Coping and adaptive behaviors of the disabled

Israel Goldiamond*
THE UNIVERSITY OF CHICAGO

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In these days, when only women are supposed to write about women's problems, and blacks about blacks', I come with an unfair advantage over others who write about disability—I am writing from a wheelchair. In these days when authority is legitimized only through personal experience, I present impeccable credentials: for nine consecutive months I was hospitalized for a spinal injury. During that time I shared observations, roles, and treatments with other patients. More importantly, we were to share similar futures upon discharge, possibly to be disabled for the remainder of our lives. It was this which fundamentally distinguished us from the newspaper reporter who attempted to understand us by spending almost a week with us, much of it in a wheelchair; most of the patients ignored him as a phony.

What I am writing now I might have written if I had simply spent the same amount of time as an observer. But I doubt very much if I would have written it at all, or at least not this intensively. The injury forced it upon me. I experienced the pain and discomfort. The pain is mostly gone, but I still frequently experience the discomfort; it is present right now. This private experience could not have come from observation, and I can think of nothing in my past life that would have prepared me for it and that might have formed a basis for empathy, as defined experien-

tially. However, arrangements can be made so that the continual discomfort not only does not get in my way, but is not even experienced. These arrangements derive from knowledge which I had prior to my current state and for which empathy is not always necessary. Arrangements could also be made so that I would experience the discomfort and it would be incapacitating.

I shall present some observations of my behavior and that of other patients while I was a patient and after discharge; I also observed patients who had not been in the hospital with me. Observations and relations are derived from context, and no observer starts out with a *tabula rasa* whether his role is as therapist or as patient. A blind roommate of mine systematized his observations and their relations through a purposive God. He drew to his bedside many nursing students whom he impressed by the sustaining power of his faith. A professional systematized his observations psychoanalytically and found depression to be a necessary developmental stage in rehabilitation; he subsequently presented a paper before a psychiatric audience. My approach stems from the experimental analysis of behavior, or what might be called functional behaviorism (or radical behaviorism, to distinguish it from classical behaviorism [Skinner, 1974]).

This approach deals with the meaning or motivation of behavior by considering a pattern of behavior in terms of its maintaining consequences. The pattern may be required for these consequences to occur, under certain conditions. The rhythmic foot-tap of the saxophonist when he is playing may be motivated by the necessity to keep time. The identical beat of a child's foot under the dinner table when the family is eating may be motivated by the parental annoyance it produces, or the same beat by a stroke patient in his room may be motivated by the muscle recovery it may produce. Although the beats are identical, they are somehow in different classes. They do not have the same meaning for the persons involved, are motivated differently, are intended differently, or serve different functions. We can also say that, despite similar topographies, the beats are different operants; that is, they are maintained by different consequences

(Skinner, 1953). The five languages of meaning, motivation, intent, function, and behavior-consequence contingency cover similar ground. The behavior-consequence language, however, deals directly with observables and potentially manipulatable events.

Once we have assessed the meaning of a current behavior, we may utilize this information to develop programs which change it or produce other desirable ends. Out of the systematic development of such procedures, a technology of behavior is emerging with a common conceptual system. Derived in the laboratory, this technology is known as the experimental analysis of behavior (cf. Skinner, 1938). Applied to clinical problems (Neuringer and Michael, 1970) and classroom problems (Sulzer and Mayer, 1972), it is known as behavior modification (Goodall, 1972). Applied to curricular problems, it is known as programed learning or instruction (Hendershot, 1967). Applied to pharmacological problems, it is known as behavior pharmacology (Thompson and Schuster, 1968). Applied to muscular and other physiological problems, it is known as biofeedback (Barber et al., 1971).

The field of rehabilitation and disability appears to be an ideal area of application for a technology of behavior. For the past few years, in our laboratory and clinic at the University of Chicago, we have been applying this approach to emotional and other living problems of outpatients, as part of the outpatient service of the Department of Psychiatry. In essence, a contract is signed by two consenting adults which specifies the agreed-upon outcome to be obtained, ascertains the current repertoire which is relevant to it, and tries to develop a program which converts the current repertoire to the desired repertoire in a step-by-step manner. The program requires self-control and self-analysis, which involve training patients to change the contingencies governing their own behavior and, having identified these contingencies, to analyze their own behavior and understand it (Goldiamond, 1965a). The contingencies governing behavior are defined as the *relationships* between the *behavior* patterns at issue which are required to produce certain *consequences* and the class of *conditions*

under which this relationship is likely to hold. In the process of developing programs which produce change and insight, we believe that we, too, have gained some new insights into and understanding of behavior, the contingencies of which it is a part, and their relation to experiential states.

One afternoon when I found myself on my back with one leg bent back under my arm and devoid of feeling, I realized that I might have suffered a spinal injury. When I had been transferred to a stretcher and was told by the neurosurgeon who had rushed to the scene of the accident that I could be treated in that town or be flown to my own hospital—to arrive in about three hours—I realized that delay would directly affect recovery, and I agreed to be treated there. When I awoke in the intensive-care unit after surgery, I knew that if I were to get back to the work I enjoy and feel is important, I would have to exert for myself the type of self-control and self-analysis we had been applying with other consenting adults.

Starting in early October 1970, I spent a little less than a month in a hospital in a small town near the site of my accident. I was later transferred to another hospital where I remained until the end of June 1971. The first hospital was an excellent general hospital serving the community from which its staff and patients were drawn. Prior to or following their hospitalization, patients might meet staff members in the local supermarket. The atmosphere in the hospital was one of kindness, consideration, and efficiency. However, because it was not primarily a rehabilitation hospital, the neurologist and my wife joined in a search for possible places to which to transfer me once acute treatment was over. Neither was previously aware of the existence of the facility which was to be my home for eight months. If they had not found this facility and if I had not been transferred there, the remainder of my story might have been utterly different.

Recently we learned of a patient with a lesser injury who had been returned home from an acute-care hospital without rehabilitation training. She is bedridden at home and requires increasing care. Apparently neither her physician nor her family was aware of facilities which could train her to transfer to a wheelchair and to increase her mobility. In the absence of such training, deterioration, physiological as well as behavioral, is occurring.

The ignorance of acute-care hospital personnel sometimes does not concern only special facilities (such as rehabilitation) available for disabled persons. Sometimes it extends to special medical requirements for those persons. At the acute-care hospital I was in, because I could not initially turn myself in bed I was log-rolled every two hours to avoid the skin breakdowns called decubitus ulcers. At the rehabilitation unit I later entered a large number of patients came in with such ulcers because they had not been log-rolled while they were in acute-care hospitals.

The rehabilitation hospital to which I was transferred was in the large city in which I live, with staff and patients drawn from different parts of the metropolitan area. The likelihood that anybody there would meet or would have met any other patient or staff member on the outside was remote, with the obvious consequences for relations within the institution. While there was a community on the outside, there was also a community evident on the inside. It would be nice to say that the divisions between the communities were overridden by the common treatment mission of the staff, but this would confuse social mission with the different contingencies for the individuals involved.

The patients enrolled in our self-control clinic have been required to keep daily logs of their behaviors and other events, and I assigned myself this task as well. I kept graphs. I recorded my muscle movements. Thus, I noted that shortly after arrival I was told to lie motionless and not to move my torso: "Don't move; we'll move you." Within these limitations I noted some exercises I imposed for myself; "9:15–9:21 A.M., shrugged shoulders 10 times." But after a while it was a struggle even to lift a two-pound weight. I was thus immobilized for more than three months. Toward the end of that period I could move, provided I wore a painful body brace. Much later, I noted that when one crawls forward movement of arms and legs is in contralateral pairs, but

when one crawls backward it is in ipsilateral pairs. This information was useful in learning to walk both forward and backward with the aid of a reciprocal walker.

