Searching for Shelter

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Bachelor of Design in Architecture
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Submitted to the Department of Architecture
in partial fulfillment of the requirements
for the degree of Master of Architecture at
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Searching for Shelter

by Frederick Martin Gutierrez

Submitted to the Department of Architecture on January 10, 1997 in partial fulfillment of the requirements for the degree of Masters of Architecture.

ABSTRACT

Architecture is born out of a need for the re-definition and intensification of the existing physical landscape. An architect's services respond and re-define culture and can never be legitimized by the want of form. Architecture is only significant when it is necessary and responds directly to our culture. It is within the nature of problem solving where architecture is given its form and meaning.

This thesis is a search for the questions that are presented to us through our relationship with the landscape and with ourselves. The research method employed is an associative branching path where one topic of research branches into another. The responses to these questions are physical in nature and culminate in the re-definition and intensification of the landscape to provide the foundation for the building of a technical school and drug rehabilitation center for juveniles. The research is nonlinear and begins with a site. The site is the edge of a suburban neighborhood in Gainesville, Florida where a fall-out shelter was built by a community of residents as a response to the threat of the 1962 Cuban Missile Crisis.
Thanks to Stephanie, my family, Dr. Robert Sholtes, friends and fellow student at the University of Florida and at MIT, faculty at the Department of Architecture at Florida (Gundersen, Tanzer, MacLeod, Orloff, Voichysonk, Tilson, Sheffer, Wiedemann and Hoffer), the faculty and administration at MIT (Fernando, Maurice, Shrimp, Stan, Moravonski and Passanti), Mr. S. Byrd, Tash, Chris Dewart, J. Lavery, George M., Sean B., Morgan E., David L., Lisa H., Mark N., Tommy D., Corey C., Joe L., Tom R., Karen K., Shane A., Chris T., Mel C., Ty T., Chris H., William E., Mark S., Burt, Crawford, everyone at Ambient Air Services (Joe, David, Bob, Earl, and Roger), the steel mills, Chan Li, Vinyoli, GSD friends, the music of Naomi’s Hair, Beggar Weeds, Chickasaw Mud Puppies, Uncle Tupelo, Hayden, 16H.P., Grant Lee Buffalo, and the Pixies, the writings of Pickney Benedict, Harry Crews, Larry Brown, Italo Calvino, Primo Levi, Frederick Barthelme, Chris Offutt and Flannery O’Conner, inspiring practitioners (Behnisch, S. Mockbee, Levitzka, Siza, and Aalto), Frank H., Daniel S., William S., Kiyoshi K., Pete L., Toscanini’s, Larry’s, Paul D., Miguel D., Alberto C., Andy P., Kenneth Frampton, A.Tzonis, Arnold Newman, Dean Industries, Kurt Wagner at Bose, Tim Ellisen, former MIT students who’s ghosts still haunt the halls (Ben B., Jack D., Mark D., Don K., Amy L., and M. Sorkin), Hebel, Middle East, Rolillex cameras, COHIBA, Quark, Macintosh, the CRL, Alejandro C., contributors to the Encyclopedia of Southern Culture, The Florida Atlas, places like Gainesville, Eiljay, Addison, St Augustine and Vicenza, Belfast, Volkswagen Vans,Curly, Kramer, Sydney and Chelsea.
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Historical Myths

The classic myths of the South can be summed up briefly in the often quoted statement of Jonathan Daniels: "We Southerners are a mythological people, created half out of dream and half out of slander, who live in a still legendary land." He was referring to the contrary images of the South that grew up in the 19th century sectional conflict: the plantation idyll versus the abolitionist critique, the "Sunny South" versus the "Benighted South," or to cite the cultural events that have most vividly fixed them in the popular mind, *Uncle Tom's Cabin* versus *Birth of Nations* and more recently, *Gone with the Wind* versus *Roots* (Tindall, *Encyclopedia of Southern Culture*).
Geologically, the visible and accessible part of Florida is a platform of sedimentary rocks largely deposited in a warm shallow sea, either close to or far from the nearest hilly land mass. For the last 100,000,000 to 300,000,000 years this growing rock platform has been migrating slowly northward through tropical and subtropical seas. During this interval, what is now the northern part of the state accumulated river sands, silts, and clays (from the Appalachian Mountains), and the central and southern parts of the state acquired marine deposits containing little or no river sediment.

