RECIPROCITY AND SUSTAINABILITY: TERRACE RESTORATION ON THIRD MESA

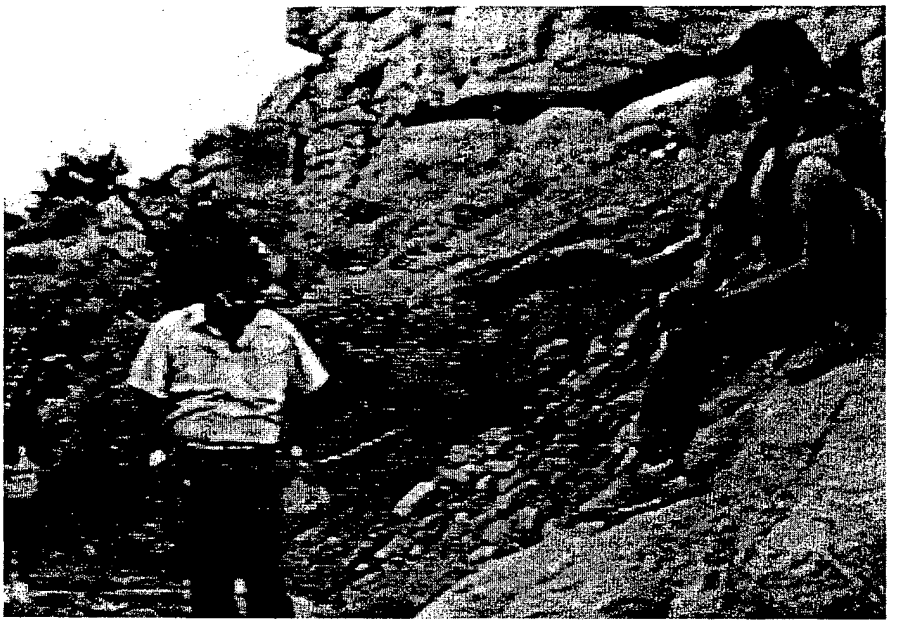
By Miguel Vasquez and Leigh Jenkins

Applied anthropologists are now commonly involved at all levels in rural and agricultural development work in Third World countries. Corresponding efforts in the United States, however, are much less common. This can be attributed in part to increased scrutiny and skepticism concerning past research efforts, which are frequently seen as unilaterally beneficial to researchers and of little tangible long-term gain to local people. No where is this more true than among Native American populations. Leigh Jenkins, Director of the Hopi Cultural Preservation Office (HCPO), puts it quite succinctly: "Intruders are not welcome, especially if they come dressed as anthropologists... As any visitor will attest, it has become quite a challenge to prove one's sincerity, honesty, and fairness to the Hopis, especially if that visitor plans to do research" ("Forward" in Peter Whitely, *Bacavi: A Journey to Reed Springs* [Flagstaff, AZ: Northland Press, 1988]).

To overcome this challenge, we have found that *reciprocity*, a basic principle of native, and indeed all, social life, can play a fundamental role. Over the past three years, the HCPO, the Third Mesa community of Bacavi, and faculty and students from Northern Arizona University (NAU) in Flagstaff have collaborated to restore the nearly abandoned garden terraces in Bacavi Canyon to their once productive social, cultural, and economic role. In an explicitly reciprocal arrangement, our work has involved restoration of the physical infrastructure for the gardens, including terraces, springs, channels, plots and paths; documentation of garden plot tenure and horticultural practices; and educational/extension activities with local youth.

The Hopi have a long and venerable agricultural tradition in northern Arizona. With a profound understanding of the agro-ecological microniches in this rugged and inhospitable high desert environment, they developed over centuries a culture based on the cultivation of corn. Although production has dropped precipitously in recent years and agriculture has given way to wage work as the sustaining economic base, many Hopi farmers continue to challenge the natural limits of this environment—dry farming the sand dunes and washes of surrounding deserts and steppe lands to produce corn, beans, melons, and squash, as well as orchard crops.

