

## DIRECTED CULTURE CHANGE AND HEALTH PROGRAMS IN LATIN AMERICA

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### INTRODUCTION

Viewing directed culture change as the attempt by an agency with the power and/or authority to modify or interfere with a culture in a deliberate and purposive way, much of the work of organized public health appears to cluster around efforts in directed change. This holds for public health in technologically and economically advanced countries as well as in still developing ones, and for health programs directed at altering environmental features as well as those aimed explicitly at modifying human behavior and attitudes.

Although students of directed culture change have tended not to relate their concepts to those of communication theory, directed change is obviously a special instance of a more general communication model. Thus, Lasswell's frequently-cited statement of the key elements in communication<sup>1</sup>—who says what in which channel to whom with what effect?—comprehends the essential elements of the directed-change case—what agency attempts to introduce what modifications by what means (and/or channels) into what socio-cultural system with what effects?

Of course, the foregoing statements are somewhat crude. Each lacks an important set of elements, the matter of code.<sup>2</sup> How, at both explicit and implicit levels, does the change agency define or *encode* the innovation? How, at similar levels, does the recipient community perceive or *decode* it? In what respects does the program encoded by the initiating agency correspond or fail to correspond with the program as decoded by the recipient system?

This paper examines, and hopes to reconcile, two sets of case materials, each involving an effort by the same Peruvian health agency in the same rural region of Peru to deliberately modify existing patterns of behavior. One deals with an effort to improve the quantity and quality of birth reports, the other with an attempt to make local water supplies safer. The paper, in the course of presenting and analyzing relevant case materials, hopes to combine a contribution to the study of the process of directed culture change with a search for findings of practical significance to public health in Latin America.

Materials were gathered in field work in Peru, from 1950 to 1954. Although the events reported are now more than ten years old, they appear to suffer no loss of timeliness. The regional health department to which reference is repeatedly made is the Servicio Sanitario Departamental de Ica (Ica Departmental Health Service), which is part of Peru's Ministry of Public Health and is roughly equivalent in nature and scope to a state health department in the United States.

While in Peru, the author worked closely with personnel of the Ministry of Public Health of Peru, particularly with the Servicio Sanitario Departamental de Ica.

#### IMPROVING BIRTH REGISTRATION

In 1952-53, when these data were gathered, 17 inhabitants of as many villages in the Ica Valley in coastal Peru, occupied principally as storekeepers, artisans and farmers, were doing part-time duty for the regional health department as resident registrars of births and deaths. Most had been doing so since 1947.

Prior to 1947, the regional health department was aware that births, particularly rural births, were markedly under-reported. Vital data provided by the traditional municipal registries were so qualitatively inadequate as to be useless for public health purposes. Following a survey, the health department learned that some factors depressed the quantity of birth data and that others impaired their quality.<sup>8</sup>

Quantitatively, gross under-reporting occurred because places of registry were too few and far apart, legal requirements were too exacting, and parents were expected to do too much. Thus, but seven municipal registries served about 35,000 rural residents of 200 scattered communities, with some villages outlying the nearest registry office by more than ten miles. Further, federal law specified that certain stringent conditions be met before a municipal clerk could inscribe a birth: it

had to be reported in person by a parent who must be accompanied by two adult witnesses prepared to testify to the truth of the reported event; the report had to be lodged within eight days of the birth and only during weekday office hours.

Most rural births occurred at home, attended by lay-midwives. Prevailing cultural convictions prescribed a prolonged period of postpartum seclusion for the mother. This often meant that either the father registered the birth, or nobody did. To report his child's birth, the father had to leave his fields on a work-day, prevail on two other local men to do the same, walk a distance of up to ten miles to the registry office, and do so before the child was eight days old.

The father was likely to register the birth if the birth occurred during a less demanding interval of the agricultural cycle, if the newborn appeared healthy enough to survive, if the parents were legally married, if the father had property to bequeath and if the father wanted to provide the child with the subsequent manifold benefits of a legally valid birth certificate. However, as the number of obtaining conditions declined, the likelihood of his reporting the birth was correspondingly diminished.

