

1. Developmental programs.

In view of the proximity of the community to the Kenscoff area, where some locally famous terracing efforts had been achieved by dint of enormous influxes of sustained foreign aid, it appeared likely that Furcy had also been the object of soil-conservation extension. Though no active soil-conservation project was going on in the community now, perhaps the present erosion-control precautions of the peasants were product of an earlier soil-conservation project.

2. Non-project imitation of foreigners.

Another hypothesis that also arose--and that tends to be the answer given by middle class Haitian observers--is the atypical presence of Haitian elite and foreigners in this region of Haiti. With respect to foreign influence, two local sources appear particularly important. In the first place there is a very well known and influential foreign resident who has lived in the region for some thirty years. Many years ago he constructed what are reported to be the first bench terraces ever to appear in Haiti, and he has been growing vegetables on these terraces for years. Because he has a seed store, and because he was a major supplier of chemical fertilizer for many years, he was in contact with peasant clients of the region and could possibly have acted as a model.

Another possible source of example is a locally influential foreign missionary compound whose directors have for decades lived in the region and engaged in various agricultural extension activities. Soil conservation has always been a major element

in their message. It appeared quite likely that some imitation effect had occurred with respect to the projects that these missionaries had fostered in other, nearby communities.

3. Spontaneous, profit-motivated valuation of soil.

In view of the failures of projects in other regions where foreigners and projects had attempted to intervene, I assumed from the outset that there were other community-internal dynamics which had nudged this group of peasants into such unusual erosion-control behavior. And these dynamics appeared quite likely to be associated with the unusually successful market position of the peasants in this community.

To discuss this point, it will be useful here to present the most significant piece of ethnographic information on the construction of the ridges: the observation that the impressive erosion control behavior that is being discussed here, though practiced now by all members of the community, is not in fact practiced, however, on all plots of ground. The soil conservation is practiced only on plots on which vegetables will be grown. It will be recalled that the community has a cropping regime with two major subdivisions: those root and grain crops which the elders have been planting since time immemorial, and those lucrative vegetables which people have been growing only during the past three decades. For corn and bean plots, traditional unprotected clearing and cultivation methods are used. The most common practice is that of simply broadcasting the corn or beans as step one, followed by scraping up the earth with the hooked knife to cover the grains with a thin layer of topsoil. This,

of course, loosens the topsoil and renders the generally steep plots highly vulnerable to erosion.

It is true that I observed a few bean and corn plots on which there appeared to be small parallel ridges, sign of possible erosion control behavior by peasants even for traditional crops. But questioning of informants would inevitably reveal that these were plots on which vegetables had first been grown. The small ridges were the remains of the ridges that had been built for the vegetables. The traditional crops were thrown in to give the owner one last harvest before turning the plot over to his animals. In no case would a cultivator invest the labor or money to build ridges on fields dedicated exclusively to traditional crops.

Here one immediately suspects the operation of rational cost-benefit calculus on the part of the peasants. The investment of \$60.00 of labor or cash on ecologically protective ground will be undertaken, one suspects, only if the cash from the harvest exceeds the total investment. This suspicion is born out in reality, at least in the case of the vegetable plots. The quarter of carreau of land which will consume this amount of labor will, if the harvest is good, produce some 50 large sacks of cabbage. If each sack can be sold in Port-au-Prince for \$5.00, it is clear that the yield will more than cover the investment in labor. Of course there are other extremely heavy production costs (which will be discussed below), and the cost of transporting a sack down to Port-au-Prince where it can draw the best price is another factor. But it is clear that the growing of vegetables is a profitable business which covers

the investment made in labor costs associated with the construction and renovation of soil conserving ridges.

