

IN BEING SYSTEMATIC WE CAN BE CONSCIOUS OF WHAT WE ARE DOING  
AND WHAT THE EFFECTS OF DIFFERENT KINDS  
OF TRAINING EFFORT MIGHT BE.

# A SYSTEMS APPROACH TO TRAINING

BY GEORGE S.  
ODIORNE

(OCTOBER, 1965)

Man is constantly in touch with systems. The light on your page is the output of a system. The *inputs* in some remote power generating station were coal, water power, or atomic energy. The *process* was that of power generation and transmission. The *output* was light. These three ingredients comprise most of the systems we deal with: INPUTS, PROCESSES and OUTPUTS. There is much to be said for adopting a systems approach to the job of the training director.

*"The system concept is primarily a way of thinking about the job of managing."*

So states one leading text in the field.<sup>1</sup> It provides a framework for the solution to perplexing problems: what to train for, where to begin the process of training, what should the process accomplish, how to evaluate results. Such a system has many advantages. For one thing it starts at the beginning, moves to the middle and proceeds to the end and then eval-

uates how well it did. If a system is to be workable it should operate as part of a larger system, should permit subsystems, and perhaps equally important it should make use of the experience and knowledge already being used.

Living in a maze of systems as we are, the first step in making a training system is to clarify what a *system* is. We live in a solar system, an economic system, a political system, and a social system. Our trainees live inside bodies that are complex systems which includes at least 10 major systems: the circulatory, digestive, reproductive, endocrine, nervous, excretory, respiratory, skeletal, muscular, integumentary systems. We go to work on transportation systems, get paid on a salary system, and talk to each other over a telephone system. System provides an integrated plan for the whole which goes from one place to another in regular fashion, and by which progress and achievement can be measured.

By applying the systems concept to training we can classify the various kinds of training efforts which

are extant, and judge whether or not we are effective in our profession.<sup>2</sup> Eight systems often found in training departments can be described:

1. *Statis Systems of Training.* The first system found in training is that of static structure. This is the geography and anatomy of the training department and the resources it calls upon to train people. It consists of a chart on a wall. Geometric squares are drawn representative of a training director, perhaps some major staff department heads such as a supervisory trainer, sales trainer, apprentice trainer, executive developer, clerical trainer and similar positions.

It is usually pictured in an organization chart, and in well-developed departments may include manuals and job descriptions. In some firms its geometric forms may include customer education, and even tuition refund or college relations staff heads. Objectives and definitions are the *input*; classes and conferences are the *process*; and *outputs* consist of trained people (who have been

through the process). This is the rudimentary level of system.

2. *The Clocklike System of Training.* The next highest system of training is the "running out" of a program which has been "wound up" at the beginning of the season or semester. The plan is developed and has regular measuring points along the way, usually in the course outline. "We will conduct 10 hours of public speaking, 10 hours of conference leadership and 10 hours of human relations" would be a typical example. The inputs are a program and a budget. The clock runs its course like the sun or the moon, until the budget is exhausted or the program is completed.

3. *The Cybernetic System of Training.* This is perhaps the most common form of system in use in advanced training departments.<sup>3</sup> It presumes that the needs will be identified in the organization, the training process will meet the needs and evaluation will measure the effect. This is a plan for restoring organization performance to ideal levels through changing behavior which requires modifying (Figure 1).

Perhaps the most pervasive system, this one deserves a longer look. We will take such a look later on.

It is at the level of the cybernetic system that complexity in planning and execution of training occurs. The trainer must determine needs by defining what organizational needs for improved behavior are, and array his courses and other educational efforts in such a way that the training program's results support the organization which produces the need, and that the behavior taught in the training course will be maintained back on the job.

4. *The Cell System of Training.* Under such a system the training department itself as an organization is sustained on a self maintaining basis. Its function as a supporter of organizational behavior is sufficiently clarified to itself and the organization that it often is able to charge back full costs on a fee basis to the parent organization.