Rain falling directly on Florida either flows to the sea or soaks into the soil and underlying rocks, where it constitutes an important water reserve. Runoff in Georgia and Alabama flows into the northern part of Florida in rivers and creeks, where part of it filters downward to become ground water. Florida does not receive any important supply from the ground water of other states.

The water that falls as rain in the southeast evaporated from the Gulf of Mexico or the Atlantic Ocean. Because the Florida peninsula is bordered on three sides by ocean, rain is reasonably frequent and abundant over that part of the state. The Panhandle obtains plentiful rainfall largely from Gulf of Mexico water. The proximity of large seas keeps Florida from having true continental extremes of temperature. This climate contributes to a tropical to subtropical vegetation pattern in which pine, palm, cypress and oak predominate.

In the Panhandle, drainage is well organized in streams that flow southward from Alabama and Georgia; the Chattahoochee and the Flint rivers combine to form the Apalachicola River, the largest in this southward-flowing set. These are all alluvial; that is, they carry a load of sediment (such as sand, silt and clay) which can be observed as sand banks or as a muddy color. Florida also has nonalluvial rivers. The largest of these is the St. Johns, which flows northward, carrying runoff and ground water derived from rain that fell directly on the state. The nonalluvial rivers flow across areas having only small relief and in general are not eroding their channels; therefore, they carry little or no solid load (Tanner and Smith, *The Florida Atlas*).
The asymmetrical Florida platform is clearly visible in this combination topographic and bathymetric map. The three-dimensional shape of the subaerial part of the platform is shown by contour lines having a vertical spacing of 50 feet (15 m.). The three-dimensional shape of the submarine part of the platform is shown by contour lines (isobaths) having a variable vertical spacing. The division into subaerial and submarine parts depends on the position of sea level. If sea level were to rise 50 feet, one can see immediately where the new coastline would be; on the other hand, if sea level were to drop 10 fathoms (60 feet) one can see how much area would then be newly exposed to the air. The latest big change in sea level was a rise, from a position about 130 meters (433 feet; 72 fathoms) below present sea level. The position of that coast can be estimated between the 50 and 100 fathom isobaths. The submarine area from the coastline out to 100 fathoms is known as the continental shelf; from 100 fathoms out to the edge of truly deep water is the continental slope (Tanner and Smith, *The Florida Atlas*).
Physiography