It would be interesting to posit the existence of an implicit calculus which attributes tentatively to all peasants the desire to protect their soil, to keep it from washing down the hillsides, but which makes it unfeasible to undertake soil-conservation labor, either personal or unpaid, unless the net proceeds from the harvest sale exceed by a certain amount the cash that one would have had to lay out if one had purchased labor for the construction of the soil-conservation works. If this were true, then we are observing in Furcy the phenomenon of peasants becoming actively concerned about their land now that it is drawing for them a great deal of income. That is, by such reasoning, land which produces little or no cash will not inspire its owner to invest money or labor in protecting it. But once the owner has seen that the land can produce a sizeable annual flow of cash income, active concern is triggered off to take more direct measures to protect this source of annual income from washing down into the stream. That is, is it the market which is creating an active concern for protecting the soil? If the peasants of this region behave in ways which demonstrate exceptional concern for their soil, is it perhaps because they have an exceptionally secure niche in an exceptionally lucrative capital-city vegetable trade?

This latter hypothesis in effect attributes the erosion control to rational self interest on the part of the peasant. The earlier hypotheses concerning projects and foreigners

attributed it rather to education and imitation. All of the hypotheses could be integrated. The market situation may have created the impetus for becoming concerned about soil as a resource to be protected; whereas the projects and co-resident foreign terrace builders may have provided the technological models for actualizing this new interest. All hypotheses were compatible and plausible. And the fact that they all proved to be substantially wrong merely increased my own respect for the power of empirical micro-research to expose the fragility of common sense assumptions--even those with solid theoretical backing--in the face of local developmental history as it actually unfolds.

Reconstructing a Defunct Project

The events that led up to the emergence of erosion control behavior in the community had occurred during the lifetime of many of the adults in the community. As part of my research I not only familiarized myself with Haitian history of the relevant period. In addition, I interviewed as many older people as possible to learn about the differences between past cultivation practices and present practices, and to reconstruct in as factual a manner as possible the sequence of events that led to the appearance and spread of the contour ridges, and the possible linkages between the appearance of these ridges and other aspects of Haitian history. The exasperatingly contradictory information that came from different "knowledgeable informants" was able to be sorted out, cross-checked, and I believe, satisfactorily resolved. The precise dates are obscure,

but the main events stand out.

By the 1940's the U.S. Marines had left Haiti. In view of the proximity of the Furcy region to Port-au-Prince, the Marines had established an outpost in the area. They had undertaken the planting of some eucalyptus trees, which are still standing on the crests of various hills, and they introduced the planting of a small type of potato, which has since disappeared from the region. The principal crops grown in the region were the traditional crops of beans, corn, and sweet potato. The little bit of cash which the peasants earned from cropping came mostly from their bean harvest.

But by the late 1940's and early 1950's a different type of visitor and outsider began coming to Haiti. Development organizations began taking a closer look at Haiti--the vanguard project being the earlier mentioned UNESCO project. An all weather road had already been completed to Kenscoff, and regular vehicular traffic had become a daily event. The process of urbanization had begun, and the population of Port-au-Prince was beginning to grow. In addition the construction of numerous hotels in Port-au-Prince had been undertaken to accomodate a growing influx of tourists. Newly autonomous Haitian governments were once again self-consciously looking at the poverty of Haiti and taking measures to prove to the outside world the seriousness of their intentions to involve Haiti in the new "development" processes that were now being talked about internationally. In short the confluence of a number of demographic and institutional processes was making extremely likely the growing involvement of the

Furcy area in closer economic ties with Port-au-Prince.

One of the effects of the U.S. occupation had been the construction and organization of a Department of Agriculture at Damien, a town slightly to the north of Port-au-Prince. During the 40's and 50's this institution was producing a steady stream of apparently well-trained agronomist who left Damien, not only with technical skills, but also--according to older informants--with a willingness to dirty their hands and work side by side with the peasants in a manner which the contemporary graduates of Damien have long since ceased doing.

The first significant arrival of "outside assistance" came in the form of one of these agronomists. He arrived with an assistant, called several meetings, elicited the cooperation of the wealthier and more influential peasants of the region, formed a "cooperative" and rented a plot of ground.

