PART ONE

FOUNDATIONS OF HUMAN PERFORMANCE TECHNOLOGY

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Nearly fifty years of research and practice with human performance technology (HPT) have led to a vast body of literature: theoretical concepts and models, case studies, and lessons learned from application. As HPT evolves, and a healthy debate on what it really entails continues, we have one certainty, that the field is alive and well.

Through experience and through the solid work of scholars and professional practitioners, HTP now is firmly grounded in a set of fundamental principles and a code of ethics.

The purpose of the chapters in Part One is to introduce these fundamentals. They are meant to orient the reader with an overview of what HPT is about, its practical application, the basic concepts and models, and the history and evolution of the field.

The first chapter, by James Pershing, provides a definition of the field and a process model. It explains in unambiguous terms what HPT is today. As with any serious professional field, future research and insights may make some knowledge obsolete and confirm other knowledge. For today, this is what we know and agree upon.

The next three chapters are devoted to the application of HPT. First, Roger Addison and Carol Haig take you on a journey through the key elements of a full performance process, with its pitfalls and how to avoid them, including guidelines and tools. This is followed by a chapter by Kenneth Silber and

Lynn Kearny, which ties HPT firmly into the world of business. Understanding the language of business is an essential prerequisite for successful performance improvement. This language is financial, the data mostly numeric, and the valued results economic. The chapter shows you how to learn your client's language and how to find, analyze, and use financial data for your HPT project. Chapter Four, by William Daniels and Timm Esque, is concerned with the essential concept of feedback. No other word in our field has been used and abused to such an extent. The authors build solidly on tried-and-true experience in the field, develop a detailed case study of a working feedback system in a large high-tech company, and share their insights on how to implement feedback for results.

Two subsequent chapters delve deeply into theory. First you will find a detailed analysis by Dale Brethower of the concept of systems thinking. *Be systemic* is one of the fundamental principles of HPT. Accordingly, systemic issues appear in most publications within HPT and within many other disciplines. This has created confusion about the definition of systems, sometimes for lack of a definition, often for excess of conflicting definitions. This chapter explains the meaning and value of being systemic. To illustrate and clarify the concept it tells you stories from various sources: fiction, a case study from a large company, and examples from the author's experience.

Chapter Six presents Roger Kaufman's model of HPT, which is probably the most inclusive. The author's quest is to provide meaningful results consistent with the fundamental principles of HPT. His view of meaningful results aims at looking for all elements involved: the world, society, companies, and individuals. Any change intervention should lead to a better future for all. At the very least, companies should try to do no harm to their environments. Kaufman puts the threshold high and expects you to be concerned as much with ethics as with the bottom line.

The final chapter, by Camille Ferond, takes a general look at both history and the future of humankind's struggle to improve its well-being, its knowledge, and its organizations. Within the field of HPT it summarizes the work of the main thinkers and explains how all of them build on prior knowledge to expand or invent new HPT models and tools.

Part One of this HPT handbook is designed to be an introduction to the key concepts of human performance technology. Readers who are new to the field or have little experience will become familiar with the essential ideas of HPT. Also, experienced professionals will find new and exciting views that put a different focus on HPT's crucial questions. Part One sets the stage for the remaining parts of the book, in which methodology, methods, and tools will be presented in detail and within different contexts of thought and application.

Our field is evolving and attracting interest from a large variety of sources. HPT can help to improve performance in all sectors of society, be they business,

public, or nonprofit. Within the past decade the field has become more international. HPT will benefit vastly from research and practice from all over the globe. Thus far, the experience with HPT in a variety of countries is encouraging; we can therefore assume that HPT is effective independent of culture. Or, the other way round, that those cultural issues can properly be addressed within the HPT framework.

CHAPTER ONE

Human Performance Technology Fundamentals

James A. Pershing

Ideas and conceptualizations of human performance technology (HPT) have evolved over time. What we know about HPT today is timebound. It builds upon the work of a number of academic and professional practitioners begun in the United States in the 1950s and 1960s. Randell K. Day, in the book *Performance Improvement Pathfinders: Models for Organizational Learning Systems,* edited by Peter J. Dean and David E. Ripley (1997), presents the case that the field of HPT evolved from the ideas of B. F. Skinner and his collaborators. "Many performance improvement pioneers got their start by attempting to improve training and were heavily influenced by Skinner" (Day, 1997, p. 22). Skinner was trying to explain how people operate in their environments. He formulated the idea that people "learn to manipulate and control their environment by their responses to it" (Day, 1997, p. 23).