I recorded social interactions in the hospital. Thus I noted the dismissal of a male attendant when he was caught with the hand of a female paraplegic patient on his knee. The attendant and the patient had been carrying on a love affair, both in the hospital and when she was home on leave. I recorded medications, surgery, and the fact that X rays indicated dislocation of spinal segment T12 ⅜'' from L1. I also recorded the occurrence of feelings of elation, annoyance, and so forth; the contingencies responsible were quite clear. In one instance they were not, and the records I kept were valuable in clarifying them.

Staff members log-rolled me every two hours during my sleep. This wakened me, of course, but I promptly fell asleep again. On a Wednesday in February, I was unable to fall asleep after the final log-roll and was sleepless for two hours. On Thursday, I was sleepless for four hours. On Friday, it was six hours, and Saturday night was totally sleepless. Nor could I sleep during the Sunday following. I mentioned this to the nurse, who immediately attributed my mounting sleeplessness to mounting anxiety. What was I worried about? What was I thinking about that kept me awake? Of course I was worried; if one cannot sleep, one is liable to worry about it. True, many of the thoughts were not pleasant. There is no reason why thoughts in a hospital when one is sleepless should be pleasant. But, as I had successfully taught outpatients in our self-control program, emotions do not cause behavior; rather, emotions *and* behavior are governed by contingencies. The solution might be that something was increasingly keeping me awake at night.

The nurse could find nothing in her record, and I looked in mine. For the past four months I had been receiving 40 mg. of Valium a day, which my physician said I could kick at will, just as I previously had kicked other medications. On Monday that week, the dosage was 40 mg. On Tuesday, I reduced it by taking three pills of 10 mg. each. On Wednesday, I took no pills. That night

had contained the first sleepless period. The ensuing pattern checked with one of the many withdrawal symptoms listed in the Physician's Desk Reference. I promptly reinstated myself on 5 mg. a day and slept soundly all night thereafter. I faded that out completely within a month. Without the records and without a contingency view of emotions as meters of observable contingency relations rather than as causes of behavior, I might have delved into past anxieties and discomforting events and had something to stay awake about. Withdrawal might then have run its course, and the changes might have been attributed to my quest into the past.

Consequences and Behavioral Requirements

While I was in the rehabilitation hospital, I kept up my professional activities. On December 14, although I was immobilized, a site visit for a grant was made in my hospital room. Within a month, I had dictated a progress report and a forty-page grant proposal. By the start of the spring quarter, I was allowed to make weekend home visits and so could resume my graduate seminar at home. When a small skin ulcer appeard on my buttock, my wife drove me home anyhow, with me lying on my side on the back seat of the station wagon. I conducted the class while lying on a living-room couch. During one weekend, I addressed the annual banquet of the Association for Precision Teaching. One year and one day after the accident I spoke at a convention in Los Angeles. I ran the laboratory and clinic from my hospital room, with research assistants, staff, students, and colleagues constantly there during visiting hours. I also took on a client in a self-control weight program.

That spring a new roommate entered the scene. He was John McWethy, midwest editor of the *Wall Street Journal* and a severely impaired quadriplegic. John rapidly caught my bad habit and began to run his office from the same room. The room was now also crowded with newspaper reporters, public relations officials, and others from both our staffs. There was no trouble telling the

two staffs apart. The members of one set were Ivy League—well dressed, clean shaven and clean-cut—and the members of the other were a motley bunch who wore jeans and had straggly beards and long hair. John has since returned home, and he puts in a full week as editor of his paper. He represents one of the very few cases of such functioning by a quadriplegic.

Resumption of our professional lives was critical to both of us; in order to achieve that goal we had to participate wholeheartedly in the rehabilitation program of the hospital. The existence of such a contingency relation or its absence was what, from my observation, distinguished those patients whom the staff described as "motivated" from those whom they described as "unmotivated" or "impossible to reach" or, in less charitable moments, "goof-offs." When a critical consequence was contingent upon participation, there was participation. When such a critical consequence did not exist, or was not strong enough to maintain the effort required to produce it, participation was absent or lackadaisical.

The small college in which a quadriplegic honor student was enrolled as a freshman prior to his injury constructed special ramps for his return, and he learned to operate a typewriter with splints and took college courses at the hospital. On the other hand, a peer with nothing in particular to return to simply watched others and created a social life of his own in the hospital. Two other patients were involved in lawsuits, in which size of settlement was related to extent of injury. These two patients engaged in few recovery programs. These cases puzzled the staff tremendously. People should *want* to get better and should *want* to stay alive longer; the staff knew how to help produce such outcomes; and the patients should *want* to cooperate. The causes of negative attitudes were believed to be hostility, depression, or other attitudinal or underlying psychodynamic formulations. Recalcitrant patients were given pep talks or scare talks that warned of the dire consequences of degeneration, shown movies, and reasoned with, all to no avail. None of these analyses, of course, overcame or was relevant to the absence of consequences

important enough to sustain the high response cost required to produce the outcomes desired by staff members.

Nor were the patients unaware of this. They talked pessimistically or optimistically to staff, depending on which was required, and then, to other patients, of how they had "psyched out" the professionals. It would be naive to assume that they revealed their "true" selves either to other patients or to professional staff members. Both sets of behaviors were under "audience control" (Skinner, 1957), that is, tended to accord with audience contingencies or what has been described elsewhere as the "demand characteristics" (Orne, 1959). Some psychologists and social workers tried to assess and change attitudes or gave projective tests such as the House-Tree-Person. Other social workers tried to make job or educational arrangements, which included finding opportunities for work and trying to reduce the behavioral requirements of these jobs. The patients appreciated the efforts of the latter group, but not of the former.

For some patients for whom critical consequences outside the institution could not be found, maintenance of institutionalization became the incentive that governed behavior. One staff conference was concerned with a patient who, it was felt, had been there too long; the hospital was too much of a good thing for him. The solution reached was the mistake often made under such circumstances: to make it less of a good thing, remove the privileges, and start to ignore him. This is a mistake, because as I have noted elsewhere (Goldiamond, 1969), if a critical consequence is withdrawn and the patient is desperate, he will display other behaviors which force the institution to provide the consequence. In this case, the patient was log-rolled at night, but during the day he persistently lay on the same side. He shortly developed decubitus ulcers, which required frequent attention, and thereby frustrated plans to discharge him.

An even more dramatic case was that of a female paraplegic who had married a man so objectionable to her parents that they had disowned her. The previous year she had pointed a pistol to her chest, and the bullet had entered her spine rather than her

heart. She was determined to return to her parents and not to her husband, and was making little progress because she had little to do with the therapies available. The staff was wondering into whose hands she could be discharged. The patient took matters into her own hands. She denounced the hairdressers who came in once a week as part of a Mafia conspiracy and spread this information. No one acted on this. The following week she attached a sign to the back of her wheelchair. It read: "Don't blow for the—commies. Hitler and Eichmann were right, but didn't finish the job." This was written notification; it was written into the nursing chart. Some of the psychologists said all this was just talk and she could be given scissors for the grooming she liked.

The institution not having "listened" early in the escalation process, the patient now forced its hand. That Thursday, when the ward door was wide open and "luckily" when three male attendants were passing by, she was observed bending over the bed of an aphasic patient, a pair of sharp scissors in her upraised hand, stabbing at the patient. She was, of course, instantly seized and transferred to the nearest mental hospital. This is not the end of the story. Her parents took her back.