The quality of birth data was also deficient. Registration forms, holdovers from an archaic Spanish-colonial tradition, were designed not to obtain demographic information but to provide legally valid documentation of personal identification, descent claims and inheritance rights. Moreover, uniformity of inscribed information varied from one municipality to another. Each municipal clerk periodically forwarded summary figures on births and deaths to the National Office of Vital Statistics (NOVS), a component of the Ministry of Finance and Trade. While the NOVS was responsible for receiving and tabulating these data, it lacked the authority to control or standardize their sources.

#### *Improvement of Vital-Data Collection*

In 1947, to improve the quantity, quality, uniformity and public health utility of vital data, the regional health department developed a project to: augment the seven existing municipal registries with a network of 17 additional registry posts, each in a strategically located village; select, train and supervise qualified villagers to man the posts; develop suitable registration forms; recruit a biostatistician to direct the project and install a modest data-processing system at the health department quarters in the city of Ica.

Village registries, each readily identified by a printed sign, "Village Registrar of Births and Deaths," were located in the stores, workshops or homes of registrars. Health department personnel drilled the registrars in their duties and visited them regularly for supervisory and control purposes. The registrar's status relative to the health department was that of voluntary auxiliary, not employee. Each received a fixed stipend of forty *soles* monthly, plus one *sol* per vital event registered. In United States exchange at the time, the *sol* was worth between five and six cents.

The health department selected its registrars from among those villagers who could write legibly and read, were readily accessible to registrants, had good reputations in their communities, could comprehend verbal instructions and perform the requisite tasks and were willing to undertake the responsibility in exchange for the nominal stipend.

In fact, what were registrars like? Thirteen, or all but four, had had no more than six years' schooling. Ages ranged from 27 to 60, and all but two were males. Occupations included storekeeper, small farmer, stoneworker, tailor and seamstress. Like their neighbors, registrars were ethnically *mestizo*, i.e., basically Indian with a Spanish admixture. Culturally, their way of life was neither Indian, Spanish nor modern Latin American but a characteristic mixture of all three.

How did they perform? Of the 17 registrars recruited in 1947, seven had performed poorly and had been replaced. In 1953, according to the biostatistician and his administrative assistant, 16 of the 17 were performing responsible and reasonably competent jobs. The one exception was a spinster storekeeper who was slated for replacement.

#### *Results of the Project*

Complete figures are available only for the project's first three years (1947-1949). Although more current figures are not available, they are reported to convey a pattern essentially similar to that shown in Table 1.<sup>4</sup>

By cross-checking reports of infant deaths against corresponding birth reports, the health department knew that some unreported births still occurred. Given the nature and prevailing conditions of the region, however, health department personnel were convinced that a reasonably complete picture of vital statistics was now available for the first time. Also, for the first time, as Table 1 indicates, still-deaths or fetal deaths were being reported.

TABLE 1. REPORTS FROM MUNICIPAL REGISTRIES AND VILLAGE REGISTRARS<sup>5</sup>

<i>Vital Events</i>	<i>Municipal Registry Reports</i>	<i>Village Registrar Reports</i>	<i>Percentage of Increment</i>	<i>Total</i>	<i>Year</i>
Births	1,183	547	46.2	1,730	1947
Deaths	744	15	2.0	759	
Stilldeaths	0	58		58	
Births	1,233	557	45.2	1,790	1948
Deaths	782	61	7.8	843	
Stilldeaths	0	50		50	
Births	1,419	639	45.0	2,058	1949
Deaths	849	24	2.8	873	
Stilldeaths	0	33		33	
Total	6,210	1,984	31.9	8,194	

By 1951, the health department had succeeded in securing the cooperation of municipal officials, and municipal clerks began filling out two sets of birth and death reports. One involved the traditional legal forms. The other set consisted of certificates which the health department had developed and which embodied World Health Organization recommendations for such forms. In addition, through working arrangements set up with municipalities and the NOVS, the health department began serving as a collection and control center for vital data in the entire Department of Ica.