Susan Markle, an early collaborator with Skinner, worked on the development of teaching machines and accompanying instructional materials. These activities and much experimentation by Markle and others on designing instructional materials led to the design and development of *programmed instruction* (Day, 1997).

Early in the heyday of programmed instruction, Thomas Gilbert and Joe Harless experienced instances in which well-designed instruction was failing to have an impact on individual and organizational performance. Both Gilbert and Harless came to recognize that training is but one factor that affects human performance. They questioned at the outset of design and development whether

training was the appropriate intervention to improve individual and organizational performance. These ideas are well articulated in Harless's 1970 book *An Ounce of Analysis (Is Worth a Pound of Objectives)* and Gilbert's 1978 book *Human Competence: Engineering Worthy Performance.* During the past fifty years, a plethora of individuals has influenced the growth and direction of HPT. Studying the ideas of these individuals and their evolving thinking is to see history in action (Argyris, 1970; Brethower and Smalley 1998; Coscarelli, 1988; Geis, 1986; Harless, 1970, 1988; Kaufman, 2000; Langdon, 1999, 2000; Mager and Pipe, 1984; Molenda, Pershing, and Reigeluth, 1996; Robinson and Robinson, 1989; Romiszowski, 1981; Rosenberg, 1996; Rossett, 1987, 1999; Rothwell, 1996; Rummler and Brache, 1995; Stolovitch and Keeps, 1992, 1999; Wile, 1996; Zemke and Kramlinger, 1982).

A DEFINITION OF HUMAN PERFORMANCE TECHNOLOGY

Defining a field is risky business. There are at least two hazards. The first has to do with time. Any definition is today's definition and may not fit as a definition for tomorrow. Second, many people are very familiar with the illustrious history and foundations of HPT. They will not agree with all of the elements or their emphases in any one definition. These points are exemplified in looking at a sample of definitions for HPT that have been offered over the past four decades (see Table 1.1). Cognizant of these risks, I offer the definition that I have developed and use with my clients and students:

> Human performance technology is the study and ethical practice of improving productivity in organizations by designing and developing effective interventions that are results-oriented, comprehensive, and systemic.

ELEMENTS OF THE DEFINITION

Following is a discussion of each of the key terms used in this definition of HPT. Understanding the meaning of each in the context of the overall definition is important.

Study

The use of the term *study* means that human performance technologists carefully examine and analyze questions that arise in understanding and applying their knowledge and skills. These questions involve both *how* to do HPT and *what* to do in given situations. This requires an understanding of the theoretical, empirical, and research foundations of the field.

Table 1.1. Sample of Definitions of Human Performance Technology from the Past Thirty Years.

Author(s)	*Definition*	*Key Terms*
Gilbert (1978, p. 18)	Human competence is a function of worthy performance (W), which is a function of the ratio of valuable accomplishments (A) to costly behavior (B).	• Accomplishment • Behavior • Competence
Ainsworth (1979, p. 5)	A cornerstone of performance technology is outcome signification—discovering valid, useful performance objectives and stating them in terms that are easily understood.	• Objective • Outcome signification
Stolovitch (1982, p. 16)	A field of endeavor that seeks to bring about changes to a system in such a way that the system is improved in terms of the achievements it values.	• Achievements • Change • System
Harless (In Geis, 1986, p. 1)	Human performance technology is the process of selection, analysis design, development, implementation, and evaluation of programs to most cost-effectively influence human behavior and accomplishment.	• Accomplishment • Behavior • Cost effective • Process
NSPI, via Coscarelli (1988, p. 8)	A set of methods and processes for solving problems—or realizing opportunities—related to the performance of people. It may be applied to individuals, small groups or large organizations.	• Processes • Realizing opportunities • Solving problems
Langdon (1991, p. 2)	Systematic application of identifying that a need exists to establish, maintain, extinguish, or improve performance in an individual or organization; defining the need; identifying, implementing, and networking appropriate interventions; and validating that the results are true improvements.	• Establish • Extinguish • Improve • Maintain • Systematic

(*Continued*)

Table 1.1. Sample of Definitions of Human Performance Technology from the Past Thirty Years. (*Continued*)

