

## The Norogachi Experiment: Lessons Learned, Lessons Taught

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"Children need to learn. If they learn they can teach us as they see us as children when they return."

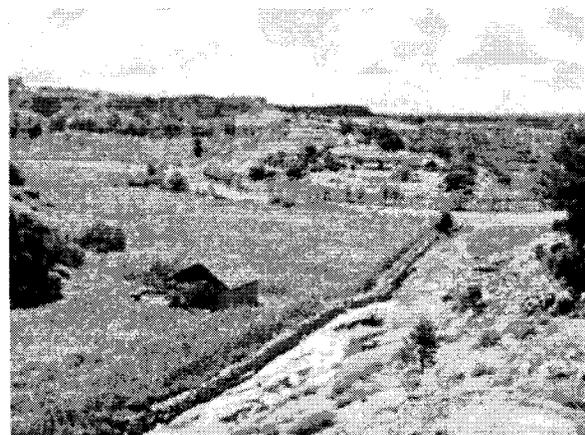
*From Rarámuri governors meeting March 2004*

### BACKGROUND

The Norogachi Experiment emanated from a research and consultant opportunity for a Ford Foundation Grant awarded to the Tarahumara Indians for the construction of an educational and cultural center, the Centro Rarámuri de Educación e Investigación.

In March 2004, I had been asked to consult on this project and had the privilege to visit Norogachi and meet with representatives of the Tarahumara community. I began working with them to design their educational and cultural center. I began by listening. Design was an arduous task, not because the program was difficult, but because I was designing for a culture, a people that I had just met. Adding to the difficulty was language. I do not speak Spanish or Rarámuri. I was fortunate to be escorted by excellent caregivers, members of the Mexico-North Research Network, who spoke both languages as well as English. The Rarámuri governors, my clients, were a bit intimidating as I was an outsider and had to gain their confidence as I attempted to explain my design ideas to them in a few words of Spanish that I had looked up in my dictionary as I designed the facility to be constructed with local materials, by traditional methods and in a manner that would make the best of the orientation.

The setting, with panoramic views, great sky at dawn and dusk, fabulous textures, richness of heritage and culture, is located in the heart of the Tarahumara region.



*Norogachi community members scheduled the construction of the center to begin in July 2004.*

### PROGRAM SIGNIFICANCE

The program, our experiment, took three directions: the study and construction of passive solar earthen architecture; the study and documentation of a Spanish Colonial mission church; and my own personal study of indigenous architecture. Our experiment was offered to upper-level undergraduate and graduate students, in the School of Architecture, as a unique opportunity to gain international, cross-cultural experience. We set out to learn; to learn how best to adapt ancient, earth-architectural methods to the construction of modern buildings; to learn to apply modern technology; to learn from centuries-old adobe buildings; to learn from a part

of the world few have ever had the opportunity to visit.

We had the opportunity to meet and interact on a daily basis with Rarámuri Indian people, who comprise one of the largest and most traditional Indigenous societies in all of North America. It was exciting to think that we were going to do something *for* these people, that our work would support Rarámuri efforts to preserve their cultural heritage. It was exciting to think that we would leave something behind through our efforts in the construction of an educational and cultural center for the Tarahumara. It was exciting to think that we could *help* them learn and adapt from what we knew and our expectations were high. One thing is certain, we were the ones who learned to adapt.

### *The Setting*

Our destination was located in and around the Rarámuri (Tarahumara) Indian community of Norogachi, Chihuahua, located 250 miles south of the US-Mexico border in the uplands of northern Mexico's Sierra Tarahumara. The only way to get there from Chihuahua City, other than public bus that operates twice a week, is to drive. The drive takes six to eight hours depending on the weather, the number of military inspections, and the ability of the passengers to withstand motion sickness through the winding of the road through the mountains. Though well constructed and paved, the road proved to be treacherous. While traffic was not heavy, it slowed to a crawl when following a logging truck, veering around fallen rock or coming to a complete halt in the wake of a horse, a cow or a burro. Traffic also slowed when onlookers peered over the edge of the mountain at a vehicle that had left the road only moments before. At a more pleasant moment, traffic slowed for awesome photograph opportunities and views that extended for miles.