#### *Evaluation of the Project*

In relying on untried villagers as auxiliary registrars, the health department sponsored an innovation that alarmed some top-level officials in the Ministry of Public Health at Lima, and caused regional health officials in Ica some misgivings. Even as they committed the fate of the registration experiment to the hands of village registrars, many of whom had had less than seven years' schooling, Ica health officials wondered if they had acted wisely.

As events demonstrated, and continue to demonstrate, they had. The experiment was an immediate and sustained success, over-fulfilling even the most optimistic hopes. On the whole, village registrars kept accurate and legible records, were cooperative with health personnel, and obviously took pride in doing a good job. Most important, their work produced a large annual increment in reported births, a modest

increase in reported deaths, and a notable beginning in the reporting of fetal deaths.

The registration project, examined from the perspective of villagers and village registrars, showed certain cultural factors that had not figured explicitly in project planning and administration.

The author interviewed 12 of the 17 registrars; was present on a number of occasions when people lodged birth reports; accompanied an administrative clerk in his visits to village registrars; interviewed the statistician and clerk, and also interviewed over 30 adults in eight villages as to their experiences with and views about registration.

As defined and delineated by the health department, the position of village registrar involved an auxiliary work-role with certain formal duties and expectations. The formal aspects of the role are those that would be listed in a "job description," those that relate to the explicit and manifest purposes of the role.

However, as students of the role-concept have shown, roles may also have informal aspects, facets of the role which the incumbent uses to realize latent goals. An understanding of the informal aspects of the village-registrar role and its latent goals is essential to understanding the success of the project.

Without exception, villagers who acted as registrars over a period of time fulfilled the role's manifest requirements. Had they not done so, they would have been replaced. Registrars who satisfactorily met the health department's expectations tended to invest the role with surplus and unintended, i.e., latent, meanings and functions.

As indicated earlier, ten of the original group of 17 registrars selected in 1947, were still at their posts in 1953, and seven had been replaced. The village of Pinos was one in which the original registrar was relieved of his duties and was replaced by another resident, who has performed satisfactorily. The first registrar was apparently a "failure," the second a "success." Scrutinizing the respective registrars may identify relevant variables attending the creation and cultural redefinition of the registrar-role.

#### *The First Registrar in Pinos*

Manuel S, about 45, is the owner of the larger and more fully stocked of the community's two stores. He lives with his wife, mother, and two nieces. Don Manuel, as he is respectfully addressed, is the most prosperous resident of Pinos. He is also its only regular reader

of newspapers, securing them on bi-weekly trips to the city. A high school graduate, he is the community's best educated citizen.

During its initial survey, the health department had selected Pinos as a good site for a registry post, and health personnel took immediate note of Manuel as a "natural" for registrar. He says he accepted the post because he admired the work being done by the health department and felt that he could do no less than cooperate. The monthly stipend was a wholly negligible factor in his decision. He did not consider himself an employee of the health department, as indeed he was not, but simply a cooperating citizen.

His store was the registry station. By technical standards, he was an above-average registrar. He readily comprehended what was expected of him, wrote a legible hand, and kept neat and accurate records.

Yet in 1949, two years after becoming village registrar, he asked to be relieved of the duty, claiming that he lacked the time to devote to it. As he told the author several years later, besides its encroachment on the time demanded by his primary responsibilities as storekeeper, the registration work itself became increasingly annoying.

In fact, however, his duties as registrar had demanded relatively little time; only in an exceptionally busy month did more than four registrants appear. Apparently, once he had spent his initial burst of enthusiasm, the role and its relatively slight demands became, somehow, negatively charged for him.

The "real" reasons for his retirement from the role must be inferred, since Manuel himself says only that he lacked the time and did not like the duties. They are inferred, in large part, from certain regularities in Manuel's relationships in the community and from his consistent stance regarding the community's goals and values.

Manuel is aloof from the important activities and networks of village life. He remains detached from the local cycle of religious and secular celebrations, declines to serve on the Village Committee, and avoids being drawn into the local network of *compadrazgo*, the godparenthood complex. In fact, none of his *compadres* are from the village, but are all city merchants.

