The Hard Technologies Of Training

further evidence of training professionalism

George S. Odiorne

When economic times get tough, it has been observed many times, the nonessential functions are apt to be the first to be eliminated in an organization. During the recent depression of the midseventies, however, training did not appear to be as severely cut back as some other functions.

In earlier years, say during the fifties, a slight reversal in the budgets, sales or profit picture often produced disastrous cutbacks in training. A good case could then be made that the training and management development function has arrived professionally, is a reasonably stable occupation and has proven itself as a contribution to organization purposes.

There is some pretty persuasive evidence to show that this fortunate condition of training is the case. For example, membership in the American Society for Training and Development (ASTD) not only did *not* drop sharply in this most recent depression as in past economic downturns, *but actually rose!* Attendance at the ASTD national convention in 1975 was one of the highest on record, despite being held out of the major population centers where the bulk of the membership is located.

Furthermore, the number of available openings in placement columns and in the search organizations which handle training and development, head-hunting is higher than ever, and, finally, the salaries being offered are higher than ever. During the fifties you could have counted the number of professional training directors making over $25,000 a year on your fingers and toes. Today, even discounting the inflationary effect upon the value of money, such salaries are not at all uncommon for heavily experienced professionals in behavioral technology.

"Learning Industry" Growth

In addition to these inside-the-organization evidences, has been the growth of the "Learning Industry" which has become a billion-dollar industry. Such firms as Xerox Learning, Westinghouse Learning, IBM's educational division which owns Science Research Associates, Raytheon, Litton Industries educational division and dozens of others make it clear that industrial and governmental continuing-education programs including publishing, software and hardware to train employees and

3

managers are a growth business, create jobs for professionals and are here to stay.

It is a safe conclusion then that training is no longer an interim nor introductory job in the personnel department through which beginners are routed on their way to the more important responsibilities. Training is a career! The human resources programs in government comprise even further evidence of the professionalism of training and development. Finally, the increased number of corporate training departments or management development offices in firms could be cited to show that the guts of corporate personnel administration departments is in human resource development and not elsewhere.

10 Hard Technologies

The performance of training professionals, which has produced this human resources revolution during the seventies, is based upon some technologies that could easily be overlooked. To put it another way, as trainers and management development people we should study our successes of late and ask ourselves "What have we been doing right?" We might then be able to do it *on purpose!* We can teach it to new people coming into the field. We might even be able to improve on it.

Here are 10 things which could be seen as the hard technologies we have developed in training and development.

1. *The focus on behavior rather than personality:* Much of the training of the fifties was aimed at various forms of personality therapy rather than changing behavior. Supervisory training often dealt with making people trustworthy, loyal, helpful and the like, rather than making them productive, creative and skilled. Much of this change in emphasis grew out of the theory of B.F. Skinner, the language laboratory and the pro-

grammed instruction (PI) movement.

Trainers soon discovered that it was not the hardware, the PI text nor teaching machine that was important about Skinner and his disciples. Rather, they taught us that programmed learning was a way of organizing knowledge in a way that it could be taught more effectively by any means. We also picked up a useful definition of learning here: "Behavior is activity that can be seen or measured."

2. *Designing training for results, not process:* When the trainer defines a result to be achieved, then produces that result, it becomes a means toward organizational ends. In many training programs of the past (and some still persist) the *process* is the only thing of interest to the trainer. This distinction between process and result is the major difference between the now defunct sensitivity training and the new and more useful forms of organization development (OD).

Sensitivity training centered on process, OD upon result. Sales training, which focused upon entertainment, was process-centered training, aiming at obtaining orders at lowest cost and centering upon results. This doesn't deny that training uses processes, but the processes are a means to a result, not an end in themselves.

3. *Relate training to its context:* All too often in the past, training sessions were conducted on a "copycat" basis . . . . Some other organization reported success with a training topic or process and dozens of others followed suit! It is a hard technology of training that behavior change, in order to persist, must be supported by the environment into which it must return.

It is as much a technique of sound training to study the context of the organization as it is to conduct a well-executed class or conference. The organizational cul-

ture, the organizational climate, the managerial climate to which the trainee must return should have some supporting characteristics. If the organization cannot support the behavior which training presents, then the training will fail.

4. *Not all management problems are behavioral problems:* The ancient faith that education is a solution to all problems has often carried over, with some unfortunate effect, into industrial and administrative training. The hard technology of training requires that the training professional ask such questions as — Is there really a problem? What is it? Is it caused by lack of knowledge or skill or is it something else (such as bad organization, weak policy or simply irresolute supervision)? If the latter is true, training is not prescribed.

First, the system which creates the problem must be worked on, the policy altered or the irresolute supervision beefed up or removed. One of the best things for trainers to learn is to SAY NO when people rush into their offices requesting a training solution to a problem which is patently not a training problem. The hard technology of training has pressed more and more training departments to see themselves as *behavior change* departments. If the behavior change isn't amenable to training solutions, then the professional won't use that method of changing it.