It should not be supposed that the behaviors produced were necessarily planned. There is ample evidence in the operant laboratory literature that consequences appropriately defined and programed will influence behavior whether or not the subject is aware of their relation to behavior (Hefferline, Keenan, and Harford, 1959; Goldiamond, 1965b[1]). Accordingly, the conscious-unconscious continuum is not relevant to this model. Knowledge of contingencies relevant to behavior can, of course, be used to plan and establish those contingencies and thereby to control behavior, either one's own or that of others. But once the contingencies are there, the behavior comes under their control, whether or not one is aware of them. Very often, environmental agents unwittingly set up a program which can produce behaviors that are contrary to the aims of these agents. Very often, the progressive interactions between agents and person produce a patterned escalation of undesirable behavior very much like the

step-by-step programing which characterizes programed instruction.

One of my roommates was a boy, aged thirteen. He tied up elevators. He jammed a seventy-year-old wheelchair patient into a bathroom in such a manner that attendants had to spend close to an hour to extricate him. The boy offered a loosely rolled newspaper to a brain-damaged patient who asked for a cigarette and roared with laughter as the high flame produced when the newspaper was lighted almost singed the patient's hair. The boy could generally be described as malicious. Staff members' lectures, reprimands, and hostile comments which were intended to decrease the behavior only increased it. The boy was getting the adult attention so critical to children of his age.

Usually he got along well with his roommates: we told him, in essence, not to foul his home nest behaviorally and tried to reinforce positive behaviors. My wife paid him a dollar for a crayon still life he made of the city landscape outside our window (it still hangs in our house), and for a week thereafter he spent most of his free time drawing landscapes. One of the aides set up a wall graph to record positive behaviors, but to be effective a token economy requires concerted staff action, which was not available.

Another of my roommates, a factory superintendent in his fifties, was transferred to the hospital after surgery for a brain tumor. He was regarded as disoriented: he urinated against the wall of our room, wondered what he hell he was doing in Panama, and wandered about. What was not noted was that this disorientation was absent in the cafeteria, where he lined up at the counter with his tray and ate appropriately at his table.

In the laboratory, disruption of behavior occurs during "stimulus change" (Azrin, 1958), that is, when certain hitherto pervasive and ambient stimuli are changed. This can be the introduction of noise, the flickering of a light, or often a minor physiological change. When stimuli are changed in this manner, the initial reaction may be disruption of the behavior pattern. Which pattern is disrupted is probably a function not only of such changes but of variables related to the histories of the different

patterns. In Azrin's experiment, with human subjects, introduction of noise disrupted a temporal pattern of button-pressing established during the experiment but did not disrupt the button-pressing itself. If the consequences and the behavioral requirements for those consequences are not changed, the pattern appropriate to them may return, that is, may be reestablished under the new conditions. As Azrin notes, we then say that the disrupting effects of the novel stimulus have worn off and the subject has adapted or habituated; the temporal pattern established in the absence of noise has now also been established in its presence. If, however, the consequences are changed by the experimenter or as a result of the behavior of the audience, new patterns of behavior may be established.

Cafeteria requirements are the same under a variety of conditions, and the behavior of my roommate there was not "disoriented." However, hospitalization and hospital rooms were new to a hitherto vigorous man whose brain damage was also new. There was sense to his "disoriented" behaviors there. Our hospital window overlooked factory and warehousing areas adjacent to a lake; a naval pier was nearby. "What the hell am I doing in Panama?" is a question that seems to be responsive to these stimuli.

The lower walls of our room were tiled, the curtains between the beds hung probably on shower rings, and, come to think of it, sarcastic visitors did compare our room to a latrine. To keep the patient from urinating against the wall, the staff confined him to his bed, and he promptly soiled his pants. Several attendants had to hold him down to change him at least four times daily. He was allowed up, and then he wet both wall and pants. He did not use the urinal supplied. One of the attendants, who was taking psychology courses and had discussed them with me, said that surely we could do better. As the patient was constantly begging for cigarettes, it was recommended that his being given a cigarette be made contingent upon delivery to the attendant of a urinal, with the required content gradually to be increased. The effects were remarkable. On occasion, the patient, who was supposed to have

loss of recent memory, searched over a good part of the floor for the attendant, with urinal in hand substituting for Diogenes' lamp, in order to collect his cigarette. Another episode showed that the patient had recent memory, provided it was consequential. He was enraged by the thirteen-year-old's prank with the flaming newspaper. About three days later, the boy was alone in a room with the patient, who pushed the youngster on the bed and started to beat him up.

The patient, or rather, the nonunderstanding environment, began to present other problems, however. Society's typical response when it does not control an individual's behavior by its own behavior was employed: control by physical means. The patient wandered all over the floor and was caught going down the back staircase. He was then strapped into a wheelchair. The final solution for the urination problem was of a similar kind. Rather than programing use of the urinal for a variety of attendants under a variety of conditions for consequences other than cigarettes, the staff had him catheterized. His rage increased, and it seemed that he was in the initial stages of developing an organic psychosis.

The staff members were not unfeeling or badly intentioned. Most were highly dedicated, and they put up with a great deal. Behavior analysis cannot be applied too successfully by one individual when the remainder of the staff is operating under different premises. To turn the whole system around to provide support for behavior analysis is a formidable undertaking, especially when the system is already straining its resources under current standard operating procedures. However, it should be noted that a unit in which the behavior analysis approach is used can be set up as readily as the type of unit in which such analysis is an intrusion. Demonstrably different outcomes have been obtained when behavior analysis has been routinely employed (Ayllon and Azrin, 1968).

Turning from this social microcosm to the social macrocosm, one wonders about the inevitability of many problems of the disabled. To what extent are organic psychoses, deterioration,

and debility programed? To what extent can we reverse trends toward such problems by appropriate behavior analysis and control? And how do the costs compare? Certainly, the suffering was far greater in the case of the man who had had surgery for a brain tumor when behavior analysis was not employed. Everyone was unhappy about the patient's behavior, and the solution chosen by the staff produced misery and guilt all around.

Laboratory experiments have demonstrated that there is a distinction between impairment of memory and impairment of learning in brain-damaged animals. Animals trained in a task may not perform it after brain surgery, but they can often be retrained in that task. Schools are available for brain-damaged children. I am aware of none to which one can refer a fifty-year-old adult for retraining.

Programing

The terms "program" and "programing" are applied in a variety of ways. I shall restrict my definition to their use in operant laboratory research and its extensions to programed instruction, behavior modification, and biofeedback.

A program, as defined in these areas, includes specification in observables of the outcome to be obtained, or *target*; explicit specification of the repertoire currently available to the organism which can be used as a starting point, or *current relevant repertoire;* and explicit specification of the *steps* which will mediate between current and target repertoires. The steps include a presented stimulus and a defined behavioral requirement. Each step itself is a subprogram containing these three elements: the target toward whose production the step is aimed, the starting point, and the procedures producing the change. The outcome of any step is the starting point of the next one, just as the starting point of that step was the outcome of the preceding one.

Merely having an admirable sequence of steps does not guarantee that the subject will go through them. Accordingly, the program also requires the development of a system of

response-contingent-consequences attached to the behavioral requirements of each step and of the program itself. These positive reinforcers can be material, such as financial rewards, food, trinkets, or candy; surrogates such as tokens or points; social, in the form of approval or opportunity to be with certain groups; behavioral, such as the opportunity to do certain things; program-specific, for example, the outcome of the program itself, with presentation of the next step being the reinforcer for meeting the requirements of the preceding steps; or combinations of these.

In the operant laboratory, such programs are used to establish behavioral patterns which can then be used for investigative purposes. For example, to investigate the effects of a drug on retention, we might use delayed "match-to-sample." A monkey is confronted by a small wall panel on which an illuminated circle is projected. When he presses the panel, the illumination goes out. Five seconds later, two panels light up. One contains a circle and the other an ellipse. The subject is rewarded for matching what appeared on the sample five seconds earlier, that is, food is given to him only if he presses the circle panel. If he does so reliably, we can say the drug dosage has not affected his retention for this task under these conditions, and we can investigate when and how it does. How to get the subject to engage in the necessary "match-to-sample" behavior is not immediately evident, however. The procedures which do so are not hit-or-miss, nor are they established through trial and error. Rather, the experimenter uses a program of the kind specified, which he can follow from a colleague's scientific report.