Compared with mountainous terrain, such as in the Andes or the Himalayas, Florida is almost featureless. But if Florida is studied without regard to other areas, many variations in the land surface can be seen. The coastal areas are subdivided, on the map to the right, into the following categories: barrier islands, Gulf coast estuaries (river mouth bays), swamps and marshes, lowlands, and the Florida keys (limestone islands in a chain near the southern tip of the state). Swamps are poorly drained flatlands having a tree cover; in the coastal zone, this tree cover is commonly dominated by mangroves. Marshes are flatlands having poor drainage and basically a grass or low shrub cover. The coastal lowlands typically have better drainage than marshes and swamps. In addition, there are highlands and ridges, which stand well above adjacent areas, and which are well drained; upland plains, which are relatively featureless and not well drained; and transition areas. The transition areas are located between highlands, on one side, and coastal lowlands, on the other, and do not really have the characteristics of either (Tanner and Smith, *The Florida Atlas*).
Gainesville (population 150,000 with students; 110,000 without) is located in North Central Florida almost equidistant (60 miles) from the Atlantic Ocean and the Gulf of Mexico. The most striking physical feature adjacent to Gainesville is Paynes Prairie. The prairie is a reserve of wetlands, which in colonial times, was described as a lake; it was so large enough that riverboats were employed to traverse it for economic and tourist trade. Today the water has vanished and what is left is a complex ecological environment of wetlands and plains. The site is located near the north-west edge of the prairie called Bivens Arm (see figure 6.8, 6.9). The shaded section of the map is a suburban neighborhood that has been severed from the recent growth of Gainesville. Just North of the site is the extremely large campus of the University of Florida. North of the campus is the heart of the city. This city's growth has been gravitating farther North and West towards Interstate 75. Before this expansion that began in the sixties, the major means of travel through Gainesville to the tourist destinations of Florida was SR 441, which cuts across the Prairie just east of the site on the map.
Figure 1.6
is an aerial map photographed in 1974. The site is located just south-west of the body of water, Bivens Arm. The south-east edge of this map is the edge of Paynes Prairie. The total area of the prairie covers about 20 times the area of this map. SR 441 is cutting north to south between Bivens Arm and the Prairie. The large grassy land West of Bivens Arm is property of the Department of Bovine Research at the University of Florida. Here, cattle graze freely on controlled diets. The land south of the map is undeveloped and protected by the state. The next town south on SR441 is Ocala, known for breeding their champion race horses.
Figure 1.7
is a detail of the current 1996 Alachua County Tax Appraisers Map. The large shoebox frame highlights the site considered. This land was once farmed and grazed. Today the land is unproductive and is overgrown by pine woods. The lot in the north-east corner is a private residence. The lot on the south-east edge is the location of the fall-out shelter, built by a majority of residents owning these same adjacent lots in 1962. The standard lot size is one hundred feet by one hundred and fifty feet. The utilities run above ground between the houses not along the roads. Unfortunately, these roads dead end and do not reach to the water of Bivens Arm. The open land/area outside of the considered site, north and west is the University property where cattle graze. The following page shows a map of the larger area. Here you can see SR 441 where East would be the Prairie. Williston Road, running east and west (SR 331) was also a major means of commerce; a railroad previously ran from the East coast (Jacksonville and St. Augustine), to the West coast (Cedar Key). Like the rest of the region, the land represented in this map is poorly drained. The lack of section to define runoff patterns leaves the land often moist to flooded and extremely humid. The local strategy for controlling drainage is to provide for it on site. For example, lot 7263-1 just north of Williston Road is a drainage basin that collects the runoff water from the surrounding lots and from a large field across SR 331. This runoff basin is 300 ft. square, which is large, though not unusually large. Looking at the aerial map from the previous page, you may notice the strategy of occupying the land agriculturally in a north-south orientation/direction. The reasons for this are for consistent solar exposure and shading. The strategy for building agricultural buildings and homes is to orientation the building east to west where to provide for maximum shading.
YOU TOO CAN HAVE FALLOUT SHELTER PROTECTION

By Robert S. Sholtes, Ph.D.
Department of Mechanical Engineering
College of Engineering
University of Florida
Gainesville

Introduction

Many words have been offered in the various news media with respect to why the populace should provide themselves with protection from radioactive fallout. With but a few exceptions we have been presented with what might happen if some assumed nuclear burst occurred at some distance under many assumed environmental conditions. There has been a notable lack of "how to" type instructions that would enable us to provide protection at reasonable cost. It is the purpose of this article to present the experience of one group who provided a shelter for themselves at a cost of less than $100 per person.

The first prerequisite of any shelter program, whether it be on the part of a governmental agency, an individual or group of individuals, is the firm conviction that such a facility is necessary. Currently the government is convinced that such shelters are needed to the extent that they are investing 38 million dollars into equipping and identifying community type shelter facilities in existing buildings. These shelters will be open to the public but unfortunately will not be of sufficient capacity to provide protection for the entire populace. As a matter of fact, of the 182 million people living in this country only approximately
37 million may be accommodated in this current program. It is recognized that some percentage of those persons not provided for will probably not require protection in the event of national emergency. However it is only logical that in certain areas, particularly metropolitan areas, there will be persons who by simple arithmetic can deduct that they will be without protection in the event of a nuclear attack. Are you one of the persons in this category?

Group Shelters vs Family Shelters

As suburban residents, the author and some neighbors felt that we would be in this category and therefore should take steps on our own volition to provide shelter facilities for our families and relatives. As is common knowledge at this time, the construction and furnishing of an individual family shelter is at best an expense of some $1,500 to $2,000 in the locality under discussion. This is particularly true since Florida building practice and sub-soil
figure 2.4, 2.5, 2.6, 2.7
figure 2.8, 2.9, 2.10, 2.11
water conditions prohibit the basement type of family fallout shelter. Generally in this area all shelters are of the above-ground type which are most expensive. With these facts in mind, the neighborhood could appreciate the advisability of building a large group shelter. In addition to the true economic advantage of such a facility there are other advantages in the form of grouping of skills, provision for a family whose household may be out-of-town, provision of more complete facilities than would be available in a family shelter and protection of food stocks.