Manuel travels to the city twice weekly to do wholesale purchasing. He is said to be well-connected in the city and to number among his urban acquaintances some businessmen and lawyers, and even a judge. His annual birthday fiesta is usually well-attended by city friends, who treat Manuel and his family with amiable condescension.

In sum, Manuel had agreed to undertake the village registrar post as an act of civic duty. He performed the requisite tasks completely. Yet within two years, pleading lack of time, he resigned from his position as registrar.

#### *The Second Registrar in Pinos*

Luis F, also about 45, is the village tailor. He also manages a tiny and barren grocery store next to his tailor shop and farms several tiny plots just outside the village. He and his wife have eight children.

Where Manuel is silent, Luis is loquacious. Whereas the former shuns village affairs, the latter is profoundly involved in them. While Manuel avoids being drawn into the local godparenthood complex, Luis is continually establishing new ties of ritual kinship and reaffirming old ones. Where the former is virtually an abstainer, the latter drinks as copiously and often as do most of the community's adult males. Manuel is interested in the affairs of the nation and world; the horizons of Luis, by contrast, are almost wholly local. Luis is a leading member of the Village Committee and a prominent devotee of the local cult of Saint Anthony, the village's patron saint. He is also an adult sponsor of the local *futbol*, or soccer, team. In addition, he probably has as many godchildren—and by the same token as many *compadres* among the latter's parents—as does any resident.

Finally, whereas Manuel probably comprehends the nature and aims of the health department's program in birth and death registration at least as well as do most educated lay people in the city, Luis probably neither grasps nor is really interested in any areas of the program beyond the boundaries of the particular registrar-tasks that he performs.

In other words, of the four institutionalized sectors of village life through which individuals may gain recognition and some degree of social ascendancy—civic, religious, athletic-sponsorship, and ritual kinship—Luis is fully and actively involved in all four. Two other recognized avenues of recognition and prestige-enhancement—possession of material wealth and high educational attainment—are closed to him. Though his horizons are largely limited to Pinos and neighboring villages and hamlets, within those bounds he has strong aspirations to gain esteem and respect.

When asked by health department personnel to assume the duties of village registrar, following the resignation of Manuel S., Luis readily consented. As compared to Manuel, Luis was less facile in his grasp of instructions, wrote with a poorer hand, and kept less tidy records.

The monthly stipend had had little meaning for Manuel, and was not large enough to appreciably affect Luis' economic fortunes. The latter, however, admits frankly that he would like to see it increased to a more worthwhile sum.

Aware that by official definition his position is that of voluntary auxiliary, not employee, Luis nonetheless informs people that he is an employee of the health department. Luis also does something that Manuel never did: he "solicits" clients for registration. He finds occasions to remind pregnant mothers or their husbands about reporting births. Though unable to understand why the health department wants certificates made out for fetal deaths, creatures who have never lived and for whom custom dictates relatively unceremonious burial, he is apparently effective in convincing equally uncomprehending parents that they should register such events.

#### *Comparison of the Two Registrars*

Manuel defined the role of village registrar in much the same terms as had the health department, i.e., as a modest job to be done in a responsible and efficient way by a public-spirited citizen who wished to serve rational public health ends. Luis, on the other hand, redefined the role, investing it with a surplus of meanings not envisioned in its original delineation, and manipulating it to enhance his local standing.

The data suggest that Manuel's non-participation in community affairs, his disinterest in the goals that moved most villagers, his disinclination to define or use the role to serve socially "ulterior" ends all contributed to limit and finally extinguish whatever rewards the role held for him, once his initial wave of disinterested zeal had subsided. Luis has been satisfactorily performing the formal aspects of the role and will presumably continue to do so precisely because he is deeply involved in the local culture and can use the role to serve ulterior ends.

The curious fact emerges that the person with less education, less technical proficiency, and less understanding of the nature and objectives of the program is the more successful registrar. Luis' credentials are poorer, but his stake in occupying the position is greater. He is motivated to perform well as registrar not simply because good performance brings health department approval—although this is crucial to continued occupancy of the position—but more importantly because thereby he gains within-community goals.