Initially, the targets of such laboratory programs were relatively simple. Outcomes of laboratory investigations starting with such targets made it possible to progressively extend these targets for further investigation. Some of the investigators realized that programing procedures could be applied to establish target patterns for human beings. Then the usefulness of the target was not as a starting point for experimental investigations; the goal was the *attainment of the target itself:* for example, getting a mute patient

to speak, establishing proficiency in an academic subject, getting a hitherto resistant community to request well-baby care, or decreasing heart rate. Hence, the various subfields of applied behavior analysis and their relation to the experimental analysis of behavior were established. This relationship is continuing. In order to investigate certain linguistic issues, Premack (1970) has been programing language for a chimpanzee. Others suggest that his procedures can be used to teach language to mentally retarded children.

One of the discoveries of the examination of programing itself has been that it is often critical whether the training agency establishes the target through allowing subjects to make errors and correct themselves, that is, trial and error, or establishes the target through an errorless program, or trial and success (Terrace, 1963). In the trial-and-success case, the behavior is being continually reinforced. Through the use of this procedure, target behaviors have been established which were impossible to establish using trial and error. Such behaviors had hitherto been considered outside the subject's capacity (Sidman and Stoddard, 1966).

In other cases, the same targets have been established, and target outcomes established through trial and error cannot be distinguished from target outcomes established through trial and success. However, when one tries to alter the task or the conditions, for example, no longer reinforcing the discrimination learned, there are critical differences related to the programing history (Terrace, 1969). The program itself is a variable.

Because I was acquainted with the literature in this area and aware of the numerous contributions of Fordyce (1968, 1971), Myerson, Kerr, and Michael (1967), and Michael (1970) to rehabilitation, it was disappointing not to see behavior procedures explicitly applied at the hospital, especially in view of the fact that the area lends itself, as few areas do, to a programing approach. However, such an approach was implicit in many of the rehabilitation areas. In physical therapy, for example, we were told that we could start the walking program only when we could press at

least fifty pounds with each arm. The barbells were nicely graduated for a series of steps. Walking followed an implicit program. It started with standing at the parallel bars and then went on to making a few steps, and finally to using crutches or a walker outside. The success of this program attracted invalids from miles around, many of whom saved money for years in order to come to learn; some townships ran special programs to raise funds for disabled citizens.

On days when patients progressed in physical therapy, their morale was high; on days when they did not make progress or they failed, their morale was often low. Progress was to a large extent related to the procedures used. One could see progress in arm muscles by the evident size of dumbbells used. But when the physical therapist asked the patient to push a leg against the therapist's pressing arm, there was absolutely no feedback as to whether the patient was advancing. There was no explicit way to handle trace movements. The possibilities seemed to cry for research in explicit programing with biofeedback, for assay of instruments to provide the evidence of progress that can maintain behavior which will help achieve goals desired by both patients and staff.[2]

There were step-by-step sequences in sitting and standing, in transfers from bed to wheelchair to car, in use of eating utensils (with special assistive devices provided for quadriplegics). There were carefully planned medical sequences in decatherization and bowel control, among other areas. In the area of social behavior, there were sequences directed toward home return, starting with a visit of a few hours and continuing to a longer stay, to overnight, to weekends, and finally to discharge. There was an active recreation department; participation in activities might be contingent on acquisition of behavior patterns in other areas. For example, a patient had to be able to transfer to and from a car in order to go to the movies. Where the sequences were successful they were designated by their targets, for example, eating, driving, home return. They started with assessment of the current relevant repertoire.

Some of the assumptions underlying these successful programs are made explicit by research in operant programing. The attitudes implied by this approach are often 180 degrees from those explicitly required and explicitly indoctrinated by other approaches. Differing attitudes have profound implications for the patient's recovery, as well as for societal reactions to disability.

In our self-control clinic, we are trying to apply programing procedures and rationale to the problems of patients whose presenting complaints range from anxiety states to xenophobia. Our approach may best be illustrated by reference to a hypothetical patient who applies for alleviation of her anxiety. Further investigation reveals that her husband will shortly be assigned to Moscow, and she is terrified because she speaks no Russian at all. This deficit is good reason to be anxious. We now try to ascertain the competence required to define her target outcome, speaking Russian, and ascertain her current relevant repertoire. If she speaks Bulgarian fluently, we can attain the target within a week. If she speaks German and French instead, we shall start from there, and our task may take longer. If she speaks only English, it will take even longer. We classify the patient *by what is to be acquired and by the nature of the program and not by the deficit.* We do not say she suffers from Hyposlavophonia. That is quite evident to her and to us.

Similarly, rather than attempting to eliminate stuttering, which many people can do, including the stutterer himself, we establish a pattern of fluency that the speaker has not used before and which we are pretty good at doing.[3] Rather than eliminating obesity or establishing dieting (which is just a change in words), we establish new eating patterns which are not intuitively evident. Almost anyone for whom the contingencies are sufficiently critical can eliminate patterns. But not everyone can program new patterns effectively, let alone know which patterns are to be programed. If establishing fluency substitutes for eliminating stuttering and establishing new eating patterns substitutes for dieting, what substitutes for relief from anxiety? This is a more complex question, but can be similarly analyzed.

The programs to be used and the successful application of programing require attention to the current relevant repertoires. Stated otherwise, we look for strengths. As one patient said after the initial interview, "Do all your patients leave feeling this euphoric?"

The 180-degree turn in attitudes called for is not simply in terms of intervention, for example, that one can intervene more effectively by concentrating on what is to be established and by looking at strengths, rather than concentrating on what is to be eliminated and then looking at weaknesses. The former approach I have designated as constructional, in contrast with the pathological approach of the latter (Goldiamond, 1974). A constructional approach compels reinterpreting the nature of the symptom and its relevance to the contingencies of the patient's behavior. Rather than considering the presenting problem as indicative of pathology, we may think of such patterns as eminently sensible and possibly the most sensible possible for existing contingencies. The behavior patterns which disturb us may be the equivalent of the key peck or lever press maintained by positive reinforcement. If a pigeon pecks at a disk only when the previous peck produced shock it is not because it is masochistic. It does so because the environmental program is such that he will occasionally get food that way but not after a peck that does not produce a shock (Holz and Azrin, 1961).

An example mentioned earlier was the patient whose parents had disowned her. In one system of discourse, she would be described as paranoid, and the emphasis might have been on understanding her history. However, if her behavior is analyzed in terms of contingencies, her behavior becomes not only sensible but remarkably so: she apparently pressed exactly the right levers to get back home. The young man for whom continued institutionalization was a critical consequence developed decubitus ulcers when the staff tried to deprive him of that consequence. Again, we could describe the behavior as suicidal and classify him in terms such as passive-aggressive, but if we analyze his behavior in terms of its contingencies, it becomes eminently sensible: he

apparently pressed exactly the right levers to stay in the hospital. The two patients' efforts were heroic, and the cost was tremendous, but the efforts were apparently called for.

Several questions are raised by such an approach to behavior. An immediate one is, why should we require such heroic efforts? When we try to deprive individuals of certain critical consequences, many can apparently find other means to attain them, sometimes at tremendous cost to themselves and tremendous cost to society.