Organization

Our group was formed immediately after the arise in interest in fallout protection in September and October, 1961. The group was started by an informal meeting of six members of the neighborhood on one weekday evening. As a result of this first informal meeting we decided to try to get the whole neighborhood to attend a meeting at which time they would be informed of the general problem of fallout and how persons might protect themselves from this possibility. This meeting
was held shortly thereafter with approximately 38 families in attendance. These families expressed written interest after the meeting in pursuing the matter further without any obligation on their part. Our next step was to draw up some very rough and tentative plans for a shelter housing 38 families which included some 150 persons. From these first estimates it developed that this shelter could be constructed of a semi-below-ground type having sleeping facilities, sanitary facilities, electricity, independent water supply, lighting and certain other conveniences for the rough sum of $400 per family or $100 per person, with no distinction made between adults and children. A succeeding meeting was held presenting these cost data and thereupon it was requested that all who were sincerely interested in constructing, at the estimated cost, sign a declaration of intent which essentially said that each signatory was willing to spend money up to the estimated amount to provide shelter space for his family. Of the original 38 families, 24 saw fit to sign this declaration. Having reduced the group from 38 to the remaining hard core group, an initial deposit of $20.00 was collected from each family in order to initiate work toward forming a nonprofit corporation. As details progressed to the extent of having a draft copy of the corporation bylaws and articles of incorporation, an additional deposit of $200 per family was collected. Of the 24 signatories to the declaration of intent, 23 remained after the collection of a total of $220 per family. From this point we found it relatively easy to collect the remaining assessments from the 23 families and to proceed with the construction of the shelter.

While the above procedure seems simple, in reality it was not. For example we experienced a split in the interested parties over the subject of children. Some of the older residents did not want to be in a shelter with the youngsters. In addition they apparently wanted and were willing to pay more for more space and comfort. We had heated discussions regarding the admission of local relatives, friends, and domestic help. It was interesting that the problem of pets caused no dissension at all. Each of these matters required a spirit of compromise for their solution.

Our group consisted largely of professional people, a large percentage representing University of Florida faculty members. It was interesting that as the development of this organization proceeded, it boiled down to a matter of parents with children participating for the protection of their children. Those persons without children or with grown children did not show an interest commensurate with those previously mentioned. Our final group is split nearly equally between adults and children. In the group, such professions as medicine, contracting, engineering, agriculture, law, and business are represented.

Although enough individuals were sufficiently interested in this project to make it economically feasible, it is unfortunate that a very small percentage of the total population in the neighborhood saw fit even to express interest. As previously stated, about 38 families were represented at our first group meeting. This number was only a small part of the approximately 160 families personally contacted who lived in the area under consideration. It must be admitted that a small percentage of these persons had some form of protection of their own before the initiation of this shelter movement. It is safe to say that their lack of interest was purely a matter of apathy (Dr. Robert Sholtes, Department of Mechanical Engineering, University of Florida).
What Happens to Fallout Shelter
When the Bomb Scare Is Over?

By BARBARA JOHNSON

If the Russians should decide to launch a nuclear attack on Gainesville, Frances Fabrick need take only a few running steps out her back door. In a pasture behind her Gainesville home lies her game plan for survival: a fully equipped, ready-to-use, fallout shelter.

With just a moment's notice, Miss Fabrick and her mother can barricade themselves inside their shelter's three-foot-thick walls and settle back for a two-week stay. The furnishings—a flush toilet with a privacy screen and bunk beds with hog bristle mattresses—seem unusually pleasant for a tiny fortress.

Miss Fabrick has been refining her $2,000 shelter for more than a decade. When she had it built during the Cuban Crisis and Berlin Blockade of the early 1960s, fear of nuclear war was sweeping the country. Construction of private fallout shelters was big business in Gainesville.

Now, Miss Fabrick is one of the last fallout shelter diehards.

"I still think the Russians have got designs on us. I've got it (the shelter). I might as well keep it ready to use," she said.

While Broyles, Sholtes and Fabrick wanted their shelters in the first place, other shelter owners who bought their homes after the bomb scare found themselves faced with an unusual decorating problem. A little ingenuity has turned some shelters into assets; others appear to be hopeless.