Author(s)	*Definition*	*Key Terms*
Stolovitch and Keeps (1992, p. 4; 1999, p. 5)	The application of what is known about human and organizational behavior to enhance accomplishments, economically and effectively, in ways that are valued within the work setting. Thus HPT is a field of endeavor that seeks to bring about changes to a system, in such a way that the system is improved in terms of the achievement it values.	• Accomplishments • Change to a system • Human and organizational behavior
Rothwell (1996, p. 29)	Human Performance Enhancement (HPE) is the field focused on systematically and holistically improving present and future work results achieved by people in organizational settings.	• Holistically • Present and future work • Systematically
O'Driscoll (1999, p. 97)	Systems thinking applied to human resource activities. (1) Systemic, (2) systematic, (3) grounded in scientifically derived theories and the best empirical evidence available, (4) open to all means, methods, and media, and (5) focused on achievement that human performers and the system value.	• Achievement • Derived theories • Grounded in science • Systems thinking • System value
Van Tiem, Moseley, and Dessinger (2004, p. 2)	The systematic process of linking business goals and strategies with the workforce responsible for achieving goals. Moreover, performance technology practitioners study and design processes that bring about increased performance in the workplace using a common methodology to understand, inspire, and improve. And finally, performance technology systematically analyzes performance problems and their underlying causes and describes exemplary performance.	• Achieving goals • Analyzes • Common methodology • Design processes • Study • Success indicators • Systematic process

(*Continued*)

Table 1.1. (*Continued*)

Author(s)	*Definition*	*Key Terms*
ISPI (2005b)	A systematic approach to improving productivity and competence, uses a set of methods and procedures—and a strategy for solving problems—for realizing opportunities related to the performance of people. More specific, it is a process of selection, analysis, design, development, implementation, and evaluation of programs to most cost-effectively influence human behavior and accomplishment. It is a systematic combination of three fundamental processes: performance analysis, cause analysis, and intervention selection, and can be applied to individuals, small groups, and large organizations	• Accomplishment • Competence • Cost effective • Process • Realizing opportunities • Solving problems • Systematic

A key to understanding the importance of the term *study* in HPT is the idea of disciplined and systematic inquiry. This involves asking questions and seeking answers about human performance in orderly and prescribed ways that follow organized sets of principles. It includes both quantitative and qualitative approaches to research as well as philosophical analyses, historical investigations, theorizing and theory building, model development, and evaluation.

From the beginning, systematic inquiry, including research and evaluation, has been the genesis for new ideas in HPT. Early on, the dominant paradigm for inquiry was studies that focused on *proving* that specific interventions were effective ways to improve individual and organizational performance. Today, the performance technology researcher and evaluator have added other paradigms or ways of looking at and approaching research and evaluation. These include understanding the complex world of people's experiences from their points of view as they function in natural or authentic settings (Mertens, 2005). Popular labels associated with these two paradigms are *quantitative* and *qualitative* research. In contemporary practice many HPT researchers and evaluators combine or blend these paradigms.

The importance of the term *study* in the definition is threefold. First, study is critical to understanding and improving the practice of HPT. Second, study is important to the selection, design, development, and testing of human performance interventions. Finally, it is important to avoid the trap of believing that we already know all that needs to be known about how and what to do in HPT. The continued growth of HPT is dependent upon performance technologists who think about the field, practice it, and do not become complacent by believing that the philosophy of HPT is set in stone, that its history has been written, its theories and models are beyond reproach, and how we ask and answer research and evaluation questions are one dimensional and tied to one research paradigm. *Study* we do, and *study* we must.

Ethical Practice

HPT has a long history of ethical standards and ethical practice (Dean, 1993; Watkins, Leigh, and Kaufman, 2000; Westgaard, 1988). The certified performance technologist (CPT) credential of the International Society for Performance Improvement (ISPI) emphasizes recent guidelines for ethical standards and ethical practice.

The CPT code of ethics includes (1) the principle of adding value for clients, their customers, and the global environment; (2) promoting and using validated performance technology strategies and standards that align with an existing body of theory, research, and practice knowledge; (3) working collaboratively with clients and being a trustworthy strategic partner; (4) continually improving one's proficiency in the field of HPT; (5) practicing integrity by being honest and truthful in representations to clients, colleagues, and others; and (6) maintaining client confidentiality and avoiding conflicts of interest (International Society for Performance Improvement, Certified Performance Technologist, 2002).

In this time of corporate scandal and international strife, there are increasing concerns about ethical issues in HPT. Nonethical behavior is detrimental to individuals, groups, organizations, the profession, and society. It undermines the work and good intentions of all who practice in the field. Key elements in ethical behavior are to *do no harm* to your clients, their customers, and the profession and to keep in the forefront serving the *good* of society.