In the context of this first "cooperative," the agronomist introduced two elements which were to eventually transform the economy of the region. The first of these elements was the practice of planting vegetables that had been unknown in the region: cabbage, lettuce, carrots, tomatoes, and others. In addition he introduced a variety of potato superior to that which had been sporadically grown in the region since the arrival of the Marines. The peasants had been oriented toward the market since time immemorial, the major cash crop in this region being beans. It was a natural transition to move to the growing of these vegetables, for which the peasants quickly learned there was a growing urban demand--including the hotels housing the

tourists who had begun traveling up the road and visiting the Kenscoff/Furcy area with greater frequency. The closeness of the region to Port-au-Prince, the presence of a road facilitating the rapid transportation on vehicles of perishable produce, and the relatively cool temperature of the region permitted Furcy and Kenscoff to become the major supplier of vegetables to the urban population.

But the agronomist introduced, not only the crop, but a strange new way of preparing the ground. Some of the peasants had tried planting the new vegetables using the same horticultural technology that had always been used for the growing of traditional root crops, particularly the sweet potato. These crops by their nature require a deeper turning of the soil than is true of corn or beans. For as long as anybody could remember the peasant had been planting sweet potatoes on small mounds (bit patat) created by the hoe. The function of this mound was dual from the point of view of the peasant: to provide a quantity of deeply overturned soil, and to provide at least a little elevation to prevent the immersion of the sweet potato in any puddles that could collect behind the mound. The mounds were small and separated one from another.

But the new vegetables had a requirement that the traditional crops did not have. They had a delicate seedbed stage, a period of closely spaced, carefully executed initial sowing on specially prepared ground. Only after the vegetables had passed through this stage could they be transplanted into the garden. The peasants of the region simply had no technology for preparing

their generally steep hillside plots for this seedbed phase. They were obliged to pay close attention to the agronomist for this technical step.

The agronomist presented to them the use of a flat hillside bed, the plat ban that was mentioned earlier. This structure, quite different from the tram, the ridge which now predominates, shares more of the characteristics of a genuine terrace. The surface of the bed is flat, and it is permitted to slope downwards. The downward slope is generally less than that of the hill itself. If the normal slope of the hill is 30 degrees the slope of the bed may be 15 degrees. A hillside prepared with these beds looks like a series of descending steps, except that each step, instead of being horizontal, slopes down and outward. The agronomist talked about the soil conservation function of these beds. The peasants were skeptical about this particular function. But they did know that some arrangement such as this finely prepared carefully structured bed was necessary for the preparation of vegetable seedbeds.

The agronomist intended that the peasants should plant, not only the seedlings, but also the transplanted vegetables in these hillside beds as well. Though some peasants initially accepted this, it soon became clear that the use of these hillside beds for the transplanting as well did not make optimum use of the space on the hillsides. Nor did it provide the slight elevation for each plant that the peasant's experience had taught them was necessary for the healthy development of a plant. The planting of vegetables caught on rapidly, and the technique of making the

hillside bed quickly spread from those better off farmers who had first learned it from the agronomist to the community at large. But within a few years of the introduction of the practice, people had taken to the custom of using the hillside bed only for seedbeds, and transplanting the maturing seedling onto the same type of small, discrete mound that had served as the structure for growing sweet potatoes.

But in 1952 Haiti was devastated by a violent hurricane, an event which threatened to sabotage the incipient foothold which the community had established in the urban vegetable market. The hurricane destroyed crops and other vegetation; but it threatened the new prosperity, not through the physical havoc it wreaked on the hillsides, but through the influx of massive foreign relief aid which it triggered off. This aid, through a number of circuitous paths not predictable by common sense, threatened to transfer the dominance of the Furcy region in the marketplace to their neighbors and competitors closer down the road toward Port-au-Prince.