Dr. John Griffith, chairman of the Journalism Department of the University of Florida's College of Journalism and Communications, calls his shelter "a liability."

"The thing is like a tomb," he said. Like a fruit cellar, his shelter is cool in the summer, hot in winter and humid always. Griffith has tried using it for a darkroom and for storage, but the dampness makes everything metal rust.

—Barbara Johnson
Dr. Robert Sholtes is an environmental engineer. He is president of the design firm Sholtes Associates. As president of the design firm, Sholtes is responsible for the design of engineering projects. He is most known for his work on the design of the Nipper Civic League. He is also known for his work on the design of the Nipper Civic League. He is also known for his work on the design of the Nipper Civic League.

One day, while walking in the woods, Sholtes came across a small shelter. He was intrigued by the design and decided to take a closer look. He soon learned that the shelter was made of wood and was designed to withstand a nuclear explosion. Sholtes was impressed by the design and decided to build a similar shelter in his backyard.

Sholtes worked on the design of the shelter for several years. He consulted with experts in the field and incorporated their suggestions into the design. He finally completed the design and built the shelter in his backyard. The shelter was designed to withstand a nuclear explosion and was able to withstand a test explosion. Sholtes was pleased with the results and decided to build several more shelters.

Sholtes has since become a leading expert in the field of nuclear shelter design. His work has helped to protect many people from nuclear explosions. He is widely respected for his work in this field and is considered a leader in the field of nuclear shelter design.

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FRANCIS FABRIC FALLOUT SHELTER DERMAL

Burt Johnson is a member of the University of Florida's journalism department.

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Metamorphosis House

Metamorphosis House is a state supported drug-rehabilitation center for juveniles with drug complicated criminal convictions. The house, is a converted large residential house in southeast Gainesville, is residence for 6 to 12 juveniles, 16-24 years of age. As part of their probation restrictions, these residents volunteer to participate and reside in this environment. These youths are usually from low income families with little education. The aims of this institution are to re-socialize the residents without a dependency on drugs, as well as to offer counselling regarding seeking job skills and locating stable employment.

The tragedy of the situation, I find, is that the resident (juveniles) have poor and unfocused educations with, most importantly, little confidence in themselves. I propose that poor education is at the root of the problem. The aims of the project include designing a physical environment that provides an active educational program where social and technical skills can be learned as a part of daily activity. I believe that valuable learning is the tangible and physical. Learning by doing is the strategy that should be directly employed. Such skills offered by this institution should stress common “blue collar” skills as higher education and true knowledge. I believe that respect must be established for skills that are not popularly considered “professional”.

figure 3.1
The fall-out shelter is a catalyst for my investigation from how the construction was detailed to the social meaning and need for such architecture. What was once a central and pivotal architectural action for this community is now 30 years later, an eyesore and a general problem to the same community. Does the vanishing necessity for a fall-out shelter account for the demise of this project?

This architectural project, I propose, is both a response to the failed program of the fall-out shelter as well as, possibly, a hypothetical solution to the problems that the community faced in 1962. This investigation focuses on how we live and socialize in the Florida landscape and looks to past inhabitants—how did they, with different means, address the same climactic and geographic problems?

