PART TWO

CASE STUDIES

CHAPTER THREE

ANATOMY OF A SUCCESS

The history of soil conservation projects reads like the history of development projects in general a depressing list of well intentioned schemes that for the most part have not worked. But the dynamics of failure stand more clearly outlined when viewed in juxtaposition to those rare projects to which the tentative label of "overall success" can be applied. There have been a small number of such soil conservation projects in rural Haiti. The project to be described here ended over twenty years ago, but its central erosion control lessons have been incorporated into, have become a permanent part of, the agrarian technology of the communities where the project functioned.

On the road leading from Kenscoff to Furcy, there is a crossroads at which the road to Furcy swings briefly westward. A vehicle which ignores the turn and continues southward will find itself on a recently constructed penetration road that for several kilometers follows the crest of a ridge affording overviews of the hills and valleys to the east and the west. The contrast between the view on the right and the view on the left provides one of the most dramatic studies in comparative erosion control visible in Haiti.

On the right is a valley that could have been modeled from a brochure on mountain erosion control. Most of the hillsides are lined and covered with rows of terrace-like structures obviously built to resist the effects of rainfall on cultivated plots that in some cases have slopes of over fifty degrees. The mountain crests are largely covered with stands of pine. On the left, in contrast, one sees the denuded mountains of traditional Haiti. With the exception of an occasional terrace-like structure, or the remains of such a structure, the cultivation in this western valley is done without the aid of erosion-resisting earthworks. The land rather is simply cleared of its vegetation and the corn and beans are sown directly into the ground. The panorama is one of land devastated by erosion. The contrast between the two valleys is visually striking. And the student of soil conservation practices finds himself challenged to explain why the cultivators of the western valley protect their land while their neighbors in the valley east of the road do not.

3.1 Mountain Vegetable Gardening and Erosion Control

I lived for several days in the house of a cultivator on the eastern slope, familiarizing myself with local agrarian technology and the history of any development project which may have helped shape this technology. To achieve this latter objective, I talked with as many older cultivators as possible.

Seen from close up, the protected, western valley began to look somewhat different. In the first place, there is some cultivation occuring there without the aid of any terrace-like protection. A sharp dichotomy exists between technology used in the cultivation of vegetables (the major species being cabbage and potatoes in this community) and that which is employed in the cultivation of more traditional crops such as corn and beans. The terrace-like structures were used only for the former. The latter crops continue to be cultivated in their traditional manner. If the hills in this valley are covered with protective earthworks, it is simply because most of the land there is allocated to vegetables. The eastern valley lacked the soil conservation measures, not because the people were different, but because the general eastern exposure of the valley created less favorable moisture conditions (called by the peasants "hot land") under which vegetables failed there with higher frequency.

Secondly, it became clear that for the vegetable economy there are two quite distinct types of earth structures being employed, each with its own history and function. And thirdly it turned out that neither of these structures can properly be called "terraces" or "mini-terraces".

The most prevalent structure is the one on which the cabbage and potatoes are directly planted. It is this structure, referred to as a tram by the cultivators of the region, which visually dominates the valley and which accounts for most of the land surface there. The tram is in fact a long, extended mound which, despite occasional departures from contour, in general follows the contour of the hill on which it is constructed. Despite initial impressions, it is not a terrace or mini-terrace; its design principle is fundamentally different. Rather than having a flat surface--the defining criterion of the true terrace--the tram is purposely constructed with a convex surface. A terrace system would produce a series of descending "steps". The tram system instead produces a series of descending structures more similar to the letter "S". Each unit in the structure has two components: the elevated convex part which the peasants call the bit (mound), and the lower, concave part, formed where the descending front of one tram meets the descending back of the tram immediately below it, to form a ditch (called the kanal) which serves to capture the water and--if the tram is slightly off contour--to conduct the water off to the side of the garden. I shall refer to the tram henceforth as a "contour mound" since it is, as will be shown, an adaptation and elaboration of the traditional mound on which the peasants of the region have always grown sweet-potatoes.

The second type of structure found on the protected hillsides is similar to a terrace, in that its surface is flat. But the surface unlike most terrace surfaces, is constructed on a marked downward incline, not as sharp as the incline of the slope on which it is located, but certainly on a greater incline than that of the standard terrace or mini-terrace. The inhabitants call this structure by the term plat-bann ("flat strip"). The plat-bann is also used only in conjunction with the vegetable economy. Its major function in the research community is that of seedbeds. Cabbage is first sown, for example, on a plat-bann. Only at transplanting will it be transferred to the larger contour mound. Other vegetables, for example carrots, are restricted in their entire cycle to the plat-bann, and are thus never transplanted onto contour mounds.