Irrigated terrace gardening represents an additional production strategy long utilized by the Hopi and their Hisatsinom (Anasazi) ancestors on the Colorado Plateau, as archaeological evidence testifies. Remnants of spring-irrigated rock-walled terraces used in the historical period can be found sheltered in canyons below the villages on all three of the Hopi mesas. These springs permitted human habitation and the reliable irrigation of gardens in an otherwise arid landscape. Today, with the advent of deep wells and modern water systems, few of the springs remain in extensive use, and most of the spring-irrigated garden terraces have been abandoned entirely.



Leigh Jenkins (left) and Miguel Vasquez Conferring on the Next Step

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The Terraces at Bacavi

Originally belonging to Oraibi (the oldest continuously inhabited settlement in North America), the terraces at Bacavi have been in use at least since the arrival of the Spanish in the sixteenth century. The village of Bacavi (Hopi for "Place of Reeds"), the northernmost on Third Mesa, was founded in 1907 when a faction from Oraibi established a new village above

the five small springs near the head of Bacavi Canyon. Today, Bacavi is a small community of approximately three hundred full-time residents in sixty-three households.

Although elders remember more extensive gardens, the terraces currently comprise an area of about one acre. Precipitous at the top and sloping more gradually toward the bottom of the canyon, terrace walls vary from one to eight feet in height. The laborious work involved in their construction was probably undertaken originally to protect early corn from frost. Crops grown recently include native cultigens (corn, beans, squash, gourds, and culinary, medicinal, and dye plants) and introduced crops (onions, chilies, tomatoes, carrots, and other vegetables, as well as herbs, melons, and peach, apricot, and apple trees).

Each spring has a small pond, from which water is gravity fed through supply ditches for flood-irrigation of individual plots every three to four days. Fruit trees planted on the hillside control erosion and utilize every available bit of moisture. Individually owned plots have been passed on matrilineally, and garden work in the terraces has been done largely by women and children (in contrast to larger fields around the village and in the washes below, where corn, beans, melons, and squash are dry-farmed by the men).

With the installation of a piped water system for the village in the 1970s, the perennial springs and surrounding terraces fell into decline. Residents found it more convenient to irrigate gardens next to their homes from the tap. Problems with the water system in the mid-1980s led to a temporary cut in allotments and a village ban on watering home gardens. Nevertheless, by 1990 only three families continued to garden in the canyon.

The abandonment of terrace gardening has been part of a general decline in subsistence agriculture since the 1960s. Dry farming and orchard production continue on Third Mesa, and local pride in this tradition is still very evident at Bacavi's annual Fall Harvest Festival. Yet construction of roads, dramatic expansion of the tribal bureaucracy, new federal or tribally sponsored development projects, and burgeoning national and international markets for native arts and crafts have all created many new income opportunities for Hopi people. Today, less than a third of local households continue to farm.

The Terrace Project

In early 1990, Leigh Jenkins, HCPO Director and a resident of Bacavi, approached the NAU Anthropology Department to request its participation in the restoration of the terraces. Although the project had been under consideration for several years, HCPO's workload had precluded the research and coordination needed to successfully implement it.

As a child, Jenkins had played in the canyon and worked the gardens with family and friends. Pained that his own and other village children no longer had the verdant canyon as a place to play, to work, and to learn Hopi customs, songs, stories, and gardening practices, he and the Governor of Bacavi, Clifford Balenquah, expressed hope of restoring the gardens to their former importance in village life. Other residents also supported the project. Parents commented that a generation gap had developed, as youngsters brought up without the activities and interactions which the gardens had provided were denied an important means of Hopi enculturation.

For the Hopi, growing and caring for plants and working in nature are seen not only as providing food and sustenance, but also as the means to develop both the inner soul and the social faculties. The feeling of working with nature, rather than against her; the encompassing human metaphor—that one cannot harvest anything without first planting and caring for it; the readiness to do what is necessary without complaint; a lifestyle oriented to what nature gives, to family collaboration, and to the rhythms of the sun and the seasons—these are ways born of work and service on one's family's lands. Parents feared that in their search for meaning and identity, children would look beyond Hopi to the dominant society and that "community memory" and, ultimately, Hopi culture would gradually erode.