### *Other Registrars*

Of the other registrars, three have had seven to ten years of schooling; the remaining 14, like Luis, have had six years or less. All but one participates in varied ways in two or all three of the institutionalized activities revolving around village secular affairs, the local saint cult and athletic sponsorship. All but one has a web of involvement in the godparenthood complex. The exception in each instance is the same individual—an educated elderly spinster storekeeper who is profoundly involved in ~~region~~ religion, keeps irregular store hours, and is increasingly indifferent to her registrar duties. Despite her neat hand and orderly records, she was slated to be replaced by a less proficient but more highly motivated villager.

In respect to non-participation and disinterest in the community's cycle of mundane affairs, Manuel and the spinster are similar. They are similar, too, in that neither attaches surplus meanings to the registrar role or defines it in ways very different from its official definition. Moreover, they are similar in that, despite adequate educational attainment and technical proficiency, neither has been a success at the role of village registrar.

Most registrars are apparently like Luis, the second registrar of Pinos, in that they like to be thought of as health department employees and they welcome opportunities to strengthen their connections with the health department. For example, when health department immunizers are on rural immunization campaigns, they now conventionally use the homes, stores or shops of registrars for equipment storage and even for personal lodgings. In effect, village registrar posts provide immunizers and other health workers with a convenient chain of personal and work headquarters throughout the valley. Also, public health nurses who visit villages to check on reported cases of communicable disease often call first on the local registrar for aid in locating families or other information. Sanitary inspectors report that those village storekeepers who are registrars cooperate more fully with sanitary requirements than do other proprietors.

### *Marriage and Family Factors*

Following the establishment of the project in vital-data registration, factors of marriage and family also played a part in the increment of birth reports. Marriage in rural Ica occurs as either formalized or unformalized union, each occurring about as frequently. Partners

to stable free unions sometimes formalize their marriage in a religious ceremony years after establishing a joint household. As a rule, however, free unions tend to be unstable. In two villages in which a careful census was conducted, about half of all mothers had not been formally married to their spouses; furthermore, either or both spouses in 30 per cent of all families had at one time been a partner in informal and since-dissolved unions.

In free or unformalized unions, only the father's signature on the birth inscription legally constitutes recognition of paternity and commits him to the support of mother and child. Without such written acknowledgment by the father, the commonlaw wife and child have no legitimate claim on the father. In properly formalized marriages, the obligations of a male to his wife and children do not depend on his signature in the birth registry. Even in this instance, however, the child without a valid birth certificate is at a disadvantage relative to siblings or other claimants in respect to property and inheritance rights.

At the inception of the registration project, the health department assumed that villagers lacked awareness and interest in birth registration. This was only half true. Villagers had little understanding of the *demographic* implications of registration, to be sure, but were extremely aware of its *legal* ramifications. By the same token, many fathers, especially those who were partners in free or unformalized unions, had little interest in birth registration and some even had strong feelings against it. Mothers, however, whether partners in formalized or free unions, were consistently and deeply interested in having the birth of children inscribed.

One important consequence of the registration project was the increase in birth reports of the offspring of unformalized unions. In two villages where careful counts were made, over three-fourths of the registered births were in this category. Interviews with parents and registrars in several villages left little doubt that mothers were now exercising more influence than before in getting the births of children inscribed.

In other words, once registry facilities were more numerous and accessible, birth reports increased. However, the data suggest that the former "caused" the latter through the intervening and facilitating effects of the influence of mothers.

## INSTALLING A HAND PUMP

Many people in rural Ica who are otherwise receptive towards maternal and child health services, immunization, malarial control programs, registration of births and other health department activities, do not readily accept the notion that untreated water may be a contaminated and disease-producing vehicle. For one thing, this idea is at variance with traditional beliefs on how disease is transmitted. For another, water already has profound meanings in rural Ica, with which the idea of water-as-threat is wholly incongruent.

Water is a problem of perennial and massive importance in the economic and social life of the valley. Ica is virtually rainless and its prime water source is a river which flows only when the rainy season in the Andean highlands provides run-off. An intricate irrigation system, constructed hundreds of years ago during the Inca epoch, distributes water for agricultural purposes throughout the valley.