The all pervading presence of the contour mound and the plat-bann, their universal adoption by the cultivators--even the poorer cultivators--in the researched community, is an impressive phenomenon in view of the substantial investments of time, labor, and/or money which must be made to construct them. The contour mounds, in the days following their completion, are quite large. Individual cultivators vary in their techniques, but the vertical distance from the top of a mound to the canal behind it may be a foot. The width of the convex part of the mound may be two feet. But most impressively the drop from the top of a mound to the bottom of the canal belonging to the mound immediately below it may be as great as three feet. These structures are built entirely with the hoe.

A pick may be used initially to loosen the earth on land that is particularly difficult, but the structures themselves are given their final shape with the traditional long-handled hoe, a process that entails the expenditure of a great deal of labor.

To be more precise, using as the land unit a quarter of a carreau, which would be slightly larger than a quarter of a hectare, cultivators estimate that it takes a team of six men about two weeks to raise the contour mounds on a plot (the work week having six days). This would be land that has no trees or brush on it, but that merely has grass or low scrub. To clear the same plot of ground for the traditional planting of beans or millet, the same work team of six men would take less than two days, and might even finish it in a day. The use of erosion control measures is thus extremely expensive in comparison with traditional technology which does not use these measures.

But the matter becomes even more startling when it is pointed out that these erosion control structures must be created anew at the beginning of each cropping cycle. The process of harvesting the vegetables entails the destruction of the mounds (kraze hit). But more importantly, vegetable gardening itself entails a deep turning up of the earth for each new cropping cycle, a process which the peasants refer to as raboure tè, to distinguish it from the lighter ground preparation affecting only the first few inches of soil necessary for traditional grains. (This letter is

called saklé tè--literally "weed" the earth--in the case of mountain agriculture, since the ordinary tool is a long curved knife called the kouto digo). That is, the erosion control measures practiced by these cultivators are not simple one-shot investments which subsequently need only occasional maintenance; they rather entail a time-consuming technology in which the investment must be renewed each cropping cycle.

Two soil conservation technicians who visited the region in connection with this research--Robert Flannery and Michael Stapleton --concluded that the contour mounds built by the peasants had an above-average "erosion control efficiency", when compared with the rock walls which have been promoted as soil conservation devices in other communities of this region and in other parts of the country. But even though they are efficient from the point of view of erosion control, could no higher efficiency be achieved in terms of investments if more permanent structures could be built? This is an important question, one which will be touched upon when bench terraces are discussed--but it is the type of technical question which diverts attention from the critical issue which is: what has led the peasants of this region to incorporate these costly erosion-control measures into their agrarian technology?

Independent information gathered from numerous peasants in the region makes it clear that these erosion control practices first made their appearance fewer than twenty five years ago. We are dealing then with an analytically critical case of the spread of effective soil conservation practices among small cultivators. Is there any replicable "secret" which other projects might latch on to?

3.2 Earlier Development Projects

The older cultivators have very precise recollections of the arrival of development activities in the region. Some versions of events--including some published reports--would have it that the development of the entire region was spearheaded by the now well documented transformation of the Fort-Jacques/Fermath area during the fifties. Spurred by the damages of Hurricane Hazel, missionary groups and relief agencies began pouring in new types of assistance, including the sending of technicians to teach new production and soil conservation techniques. These techniques, carried out in the context of a good road to Port-au-Prince, a climate favorable to growing vegetables, and a ready market waiting for these vegetables, caught on, spread, and eventually transformed certain aspects of the local agrarian economy.

The older cultivators of the Furcy region have memories that go back even further, however. In this region the first stirrings of change came long before Hurricane Hazel, perhaps 10 years earlier. The changes are associated with the name of a Haitian agronomist working out of Damien, Agronome Roger Victor, and with that of his assistant, Pierre Fils, whose activities in the region go back to the presidency of Lescot in the forties.

Agronome Victor arrived in the region and proceeded to organize a "cooperative". He gathered a group of the leading farmers, rented land from one of the more prominent among them, and began a demonstration farm. Some reports claim that potatoes and other vegetables were introduced via Fort-Jacques in the fifties. This is not true. Potatoes had already been grown in the Furcy region, having been first introduced by the American occupation forces. But Agronome Victor introduced a superior variety of potato, as well as other vegetables that had not yet been grown in the region. He also introduced the concept of the seedbed and of transplanting, techniques that were as yet alien to the repertoire of local cultivators.