Because behavior change may require changes in the systems by which the company is operated, trainers and behavior change experts need access to the top management of the unit being changed. Training salespersons in "How to close an order" may not work because the general marketing plan is weak, the prices are noncompetitive and the product is inferior.

5. *A training objective should have criteria:* Before training begins, the objective of the training

should be prepared, approved and promulgated. "As a result of attending this training session . . ." should preface every announcement, invitation or course description. This announcement gives management full knowledge of what it is buying, lets people attending know what they are in for and whether or not they are attending the right program. It helps teams of instructors match their efforts toward a common purpose. It also comprises the best yardstick for the evaluation of training after completion of the training!

Stating the objective in simple terms is a fair start, but to obtain best use of objectives later on, the objectives should be clarified, expanded and made explicit by statements of criteria. An objective without criteria will be worthless when the time comes to use it!

Such criteria for training could be examples of the behavior which would represent successful completion of the training. Criteria might also include statistical changes in outcomes on the job, which would be evidence of behavior change (although this isn't always practical). Criteria might be ratio changes which should be produced by training (the ratio of complaint to compliments from customers anticipated through an employee customer - relations training program).

Criteria might be stated in the form of "go-no go" statements, such as "the Palo Alto store will be turned around in sales and profit, thus avoiding its closing in 1976." The weakest form of criteria are those which consist of adjectives, for their meaning is often ambiguous within the training context. A good rule for criteria for training would be "measure the measurable, describe the describable and eliminate the rest."

Two Important Changes

Two important changes have also occurred in defining training success as measured by hard cri-

teria.

• It is not sufficient to "find a training problem" and solve the problem through training. This is adequate but limited use as a criterion. The most important criteria for training is that it be *innovative*. Problem Solving merely restores normality. The training professional is an agent of change and betterment.

• A good training criteria must include a statement of the *present condition* as well as the *desired condition*. Without a definition of present behaviors, training may boast achievements which it should not claim, for the desired condition already existed before the training took place. Therefore, criteria for training should include a statement of a "from-to" character. The training which purported to make the Minnesota Company "safe from tigers" could easily boast for years after, "surely we must have succeeded for no tigers have attacked us since the course was held."

6. *In designing training, think of simulation first:* If a single important breakthrough in training as a means of changing relevant behavior had to be chosen as best, surely simulation would rank at the top. Role play, the management game, case studies, family group OD sessions, incident process, the flight simulator, and many other similar models have comprised a training revolution. The merit of such methods of designing training is not, of course, in their novelty nor entertainment value, but in their demonstrated ability to produce relevant behavior change. The relevance lies in the closeness of the simulated behavior in training to the actual behavior demanded by the trainee on the job. The flight simulator requires that the pilot enter a flying environment and emit behavior. When the pilot gets feedback it is not general but specific.

Asking managers to work in teams to assemble horses from magnetic pieces has merit in simulating team behavior only if such behavior is ordinary or desirable on their job. Yet, managers seldom work in teams to assemble toy horses. They work on problems of production, quality, housekeeping, safety, profit planning, program development, etc. The trainer who persists in unrealistic simulations is not clever but lazy. It takes more work to prepare training which simulates reality. For example, it requires that the trainer get out into the plant, field or office where real things happen to find simulations.

It also requires that trainers resist unnecessary prattling about theories which *interest them*, but are of little benefit to the trainee or the firm. Endless hours of gabbing about the writings of be-

havioral scientists of one school or another have produced nothing but trainees who can, in turn, talk about the leading father figures of the training directors.

Rather than *talking about* Herzberg, McGregor and Likert, time might be better spent in simulating behavior which is expected of people on the job, applying those theories in action. Most motivation training does more talking about motivation than teaching managers how to behave in a way that will change behavior on the job.

7. *Break the total training objective down into successive stages:* One of the more effective training techniques of the past 50 years was job instruction training (JIT), which was applied in wartime to train millions of previously untrained people in work skills for wartime industry. The results

were fantastically successful. A four-step process, JIT insisted upon detailed breakdown of each job being taught into stages. This job breakdown was sufficiently fine, allowing the trainers to check their own progress and that of the trainees at every step.

Modern adaptations of that approach such as the Keller System, sometimes known as Personalized System of Instruction (PSI) have applied this logic to new training problems.

The major advantage of task breakdown, prior to conducting the training, lies in the ability of the trainer to teach for mastery of the competencies sought. If the learner hasn't acquired the behaviors required for step one or step two, he or she can be recycled through that step until mastery has been achieved.

8. *Require that the learner emit some action during training:* Passive behavior by the learner may produce some learning, but the training which relies on such learning is engaged in a blind form of management of the training effort. If every person engaged in the training is required to engage in some kind of action, there is an opportunity for feedback which can reinforce the desired kind of behavior. This obviously more feasible and useful if the behavior is done within a simulated design, relating to the actual environment or system in which the desired behavior must perform back on the job.