To grasp the sequence, one need only remember that development assistants tend to prefer regions closer to their residences and to paved roads. Not only can they do their promoting more easily if they are only a half hour from their homes (foreign advisers in Haiti--with the exception of missionaries--have almost inevitably opted for residence in the capital or large towns). In addition, it is easier to use a nearby project as a showplace for incoming superiors and visitors. As a result of these and other considerations, a substantial

portion of the foreign aid that came in the wake of the hurricane was directed to communities substantially lower than Furcy and closer to Port-au-Prince. These communities were the target of massive technical and cash inputs.

These lower communities had not yet entered into the vegetable market. Climatically they were high enough to permit growing of vegetables. But they were exceedingly rocky. To counteract this problem, the foreign advisers instructed the peasants in techniques of rock wall and terrace building. These measures were explained in the idiom of soil conservation. But their actual function, from the point of view of the peasant, was to clear the landscape to make it more suitable for the new type of vegetable gardening.

The reports of the foreign advisers, which I was able to read in Port-au-Prince, indicated that these advisers incorrectly believed they were the first to introduce vegetables into the region. In actuality they were helping peasants at lower altitudes get a foothold in a market that had already come to be dominated by the Furcy peasants at high r altitudes, on land with fewer rocks and boulders.

The lower-altitude peasants received a series of subsidies not available to higher-altitude peasants. But in addition they received marketing support which in modern competitive terms would be listed as unfair. The foreign adviser himself, determined that his project should work, personally contacted the hotel owners in Port-au-Prince and secured from them a promise to purchase the vegetables from his project areas rather than elsewhere. He then rented a truck and personally sold the

vegetables directly to the hotel owners. From an outsiders' perspective, he was robbing Peter to pay Paul. From the perspective of a career development technician, he was merely ensuring that "his" project would work.

But this entry of the lower altitude peasants into the market did not eliminate the Furcy peasants. Their vegetables, grown at slightly higher altitudes, were of superior quality. But the foreigners, determined to make the lower altitude project area a showplace, took one final step which completely altered the rules of the game. They taught "their" peasants how to use chemical fertilizer.

The results were electrifying. Not only did yields double, triple, quadruple. In addition the individual vegetables grown with fertilizer made the unaided vegetables of the higher-altitude peasants appear like ugly gnomes. With small grains, fertilizer will increase yields without necessarily producing dramatic visible differences between individual fertilized vs. non-fertilized grains. But with vegetables, fertilizer, by producing more attractive individual vegetables, in effect drives unfertilized vegetables out of the market. The response of the Furcy peasants was predictable. They soon began purchasing fertilizer themselves and applying it to their own vegetables.

It was this critical move which finally nudged, or rather catapulted, the entire community into the creation and application of systematic erosion control strategies. For the first time in their history the peasants found themselves disbursing large sums of money to produce their crops and secure a foothold

in the market. They were no project community; they were receiving no subsidies. Their fertilizer was purchased in the open market. They had to purchase this fertilizer unless they wished to revert to the subsistence pursuits of years gone by. But for the first time in their own history or that of their grandparents, they were disbursing what for them were enormous sums of cash in the purchase of this powerful white powder. And from the point of view of this discussion, we are less interested in the maneuvers which they undertook to raise this cash, than in the maneuvers which they were forced to take to protect their investment once they had made it.

Recall: the vegetables were transplanted onto fields which had been prepared in the form of traditional, separate, sweet-potato mounds. The peasants began applying the fertilizer to these tiny mounds. But the reader can imagine the effect of heavy rainfall on this fertilizer. The Haitian peasant may have learned to look with resignation at the sight of soil washing down the hills. They were emphatically not resigned at the sight of their dearly purchased fertilizer following the same course. It was this infuriating sight which triggered off in this community of Haitian peasants the same sort of determined technological maneuver which has led to the evolution and intensification of agrarian systems in other regions, at other times in history.