But most importantly he introduced the concept of soil conservation. The peasants of course had always known that water was washing down soil (dlo-a konn lavé tè). Many peasants believed--and still believe--that the presence of more rocks in their land in recent years stems from the fact that rocks can grow (roch konn grandi) and even have children (roch konn fè pitit). But at the same time they were aware of the erosive effects of water.

In local terms, *dépi lontan dlo-a konn lavé grès tè-a.* "Even way back water used to wash down the best part of the soil." But they had never been exposed to ideas or practices which would have permitted small cultivators to resist this process. Agronome Victor's solution was to introduce the construction of flat hillside beds--the *plat-bann* described above. He urged the peasants to use them not only their seedbeds, but also for the vegetables themselves when these were ready for transplanting. He introduced the use of the A-frame, urging peasants to take the time to stake out the contours of their hills, thus insuring that the horizontal axis of the beds would be as level as possible.

When he and his project left the region, the demonstration farm reverted to its owner, and the cooperative quietly disbanded. But a handful of the better off farmers began planting, as part of their regular cropping cycle, the improved variety of potatoes and the cabbage and other vegetables which the Agronome had introduced into the region. They kept the plat-bann, but they abandoned the A-frame, preferring the shortcut of trusting their own eyes over the more time-consuming procedure of staking out the contour with string. But the yields of the vegetables were not yet impressive enough to have this vegetable gardening become a central part of the local economy. The idea, the varieties, and the erosion control techniques had been introduced. But a critical stimulus was still lacking.

2.3 Fertilizer and the Evolution of Agrarian Technology

The stimulus came in the form of commercial fertilizer. The conditions of its earliest introduction into the Kenscoff region are still not clear. But it began being used on a large scale by the peasants of the Furcy region in the late 1950's. The use of this input tripled and quadrupled the yields of vegetables, more than amply justifying the investment that the farmer had to make. Unlike later projects, the fertilizer here was not subsidized. Peasants bought it on the market at going prices, but they bought it willingly because of the increased yields; and the entire community turned to the full-scale growing of vegetables, relagating their traditional crops to the less favorable land which could not produce these profitable new cash crops, for which there was a growing, and apparently inexhaustible, near by urban demand.

But some technical problems quickly arose. The plat-bann, introduced by the Agronome, was suitable for the seedbeds and for small vegetables such as carrots. But for the planting of larger vegetables, the plat-bann proved unsuitable as a final resting place. Its downward slant was seen as only a minor problem. More importantly its bed was too shallow to give the vegetables the depth of soil needed.

The peasants began turning to a traditional structure which they had learned from their fathers and grandfathers: the bit patat, the sweet-potato mound. For grains such as corn and beans, peasants have never turned up the ground deeply. But for root crops, the peasants had been used to building small mounds, separated from each other, created by a deeper turning over of the soil with the hoe. These small mounds were viewed as more appropriate than the plat-bann for the growing of potatoes and the planting of cabbage after the seedbed stage.

But at this point a disastrous process set in. Those farmers who used the small mound began seeing their dearly purchased fertilizer slowly wash down the slopes, wiping out a substantial part of what for them was an unusual new type of heavy cash investment. The response was rapid, and it spread like wildfire.

Some unknown peasant or peasants in the region hit upon an improved form of mound, one which was deeper, but--most importantly--was constructed, not as a series of discrete mounds with intervals permitting the escape of fertilizer, but was constructed across the hillside as one elongated furrow. The mound-like design was retained, but the connecting of the mounds into the form of a long furrow created in effect a ditch behind the mound which stopped or slowed the flow of descending water. The vegetables and their fertilizer were planted on the higher inside portion of the mound. With this structural innovation, the runoff of the expensive white powder was effectively halted.

This new structure is, of course, the countour mound, the locally devised tram, described in a preceding section of this chapter. It is thus a local innovation. Though older informants remember well the Agronomes who introduced the plat-bann, nobody could recall which local cultivator had first experimented with the contour mound. The local inventor--if there was a single inventor--has been lost in history. But his invention spread rapidly, as peasants of the region began copying each others earth-building techniques, until the process has become fairly standardized and deeply embedded in the repertoire of local cultivators as a normal practice which fathers now teach to their sons.

But paradoxically the peasants have adopted this effective erosion control device, not to protect their soil, but to protect their investment in fertilizer. And they have done it in a fashion which has entailed the selective acceptance of some techniques and practices introduced by project, the rejection of others, and the elaboration and improvement of techniques which have always been part of their own agrarian repertoire.