### **ARRIVAL**

We arrived in Norogachi in total darkness after having traveled for two days; the last hour and a half was spent dodging holes and bouncing through the mountains on a gravel road not knowing what the setting would truly be. We settled into our house in the dark though each room was equipped with a bare light bulb. I introduced the students to the four rooms of the house and the outhouse and the need for the flashlight. We took the short walk up the hill to meet with our caregivers and have our first meal in Norogachi. Everyone was exhausted but going to sleep was difficult since the students had no idea what was beyond the darkness.

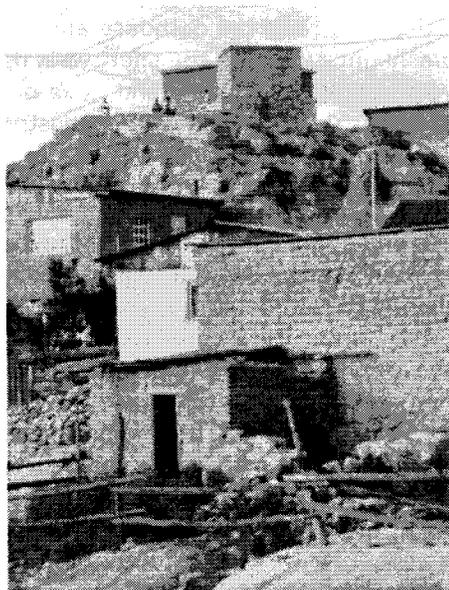
Roosters, burros and bright sunshine announced the morning. This would be the day that our presence would be explained to Norogachi and we would be introduced to the Tarahumara community. As is the custom, the Tarahumara governor would meet with the women and children after Sunday morning mass, reminding them how they should live. The women leave and the men gather to hear a similar speech about life and how to live. The discussion turned to us, why we were there? What is this project about? It was interesting to be the center of the discussion without being a *part* of the discussion. We were just there; until the governor and other leaders had answered all questions and assuaged all fears. Now we could walk through the village and get acquainted with our home of the next several weeks.



We hiked the village to get the lay of the land, ad-

justing to the noticeable difference in altitude from our home. It was awesome. The colors, textures, forms, materials and views demanded attention and study.

The faces of the village were on us. People would appear, seemingly from nowhere, to observe the group of strangers that had invaded their town.



### STARTING TO WORK

Our first days at work were spent laying out the project on the land, considering orientation, breeze, sun angle, winter wind, views in and out of the site. We headed off with a photocopy of the hand drawn plan that had been approved in March at the governors meeting. It had been drawn on graph paper in an imaginary metric scale, which proved to be one of the first lessons, English to metric conversions. We studied how to layout the footprint of the buildings, the importance of a compass, and the reality that water runs downhill and will not percolate into rock.

As one team was marking the building locations on the ground, another team began to dig what would become the town's first septic system and leach field.

As we worked, the people of the community watched, arms crossed, talking among themselves, looking at us and laughing periodically. After three days they joined us and we began to receive our lessons. We began to work together though we could not communicate well, even in Spanish.

It is very difficult to dig in rock with a pick ax and a shovel. A hole takes a long time to dig by hand and it fills with water when it rains and frogs like it. Taking turns is a very important lesson.



Where we live, sand is delivered to a construction site. In Norogachi, the sand is dug from the river by hand, delivered to the site by a truck and then sifted to separate the sand from the rock. It takes truckloads of sand to make mortar and concrete. Lesson learned.



Where we live, concrete is delivered to a site in a ready mix truck. In Norogachi concrete is mixed on the ground by hand, mixing sand, gravel, water and