The feedback may come in many forms, as in the flight simulator where the pilot sees himself crash with his plane if he makes a serious error on landing. Usually, the simulation is one in which situational facts resemble but do not fully duplicate the features of reality. However, the simulation is complete enough that the trainee can relate to the simulation in a way that resembles relating to the real world being copied. The train-

ee's behavior should thus be an enactment of how he or she would behave in that world. Usually it is better to attempt to obtain action which will be successful rather than unsuccessful.

9. *Trainees should receive feedback for their actions:* One of the most important aspects of hard technology training is that people in training get feedback on the effects of their actions while that action is going on. Some trainers, especially the behavior model theorists, hold the view that the pure act of learning takes place when the feedback occurs. The "hot-stove principle" of learning suggests that the cat that jumps on a hot stove will never jump on any stove again, demonstrating feedback in its purest form. Yet, many cats will be required "on their job" to learn to jump on cold stoves, avoid hot ones and discriminate correctly between a hot and a cold one in advance of the jump.

Some guides to successful feedback in training might be helpful here:

a. Fast feedback is more effective than slow feedback. The closer feedback comes to being simultaneous with the behavior, the greater the learning effect.

b. Relating the feedback to the behavior explicitly increases the learning effect of the feedback.

c. Favorable or pleasant feedback will have better effect than punishing or negative feedback. The pleasing feedback, issued for the desired behaviors produces the desired behavior and also assists in a desire to learn more. Unfavorable, or punishing feedback may extinguish the undesired behavior, but may also produce some unintended side effects, including a desire to get out of the entire training situation immediately and remain away from it permanently in the future.

Behavior modification is largely based upon feedback. It has attracted many severe criticisms,

especially when applied in a strong negative fashion. The prison applications to even the most despicable criminals (electric shock to child molesters, for example) has produced vehement cries against this shaping of human behavior. In one sense it is an invasion of privacy, critics say. In fact, many of such protests are rooted in the realization of the full importance to new hard technologies of training.

Effective use of feedback can change behavior, and it is this awesome fact which places the trainer in a position of playing God with other human beings. As long as training was a harmless and usually ineffective activity nobody got excited. Now that the new hard technologies of training are proving their ability to change behavior, training is receiving closer attention for its moral and social consequences.

All Training That Works

Behavior modification in a narrow sense consists of a narrow construction. It is directly drawn from the experimental psychologists such as Pavlov, Watson, Skinner and the like. In a broader context, it must be defined to include *all training that works*. This would include the freshman English course which produces writers, the two year MBA degree program at Harvard or a team-building course for engineers.

10. *Hard technology training measures results against goals:* The evaluation of training is a much-discussed and often overly confused topic of discussion. The difficult problem seems to be finding criteria against which to measure the training effort and expense. Rating the course against participant opinion, top management impressions and similar measures misses the main point. Training should change behavior that is relevant to the job environment. That behavioral definition should have been defined in advance, with criteria spelled out,

small steps defined in a job breakdown and simulated in the training.

The trainee can rate the popularity of the program, which will have some political effects on the image of training in the organization. It can affect future course enrollments without doubt. It cannot, however, determine whether or not the training was effective. That can be done by pulling out the original statements of objectives and weighing the new behavior against the old behavior and the objectives. If the objective was mastery, then the extent of mastery comprises the extent of course success.
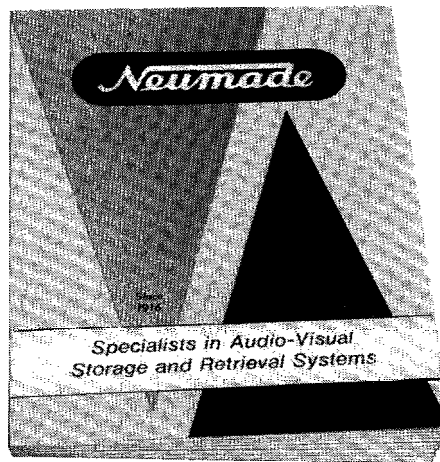
Summary

The continual upgrading of the training and development profession lies in more hard technologies applied to its responsibilities.

Clearly, the technologies are more sophisticated than in the past and have a better track record of doing what they purport to do. The trainer or training department which can change behavior is an important contributor to the operation and strategy of the organization. The realization of this will become more pronounced during the last half of the seventies.

George S. Odiorne is dean, College of Business Administration, University of Massachusetts, Amherst. He is the former dean of the College of Business Administration, University of Utah, Salt Lake City, and has taught management and economics at Rutgers and New York Universities. His experience includes positions with General Mills, Inc., American Management Assns., and American Can Co. He is a member of the ASTD Board of Directors.