Despite persistent questioning, nobody could remember who the inventor of the new system was. It was definitely not an agronomist. The original teachers of the plat ban had long since

left the community. But in the late 50's one peasant, or several peasants simultaneously and perhaps independently, took a look at their traditional sweet potato mound, took a look at the fertilizer escaping downhill in the interstices of these haphazardly deployed tiny structures, decided that some radical modifications were called for, and went ahead and experimented.

Two basic modifications were introduced into the traditional sweet-potato mound. In the first place the space between the individual mounds was eliminated. Perhaps analogizing with the elongated, continual structure of the plat ban the peasants began making continuous, unbroken ridges across the width of the garden. Secondly the mound was made higher. That is, whereas the difference between the top and the bottom of the sweet potato mound was no more than a few inches, the typical distance between the outside highest point of the new structure and the inside lowest point came to be as much as a foot. The result of this experimentation was the contemporary tram, the laboriously constructed contour ridge whose appearance in this community provides the anthropologist with a living replay of the spontaneous evolution of technology and the developmental planner with a case study in the project-mediated adoption of effective soil conservation techniques for perhaps the first time in Haitian history. That the critical response was triggered off by a project, not in their own community, but in a competing community closer to Port-au-Prince, merely indicates the manner in which history will stubbornly unfold in ways that force would-be analysts to check their assumptions and, above all,

to carry out their model-building under the inspiration, not only of received wisdom, but also of inductively generated micro-probes into the economic behavior of specific individuals and communities.

CONCLUSIONS

1. The unusual erosion-control behavior of the peasants of Furcy is directed toward preservation not of their soil, but of the fertilizer which they purchased on the open market.

2. The reluctance of peasants whose technology lacks soil-conservation techniques will disappear once economic options are made available which simultaneously presupposed the application of soil conservation techniques.

3. In such cases the erosion-control function will be a secondary spinoff of behaviors engaged in first and foremost for cash-generating reasons.

4. For reasons that deserve further analysis, the Haitian peasant in general sees little purpose in protecting soil for soil's sake.

5. The Furcy development of erosion control technology was intimately linked to development projects. There were elements that were a direct result of input from project agronomists in the late 40's and early 50's. The major contribution of these agronomists was in terms of new cash crops. The associated technologies were accepted simply because the peasants, in their traditional repertoire, had no techniques for growing seedbeds on the steep hillside.

6. At the same time, elements of spontaneous technological evolution were to be found. The Furcy peasants later had to develop independent responses to erosion control. The wall-building techniques which foreigners were teaching in lower altitude communities were technically inappropriate because of the absence of rocks in Furcy. The bench terracing techniques also available were counterproductive because of the loss of cropping space which the need for diagonal risers entailed. The result was a situation in which the peasants were forced to devise their own techniques. This illustrates a capacity of the Haitian peasant for technological creativity. But the precondition is protection and enhancement of domestic income.

7. The peasants have not generalized changed technology into changes in all aspects of their economy. Of most importance they have continued to practice traditional individualistic land tenure patterns, in which the principal actor is the proprietor-gardener. Furthermore they have preserved traditional marketing patterns, in which the principal actor is the traveling female intermediary. Change may be domain specific.

8. Appropriateness of technology is a relative concept, limited to specific context. The use of fertilizer was an "appropriate" technology in terms of short-run increases in production. It is not at all clear that this dependence on an increasingly costly and ecologically questionable input is in the long run a desirable development. We must accept this contextualized use of "appropriateness" and not restrict its use to behaviors or technologies with no possible backfiring consequences.

"Appropriate" should be read to mean "Appropriate to X Objective."

9. Planners have more global models of change and somewhat more ambitious criteria for defining success. Some planners might ipso facto dub the Furcy issue as an "unsuccessful" project because peasants, though practicing soil conservation, are "doing it for the wrong reasons" or doing it without changing their cooperation patterns. Just as "appropriate" is taken to mean "appropriate for X objective," so also successful will mean "successful for X objective."