A few weeks ago, I was asked by the medical service at our hospital to consult on a case in which the patient was driving the staff crazy by her constant calls; her light lit up more than twenty times a day. Their analysis, which agreed with mine, was that she was doing this for attention, and her psychiatric history clearly indicated why this would be a critical reinforcer. The staff members' reaction was the perfectly natural one of refusing to be manipulated this way, and the intervention they proposed was to withdraw attention. This approach is often found in the behavior modification literature, where it is called extinction. In the animal laboratory, if we stop reinforcing the pigeon for pecking at the disk, it will eventually stop, but it has no alternative; it is literally in a box. This patient, I suggested, *did* have an alternative. If the staff stopped paying attention when she put on her light, she could make them come by ripping her bed, vomiting, and so forth. As a matter of fact, she later turned over the television set and broke it. By denying the critical consequence, the staff would force her to escalate behaviors which would produce it, along with outcomes which would be increasingly costly to her and to the social agency they represented. Coming when the light goes on is comparatively cheap.

I recommended a program which would start with this repertoire. They were to set up a written chart scheduling twenty-five daily visits at times *they* set. When the schedule called for their arrival at times when her light was not on, they were to tell her how they appreciated not having been called because such visits often had to be limited since they had been called from something

else, but now they had some time for a chat. The program *started* this way but was to pursue a different course designed ultimately to free the staff. This was to include constructional psychotherapy (Goldiamond, 1974) which would be continued on an outpatient basis after she was discharged from the hospital.

Another consultation for which the solution was not easily available was a kidney patient on regular dialysis. Upon coming home, he drank a six-pack of a cola drink and had to be rushed back. He later drank witch hazel. He was diagnosed as suicidal, and the inevitable psychiatric consultation was called for. It turned out that his system had rejected a kidney transplant, and, as far as his family was concerned, he was the equivalent of a terminal cancer patient. They felt he would die but not before he had gone through their savings, home equity, and other resources. When he came home, all members of his lower-middle-class family except his mother greeted him with the guilt-ridden hope that he would die soon—an uncomfortable situation, to say the least. He engaged in exactly the right behavior to get him out of there and into the hospital, where people wanted him to live. By regarding his behavior in terms of the sense it makes, in terms of the requirement for reinforcement it represents, we classify him not as suicidal but as highly desirous of life.

When I was writing to a friend in England about the program we were developing, I realized that this case would not have occurred there. Because of the British health plan, a patient in England would not have been bankrupting his family. Its members might therefore have welcomed him when he came home, and society would have been saved the costs and efforts of medical treatment, hospitalization, consultation, and other procedures.[4] The costs of the present ways of dealing with disability, in terms of the heroic and expensive behaviors they require, are somehow seldom computed.

Similarly, if some way had been figured out of assuring the young man who kept the hospital from discharging him that he would be taken care of or that a future outside the hospital was brighter than one within, society would have been saved the costs

and efforts that his ulcers required. What effective approach could have been applied for the woman whose parents had disowned her I do not know. But the question of what is an effective approach can be raised when we view behaviors in terms of the sense they make, rather than in terms of disabilities, pathologies, or maladjustments.

Independence and Affect

An issue that is continually raised with regard to people classified as disabled or aged is independence. Independence is often considered to be a desirable outcome of intervention. When this is stated, it is often part of a mixed message: both "striving for" independence and accepting the fact that one will now be dependent are regarded as signs of adjustment.

The difficulty with setting independence or its quest as a goal is not that it is unrealistic or that it involves false expectations; it is simply that it is a false issue or pseudo issue. Neither the disabled nor the able-bodied, neither the young nor the old are independent of their environment. If I am dependent on an elevator to get me to my office, so, too, are others. If they are independent of the elevator, they are dependent on an unblocked staircase. Stating aims in terms of independence, relative independence, or as much independence as possible poses alternatives in nonexistent terms. It also obscures attention to classification in terms that are congruent with events, point out real problems, and may even suggest solutions which are available or which should be programed.

My laboratory office is on the second floor of a museum. I can take myself to the museum and down the loading ramp. In order to get into the basement, I (or anyone else) must telephone in advance to ask that the basement door be unlocked. I also make sure that the freight elevator will be available. If calling every day became bothersome, I would arrange to arrive at definite hours so that my arrival could be anticipated, as is the arrival of visitors to the regular museum every morning, when the main gates are

unlocked. They, too, are dependent on the guard's completion of his duly appointed rounds.

The appropriate form of the dependency question is: With regard to what behavioral patterns, and under what conditions, are disabled people dependent on the environment in ways different from before? If they or society value certain behavior patterns, what should be done to make the behavior possible? My friend, John, whose newspaper experience is treasured, is driven to work every morning and driven home every evening. His morale is high. Neither his morale nor mine would be high if we concentrated on the obstacles in our way.

I was recently asked by a nurse to discuss such difficulties, because some patients were "not being realistic about them." I declined indignantly for four reasons. First, I believe it is far more sensible, useful, and fulfilling to define problems in terms of goals and ways to program the achievement of goals rather than in terms of overcoming obstacles. New conditions, physiological or other, merely mean that more time and different efforts may be required for us to attain our goals. The appropriate approach is one which stresses problem solving in the form of questions such as: What do I have to do to get where I want to go? What is available, or what has to be provided? The solutions for a disabled person are often unique because they have not been handed down to us by the more general environment, which is programed for others. The approach optimizes ingenuity. This is something society sorely needs, and it may profit from carefully observing the unique solutions which people in unique positions are required to find in order to attain their goals.

Second, when the professional refers to patients as "being unaware of," "being unrealistic about," or "repressing" their problems, it is the *professional* who is often being unrealistic. If I am not discussing pains, problems, and infections to which I am susceptible, it is not because I am unaware, unrealistic, or repressing. At times, I am painfully aware of them, and I mean that literally; I am sure other persons also do not discuss problems when they could. If they do not, in discussions with professionals, "face up"

to these issues, it is because of the same good sense: They are facing, or trying to face, in a different direction, namely one that can help them program attainment of their goals.

I believe strongly that it should be the task of professionals to help the disabled develop such programs. I discussed physical therapy earlier. Physical therapy was popular with most patients precisely because the concerted effort of the staff was in this direction. I believe that, if staff members learned operant programing, they could do even better. Nevertheless, their efforts were not devoted to discussing shortcomings but to building behavioral repertoires on what was available. Pain could result from the stretching of contracted muscles, and sometimes patients screamed, but they came back and were proud of their therapists and themselves. The place was always a bustle of activity.

If 80 percent of patients who are fitted with leg braces do not wear them, it is not because they are unaware of the importance of standing upright for the function of internal organs, retardation of osteoporosis, and general health (Olson, 1967). It is because most leg braces are made by individuals who are competent in the structural properties of metal and design braces accordingly, but who generally totally lack an understanding of the behavioral requirements of the patient. And why should the makers of braces develop competence in this area? They are amply rewarded by payment on delivery for their present level of incompetence. A rental or use-contingent payment system might serve otherwise. Patients are aware of future complications if they do not stand. But, like the cigarette smoker, they take the cash and let the credit go. The public health task is to devise braces that people will readily wear.

The same point is tellingly made by Sharples (1971) with regard to artificial limbs. He asked patients and providers to rank order five criteria for the development of artificial limbs. What the patients ranked first, the providers ranked last; what the patients ranked last, the providers ranked second. With the exception of one pairing (physical function) the rankings were exactly reversed. Sharples commented that "the nonalignment of

priorities between these two groups accounts for much nonutilization of prostheses and the concomitant wasting of time, talent, and more tangible resources" (1971:60).

Third, while a description of situations in terms of what cannot be done or what deficits exist may serve to indicate limitations, it may also be demoralizing and depressing. I have often puzzled over the reinforcers our society must be providing to keep such negating discourse going. I recall once being driven through a downpour in Miami. The cab radio said "Probability of sunshine, 5 percent." It makes sense to talk this way when your economy depends on tourism. But what is the critical variable when my radio reports, "Probability of precipitation, 5 percent," rather than "Probability of sunshine, 95 percent"?