The fall-out shelter today is depicted in the photograph here (figure 4.1). In 1995 it was given/sold to myself and three partners (an engineer, a sculptor and another architect) by the previous owner Dr. Robert Sholtes. Dr. Sholtes built the shelter in 1962 with the Napier Civic League and later bought out the venture and used it for general workshop space. Over the years, it has gone through several transformations. When de-activated in 1970, the earth was removed from the top and three feet from the sides. Later it was discovered that the double TT roof leaked severely. The cedar barracks that were no longer used inside were transformed into a roof above the double TTs with additional plywood and asphalt shingles (page 22). The west end of the shelter was dug out and a large ten foot opening was cut with a concrete saw providing access much like an underground garage might operate. Because the below grade area was often damp, a 20ft. by 20ft. pre-fabricated storage garage was placed above the shelter with a garage door facing south and a side door and window to the east. After the last transfer of ownership and years of neglect, the cedar second roof was removed because of termite infestation and moisture decay. Pine trees that grew only feet away from the walls (40 to 60 feet tall) had to be removed (see figure 4.3). The original entrance had totally decayed and required removal and rebuilding (figure 4.4). These initial physical problems became the focus of the investigation. How can this building be made more comfortable, habitable and durable? The answers appear to be direct, but applied within the architectural projection, one realizes that they alone drive the form and meaning of the project.
This is a residence directly south of the fall-out shelter. The building method is slab on grade with masonry exterior walls and frame interior walls. The roof is frame with asphalt shingles. The lot is drained to the edges with the highest point below the house. The building is shaded predominantly to the south and much less to the north, east and west. The roads in Florida are also coupled as drainage ditches. This road will carry off excessive water to either larger constructed drainage basins or to locations where it will be mechanically pumped to natural basins.
Figure 4.3
is the reconstructed entrance of the shelter. When first built, this was the only access into the space. Today the entrance is more of a room than an entrance. The door is token and may be replaced with a window. The roof is metal galvanized on galvanized frame sloping south. All the wood used is pressure treated, though this may not be the answer. Any wood left damp and shaded is destined to decay within a year.

Figure 4.4
shows the back section of the fall-out shelter. To the left is the pre-fabricated garage. Because of the overgrowth, the shelter appears to be well below grade. The actual location of grade is four feet below the top surface. After the roots of these pine trees are removed, the site must be regraded to drain water away from the openings of the TTs. These TT end caps were removed to increase the ventilation below (figure 4.5).
Figure 5.1

The Seminole Indians inhabited this region of Florida well before the 18th century settlers developed what is now known as the Cracker style house (figure 5.6). The strategy the Indians employed was both thermal shading and a method of cooling by maximizing their surface. The Seminole Indian in figure 5.1 has a hat/turban that both shades as well as thermally insulates from radiant heat exposure. His clothing covers most of the body as well as drapes around him. The intense radiance of the sun will burn the skin if left exposed. The loose fabric helps to catch a breeze and cool down the skin by evaporation. The building behind the Indian depicted was not a construction of the Indians, but a reinterpretation of Indian habitation by the settlers in the 18th century.
Figure 5.2
Seminole hut built of pine and thatch. The strategy was to maintain openness to allow the breeze to pass through, over, and under. This ventilation kept the humidity to a minimum and the residents cool. The roof had to be weighed down by logs to prevent uplift by the severe tropical winds.

Figure 5.3
This Seminole family share the same clothing strategy as the Indian in figure 5.1. Notice the bangs of hair on the woman and children to protect their eyes from the sun.
Figure 5.4 is an Indian dugout cedar canoe equipped with a sail to take advantage of the wind.

Figure 5.5 is a comical portrait that expresses the relationship between the ground and the water quite explicitly.
Whiddon Cabin, 1864, is a log dog-trot type construction today known as one of the Cracker style houses. This house shaded the surface with massive porches; the kitchen is a separate building out back. The foundation is made of logs, pine or cypress elevated by large stones. Wood exposed to the ground would rapidly decay and become insect infested.
Chapter 6
Figure 6.8 and 6.9 are the Bivens Arm nature walk just three miles from the site. Here shading is provided by a pavilion where the roof structure and bracing are along the eaves to provide extra screening of the sun. The walk itself is constructed of cypress and is lifted well above the moist and flooded ground. The raised elevation also keeps snakes and other unwanted vermin away from the path.
figure 6.10, 6.11
figure 6.15, 6.16
figure 6.25, 6.26
Figure 6.27
Photograph by Arnold Newman "Hot Dog King." The gentleman in the photograph illustrates the necessity of protecting the eyes from the glare of the ground surface. The illuminance of the space is achieved through reflection of the light off the ground outside, upon the ceiling and high upon the walls.
Figure 6.30
Marjorie Kinnan Rawlings’ house in Cross Creek, Florida, 10 miles from the site. This is considered a farming house coupled with a barn. The climatic strategy of this house is to be formally long and thin. This thinness allows cross ventilation as well as an abundant amount of skin to be ventilated by breezes.
figure 7.6
figure 7.12
figure 7.13
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Bibliography


WORKS CITED


a memory of a miner
who dragged himself to work
and worked himself to death
working for someone else

we follow each other around
on shaky ground.....

(Uncle Tupelo)