Jenkins felt that anthropological input and participation could be useful in an undertaking incorporating diverse ethnographic, archaeological, and educational components. Sensitivity to local Hopi social organization, kinship, and religious considerations and to local technical knowledge of horticulture and stone construction would be needed. In addition, the collaboration of faculty and students in a project of visible, practical, local benefit would facilitate community support for other HCPO projects and create a precedent for positive university-tribal-community relations. (A formal cooperative agreement between the applied-oriented NAU Anthropology Department and the HCPO for technical assistance, student internships and employment, and project funding is nearly complete.) On a personal note, Jenkins hoped to develop broader insight into the discipline of anthropology and its practitioners through his own participant observation during the course of collaborative work.

Work to date has consisted of three components, all initiated by the HCPO and villagers: infrastructural renovation, cultural/horticultural documentation, and educational activities for village children in gardening and historical preservation. NAU has supported this project through the labor of students and faculty, other forms of continued funding, and strong philosophical backing for applied research with native people. Grants or donations have also been received from the Bacavi Village Council, Feed My People International Inc., Native Seed/SEARCH, the International Alliance for Sustainable Agriculture, and the Arizona State Historical Preservation Office.

Infrastructural Renovation

The first priority was the physical renovation of springs, terrace walls, and paths to a condition where safe and practical use could be made of them. We began cleaning and deepening the five springs, restoring or rebuilding the walls surrounding the ponds, and

replacing underground irrigation pipes to adjacent plots. Cattails and the reeds from which Bacavi gets its name were also reintroduced around the ponds. After some initial misunderstandings regarding directed questions, faculty and students learned to heed the casual, offhanded way gardeners let them know "how things should be done." When, in the second season, members from two kiva societies blessed the springs again for the first time in many years, village acceptance and ownership of the project was no longer in doubt.

Other restoration activities during the first three years of the project have included the laborious rebuilding of terrace walls, steps, and pathways; the planting of fruit trees; and the building of gabions (check dams) and new walls to stem further erosion in the canyon. As this infrastructure is stabilized, increased demand for plots will probably necessitate expansion to long-abandoned areas of the gardens where few terrace remnants remain.