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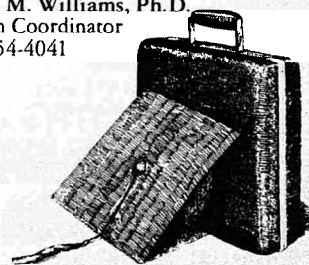
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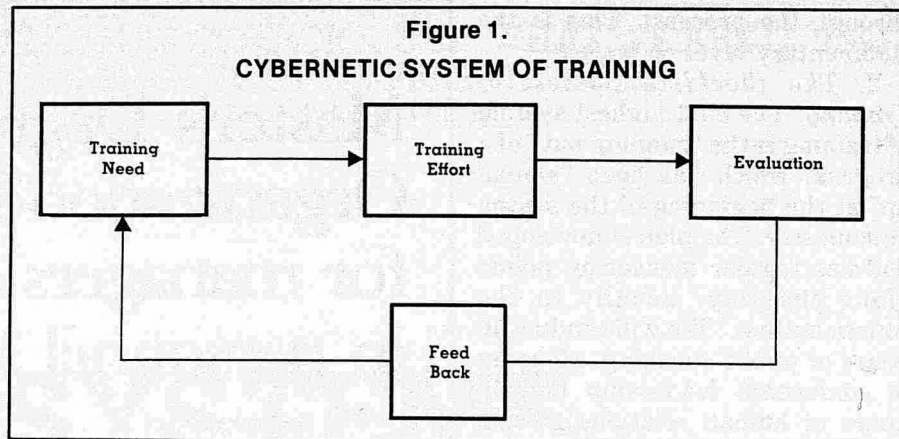
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An example of such a cellular system would be the General Motors Institute, which charges the divisions for all costs of training, confident that it can sustain its own existence by providing needed training to the line departments. The same line departments will transfer funds into the training budget on a per-trainee basis to support the training effort.

The Training Department of the University of Michigan's nonacademic departments is based on this level of system. Each department may enroll as many persons as it wishes in training department courses but must pay a per capita enrollment fee. The only financial support of training comes from the operating budgets of the departments whose people are trained. Thus the training department becomes a cell unit of the organization. It will do little experimental training, beyond the amount the organization will "buy." If the organization is itself experimental, it will accept innovation by the train-



ing department.

5. *The Plant System of Training.* Still another system which might be used to describe training departments and the training function is to analyze it to a central stem with branches and twigs. It is susceptible to having its branches (particular sections such as sales training, factory training, supervisory, executive or apprentice training) truncated, or new branches grafted on.

It is also subject to having the entire plant wither and die, such as happens to many training departments when the economic or managerial climate fails to sustain the plant. The plant obtains its sustenance from roots established in a more basic foundation (the firm, or the institution) and when this environment is altered drastically (a depression, or new management which is not sympathetic to training) it may die. Yet the seeds it has generated often are the roots of self-renewal and a new plant springs into being after the environment once more provides sustaining fuels and energy for it.

Small companies, or other automatically run organizations are often hostile environments for training and fail to sustain a healthy training plant. In other cases the fluctuations in plant health result from excessive growth for the environment in which it grows.

In some instances it has been known to have grown too rapidly until it outstripped the ability of the environment to nourish it, and it may temporarily or even permanently wither, either in all its branches (leaving only a dormant trunk) or in its entirety. Empire

builders in training should understand the dangers in their over-staffing as depicted in this analogue.

6. *Training as An Organism.* A still different and perhaps higher level system which is analogous to many training departments is that of the organism such as animal or man.<sup>4</sup> Such a department has these characteristics:

A. It obtains and uses information through a brain. It has a series of information receptors located at its extremities. These receptors are providers of information to the central center or brain which reflects messages back to the effectors or the striped muscles. Such a department in practice often relies heavily upon advisory groups, research into training needs, and plenty of observation about the influences which surround it.

B. The training department which functions at the organismic level is probably more self aware than lesser levels of system. It is more apt to work at symbolic levels and treats with its information symbolically. It communicates through behavior that results in an exchange of meaning. It is self-conscious in the better sense of the expression, and is more apt to conduct evaluations of its effectiveness than lesser system.

In practice the training department which functions at this level is closely tied to personnel research, to information channels in the firm (such as profit and loss statements) and has orderly methods for defining training needs and measuring the impact of its own behavior upon others around it. In some instances this is demonstrated in evaluations which seek

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out the acceptance and popularity of its programs among those it contacts.