Improving Productivity

To *improve* is to make better and involves enhancing quality and value. Productivity has both quality and quantity dimensions. It is the maximum value that an organization that delivers a particular product or service creates at a given cost using the best available management techniques, skills, technologies, and required inputs. "In a nutshell, productivity reflects results as a function of

effort. In a classical sense, productivity is defined as a ratio such that the output of an effort under investigation is divided by the inputs . . . required to produce the output" (Brinkerhoff and Dressler, 1990, p. 16).

Productivity can be simply depicted as the relationships between inputs, processes, outputs, and feedback. "Inputs are the resources consumed in producing the goods and services of an organization" (Brinkerhoff and Dressler, 1990, p. 72), while outputs are simply the goods and services an organization produces. Processes are mechanisms organizations employ to convert inputs to outputs. Feedback is the means organizations use to calibrate the inputs, processes, and outputs. There are essentially three ways to increase productivity. An organization can hold inputs constant and increase outputs. Second, outputs can be held constant and inputs can be decreased. And finally, inputs can be decreased while outputs are increased. These combinations are achieved by modifying or changing inputs and processes.

Organizations

Organizations are enterprises that are dynamic, political, economic, and social systems with multiple goals. They are invented by, made up of, and serve the needs of people. People come together and create an organizational culture consisting of principles, ideas, and pronouncements that define an organization. They also create a structure that defines the roles, relationships, tasks, and duties of individuals and groups. Finally, organizations operate in a larger environment that requires the development of direct and indirect relationships with other organizations, including suppliers, distributors, stockholders, and others. Organizations are purposeful and serve the needs of their members and a public that values and consumes the organization's products and services.

Historically, HPT has had as its major focus individuals, including workers and managers. Over the years, several human performance technologists and management gurus have modified or changed this single focus on individual workers. Ideas from two pioneers exemplify this shift in thinking. Thomas Gilbert, in referencing organizational systems, observed that if you "put good people in a bad system, the system will dominate" (quoted in Dean, 1997, p. 63). W. Edwards Deming, a founder of total quality management (TQM), emphasized that workers are not the source of problems in organizations. Managers and those that lead organizations have the control and power to change and improve the structure of organizations, and problems rest with them, not the powerless worker (Petty, 1991).

So nobody works alone. People work in organizations and regularly interact with other individuals. Individuals belong to units or work groups and receive and give information, meet, and problem solve as part of and in the context of a group which is part of an organization (Hanson and Lubin, 1995). In short,

people's needs are organizational needs and organizational needs are people's needs. The two are inextricably entwined.

Designing and Developing

Designing involves the preparation of a detailed plan for performance-improvement interventions. It includes completing a performance analysis, specifying objectives, identifying characteristics of the affected population, grouping and sequencing objectives, specifying characteristics of the interventions, and executing an evaluation process. Designers orchestrate and logically sequence a series of activities that solves problems and improves performance.

Production involves translating design specifications into actual interventions and strategies for implementing them. Performance design is often confused with performance development. The major difference is that design indicates what the performance should look like, whereas development indicates how to make it that way (Reigeluth, 1983).

Effective

Effective performance improvement produces desired results. It is achievement of purpose; doing the right thing and doing it right. Doing the right thing means that performance is aligned with the mission, goals, and purposes of the organization. This *strategic alignment* means that there is a direct and traceable relationship between a performance-improvement initiative and a declared goal of the organization.

Doing things right is subsumed with doing the right thing. It means achieving desired results with a minimum of inputs. So there is a hierarchy for effective and efficient behavior. Effective behavior is efficient, but efficient behavior may not be effective.

For example, a city builds a traffic bridge over a small river. The bridge is built to state and federal load and safety standards for minimal costs: it is built efficiently. However, a traffic bridge may not be the best solution to a strategic goal of the city: the movement of people. Mass transit may be a better solution. Or moving people across the river may become less important if zoning laws that restrict commercial and home building on the floodplain on the far side of the river are enacted and enforced. If the bridge is the best solution but building it takes decades versus months and nearly bankrupts the city with cost overruns delaying its use, it is not effective. Effectiveness is being correct and in so doing, doing things correctly.

Interventions

An intervention is a course of action taken to improve performance. It is planned and purposeful, and requires organizations and the people in them to behave differently. Interventions have to be proactively planned for and

managed, and people must adapt to them. Interventions are designed and developed to respond to specific needs, which are gaps between where an organization is and where it seeks to be in the future.