When a season of subnormal precipitation occurs in the Andes, agriculture in Ica wilts, village wells run dry, the total economy suffers, and widespread deprivation occurs. On the other hand, when highland rain and coastal run-off are adequate, these conditions are reversed, and relative well-being prevails. In other words, some of the most fundamental sectors of life in Ica are at the mercy of the vagaries of an unstable water source. People have such large concern with the economic and social effects of water that they have little to spare for its preventive health aspects.

### *The Hand Pump in Arenal*

Traditionally, Arenal's water supply for domestic purposes consisted of an uncovered public well, from which water was drawn with rope and pail. On the basis of periodic analyses of water samples, the laboratory of the regional health department regularly reported high levels of contamination. In respect both to artifactual features and sanitary quality of its water supply, Arenal was typical of many rural communities in the Ica Valley.

In 1950, wishing to explore simple and inexpensive means to assist rural communities in achieving safer water supplies, the regional health department selected Arenal as a typical site for an experiment. It approached the town council and offered to cover the public well with a concrete shield and install a hand pump. The installation, to be paid for and set up by the health department, would on completion become the town's property and responsibility. Town officials enthusias-

tically accepted the offer, even expressing the community's gratitude to the health department in a formal resolution.

The sanitary engineer installed the hand pump and covering shield, revisited the scene several times to check on seepage and pump operation and, finally, expressed satisfaction with the engineering aspects of the installation. At the same time, laboratory reports on water samples following the installation indicated that bacteria counts had dropped and were now routinely at reasonably safe levels. Eventually, the sanitary engineer submitted a report of the entire operation to the health director. The report concluded that the experiment had worked. The next step seemed to be to apply the method to other communities, now that the job in Arenal was done.

But the job in Arenal not only had not ended, but perhaps had only begun. Not many weeks after the sanitary engineer had written his "final" report, town council members and townspeople from Arenal began calling for his services. Initially, their visits were for the purpose of securing parts or technical help in repairing the pump. They readily conceded the sanitary engineer's point that the health department had amply fulfilled its commitments and that responsibility for the installation's upkeep was Arenal's. They humbly insisted nonetheless that even the modest financial outlays and technical resources needed for pump maintenance were beyond the community's capacity. Despite his annoyance, the sanitary engineer continued to provide occasional parts and technical aid.

As time went on, however, the sanitary engineer realized that he was being drawn increasingly into matters unconnected with his technical field and into a role he was unfitted and unwilling to perform. That is, disputes between townspeople over the social organization of pump and well were being brought to him, and he was expected to adjudicate them. However, serving as arbitrator of local quarrels placed him in what he felt to be an absurd position. After several such experiences, he vehemently refused even to listen to any more arguments concerning local use and management of the well.

### *Outcome*

About a year after the sanitary engineer had reported the satisfactory completion of the project, the community had returned to the use of the familiar rope and pail in an open well.

Why had the experiment failed? One reason had to do with the community's value system. How a group allocates its scarce resources

and spends its money depend on its dominant values. To be sure, Arenal could conceivably have used its meager funds for pump repairs and even for paying a stipend to a well-custodian. Had it done so, however, this would have meant diverting available resources from the important town celebrations (the patron saint's fiesta, the Independence Day celebration, and others). Much as Arenal favored the new hand pump over the former rope-and-bucket arrangement, the town fiestas were even more important than the pump.

Another reason was the community's perception of the nature and purpose of the pump. Although the health department and sanitary engineer defined the pump installation as a means of assuring a more sanitary water supply, townspeople viewed it as a way of having a more convenient one.

A word on the concept of water sanitation is in order. The notion that the community needed a "protected" water supply, one that would safeguard people against disease-producing elements which water might otherwise convey, was never understood or taken seriously by the villagers. Like all rural residents of the rainless Ica Valley, the people of Arenal depended on an irrigation system fed by seasonal run-offs from the adjacent Andes. Water gave rise to a vast unease and inspired a profound, even religious, devotion for its annual rejuvenation of the soil. The idea that water might also be a vehicle for malign forces seemed too threatening in its implications to be believed.