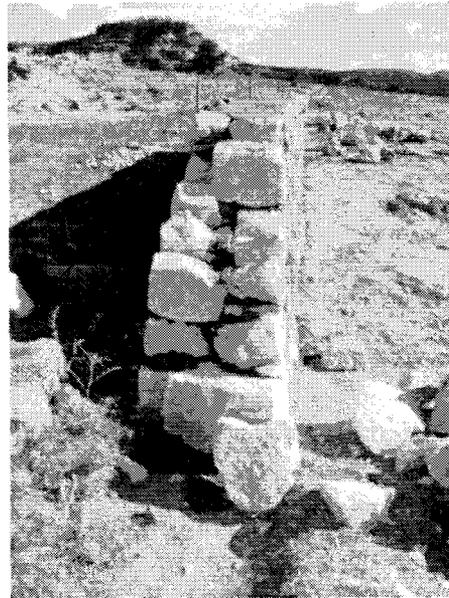
cement. The cement was purchased in Guachochi, a town about an hour and a half drive from Norogachi on that same road on which we came and hauled here on a truck for hire. The sand came from the river and was sifted from the gravel. The gravel came from the river and was sifted from the sand. The water came from a town well, or more often, the water was rainwater collected from a hole in the ground. All water was carried in a bucket or a wheelbarrow.



Since the site was predominately rock, the drain field for the septic system had to be an evaporative system, built up in layers of rock, gravel perforated pipe and topped with pine needles. A retaining wall was required to accommodate a level area. Rock had to be collected for both the retaining wall and for the drain field. Rock was harvested from the site by lifting each on into a wheelbarrow and relocating it on the site. Special care was given to avoid black widow spiders, centipedes and snakes. Lessons learned.

Much more rock was needed. It was hauled from the river and sorted but was far too laborious. A more extensive source of rock was located nearby mountain which proved only slightly easier to load onto the truck and haul to the site and the footing began.

While we taught theory, we learned technique. The local workers taught us to be masons. We explained mass effect and learned to make adobe. We learned to be resourceful; a skill the local people had developed long before our arrival.



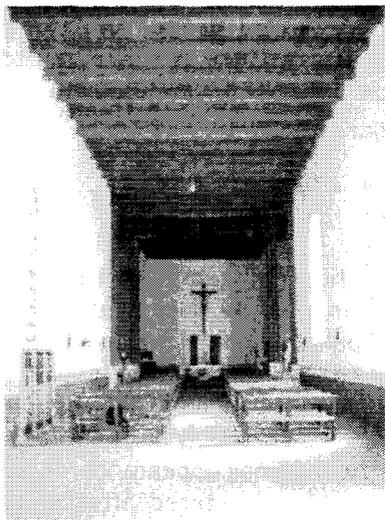
Not all aspects of the project were related to the labor and construction of design. Students were assigned research and design projects as well and were required to explain their implementation and relevance to the school, the location and the material. Design and research topics included orientation, thermal mass, rainwater harvesting, gray water and black water reuse and composting, furniture design, photovoltaic and wind power, etc. This work will become part of further study in and field guide for similar locations.

#### *The Documentation Component*

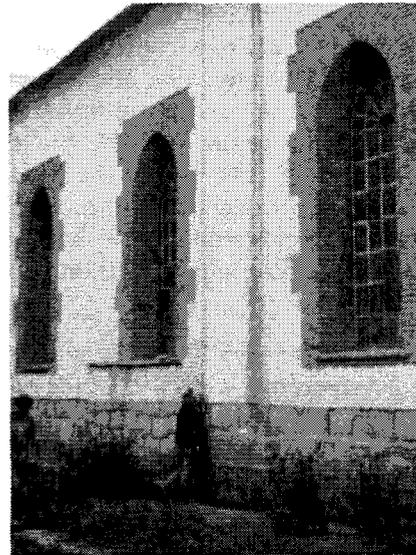
As part of our education and commitment to the community and region was the documentation of the local church, a Spanish Colonial mission church of the late 1600s. Little written history is available and no drawings exist. A collection of photographs and documents from a publication of about 1936 offered insight to the original appearance of the church though dramatically altered after a fire decades ago.



Observing and recording the church and its construction reassured us that the mass effect of the three-foot thick adobe walls did, in fact, work. The modest interior revealed and confirmed the coexistence of two different cultures, that of the Mestizo and Tarahumara. This was observed during mass. The vestment clad priest of the Roman Catholic faith stood next to the layman assistant who wore traditional loincloth and headband. The interior of the church was decorated with the Tarahumara cross, which might have been thought of as a pagan religion.