Results-Oriented

An enduring and distinguishing principle of HPT is focusing first and focusing last on *results.* Results must be tangible and measurable, due to a performance improvement initiative, and must positively affect an organization. They must create value for the organization, its members, and its customers. In short, they must have a positive impact.

There are many types of results. Some focus on an organization's bottom line. Examples include increased production, reduced scrap, reduced backlog work, and reduced costs. Time savings also have an impact on the bottom line of an organization. The focus also can be on workers and work teams. Examples include reduction in accidents, increases in worker health and safety, improvements in morale and motivation, increases in knowledge and skills, and reductions in grievances and personnel turnover. Or the focus can be market-oriented, such as increased market share, maintaining and increasing satisfied customers and repeat business, long-term growth, and expanding partnerships. Finally, organizations can focus externally and serve and give back to the community by being good corporate citizens and avoiding externalities such as air and water pollution, worker exploitation, and wasting of natural resources.

All results must be legal, ethical, and morally defensible. Most important, they must be aligned with one or more of the values, missions, goals, and objectives of the organization.

Comprehensive and Systemic

To be effective, performance-improvement interventions must solve the whole problem; that is, be comprehensive. The interventions must also be integrated into the organization, which is being systemic (Irlbeck, 2002). In deriving a solution set and as the whole picture is uncovered as we seek to maximize effectiveness, there are inevitable trade-offs when only partial performance issues are identifiable or partial solutions are feasible.

All organizations are complex systems of multiple and mutually interacting components. These interrelated parts connect with one another to carry out the purposes of the organization. The parts of an organization are unified as a whole by complex sets of rules, principles, ideas, and methods that govern the interactions and behavior of the parts. There are also boundaries for organizations that separate them from other organizations.

Systemic interventions address organizational needs as a whole, especially with regard to an organization's vital processes and functions. Systemic problem

solving looks beyond linear cause and effect by taking the perspective that a given cause and its effect cannot be separated or isolated from their context. It is a matter of holism versus reductionism (Douglas and Wykowski, 1999; Hallbom and Hallbom, 2005).

In explaining the idea of systemic thinking and problem solving, I find a useful analogy in the old game of "pick-up sticks." For those unfamiliar with this game, it often uses painted wood sticks that are about eight inches in length and look like oversized toothpicks. Twenty-five or so sticks come in a bundle, often stored in a tube. A player grasps the bundle of sticks and drops them on a table in a pile. The object of the game is to pick up as many sticks as possible, one at a time, without disturbing the rest of the pile.

Imagine each stick as a part or element of an organization. When dropped, the pile of entwined sticks represents the organization as a whole. Some of the sticks may not touch or they may only touch in simplistic and easy-to-manage ways. Other sticks will be piled in a complex web, and if disturbed or changed, they will move or disturb other sticks. In other words, there are *ripple effects* of moving or changing any one part of the organization, with some parts being more affected or sensitive to change than others. Moreover, as the pile of sticks is disturbed as a player touches and manipulates a given stick or part, the pile as a whole changes its form. Although not a perfect analogy, the game of "pick-up sticks" does illustrate the need for performance-improvement initiatives to be comprehensive and systemic.

PERFORMANCE-IMPROVEMENT MODEL

As with definition building, model building in HPT is risky. I often get the questions, Why are there so many HPT models? and Why has the field not settled on one model? In my judgment, the answer is threefold. First, if one looks back over time, as the field has matured and the ways organizations operate and are managed have changed, academics and practitioners have adapted their views and practices. The models they use reflect these changes. Second, organizations have different needs, vary in their orientations to HPT, and have HPT personnel from varying backgrounds. Because of this, performance technologists customize an HPT model that reflects their views and ways of doing performance improvement. Third, there is the view that some academics and independent consultants build models for self-promotion and as a marketing device.

The model I have built and use is a process model. It builds on the work of others, consists of a set of components that I find essential in doing HPT, and fits with my definition and view of the field. Use it as is, adapt it, or reject all or parts of it. Do not accept or use it without study. The graphic depiction is displayed in Figure 1.1.

