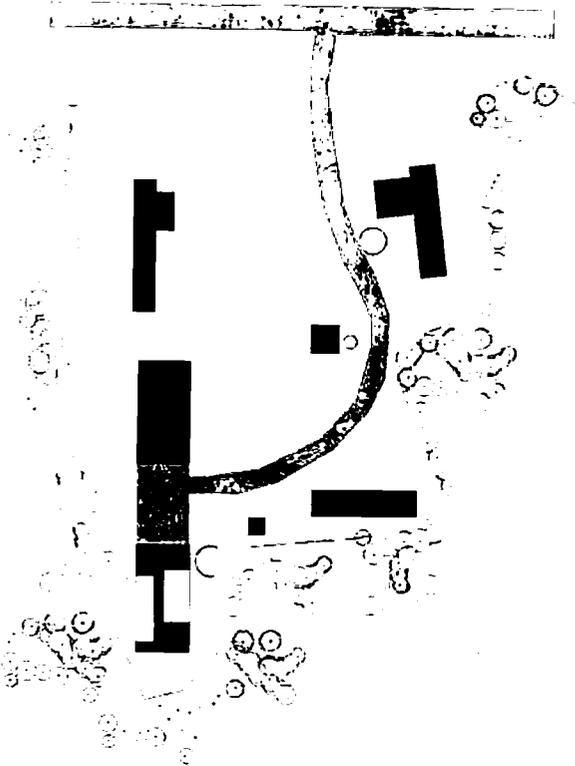
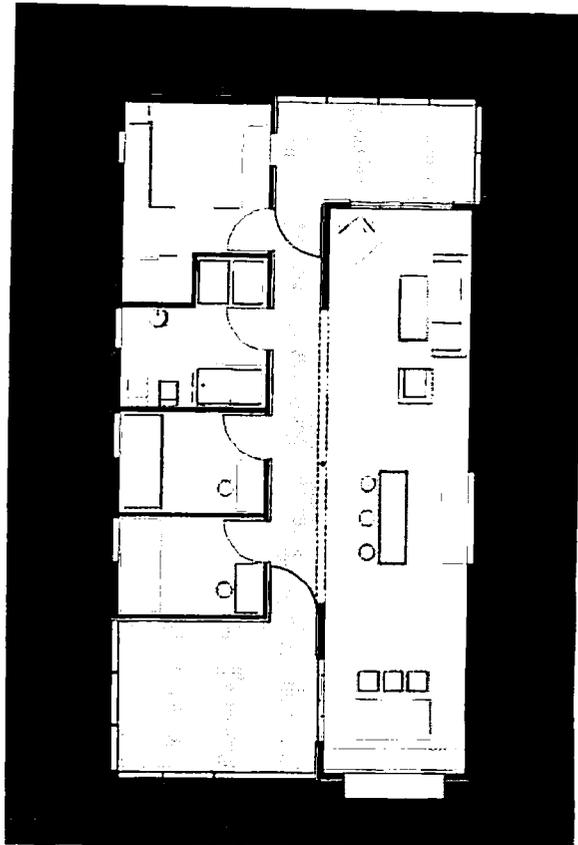


Figure 3. Site + floor plan.

as fast as the young men. Upon finishing the framing, the students were (finally) rewarded with the use of pneumatic tools.

Our structural system is based on a 4'x4' grid to fit, of course, into a 4'x8' system. The wooden structure stands on 12 piers grounded 6' deep. The building has a 2' cantilever beyond the piers to get the effect of a 'flying house.' But to maintain this effect on the short side of the house, we had to change the direction of the floor joists by integrating a diagonal beam.

Recycling and the reuse of materials is, and has always been, an important part of the ethic at Rural Studio. There are a lot of abandoned houses in and around Greensboro. A local judge allowed us to salvage floor joists, floor boards and doors. Through careful and thoughtful dismantling of the components, the students learned how the floor joists were connected before metal hangers and, for example, how an old door frame is constructed. They learned more fully



and deeply by doing this exercise than a textbook could teach—if only because of the sheer time invested in the task. The students sandblasted these old hard pine doors, put new hinges on and managed the puzzle of integrating an old door into a new frame.

All our windows were donated by a big national window company—with one formal disadvantage—not one window was the same size. We came up with a detail to allow the window to sit 3 inches behind the siding so, because of this, it doesn't matter that the windows are different in size.

During one of our salvage trips, the students also found a large sheet of safety glass, which they decided to incorporate into the design as a 'panorama window' to allow Willie Bell the visual connection between her own house and her daughter Christine's. The size of this window determined the spacing of the gaps in the exterior siding—the heat screen. We had learned our lesson about this spacing in our garden shed experiment. When we built the

shed, everything had to be designed around the window. Thus, our learning had come full circle, from error to innovation and, finally, to mastery. Well almost. Still, a few mistakes—let's call them lessons—were yet to be made.

On 'Pig Roast Day', the main celebration of the Rural Studio year, we had finished Willie Bell's house, with exception of drywall and the finish flooring. With a group of dedicated students and the help of some inmates from the state cattle ranch, we were finally done at the end of July.



Figure 4. Site. Photo by: Tim Hursley

Almost three decades after the explosion, Willie Bell and her family finally have their new house. In her own words, "We are blessed."



Figure 5. Dawn. Photo by: Tim Hursley

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<<http://www.heroknowledge.net>>

Project Credits:

Auburn University Campus: Rural studio College of Architecture,

Design and Construction, School of Architecture, 202 Dudley Commons, Auburn University, AL, 36849.

Newbern Campus: Rural Studio, P.O. Box 278, AL, 36765

Neck-down project fall 2004:

Instructors: Pamela Dorr, Frank Flury, Andrew Freear, Emily McGlohn,

Daniel McHugh.

Construction Supervisor: Johnny Parker.

Fall 2004 rural studio second year: Brent Amos, Uel Bassett, Kait Cald-ell, Laura Clark, Drew Cashowl, Betsy Farrell, Jason Holland, Nadene Mairesse, Rand Pinson, Sarah Tilloston, Nicholas Thomas, Jennie West, Tylor Young.

Thesis 2004-2005: Derreck Aplin, Amy Bell, Adrienne Brady, Natalie Butts,

Sam Currie, David Garner, Amy Green, Paul Howard, Angela Hughey, Stephen Long, Coley Mulcahy, Turnley Smith

Outreach 2004-2005: Philip March Jones, Min Joo Kim, Hanna Loftus,

Laura Noguera

Outreach Fellows 2004-2005: Charles Horn Kellie Stokes

House for the Harris' family - Fall 2004-Spring 2005.

Instructors: Frank Flury and Emily McGlohm

Construction Supervisor: Johnny Parker

Fall 2004 rural studio second year: Brent Amos, Uel Bassett, Kait Caldwell, Laura Clark, Drew Cashowl, Betsy Farrell, Jason Holland, Nadene Mairesse, Rand Pinson, Sarah Tilloston, Nicholas Thomas, Jennie West, Tylor Young.

Spring 2005 rural studio second year: Daniel Ash, Lu Bai, Rebecca

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