10. Projects should not content themselves with giving priority to discovering the felt needs of the community, as classic community development theory would have it. A good working assumption for most peasant settings is that people have a pre-existing felt need for more cash. The contribution of planners would be that of suggesting cash-generating options that the community may never have thought of. Outsiders brought in the vegetables that transformed the economy of the Furcy-Kenscoff region.

11. The most difficult, but most valuable, contribution which a program can make is in terms, not of technologies per se, but in terms of substantially improved cash generating options.

12. Once the new options have been deemed feasible, the peasants themselves will modify and adapt techniques to their own ends. The peasants of Furcy did not reject the plat-bann. They simply relegated it to one function, that of seedbeds.

13. Important technological changes of this sort can probably not be introduced in isolation. Projects which try to teach the

peasants better techniques for producing, say, subsistence corn will probably be doomed to failure. The increase in cash income will be so negligible as not to warrant the investment in additional labor.

14. Projects may succeed even in the absence of certain educational inputs touted as essential to successful development programs. The Furcy peasants adopted technological change with little sustained educational input. The majority of peasants who today practice soil conservation learned it from other peasants. On most matters it may be the case that, where there are payoffs, the need for educational promotion will be minimal or nonexistent. In contrast, if elaborate mass-media education schemes are called for, chances are that the proposed scheme is so irrelevant to the perceived interests of peasants that the projects will founder anyway.

15. In Haiti, and probably elsewhere, planners and administrators have shown confusion in using the term appropriate. Ecologically appropriate strategies from the point of the hillside may not be economically appropriate from the point of view of the peasant. Various types of appropriateness will ideally be taken into consideration. But in projects predicated on voluntary participation, the criterion of economic appropriateness should be the first criterion.

16. Planners in Haiti, and elsewhere, have in general neither possessed, nor felt the need for, the type of region- or community-specific insights into local economic behaviors and options that would endow them with a sense of the genuine economic

appropriateness or inappropriateness of the schemes which they are proposing.

DISCUSSION

Some final points remain to be discussed. Why did peasants in the adjacent valley to the east not construct ridges? One of the most surprising elements of the Furcy panorama is, as was mentioned earlier, the localization of the structures to the Furcy valley and hillsides themselves. The adjacent hills are virtually absent of ridges. When the economic calculations underlying the construction of the ridges had become clear, it was easy to hypothesize that there were economic considerations underlying the puzzling decision not to build ridges in the adjacent valley. Since the valley was as close to the paved road as the Furcy valley, questions of accessibility to markets did not seem to be the key.

It turned out that the decision was based on solid ecological factors not easily visible to outsiders. The folk taxonomy of the Haitian peasant distinguishes between "hot land" and "cold land." Generally hot land tends to be at lower altitudes and cold land at higher. But even within a region plots of ground at the same altitude can fall into different hot/cold categories on the basis of 1) soil texture and 2) exposure to the sun. In general sandy soil or soil that faces east or south will be hot land. Other land will be cold at least at the altitude of the Furcy region.

Because of its general western, northern exposure, most of

the land of the Furcy valley was "cold land." The contiguous valley, on the other hand, was dominated by land recognized by the peasants to be "hot." Hot land is known to be unsuited to vegetable growing. I have seen cases of peasants who, lacking access to enough cold land, tried growing vegetables on this hot land, using fertilizer and the ridge system. The results were catastrophic and substantial investments were lost. The folk taxonomy embodies ecologically valid distinctions, and the contrasting erosion-control status of the contiguous was a product of important differences in ecological potential, differences which the peasants learn while still children.

Why have the peasants been unwilling to construct bench terraces? That is, the bench terrace is a permanent structure that entails enormous inputs of labor to construct it, but whose maintenance subsequently entails little case. The bench terrace permanently alters the topography of the hillside.