Cultural Documentation

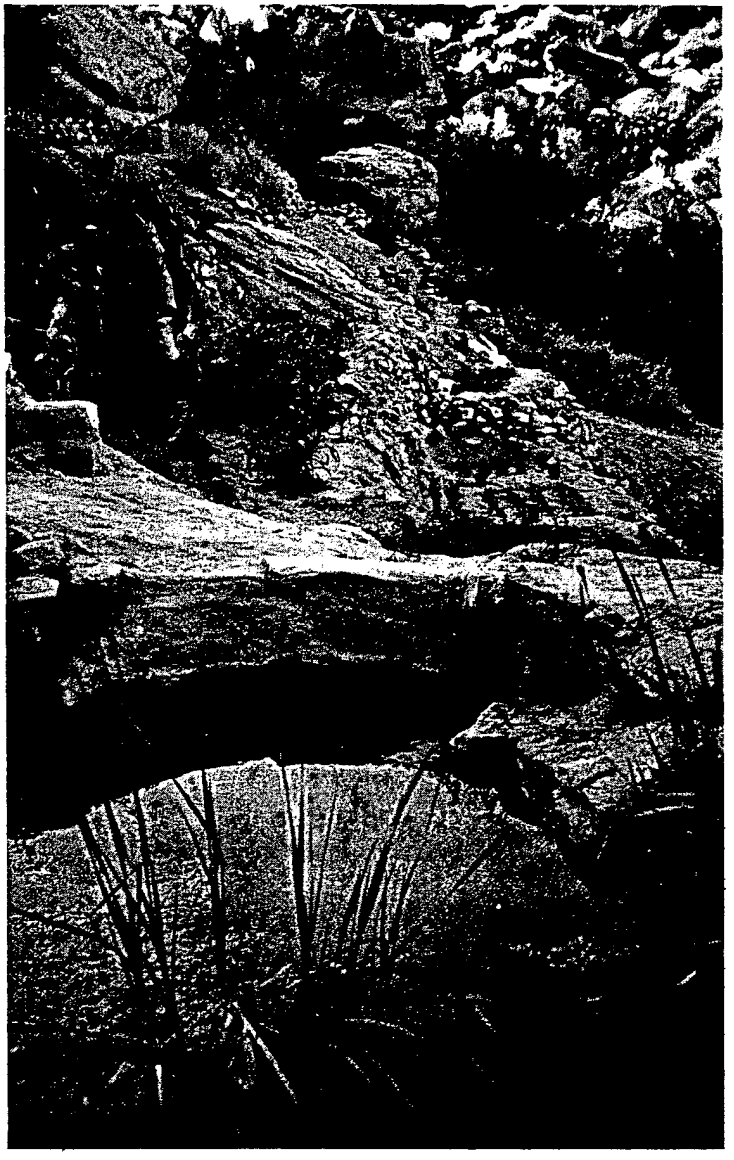
Priorities expressed by village and tribal leaders in the second year of the project expanded to include collaborative research into plot ownership and indigenous horticultural practices. Uncertainty in the village about tenure had impeded development of many of the long-unused plots and had given rise to several disputes as additional terraces were put to use. Interviews, in conjunction with a terrace mapping project, are being carried out to determine plot ownership within the memories of the elderly. With this information, village leaders hope to dispel interfamily conflicts over ownership as well as to determine future needs for further terrace development.

Documentation of the practices, techniques, and cultigens used in the gardens, as well as the folklore and beliefs which have developed there, are the other research priorities. Data is being compiled from interviews and intensive participant observation in the gardens. In addition to the inventive practices noted among Hopi agriculturalists by various researchers through the years, a number of innovative adaptations in plant propagation, pest control, and soil and moisture conservation have been observed locally. This information will be useful both in educational activities and in our work to develop a sustainable gardening model that is culturally appropriate to the Hopi situation.

Education

Most recently, the project has expanded beyond restoration and documentation to hands-on educational activities which will involve the younger children of the community. As one mother commented, "If they are going to learn the traditional Hopi way, the children need to have the terrace gardens to work with." During the past summer, one of the most prolific gardeners, a woman well-versed in Hopi horticultural tradition, worked with local children, helping them to cultivate and care for their families' plots for the first time in a generation. This program will continue into the school year, with classes from the Hotevilla-Bacavi Community School, and into the next summer growing season. Through direct participation in gardening and historical preservation activities in the terraces, parents, teachers, and village leaders believe that the heritage of the tribe can be a more relevant vehicle for Hopi educational programs in social studies, science, language, and art.

From a few people working tiny plots, the project has grown in three years to eighteen families cultivating gardens in Bacavi Canyon. More and more families have expressed interest in producing at least some of their own food, and many express nostalgia for the old varieties. With ninety cents of each dollar being spent off the reserva-



Bacavi Spring: A Source of Life at Hopi

tion, according to a village survey, and 60 percent of that on food or groceries, even partial food self-sufficiency is seen as increasingly important locally.