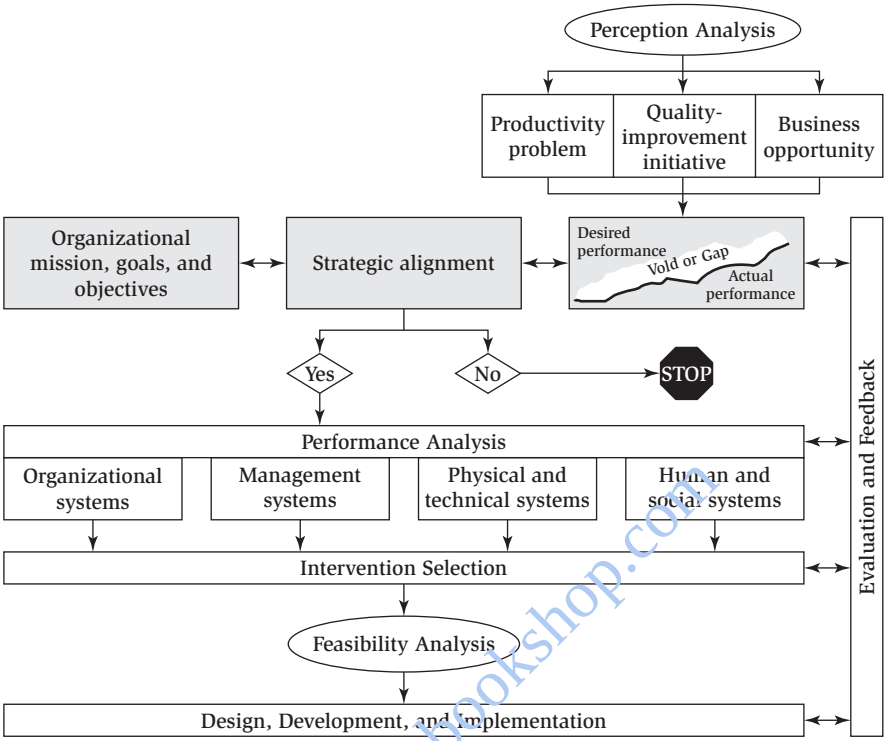

Figure 1.1. Pershing Performance Improvement Process.

Getting Started

As displayed in Figure 1.1, the *performance-improvement process* has a beginning. I find that individuals or a group in an organization move forward with one of three types of perceptions. They believe there are performance problems, they believe there is a challenge for quality improvement, or they believe that new or emerging business opportunities have arisen (see Table 1.2). Furthermore, they sense that there is a void or gap between where the organization is and where it ought to be. The void or gap is often perceived as the difference between present or actual performance and desired future performance.

Perception Analysis

Needs for performance improvements are identified on a daily basis in organizations. Given this frequent activity, how is a performance analyst to know which needs are important and deserve attention?

Different performance-improvement needs will have different perceived levels of importance within an organization. This leaves the question, Who has the

Table 1.2. Sample Performance-Improvement Initiatives.

Performance Problem	*Quality Improvement Initiative or Challenge*	*Business Opportunity*
• Backlogs • Customer complaints • Delivery delays • Employee absenteeism • Employee turnover • Equipment downtime • Quality-control failure • Waste and breakage • Worker health and safety	• Decrease inputs • Increase outputs • Increase return on investment • Improve organizational climate • Improve processes • Reduce unit costs • Speed up delivery	• Acquire new business • Acquire competitor • Enter new geographic market • Expand customer base • Expand product line • Merge businesses

correct perspective? For the performance analyst the key to this dilemma is found in the process of *perception analysis*.

The power of individual and group perceptions is well established in the literature on performance analysis, needs assessment, and organizational change (Hall and Hord, 1978; Eggen and Kauchak, 1997; Tafoya, 1983). If you are familiar with the idea that someone's perception is his or her reality, then you are familiar with the most basic reason for carrying out a perception analysis as part of the performance-improvement process. Individuals and groups within an organization may have widely varying understandings of the same situation, event, process, or need.

Perceived needs reside in the values, beliefs, opinions, and judgments people have about their work and the culture of their organization. Often they evolve from people's reactions to events or situations. In a way, they are like the vital signs of an organization as viewed by the very people who make up the organization. Such information helps gauge individual and group perceptions and possible ambivalence toward, support for, or resistance to an identified need and potential interventions. Perception analysis uses three guiding questions to reveal three important aspects of the need: who, how, and why?

The Who Question. The who question identifies which individuals and groups are involved in the performance-improvement initiative. At a minimum, a perception analysis discerns the sponsors, champions, and stakeholders.

Sponsors are people and groups with influence and power. They control the purse strings and have the authority to devote resources to a performance-improvement initiative. Their belief in and their willingness to support an initiative are vital to success. Champions are individuals or groups that lead the

effort to improve performance. They are personally invested in the process and believe in its importance and potential. Stakeholders are individuals and groups either directly or indirectly affected by the performance-improvement initiative. They will include employees, owners, stockholders, customers, suppliers, and others. They have significant interest in the actions and effectiveness of the organization. Performance-improvement initiatives must have a strong sponsor and champion. These may be the same person or group. Stakeholder support is helpful. More critical, however, is to make sure that key stakeholders are not hostile toward an initiative or overtly intent on undermining the efforts.