I initially suspected that the reluctance to use the bench terrace stemmed from this initial labor requirement. But questioning in different parts of Haiti where different agencies have attempted to teach the bench terrace indicate that much more profound objections exist. There are ample models of bench terracing in the Furcy area. Yet not one peasant has attempted to construct a bench terrace on his own land.

This reluctance has astounded and disappointed soil conservation technicians, who correctly recognize the superiority of the erosion control efficiency of the bench terrace. But it now appears that the resistance of the peasant to this apparently

superior structure is founded on solid considerations.

In the first place the assumption that the bench terrace would eliminate the back-breaking labor of erecting ridges for each cropping cycle is simply unfounded. The very character of vegetables, at least as they are planted by Haitian peasants, entails the construction of ridges and/or mounds. If a peasant had put his land into bench terraces, he would simply raise mounds on the surface of the bench for each vegetable cropping cycle. That is, this ground preparation labor is not eliminated.

But secondly, and perhaps more importantly, the placing of one's land in bench terraces, at least in Furcy, would entail a decrease in total surface available for cropping. Recall: the land of Furcy lacks rocks. On land where there are no rocks available for building the riser (the front wall) of the terrace, the cultivator cannot construct vertical risers. The earth would crumble. In the absence of rocks, the riser rather must be diagonal. Since no crops can be planted on the riser, the obligation to give it a diagonal slant automatically eliminates some cropping surface. In short, the bench terrace, attractive as it is to soil conservationists, is less attractive to the peasant.

The emphasis throughout this presentation--the need for short-term cash inducements--may seem like a rather dismal conclusion. It would appear to be saying that soil conservation measures will be voluntarily undertaken, at least in Haiti, only in those atypical regions that combine a paved road connection to Port-au-Prince with the proper altitude and rainfall patterns

that permit exceptionally lucrative market involvement.

Some might point out that it is precisely in view of this dilemma that there is such a need for community education, community motivation, and community organization. Stated one way: when there is a dramatic profit-motive being satisfied, as in Furcy, important technological change will happen almost in the absence of comprehensive project organization. But most development projects do not have the advantage of these immediate payoffs. Perhaps it is in such cases, one could argue, that the need for a different sort of developmental emphasis arises, an emphasis that calls on the motivational and educational expertise of donor agencies, that points to long-term benefits, to the obligation to work together as communities on projects which may have no immediate income implications, but which are for the general good of the community or for future generations.

I have heard different versions of this argument proffered. I must state that I disagree profoundly with the entire point of view. Development projects, at least rural economic development projects, should in my opinion channel the creative energy of their personnel in the direction of devising income-generating options for the peasants, not in exploring techniques for manipulating attitudinal and value systems in the direction of altruism, future orientation, or what not. This position on my part is not a statement of a philosophy of life, in which only economic improvements are to be sought. It stems simply from a conviction that the standard developmental agency and the standard developmental professional are eminently unsuited to

the task of fomenting and svstaining charismatic internal changes in the minds and hearts of Third World villagers. Charismatic political leaders, or dedicated missionaries whose long term presence in a region win for them the confidence and admiration of the people, are able to base part of their activities on moral force and idealism.

It is not being uncharitable to suggest however that the standard developmental career person is not in the same moral or charismatic league with those other figures. Programs must be consonant not only with the realities of the recipient communities. They must also be consonant with the character of the planning and implementing agencies as well. Members of the development establishment come from nations generally successful in the objective of making money. The careerists themselves, even those who appear to do little good for their host country, generally appear to do quite well. Their developmental objectives should likewise be oriented to raising the income of target groups, not their communi spirit, their idealism, their concern for their children, or otherwise.

But we are still left with the dilemma, then. What do you do, short of coercion, in the case of ecologically critical projects for which there may be no immediate visible payoff? My answer would be that with creative thought in the right dire tion feasible strategies will emerge, at least as explorable possibilities. Two concrete examples may help.