At its worst it becomes so self-conscious that it turns its major efforts toward maintaining its image through presenting sophisticated forms of executive and managerial entertainment for "something new." Its self-consciousness leads to gimmickry rather than service.

7. *Training Department as Social Organization.* Industrial training is not conducted by such primary and personal organizations as the family, the tribe, or the neighborhood. As organizations go the training department could be classified as a *secondary* kind of social organization, concerned with complex relationships and numerous contact points.

• It is similar to other specialized groups that have risen to perform special economic functions demanded by the ecology of modern industrial society.

• The groups with which it associates are often large in num-

bers of members, which are also widely distributed geographically. The large oil company training department may even have its own international relations program.

• Large size and geographic spread means that their unity does not depend upon personal sentiment, but upon the impersonal idea that the group has a life of its own apart from the individual persons comprising it. The plant training manager in Chicago may be nothing more than a name, having nothing beyond a status and function in the total training activity for those in Corporate staff in New York.

• Social groups of this nature are real but not too stable. Segments of the organization develop special interests.

• To prevent such tendencies toward disorganization from gaining an upper hand, organizations maintain discipline through reports, policy statements and the like. They may supplement this with persuasive communications, conferences, information bulletins,

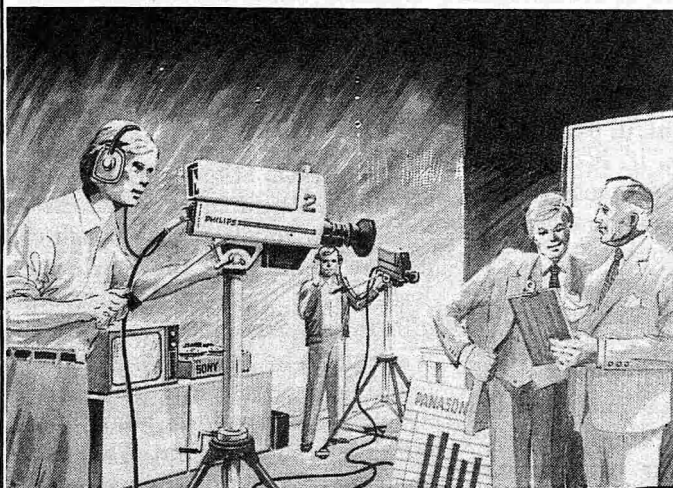
posters and other kinds of personalized but mass appeals. In so doing they try to supplement organization discipline with voluntary self-control on the part of the members.

• As a social organization the training department is not independent but relies upon cooperation and coordination with other parts of the total organization to find acceptance of its legitimate function.

• This coordination with other groups cannot be completely achieved since others may be competing with it for space, budget, the attention of trainees, and attention of top management. Many training departments have a hearty sense of competition with accounting, industrial engineering, labor relations, or the public relations department, for example.

8. *Training as a Social Movement.* Not as often found as in the past, some training departments have the nature of a social change movement. The social change which seems to have pervaded

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Figure 2.

WHICH SYSTEM BEST DESCRIBES YOUR TRAINING DEPARTMENT?

Rank 1-2-3-4, etc.
(Refer back to the text for detailed explanation)

How you place
department

- 1. Static System
2. Clocklike
3. Cybernetic
4. A Cell
5. A plant
6. An organism
7. A social organization
8. A social movement

training most is that of achieving "industrial democracy." Its objectives seem to be the achievement of reforms within the organization through a kind of indoctrination. Faced with real or apparent opposition it may join hands with other trainers faced with similar opposition from line managers who resist the true faith and form a sect. This is close to a religious form of organization which is at war with the existing mores. It seeks to generate a state of mind and estab-

lish a moral code different from that of the world about it — based upon some ultimate authority such as behavioral science. In order to achieve this it may set itself off in contrast with the rest of the world.

Because it is intolerant of infidels (autocrats) it often adopts distinct differences in speech (words like "interaction" and "perceive").

At this point its affinity to religious sects is a close one, and often it will slip the bounds of economic origins and make candid admissions of its sectarian nature. In such a posture toward the rest of the organization it may find itself in jeopardy when the economic winds blow adversely on the parent firm which sustains it.