The How Question. Perception analysis considers the origin of the need because the very nature of people's perceptions of a problem, quality-improvement initiative, or business opportunity is rooted in the originator's perceptions. This gets at the issue of ownership. If the performance analyst identifies a need or opportunity, it is considered proactive. This type of purposeful action by the analyst will need to be sold to affected individuals and groups so that they take ownership. If the initiative is perceived to be owned only by the analyst, it will falter or fail.

Reactive situations occur when individuals or groups identify a need or opportunity and seek assistance from performance-improvement specialists. The initiators have ownership. Challenges for the performance analyst come into play when the need or opportunity is misdiagnosed by the owners and the interventions are predetermined and do not meet the need. In such instances, the analyst must sell the rigor of the performance-analysis process.

The Why Question. The final perception-analysis question is Why is the perceived performance-improvement initiative important? This is essentially a matter of impact. Impact upon individuals, groups, the organization as a whole, other organizations, and society. It is best answered in terms of the next component in the model, strategic alignment.

Strategic Alignment with Organizational Mission, Goals, and Objectives

A way to judge the importance of a perceived need is to ascertain its relationship to meeting the missions, goals, and objectives of the organization. This is *strategic alignment.* The essence of strategic alignment is looking for agreement between perceived needs and the goals and tactical behavior of an organization. Strategic alignment is a *state of affairs,* not an outcome. The assumption is that alignment leads to increased organizational effectiveness and performance-improvement initiatives that contribute to rather than conflict with strategic alignment. The performance-improvement analyst must ask, If this need is met,

will this fit or conflict with the organization's missions and goals in the following ways?

- *Values:* Do the perceived need and potential interventions fit with the set of preferences and judgments concerning what individuals and groups in the organization deem as good or bad and desirable or undesirable?
- *Norms:* Will the proposed interventions support formal and informal guidelines for acceptable and unacceptable behavior standards that facilitate interactions between individuals and groups in the organization?
- *Culture:* Is there congruency with the prevailing values, beliefs, and expectations within the organization, including the ways the organization is managed, what is expected of its members, and goal attainment?
- *Structure:* Is there a rational cascade of goals, key processes, teams, and individuals so that outputs contribute directly to goal attainment and reward systems?
- *Performance:* Will the interventions help individuals and groups engage in goal-directed, results-oriented behavior?
- *Environment:* Are there external factors or demands from the environment that conflict with the proposed interventions? [Adapted from Semler, 1997]

Questions of strategic alignment are the most important in the performance-improvement process. Too often, nonaligned performance-improvement initiatives are undertaken, resulting in suboptimal behavior. Organizations are often caught up in expending resources and time in solving problems or seizing opportunities with little or no payback or contribution to organizational goals. Sometimes the outcomes have negative consequences and make things worse by addressing performance in a way that directly conflicts with organizational goals. If a performance-improvement initiative is not strategically aligned and causes suboptimal behavior by individuals or groups, as the model depicts, stop and move on to another project.

Performance Analysis

Performance analysis focuses on factors that drive individual, group, and organizational performance. The factors may be causes of problems, road maps to improve quality, or ways to exploit opportunities. They are the why questions, and the answers can be classified and analyzed in several ways.

In terms of classification, there are a number of popular HPT models that depict performance elements and suggest that analyzing performance gaps is

often complicated and multifaceted (Gilbert, 1978; Langdon, 1999, 2000; Mager and Pipe, 1984; Molenda, Pershing, and Reigeluth, 1996; Robinson and Robinson, 1989; Van Tiem, Moseley, and Dessinger, 2004; Wile, 1996). The taxonomy of performance elements or classification scheme depicted in the performance-improvement-process model (Figure 1.1) synthesizes elements from models of five distinguished names in the HPT field: Harless (1970, 1988, 1997), Gilbert, (1978), Rossett (1999), Spitzer (1992), and Wile (1996). It also builds upon the work of Gilmore and Pershing (2001). The four elements are organizational systems, management systems, physical and technical systems, and human and social systems.