The community's limited resources, characteristic values, and definition-of-the-pump-situation influenced its evaluations and perceptions of the pump. Another set of factors—Arenal's prevailing social structure—affected how the town handled problems of pump management and supervision. In point of fact, the well-supervision problem proved to be the rock on which the project finally foundered.

Children were often sent to draw water. Although occasionally punished for swinging on the pump handle, staging water fights, and the like, youngsters found the pump an irresistible play object. Their antics not only abused the pump but wasted water and resulted in an even muddier morass in the immediate well area than had formerly occurred.

Apprised of this situation, the sanitary engineer insisted that the town council do something about it. Exhortations to parents to control their children resulted only in spasmodic improvements. The town council then persuaded a housewife living near the well to serve

as volunteer overseer. She proved to be ineffectual, as did her successor. Each of them claimed to be too occupied with her own domestic chores to devote much time to watching the pump and controlling its users.

An arrangement was finally worked out with a third housewife. Insisting that she was no more free than her predecessors to be on continual overseer-duty, she agreed to be keeper of the key for a padlock which was placed on the pump handle. During stated hours at the beginning and end of the day, she removed the padlock and people could get water. Outside these hours, any adult could call at the overseer's house and get the key. This meant that housewives could not send children for between-hours water, however, but had to make the trip themselves.

After an incident in which the key was either lost or stolen and a new padlock had to be obtained, the overseer refused to allow anyone but herself to open the padlock, and residents could use the well only in the early morning and late afternoon. While this arrangement lasted, about two months, queues of a dozen or more people at the well were not uncommon.

Men, particularly those who never went for water and could see the humor of it, joked that Arenal was sure to become famous as the place where one got water only by appointment. Among many women, verbal antagonism was expressed against the overseer. In addition to the obvious complaints, gossip had it that she allowed her relatives and close friends to use the pump outside regular hours.

The gossip may have been without foundation, but the town's social structure made it credible. Despite Arenal's small size—75 households, totaling fewer than 400 persons—the community was not a cohesive social unit. Rather, it was fragmented into 12 to 15 extended-family groupings and two primary sets of political allegiances, the latter corresponding more or less to the major political divisions obtaining in the nation at large. The bonds of *compadrazgo* tended not to cut across, but to follow and reinforce existing lines of solidarity and cleavage. Except for a few marginal individuals and families, virtually every adult in the community could be readily located according to his kinship network, and almost as many could be identified by commitment to one or another political faction.

One day, the overseer slapped a child who was trying to work the padlocked pump, and an argument ensued between the overseer and child's mother. The women did not have kinship ties with each other, and their husbands were adherents of different political factions. Rela-



tives of the respective women entered the dispute, and much taking of sides—along predictable lines—occurred throughout the community.

The next morning, the padlock was found to have been forcibly removed from the pump, and the pump handle broken. A relative of the slapped child was assumed to be the culprit. During the first months of its installation, the pump had served to some degree as a unifying focus for the community, even when people had had to stand in line for water. Now, however, it had become a source of bitter community dissension; this may have been why nobody went to the nearby city of Ica to inform the sanitary engineer and ask that the pump be fixed.

Because of the broken handle, pumping was now slow and arduous. In answer to their wives' complaints, several local residents soon afterwards dismantled the pump and took up the concrete shield.

This meant that somewhat over two years after the well had been covered and a handpump installed, Arenal had returned to the former rope, pail, open well and contaminated water.

## DISCUSSION

### *Improving Birth Reports*

A health department in Peru resolved to improve the collection of vital data in a region and situation presenting extreme difficulties. Following careful surveys and planning, a project was put into effect. Certainly, in the presence of the formidable concatenation of circumstances—the encirclement of registration with archaic and oppressive requirements, the prevalence of home births attended by lay-midwives, crude conditions of travel and communication, a dispersed and barely literate population, a long tradition of poor reporting of births—it faced a real risk of failure.

But the project did not fail. It was, and continues to be, a success. The right administrative ingredients, e.g., preliminary survey, realistic planning, skillful implementation, careful training and supervision of key workers, secured the right results. Yet the reasons for success go beyond these simple conditions.