Which One to Adopt?

For the insightful trainer or training director, it is no small matter of passing interest that he see clearly which system best describes his own department. Training objectives, training content, training methods, and evaluation of training all follow the system which is being used, whether consciously shaped, or unconsciously drifted into. As a simple test try this chart on your own training department. The eight major systems previously explained are listed on Figure 2.

Take a pencil and place a rank-order position beside the three or four which appear to best describe your department. You will want to rank several of them since no real-life training department will operate wholly according to a single system described here, but in all likelihood is a combination of two

or more.

While your concept of your department may be perfectly accurate, you might also find it instructive to let some others tell you how they see your department (use column 2). To get comparable opinions it may be necessary to limit yourself to those who will take time to read the respective descriptions. This, of course, biases your data collection to those people who are evenly sufficiently interested in going that far.

Finally you are in a better position to ascertain whether or not the actuality resembles what you would like.

Cybernetic Systems — The Modern Approach

Current training literature is beginning to see more and more attention being paid to "systems." In almost every instance they are cybernetic systems. Is this the most appropriate system? In many respects it meets the needs of behavioral technology. On the other hand, there may be temporary instances in which one system may have some distinctive uses that make it superior to all other forms. Analogies can help define and clarify your present condition.

Perhaps the most persuasive reason for adhering to a cybernetic system of organizing and managing training is the very popularity of the cybernetic concept. It is a communication theory which treats organisms and organizations as being very much alike — both can display behavior. Since the subjects of the training department's efforts are organisms (employees) it seems to be sensible to treat the training process as a feedback or cybernetic process that is occurring to an organism. This paves the way to expanding your logic to presume that the training department itself is a cybernetic system.

Perhaps the easiest-to-understand illustration of the cybernetic system is the home thermostat which controls the temperature of the room, at least that part of it where the thermostat is situated. The inputs are gas, oil or electricity. The process is what goes on inside the furnace which converts energy into heat and pushes it up

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the pipes or ducts. The output is BTU's of heat measured by the thermostat as degrees of temperature. The thermostat simultaneously measures the heat in degrees, compares it with a predetermined level set by the householder.

When the heat exceeds that temperature by a slight amount it sends a message back to the control point and turns off the inputs. When the furnace is not operating and the temperature is

discovered by the thermostat to have dropped below the pre-set level it sends a message to the switch to control the inputs, and the inputs begin to flow again.

This switching off and on is sometimes called homeostasis. The result is not wide fluctuation nor is it perfect stability. It is control.<sup>6</sup>

The cybernetic system does not automatically ensure successful training, however. As a closed loop it merely assures the trainer that he is achieving the things he set

out to do. If his goal is to run successful programs, he can do so by defining success in specific and measurable terms. He might desire that the programs be interesting to those attending.

His inputs will be speakers, materials and outlines. His process is a course with top flight instructors, lots of gimmicks and enough novelty that it keeps the class intrigued. To measure his output he passes out questionnaires seeking their opinion. If they "liked" the course he achieved his objectives.

On the other hand the cybernetic system, combined with a business-like definition of the behavior change sought provides him with a thermostat to assure the achievement of the training objectives. He is controlling the growth or behavior change of the trainee.

The great danger in using such a closed loop system is that as long as it remains a closed loop it is incapable of learning anything. Sadly, training departments have often been mechanical cybernetic closed loops, as devoid of information theory as they were of learning theory.

The remedy for such isolation of training from real life, or the business purposes of the organization which supports them requires the addition or modification of the trainers' values. In more detailed form the earlier diagram of a cybernetic system would look something like Figure 3 (page 48).

We complicate this in training by virtue of having control over only one of the communication loops which affect the trainee. His boss, the company policies, his peers, his subordinate (especially if they belong to a union), the ropes of the organization, and other procedures such as the pay plans, the promotion system and other "order communicators" push and shove the effector into a certain posture toward his job and behavior on it. The problem with training is that it often permits itself to be caught in the position of being the lowest-pulse communicator.