An insight occurred to me once in dealing with a patient, classified as obsessive, who talked rapidly and almost without cessation. If one must talk and one is not particularly gifted or educated, much of the talk will not make sense, but will be verbal garbage, anything to meet the requirement of high output. Breaking into her harangue, I pointed to the desk calender and said, "Today is Wednesday, January 7, 1970." "I don't want to talk about that," she said. "Of course you don't," I answered. "When you talk about what today's date is, that's about all you can say about it. But think of all the ways you can talk about what it's not. You can say it's not Tuesday, January 6, or it's not 1588, or not March 15, 44 B.C. You can be fanciful and imaginative; it's not February 73, 2066. Let's not talk about what is not in your life and what is not making you happy. Let's talk about what is, and what you want, and what we can try to do." She then said much less, but made sense each time.

Fourth, then, we can write endlessly about deficits and obstacles and develop numberless theories about them. We may gain professional audiences and attention. We provide opportunities for rebuttal and counter-rebuttal. In the absence of progress toward solution, the locus of difficulty may be assigned to the problem or the patient, but it may be in the approach.

Absence of progress can, of course, depress patients. They can

also be depressed by treatment by the staff, by invasion of privacy, and by any of a variety of other degradations visited upon inmates of institutions. I recall, when I was once "grounded" and was moved by cart, that a student nurse suddenly grabbed a professional journal I was reading out of my hands. She bubbled, "What are you reading?" I presume this was her way of establishing rapport with children, and I recalled the effects of powerlessness then.

By considering apathy, depression, or aggression as developmental stages in injury (or for that matter in aging or other causes for institutionalization), staff members are relieved of the necessity for asking how their actions might have helped cause these reactions. Ameliorative change is thereby precluded. The theories are pervasive. My wife, for example, was told to expect me to be profoundly depressed. When she protested that I was not depressed, she was greeted with the same skepticism that would greet someone disputing cephalocaudal sequences of infantile development.[5]

It is, in part, reaction to one's own injury that is supposed to contribute to depression. But I submit that depression may result because the injury may reduce the availability of consequences that had hitherto been the critical maintainers of behavior. The injury may impose a high response effort to obtain what had hitherto been less difficult to obtain. The depression may produce concern and attention. Actively programing alternative consequences or behavior patterns is a different reaction to injury—with different emotional effects.

Aphasia produces, we are told, profound personality changes and emotional lability. An effect of aphasia is diminution or loss of accustomed ways to control the social environment through speech. In the laboratory similar losses of control are often accompanied by reinstatement of behavior patterns which had in the past been successful in attaining control. Thus, a powerful businessman who had brought straying followers into line by threats and displays of temper often threatened hospital staff members with dire consequences and was irascible. A factory

worker who had learned the safe army way out when things had not worked out—"No excuse, sir"—shrugged his shoulders philosophically when the wrong sounds occurred. One woman wept and whined continually. These behavioral patterns and their accompanying emotional lability were present a high proportion of the time; so were the reinforcement losses.

The wife of an aphasic physician commented that her husband's personality had changed markedly since he became ill. He had been a very sweet person and was not continually irritating and insulting. "You're telling me about yourself, and not him," I said. "You're saying that you had always set things up for him so that he got what he was after. How did he behave in the past on the rare occasions when he didn't get it? Those are commonplace now." She thought for a moment and then said, "You're right. He hasn't changed."

The handling of pain and discomfort, and its relation to consequences, is another area that bears inspection. Seated in the wheelchair, I very often feel a discomfort in my seat. It might be called pain. This occurs especially when I am not working. One way to talk about it would be to say that the pain keeps me from working. Thereby, I could get sympathy and support from a variety of people who are proponents of classical theories of emotion. A second way to talk about it would be to say that, because I am not working, my attention is turned to my seat and I feel discomfort. Thereby, I could get sympathy and support from proponents of the James-Lange theory of emotions. I submit that neither approach is particularly helpful.

A third way to talk about it is to say that I am not working because the contingencies which maintain productive work have not been instituted or are somehow crumbling. My discomfort is a signal to me that something is lacking contingency-wise. My seat is apparently more sensitive to the crumbling trend of these contingencies than is my intellect. When I start feeling the discomfort, I should immediately attend to the contingencies before they break down completely. I should set up working conditions so that my writing progresses.

When I use a contingency theory of emotions in this manner, I do not get sympathy, but my behavior receives the same support from my colleagues that maintained it at a high rate before. I valued the support then and value it now.

Transitive and Intransitive Approaches

The title of this chapter is "Coping and Adaptive Behaviors of the Disabled." It raises the questions of coping with what and adapting to what. To understand adaptation we must understand the environment which sets up behavioral requirements and consequences contingent upon them. There is a limited number of ways to change behavior by changing contingencies. When we use environment-free statements in discussing people, we can generate an infinite number of statements, as many as the not-today dates of the obsessive patient mentioned earlier. The environment-free statements generally employ intransitive verbs and give credit (or blame) to the subject of an intransitive sentence: the *child* learns (or does not); *corn* grows (or does not); the *child* develops; *people* age; *older* people deteriorate; in nursing homes, *they* become depressed. We can include the environment by transforming the statements into transitive ones: the *teacher* instructs (or does not) the child; the *farmer* grows (or does not) corn; *something* ages people and develops children; *nursing homes* deteriorate older people and depress them. When we make this transformation, we seem to get a handle on the problem, but the statements are rough on teachers, professionals, and nursing homes and unduly blame them, because following this syntax, it is they who are accountable for undesirable outcomes. They may be victims of the same passive theories and may be equally unhappy about the outcomes.

Accordingly, a second transformation is in order: the teacher's *procedures* instruct the child (or do not), the farmer's *procedures* grow corn (or do not), nursing home *arrangements* deteriorate older people and depress them. The stress has now changed. If the child is not learning and the teacher is not teaching, we should look to the *procedures* used in the transaction and change them to produce the effects desired. This is something we may be able to teach the teacher or the professionals in a hospital.

However, the second transformation also has inadequacies. It lacks parallelism between subject and predicate. With regard to the subject, it is not the total teacher that the transformation involves but those procedures she uses which are relevant to her role in fulfilling the requirements of her contract with the school board. Similarly, the total child is not the object of these procedures. There are other behaviors, for example, those related to religion, that the school is explicitly enjoined from affecting. The behaviors of concern are those relevant to the social contract implied in the establishment of a school system. Accordingly, by the same token that the teacher is not the manipulating subject, the child is also not the manipulated object. This provides our third transformation, which is the programing statement. The *procedures* of the teacher program the *target behaviors* of the child or do not; they may program others in addition or instead. The arrangements of the hospital program target behaviors of the patient or do not; they may program other behaviors which are not in the implicit contract or are contrary to it. The target can be agreed upon by mutually consenting adults or can be determined in other ways. Competence is required in programing, in setting targets, in assessing current repertoires, in using or establishing necessary facilities, and so on. In successful self-control, the procedures of the programer establish such programing and analytic competence in clients regarding their target behaviors. The client's involvement with the professional and reliance on interventive institutions is phased out as the client becomes increasingly competent.

We are all familiar with the nursery rhyme, "Oats, peas, beans, and barley grow, / Oats, peas, beans, and barley grow, / Neither you nor I, nor anyone know / How oats, peas, beans and barley grow." When the process is expressed intransitively, it is mysterious and unknowable. Not so the procedures, however. Went (1957) reports results obtained with plant growth in a Climatron,

an environmental chamber in which there is considerable control over variables normally uncontrolled in a greenhouse or outside it. He was able to produce pea plants almost to specifications. Presumably, by changing the settings of his variables to those values which hold outside, he could have grown all the different pea patterns whose diversity has led to the nursery rhyme I quoted.