3.4 Summary of Strength and Weaknesses

In labelling the Furcy case a "success," no implication is meant that the best possible techniques were employed or that life's problems have been solved for the peasants of the region. Success is being defined here in a very specific sense: the incorporation into the repertoire of a peasant community of techniques which effectively combat soil erosion. In this sense the case of Furcy presents a multi-dimensional success story.

1. The erosion control is relatively effective on treated plots.

2. The techniques have been completely incorporated into the community's behavior.

3. There is no artificial dependence on outside inputs. That is, nobody is paying the peasants either cash or Food for Work to build the contour mounds. They do it on their own out of economic self-interest. They even purchase the fertilizer on the open market, unlike the coffee farmers of Belladere who receive their fertilizer at subsidized prices and with credit as well.

4. The innovation has spread to all levels of the community. The well-to-do of course use fertilizer, and pay others to construct their contour mounds and plat-bann. But the poorer sectors also grow at least small quantities of vegetables, and when they do so they also purchase fertilizer and construct contour mounds. Paradoxically, or perhaps not so paradoxically, they will use the money they earn building mounds for others to purchase the fertilizer which they will use on their own fields.

5. The innovation is consistent with, and in fact partially arose from, pre-existing cultural traits. As was pointed out, the contour-mound is basically an elaboration of the traditional bit patat. Several peasants proudly indicated the fact that the contour mound was of their own making. (Tram-nan soti nan lidé pa nou)

6. The handful of "heroes" are Haitian, not foreign. When peasants talk of the agronomes of the forties and fifties they talk of legendary giants whose presence helped transform a region. This is different from what I observed, for example, in the Northwest, where peasants sing the praises of PACHO and doubt the capacity of the Haitian government to duplicate the achievements of what they perceive to be a foreign operation. With the exception of "Monsieur Wynn," an American who has built terraces and has operated a fertilizer and seed store in the region, the blan are generally absent from this particular erosion-control drama in Furcy.

But by the same token, the results of this project contain many weaknesses.

1. There has been created a total dependence on commercial fertilizer which at least some observers would consider dangerous.

2. The soil conservation techniques have in general not included the replanting of trees. It is only in the past few years that a few better-off farmers have started planting orchards intercropped with fields where they plant vegetables. It remains to be seen whether this promising innovation will be profitable enough for it to catch on.

3. In accepting certain types of innovations, the community has jettisoned other developmental innovations considered desirable by project organizers. There have been, for example, no special groups arising in Furcy around the issue of the contour mounds. The early cooperative, which entailed some hopes of collective farming and collective marketing, has totally disappeared. The peasants have retained, not only their own private cropping system, but also the traditional market system in which the prime actor is, not the cooperative, but the traditional madam sara. The new developmental movements in the region--the Community Councils and developmental organization called Afe Neg Konbit--have arisen around matters extraneous to the erosion control innovations.

This simply means that there is room for much more development in the region, that erosion control is merely a start, not the final answer. But in Haiti it would appear to be a necessary start without which most other developmental innovations especially those of an agricultural nature, lack ultimate meaning.

The major lesson to be drawn from the Furcy project is dramatically underlined by the paradoxical fact that the costly the contour mounds are built to conserve, not the soil, but the fertilizer. Stated more abstractly, it would appear to illustrate that erosion control has occured as the secondary result of an innovation whose primary function, from the peasant's viewpoint, is the immediate enhancement of their cash profits.

This is a critical dimension of the whole process. Most of the projects examined in this research have unsuccessfully attempted to teach the construction of terraces or walls in the context of traditional crops. But the erosion-control innovations of Furcy have arisen and spread only in the context of a transformed cropping economy offering formerly unavailable levels of profits to the peasants. This may sound like a depressing conclusion, since it means that projects must not only provide technically sound soil conservation measures, but must simultaneously open up convincing avenues of new profits if the measures are ever to be adopted.

But there is no reason for this to be taken as a depressing conclusion. It is true that the absence of roads and distance from markets will hinder the development of the Furcy drama in most other regions of Haiti. But recent demonstrations and experiments have shown that there is a new type of cash crop which could transform rural Haiti, a cash crop whose promotion will require more institutional support, but whose successful propagation could directly affect the economic life of even isolated mountain peasants, and whose planting would substantially alleviate the erosion control problem in project regions. I am referring now to the introduction of fast-growing trees as a cash crop, trees which would permit the continuation of cultivation during the first few years.

It is in the domain of trees, rather than terrace or wall-building, that the most promising avenue of general erosion control will be found throughout Haiti. For this reason, it will be important at this point to examine the fate of some projects which have tried to promote the planting of trees.