Though changed from the original design the church remains the stronghold of the community for religious as well as social life.



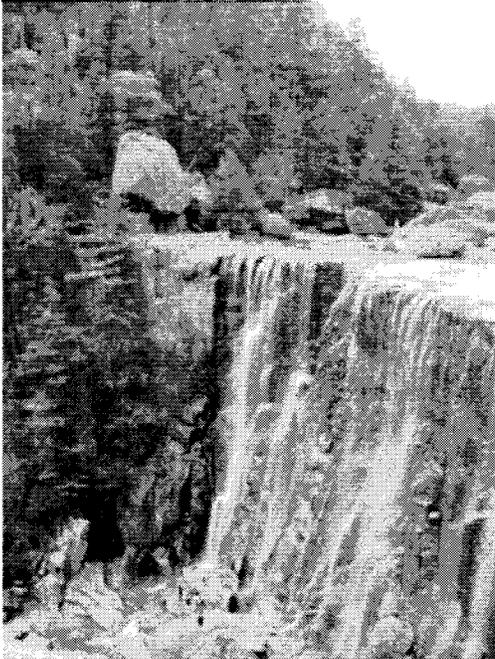
The documentation addressed issues of how to measure and document accurately, what to document and why document. We discussed what information would be useful for future research and records as part of the 50 Misiones project of the Mexico-North region.

#### **A CULTURAL EDUCATION**

Not all education took place in Norogachi. We were invited to a neighboring village to observe and learn from the "weaving project" which is intended to enhance the value of traditional weaving, both to the local people and to outsiders. It is amazing to note the amount of effort in weaving by hand, one thread or strand at a time. We take the woven product for granted but the beauty cannot be matched by machine. The Tarahumara take the weaving for granted as an ordinary task that produces utilitarian items.



A daylong road trip to Creel, the heart of the Copper Canyon region offered an experience far beyond anything to which we were accustomed. Spectacular views and waterfalls made us well aware of how little we know of the world.



Another afternoon, a small group of students was invited to hike to private land to see cave art, both carved and painted, providing a glimpse of history when the Apache and Comanche occupied this part of the Sierra.

No travel experience would be complete without a shopping experience. The difference in shopping was product. We shopped for baskets woven from palm or pine needles; belts woven from yarn, rugs of wool from yarn spun from the sheep in the area and woven on log looms. We learned to make sandals from tires and leather straps, which were a basic clothing item for local dress.

### A RESEARCH BARELY BEGUN

The Indigenous Architecture Project, my own research and passion, is a study of vernacular architecture, construction techniques and materials throughout the Sierra Region. The Project is intended to promote the awareness of the unique,

handcrafted responses to the environment, available materials, cultural impact and architectural form and diversity of the built environment in the rural areas of the Sierra. The beauty, design and character of the built form reveal an often overlooked and lost understanding of the environment and sustainable design.



These concepts, which worked for generations, are being lost to new technology and materials recently available to the region, compromising the integrity of the original material. The past has much to offer in understanding the environment, the architecture and the people. This project has only started.

### IN CLOSING

The experiment proved many things. Lessons are learned from the most inconceivably modest detail, in remote and unknown locations. The adobe structures have been in service for hundreds of years, serving as a teaching tool for anyone to observe. Lessons are learned from people of all ages, from those not typically considered teachers. We learned from the eight-year-old girl and ten-year-old boy who were our guides through the mountains and would be the future students of the school.



We learned from the old men who would watch the sky as the summer rains headed our way. We learned traditional construction techniques and taught the significance of those traditional materials and construction methods. We learned how to use a water hose for a level and taught how to use a line level and string. We learned how different life could be yet so rewarding.

There were lessons on patience and all we take for granted, running potable water, indoor plumbing, reliable electrical service, the joy of a washing machine and how precious a seed can be. We learned the need for less.



Lessons can instill a yearning for more knowledge as is evidenced in continued research and exposure to new career paths of some of the students who participated and the expectation that this will be an annual experiment, open to other universities and other fields of study.



We will return to Norogachi for the Norogachi *experience*. The "experiment" was a success. What is apparent now is how little we gave and how much we received.