Certainly, an investment of administrative efficiency earned dividends in achieved results. Yet other sectors of the health department's program, directed by the same professional staff and attended by serious planning and implementation, produced considerably less fruitful effects. In fact, as compared to certain other activities—the hand-pump

fiasco in Arenal, for one—the project on vital-data registration seemed to be paying disproportionately large returns for the effort expended.

It did so because an investment of imaginative and sound public health administration had inadvertently tapped into certain fields of cultural forces which provided the project with two powerful sources of aid. One was generated by the creation of the role of village registrar. As interpreted by the health department, this was an auxiliary and low-ranking job, the function of which was to promote improvement of vital-data collection. Furthermore, the rewards for being a village registrar, in the health department's implicit coding, centered on the proffered stipend. As decoded by village society, however, the designation of a resident as village registrar was a status-enhancing event, whose primary reward was an enhanced local esteem with the stipend serving as no more than a secondary and reinforcing reward.

The project was facilitated also by a second source of unanticipated aid. As encoded by the health department, the establishment of 17 new registry posts would, hopefully, trigger the following sequence: (1) more registry posts would lead to (2) readier access to registration facilities by more rural parents which in turn would lead to (3) more birth reports. Although (3) did in point of fact follow (1), this does not mean that (2) is a full and significant statement of the intervening dynamic. A fuller and more accurate description of the sequence, one that takes into account how mothers in village society decoded the fact of additional registry stations, is: (1) more registry posts mean (2) readier access to registration by more parents, which means (3) more compelling influence by mothers, especially those in free unions, in getting children's births inscribed leading to (4) more birth reports.

In other words, the health department believed that establishment of numerous new registry stations would increase birth reports by decreasing physical distance between registrants and registrars. As interpreted in village society, however, greater proximity of registration sites had this effect because it gave mothers a stronger voice in birth-registration decisions. The network of new posts served to activate certain forces in favor of birth registration that village culture and society had, so to speak, been holding in reserve.

### *Installing a Hand Pump*

The complex problem of improving birth registration was solved successfully and with relative dispatch. The "simple" one of making a local well safe encountered increasing difficulties and was finally a failure.

The health department believed that the installation of concrete shield and hand pump was essentially a matter of engineering and environmental efficiency. The problem was seen as one of interrupting the circuit of disease transmission between humans-environment-humans by interposing simple technical devices between water source and consumers. The fact that the health department had to undertake the provision of on-going maintenance service for the hand pump meant merely that the level of engineering efficiency was lower than anticipated; in itself it did not lead to the project's failure.

Townspeople did not perceive the new installation as a means of making the well safe. The idea that their water might convey harm was too threatening to be readily accepted. As they saw the project, the hand pump meant more convenient use of the well, i.e., greater social efficiency.

However, once the hand pump became entangled in, and exacerbated, existing factional tensions, its convenience value lost its force. It was no longer a socially efficient but a socially destructive innovation, and its failure followed.

## REFERENCES

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<sup>2</sup> For discussions of code as related to communication, see Berlo, David K., *THE PROCESS OF COMMUNICATION*, New York, Holt, Rinehart & Winston, Inc., 1960; and Ruesch, J. and Bateson, G., *COMMUNICATION: THE SOCIAL MATRIX OF PSYCHIATRY*, New York, W. W. Norton & Company, Inc., 1951.

<sup>3</sup> Although the project was also concerned with data on deaths and still-deaths, for convenience the present report deals primarily with birth reports.

<sup>4</sup> Servicio Sanitario Departamental de Ica, Ica, Peru, *Personal Communication*, 1958.

<sup>5</sup> Fiestas, Cesar, *et al.*, *Ensayo de Nuevos Procedimientos del Registro de Nacimientos y Defunciones en el Departamento de Ica*, *Revista de Salud Publica*, 1, 10-30, 1951.

<sup>6</sup> Wellin, Edward, *Water Boiling in a Peruvian Town*, in Paul, Benjamin D. (editor), *HEALTH, CULTURE AND COMMUNITY*, New York, Russell Sage Foundation, 1955, pp. 71-103.

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