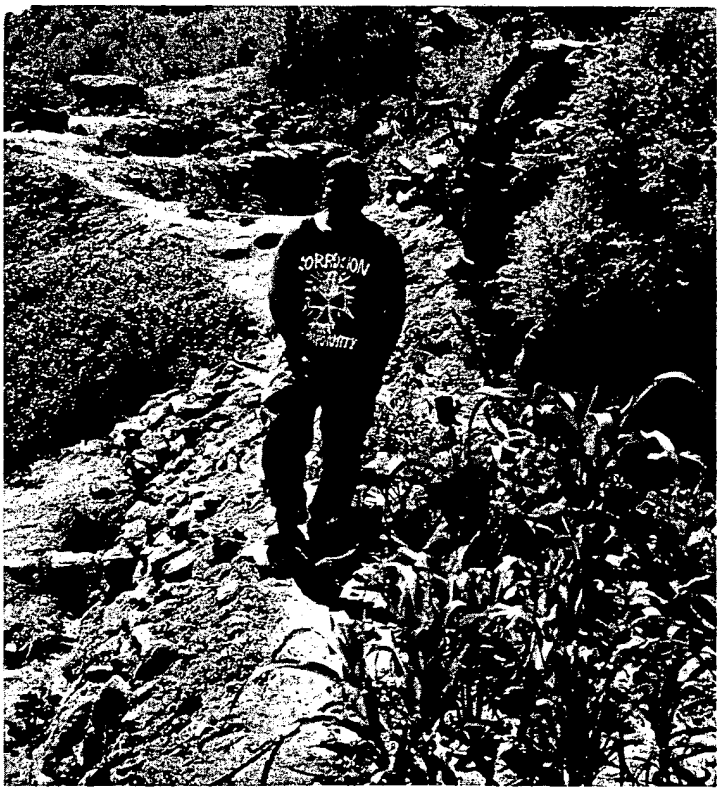
Perhaps most exciting is that children, along with their grandmothers, mothers, and aunts (as well as fathers and older brothers), are again using the canyon. Teenagers and children are some of the most active gardeners, expressing curiosity and real pride in what is happening there. The songs and stories which tie them to this land are re-emerging from old memories.

While elders among many native groups bemoan the frequent lack of youthful interest in their heritage, few communities have taken as active an effort in providing or maintaining the structure necessary for the meaningful preservation of cultural activities. Many in this community understand that the lessons engendered in the terraces, in the course of productive family activity, are not the sort to be found in schools or modern lifestyles. These lessons have been the basis of the sustainability of Hopi life, and therefore must continue.

Discussion

Collaboration has brought success on several different levels. The project has involved tribal officers, villagers, and anthropologists in hauling rocks, excavating springs, shoring up cliffside pathways, and sharing in the fruits of harvest hard won in a stunning but unforgiving environment. One comes away with an increased appreciation of the monumental work of the ancestral Hopi and with a mutual respect between Hopi and Pahana (non-Hopi) born of shared hard work, both physical and intellectual.

In addition, HCPO continues to enhance its professionalism in dealing with issues of ethics in research and intellectual property rights, by incorporating professional anthropologists on staff and actively monitoring and responding to the representation of Hopi culture in professional and popular media. These efforts have taken HCPO to a new level of engagement with the professional community as attested by recent publication and projects involving local school programs, the Arizona State Historic Preservation Office, and the National Registry of Historic Places. Community expectations are being met by these efforts as evidenced by family participation, funding, and support by village religious leaders. This reciprocal interaction has given NAU students and faculty invaluable professional and personal experience in research, planning, strategizing, organizing, and socializing with an indigenous community struggling to develop a sustainable future for its children.



Fred Koruh and the Fruits of His Labor

The reciprocity inherent in this project is a principle which needs another look. It is central to native culture, yet too often forgotten by anthropologists, who have lived with and studied native people, building careers on what they have shared, but leaving little of real or lasting benefit to their communities. This kind of hands-on, roll-up-your-sleeves collaboration, perhaps a step beyond traditional participant observation, and certainly better regarded locally than the cursory observation, analysis, and reports of better-paid, seldom-seen "experts," seems to be a key factor in the project's success.

With the recent surge in worldwide concern over the fragility of our planet, models of sustainable agriculture are of interest and concern to a growing number of people. The terrace project has important implications for cultural and environmental revitalization, intergenerational relations, and food self-sufficiency for the Hopi and for other farming groups. Its success should also stimulate academic researchers and practitioners to re-examine their approach in working with native people. The Hopi have much to teach us: One cannot harvest anything without first planting and nurturing it.

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