Where the conventional settings of typical variables produce conventional behavior patterns and progressions, it may not matter much for practical purposes if we view behavioral changes as possessing regularities of their own; that is, they need be only grossly related to the environment. Because the environment seems to be a constant, for practical purposes it can be ignored. Instransitive forms can be used for purposes of understanding. However, when the behavior patterns produced are not conventional, practical procedures deriving from an intransitive statement which ignores the environment break down. In the search for transitive forms, for the functional relation of behavior to its environmental contingencies, we may uncover the transitive relations which also govern the conventional cases whose controlling environment we have been taking for granted and have been ignoring. We thereby extend knowledge and understanding even when intervention is unnecessary.

Accordingly, whether one's interests are knowledge or intervention, theory or practice, I would like to solicit members for the Society for Abolition of Intransitive Verbs for describing people. The name is in the negative form which I have opposed up to now, but I have chosen it because its initials, applied to persons, form the acronym SAIV. The message is clear.

Adaptive Behaviors and Social Institutions

It appears to be far more costly and time-consuming to develop successful social programing for the disabled than it is to explore failures ascribed to autonomous psychological processes. If we deal with social programing requirements, we may be able to

attain goals not hitherto attained. But at what social cost would the benefit be attained, and how would this compare with the outcome of a cost-benefit analysis of the present system? What other demands are being placed on our limited social resources? Certain outcomes, like degradation or suffering, are difficult to cost account, and I shall therefore confine my comments to those which are capable of more ready analysis. I do not know whether the consequences of transitive programing views are less costly than those of intransitive disability views. We have no such information at present. To get it requires us to think through goals, priorities, available procedures, and procedures that might become available. What I do suggest is that even the *appearance* of the costliness (as compared to the status quo) of this effort may be illusory.

It is expensive to train professionals and provide professional intervention. To the extent that the disabled person does not rely on such social institutions, he is not draining their resources and not requiring a society harassed by other obligations to provide yet more. One may be independent of a professional intervention system, but one is not independent of the social environment. The question that must be raised is the comparative cost of alternative systems.

Rather than discussing such alternatives to hospitalization as home visitors, personal care organizations, and the like, which others can do far more capably, I shall confine my discussion to the alternatives to current nonprograming interventions that are provided by programing procedures and analysis.

A standard item of equipment in physical therapy is a chair in which, through a complex pulley system, weights are attached to the patient's legs to assist or resist movement. It is the leg equivalent of the barbells. In one device, the weights are behind the patient's back and so must be controlled by a physical therapist. This system is far more costly than a system which would substitute, whenever possible, patient control for professional control.

At home, the high cost of the device, plus the fact that another person had to help me use it, seemed to preclude such exercise on

my own. However, I purchased a portable clothes-rack which has no bottom bar, so that I can wheel into it. With pulleys and weights, the total cost of the device was less than thirty dollars. It may not do all that the expensive chair can do, but I can exercise my leg and can program an increasing weight requirement by myself. It would seem that redesign of such equipment would save costs for physical therapists, who might then turn their attention to other areas and more adequately use their unique skills.[6] Such redesign might also influence patient recovery.

The costs for hospitalization for the consequences of immobility can be staggering. A patient's physiological processes can be affected by his mobility and by his regularly putting weight on the bones through assuming an upright position. The lack of competence of brace makers has been noted. But the price of such incompetence is a bill which is staggering, not only in terms of hospitalization and loss in employment but also in terms of misery and suffering. Surely, it would be less costly to support a *sustained* research effort concentrated on producing braces which people will wear.

Consider the case of the brain-damaged patient who urinated against the walls of his room and in bed. To follow through on the token system which worked would have been too costly because of the institutional structure available. The patient was catheterized, at considerable saving. However, catheterization involves insertion of a foreign substance into the bladder and makes bacterial invasion possible, indeed highly probable. The resultant infection will require intervention which will become extremely expensive if renal involvement occurs. One hospitalization for a short time will be far more costly than a token economy run over six months would have been, and the token economy might deal with other targets as well.

One insurance company, with considerable experience in rehabilitation costs, reports spending close to $5 million on rehabilitation for fewer than two hundred insured wheelchair cases, or more than $25 thousand per average case. The company's estimate, based on other cases, is that, if the patients had not had

rehabilitation training, costs to the company would have *exceeded* the cost of rehabilitation by almost $50 thousand per case, on the average. The 1965 estimate based on about one hundred thousand civilian paraplegics suggests that the savings are not insignificant (Barrie, 1970). A pilot study in Israel on costs of nonrehabilitation of persons with other types of disability makes a similar point and attempts an explicit cost-benefit analysis (Silberstein, et al., 1964). The need for raising the question of the cost of nonrehabilitation in the United States is suggested by Morris' (1973) estimate that there are "six million Americans with handicaps so severe and incurable that they cannot carry on all or part of their normal activities."

Rehabilitation facilities are distinguished from acute-care hospitals to a large extent by the emphasis the former place on attempting to replace institutional intervention with other types of intervention. The considerable success they have achieved, as judged solely by the insurance figures cited, suggests that the success can be extended by more explicit attention to a programing analysis and to research in programing.

Social contingencies can also deteriorate the behaviors of the disabled. A professional who enjoyed her work but whose multiple sclerosis made her unable "to cope with public transportation to and from work" asked for a small subsidy to augment what she could afford for substitute transportation. "I was candidly told by the Welfare Department," Saxon (1973:112–113) writes, "that they would be happy to wholly subsidize me when I gave up work, but could not arrange to help me with $20 per week to prevent my becoming a public charge. . . . [I] do not want to be forced to stop contributing through circumstances beyond my control." Another example, a report for the Special Committee on Aging of the United States Senate, by the Levinson Gerontological Policy Institute (1971:5), notes that average payments under Old Age Assistance for the severely handicapped living at home are $77.60 a month, but that "our programs . . . will readily pay an average of perhaps $400–$500 a month to keep the same person in an institution." As the requirement to get the help unobtain-

able at $77.60 is behavioral deterioration, deterioration is being programed. In addition to these individual effects, "the entire burden is placed upon family and neighbors who usually help for a time, until they are virtually bankrupted in money and energy. . . . Instead of reinforcing and conserving these natural family and friendship supports, they are permitted to exhaust themselves until only much more costly alternatives remain available" (1971:5)—including drinking a pack of soft drinks to return to the hospital for dialysis or drinking witch hazel to stay there, as I mentioned earlier.

Setting up Personal Care Organizations (Caro and Morris, 1971) which provide support at home not only may be more economical but may produce marked behavioral and physiological differences. Caro and Morris suggest a voucher procedure whereby the disabled may choose among a variety of delivery systems and suggest other well-considered alternatives. To the extent that such investigations increase the programing repertoire of the environment, they are to be welcomed. However, I should like to point out that the system may simply produce alternatives between types of custodial care unless the paraprofessionals involved utilize programing procedures. The extensive use of paraprofessionals (often operating at distances considerably removed from the professionals) to program behavior is reported by Tharp and Wetzel (1969).

Institutions are currently under attack. It should be pointed out, however, that the establishment of behaviors which are the opposite of those targeted by the social contract is not confined to institutions such as asylums, hospitals, and schools. Nor is it confined to currently established professional groups. It can occur equally well at home, in the community, and elsewhere under the well-meaning aegis of parents, neighborhood groups, and new orders of paraprofessionals. What is at issue is not the type of institution or professional but the type of programing.

We can, like the obsessional mentioned, talk endlessly of programs which do not produce the outcomes targeted, or we can program competing outcomes and denounce the programs

which exist. We might more profitably direct our attention to the procedures used in programs that produce outcomes in accord with the targets and to those which produce outcomes which compete with the targets. We might utilize effective procedures in different programs, and we might ascertain the conditions under which institutionalization is the intervention of choice. What this boils down to is that I suggest we start treating institutions which present disturbing patterns with the same programing courtesy with which we treat individuals who present disturbing patterns. What is needed is a marriage of social analysis and behavior analysis.