In operating terms, where the trainee system conflicts with the rest of the systems that are com-

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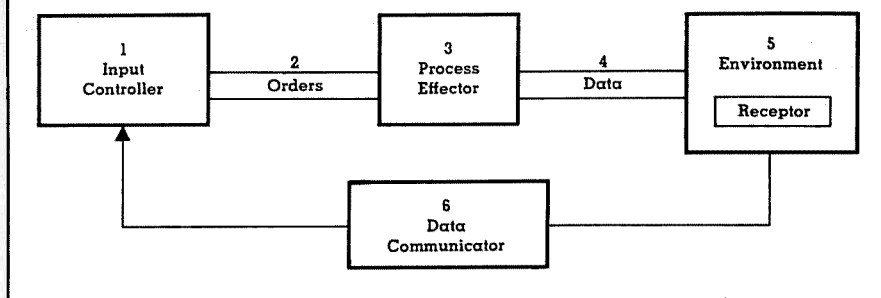
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Figure 3.  
CYBERNETIC SYSTEM PLUS TRAINER'S VALUES



municating (say the boss) with the trainee on the job, the training will lose out. If, following the teachings of the trainer, he misses out on a raise or a promotion then the future inputs of the trainer are overridden by other order communicators. What does this imply for training systems? Following the scheme shown in Figure 3 we might conclude these things about training systems of the cybernetic model.

1. *The Controller and its Inputs.* When the training department is to issue proposed instructions (actually they may not be orders, but only suggested behavior) they should reflect information received from the environment itself as well as narrow bits of data received back from the trainees at the end of the class. The trainer should be reading messages from the shop or office environment, the organization and its power sources as well as its little "rating cards" from trainees.

2. *Training Materials Have Much in Common with Orders.* To the trainee who is tacitly directed (or even openly ordered) to attend, the materials he receives have much of the coloration of directives. They will usually be so received if they appear to be *legitimate*. What is illegitimate training? It consists of training that asks the trainee to fly in the face of his bosses' wishes, of company policy, or against his own career interests in his job.

3. *The Training is the Effector.* Training should lead to changed behavior. If it does not it may be the trainee has not the IQ to understand, has a boss who conflicts with the training behavior pro-

posed, or has peers or subordinates who determine that such proposed behavior would not work or be suitable in the environment.

4. *The Data Communication.* What the training intends to achieve is only important in regard to what the trainees receive. The data that goes to the receptor (the trainee) may not be what the trainer put into the system at all. For example, we find the trainer teaching: "autocratic behavior is wrong." What the trainee learns is: "My boss is not a very good boss, he should be here instead of me."

5. *The Receptor Works in an Environment.* This means that the trainees are reading from numerous sources of inputs at once. The environment, including the organization culture, the organization climate, and the boss are all sending data to him. If training is consistent and congruent with the other messages it amplifies and accelerates behavior change. If it is incongruent or inconsistent with environment it may lose out, and simply confuse the trainee (receptor).

### Summary

In the management of training we undoubtedly operate by some system or another. In being systematic we can be conscious of what we are doing and what the effects of different kinds of training effort might be. The cybernetic system has numerous advantages, and points up what experienced trainers have realized for a long time.

1. For training to be effective, it should start from the top down, or at least, have the endorsement or permission of the superiors of the

trainees. Without such endorsement the training may be wasted or harmful. Where active opposition to the training behavior taught exists, the training will lose out.<sup>7</sup>

2. The identification of training needs consists of a trainer briefing himself thoroughly on the nature and intensity of other behavior change messages which are bombarding the trainee on the job.<sup>8</sup> Where he sees conflict, the trainer must either change that environment and its messages, or forego the training as being harmful.

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George Odiorne is professor of Management and former Dean at the University of Massachusetts in Amherst. Prior to joining the staff at the University of Massachusetts, Dr. Odiorne was Dean of the College of Business, Professor of Management at the University of Utah for five years and prior to that he was Director of the Bureau of Industrial Relations at the University of Michigan for 10 years. He has taught management and economics at Rutgers and New York Universities. His most current books include *Management and the Activity Trap*, *Personnel Administration*, *Green Power - The Corporation and the Urban Crisis*, *Management by Objectives* and *Management by Objectives - A System of Managerial Leadership*.