There are soil-conservationists who simply cannot accept the fact of the rejection of bench terraces. They are convinced

that the only hope for Haiti is the covering of Haitian hillsides with the same intricate terrace systems as are found in the Philippines or other parts of Southeast Asia.

Let us assume, for the moment, that their concern is ecologically defensible. They have three basic strategies that they could try. The first would be one of education and motivation concerning the long-term advantages of bench terraces. The objective would be to morally and intellectually convince the peasants of the need for bench terraces. The second would be a strategy of simple remuneration. Buy or rent land, and purchase the labor to set up at least demonstration terraces. The third, and the one most consonant with the findings of this paper, would be to devise new cash-generating options, superior to traditional techniques, which however would absolutely require bench terraces for implementation by the peasants.

I can think of at least one such possibility. The mountains of Haiti subsist entirely on rainfall agriculture, irrigation being relegated to the plains. A technician or agency that could introduce the concept and practice of mountain irrigation by the use of gravity techniques on the thousands of mountain streams and springs in Haiti would open the door for transforming the agriculture of most of Haiti. But highland gravity irrigation systems would require structures much broader and flatter than the ridge--would require the same types of bench terraces that have supported highland irrigation in other world regions. The introduction of a technique such as this one would be one way for triggering off widespread bench terracing.

The point is that the Furcy experience points away from one course of action--education/motivation as principle strategy--toward another: cash generation as principle strategy.

We can take an even more challenging case. Given the poor road system throughout most of Haiti and the de-facto isolation of large sectors of the mountain population from easy access to markets, it would appear unlikely that any lucrative cash-cropping such as that practiced in Furby is feasible for the near future. In distant mountain regions we can assume that for decades conventional agriculture will remain commercially marginal. Yet the soil has to be protected, not only out of concern for the mountain farmers themselves, but also to prevent the silting of rivers from destroying already fragile downstream irrigation systems. How, short of coercion, motivate the farmers to conserve their soil.

The principle is: creative thought toward reasonably short term profits is impressively greater than those generated by current techniques and practices. For the distant mountain regions of Haiti, in light of this principle, I have elsewhere recommended a turning away from the virtually insane wall-building that has characterized perhaps hundreds of rural Haitian development projects. The peasants build the walls strictly to cash in on project food or wages. The walls are left destroyed afterwards.

For such distant regions, the Furcy lesson would push us in just the opposite direction--i.e. away from an erosion control strategy relying on structural measures toward one

relying on vegetative measures. At this point in history the tropical world is witnessing the spread of a small number of rapid growing "miracle trees," the best known one being *Lucaena leucocephala*, otherwise called Ipil-Ipil. The income potential of these trees consists in their unusually short rotation period--four years under reasonably good conditions--plus the fact that the peasant can continue cultivation of traditional crops on the treed plot during the first two years. That is, these trees may be planted without seriously disrupting traditional cultivation. By the time their shade is so thick as to make cultivation impossible, they are almost ready to be harvested.

In Haiti there is an incredibly strong internal market for wood, for both lumber and fuel purposes. The Haitian peasant has been an extractor of wood; he has not yet been a planter and harvester of wood. The most revolutionary breakthrough in most of rural Haiti would be the implementation of agroforestation projects in which, for the first time in Haitian history, trees are planted and harvested as a cash crop. I have worked out the logistical and organizational outlines of a possible approach elsewhere and will not discuss it here. The point is that these trees would geometrically increase the cash income which the peasant generates from the land. And quite significantly, the peasant would plant them, not with a view to protecting the soil, but with a view to reaping profits. The erosion control function would be a secondary spin-off of behaviors whose primary function from the point of view of the

cultivator is the generation of cash. And the programmatic value of keeping this principle in the center of attention should be obvious: it leads to the selection of one type of technology --earth structures--in a region such as Furcy, but fundamentally different measures--trees--in other regions. It is not a platitude; it is a pragmatically useful touchstone.

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