If deteriorated behavior of individuals can be shaped by reinforcement of invalidism, institutional behavior can be similarly shaped by short-sighted policy. Presumably a patient flat on his back needs more care than one on his feet. To get institutions to accept and care for the bedridden, Illinois Welfare paid nursing homes an allotment scaled according to degree of disability; they were paid more for supine patients than for ambulatory ones. The contingencies for keeping patients bedridden were thereby neatly set up. A contingency analysis suggests that the allotment might be scaled according to degree of progress toward ambulation, with so fat a bonus paid when the patient *walks* out that the institution will set up a research laboratory to develop new devices. An interesting analysis of the relation between institutional care and social and other payoffs for the institution is provided by Ullmann (1967).

More is required than the building of "a barrier free community environment" (Molinaro, 1973). While such human engineering to eliminate "physical barriers . . . in the design and construction of our buildings and communities" is of great importance, such change is insufficient by itself. Architects and engineers should concern themselves with contingencies. For example, when the Sermon on the Mount is printed in unreadable type, it cannot be read. Printing it handsomely in legible type does not, however, guarantee that it will be read. To assure that it will be read requires motivation-incentive-meaningfulness, or attention

to the contingencies, social contexts, and systems which provide consequences and set behavioral requirements for them. Unless these are set up, no one may read the Sermon on the Mount. It might then be falsely concluded that one should not attempt to set legible type because it makes no difference anyway, except for occasional heroes, such as Lincoln, who read by candlelight. One *should* set legible type, and one *should also* set contingencies appropriate to the task.

A programing approach does not mean the establishment of uniform programs which ignore differences between individuals.[7] Where there is such deindividualization, I suggest we look to the present approaches, which posit uniform reactive states, life problems, and deficits as the result of disability. Such approaches may set up uniform social contingencies which provide self-fulfillment for the hypotheses. A programing approach requires meticulous attention to the different repertoires people bring to their disability, to differences in targets they require or desire, to differences in the procedures which will be necessary for change, and to the different consequences which maintain behavior. A programing approach suggests procedures whereby individuals themselves can learn how to analyze and control the contingencies governing their own behavior.

None of the foregoing, I trust, will be interpreted as advocacy of some simple-minded procedures for reinforcing here and extinguishing there. The branch of applied behavior analysis which offers closest parallels is programed instruction, which not only requires application of contingencies of reinforcement but also defines the contingencies in terms of a program, or complex curriculum, whose establishment requires expertise in the curricular area.

In self-control, it is assumed that the people closest to the curricular area, ones who have the greatest expertise, are the people involved. The task for the professional programer is to teach them how to develop programs for themselves by keeping records so that they can relate changes in their own patterns to changes in procedures. In short, the purpose is to help them form

their own analyses. In this process, setbacks are not occasions for despair but occasions for unscheduled learning, just as equipment breakdowns in operant laboratories have at times produced significant breakthroughs.

Much of rehabilitation is already disposed toward such analysis; the contrast with acute-care hospitals is often striking. Research which develops programing for the disabled may increase happiness as defined in classic Greece: "Happiness is striving one's utmost under favorable conditions." This definition calls upon us to ascertain and possibly program the favorable conditions which will maintain behavior in the strength desired. In the process of producing such happiness, we may learn to understand it better.

The coping and adaptive behaviors of the disabled are, in the terms of the third transformation from the passive to the programing active, the target outcomes, unwitting or witting, of the programing procedures of the social system. That is, the specific programing procedures program and produce the adaptive behaviors of the disabled. When the significant attention is to deterioration, the system programs the adaptive behavior of deterioration. Patients may then express pessimism and depression. Using other programs, the system may program ingenuity. Patients may then express optimism. Investigators will then find statistically significant and intriguing correlations between coping behaviors and those verbal behaviors we call attitudes. By examining social systems in terms of the programing procedures they institute, we may become able to program both behavior *and* attitudes. We may become better able to analyze and systematize our knowledge. The behaviors of the disabled are adaptive now, as they will be when we have more knowledge.

Perhaps what we should be talking about are the adapting and coping repertoires of the environment. We might then talk of environments with limited talents and resources, of environments which are not living up to their potentials, and of environments which are ingenious. We might then attempt to set up environments which program target behaviors in accord with

social contracts mutually agreed upon by consenting adults.[8] Programs of a sort exist now, but they are often unsystematic and inexplicit and can produce outcomes which are the exact opposite of the targets stated in the social contract. When we shift our approach toward the direction suggested in this discussion, we shall still have a long way to go. We shall be changing the explicitness whereby we describe the functional elements of a program, the degree to which we can learn how to find those elements, and, we hope, the extent to which we can manipulate them. Closing on the same personal note with which I began and speaking only for myself, I conclude: Hasten the day!

NOTES

1. See especially pp. 111–112.

2. Since the writing of this paper, an exploratory report has been published describing use of biofeedback to increase mobility in a paraplegic and a paraparetic (Schneider et al., 1975). One of the patients reports continued progress (Herbert, 1975).

3. Results of the present program, in which fluency has been established with lifelong stutterers in a median of 29 sessions, will be reported in a monograph in preparation. For an earlier report, based mainly on the prior experimental analysis, see Goldiamond (1965*b*).

4. Since this chapter was written, the federal government has undertaken much of the financial underwriting of kidney dialysis. Had this been in effect at the time, the behaviors mentioned might not have occurred or the cost been incurred. However, the general point still holds for similar situations.

5. *Newsweek* (March 5, 1973) notes the case of a Marine corporal who, upon being told after surgery for removal of a bullet that he would be paralyzed for life, was not depressed, but happy to be alive at all. "I adjusted to the fact so quickly," he reports, "that they sent me to a psychiatrist to find out if I was okay" (p. 23).

6. The author is indebted to Robert T. Babbs, Jr., Director of Rehabilitation at the University of Chicago, and Mrs. Adrienne Peterson and Donald Olson, registered physical therapists, for suggestions.

Currently, much of therapy time for patients consists of waiting, since the therapists usually have more than one patient at a time and divide their time

between patients. This is built into a system where the patient cannot adjust equipment for himself. An alternate system, based on a model designed for academic material (Cohen and Filipczak, 1971), suggests itself. In that model, the teacher became a program checker, adviser, and editor. She could visually monitor as many as thirty carrels at the same time. The carrels were used for programed material. When the student arrived, he checked in at the teacher's desk and was given the appropriate unit. When he left, he brought the records to the teacher, who checked them with him and then noted which unit he should have next (either the same unit or an earlier one).

In physical therapy, this would involve equipment which the patient could adjust himself or which the therapist might adjust at program points dictated by the preceding record. This might be a cumulative record of behaviors, or other print-out. If the recording system could not provide immediate feedback to the patient concerning progress toward his goal, at least it might produce records which could be compared with records previously obtained. In the educational system, the program checkers were able to note not only the progress of the students but possible program improvements. They used their knowledge of subject matter and teaching skills for continual program revision and improvement. The carrels were supplemented by classrooms and other facilities when explicit programs were not yet available. The use of such a systems approach in physical therapy naturally imposes behavioral requirements on therapists to be more explicit, something which patients also desire. The presence of explicit evidence of progress, no matter how minute, can sustain behaviors which often crumble otherwise because the patient feels too discouraged to continue.

7. The reader may substitute "institution" throughout this paragraph wherever "individual" appears or is implied for a ready verbal extension of behavior analysis of individual organisms to behavior analysis of institutions. Developing the appropriate procedures is a more difficult matter and is, of course, a direction required by behavior analysis.

8. This is the thrust of B. F. Skinner's *Beyond Freedom and Dignity* (1971).

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