Organizational Systems. At the core of any organization is its economic status for present and future conditions, including financial stability and readiness for change. Its structure is important, including lines of communication, lines of command, span of control, and divisions of labor. Both formal and informal lines of communication are significant, as are relationships between management, employees, suppliers, customers, the community, and government. How people access information, methods of operation, and executive decision making are part of the organizational system (Gilley and Coffern, 1994). The goal in analyzing an organizational system is to look for ways to improve organizational viability and effectiveness.

Management Systems. At the heart of every organization are people who manage others. They provide guidance and direction to employees and serve as the interface with the organization's executives. The functions of managers are to delegate, develop personnel, conduct performance appraisals, and establish priorities. Managers need to have good listening skills, provide constructive feedback, and have productive relationships with the employees they manage. In short, they must be skilled at the art of managing and be supported at the organizational level as they do so (Gilley, Eggland, and Gilley, 2002). The goal in analyzing the management system is to improve management practices and techniques.

Physical and Technical Systems. Organizations of every type have facilities, equipment, and tools that surround its members. These need to be up to date and appropriate for the tasks that are performed. Facilities need to be of adequate size, properly lighted, well heated or cooled and ventilated, noise inhibitive, and so on. Equipment and tools need to be available, ergonomically sound, and safe. Facilities, equipment, and tools need to be well maintained (Rothwell, 1996).

All organizations have technical processes that combine and integrate people, machines, materials, and methods to produce a product or service (Mears, 1995).

These work activities consist of sets of interrelated tasks that produce results. The ideal is to minimize the variation in these technical processes. Information and engineered systems are often combined with various job aids and performance support tools that reduce system complexities and enhance the mental and physical capabilities of individuals and teams. Well-designed technical systems minimize worker fatigue and monotony, enhance safety, minimize physical distractions, and maximize the quality and quantity of outputs (Pipe, 1986). Productive organizations invest in the necessary facilities, equipment, tools, and technical processes to be effective.

Human and Social Systems. People in effective organizations are competent. They have the required skills, knowledge, aptitudes, and attitudes or beliefs to perform effectively whether individually or in groups. They know how to solve problems and work in teams. The organization has formal and informal on-the-job education and training systems in place to maintain and enhance the competencies of its members. These education and training systems have clear linkages with workplace applications.

Effective organizations also have effective systems for recruiting, hiring, orienting, advancing, and redeploying competent people. Often there are structured coaching and mentoring systems in place. There are also support systems in place to help workers be safe and healthy, and for emotional support. According to Gilley and Boughton (1996), a healthy work environment includes freedom from fear, positive interactions with others, personal involvement, trust, honesty, and self-esteem.

Effective organizations also have reward systems and incentives that support individual and team performance. Rules and regulations for worker compliance with policies, procedures, and work rules are clear and fairly administered.

Finally, there are systems in place that enhance collaboration and group dynamics. Examples include team and group work between management and labor, day and night shifts, home and field offices, technicians and engineers, and departments. In effective organizations, race, ethnicity, and gender are celebrated, and diversity adds to productivity (Hanson and Lubin, 1995). Productive organizations invest in their people and treat them well.

Order of the Four Elements. The order of the elements in the model, from left to right, has meaning. When carrying out a performance analysis, experience has taught me to look at all four elements but to look first at the organizational system, second at the management system, third at physical and technical systems, and finally at human and social systems. Over time, I have also learned that the order, again from left to right, has meaning in terms of level of difficulty in problem identification and problem solving. These experiences parallel what David Wile (1996) reported in presenting his classification scheme of seven

elements: organization systems, incentives, cognitive support, tools, physical environment, skills and knowledge, and inherent ability.

How Is It Done? Performance analysis is a form of action research. Research involves "a problem to be investigated, a process of inquiry, and explanations that enable individuals to understand the nature of the problem. Research can also incorporate actions that attempt to resolve the problem being investigated" (Stringer, 1996, p. 5). In paraphrasing Denzin and Lincoln (1994), Stringer explains action research as follows:

> Its purpose is to assist people in extending their understanding of their situation and thus resolve problems that confront them. Put another way . . . action research provides a model for enacting local, action-oriented approaches to inquiry, applying small-scale theorizing to specific problems in specific situations [p. 9].

According to Stringer, this approach to research may be used to enhance work practices by reviewing goals and procedures, evaluating their effectiveness, and planning activities and strategies. It can help to "resolve specific problems and crises by defining the problem, exploring its context, analyzing its component parts, and developing strategies for its resolution" (1996, p. 13). Is this not the essence of the performance-analysis process?

For each of the four performance analysis elements in the performance-improvement process model (Figure 1.1), the analyst will pose questions, collect data, analyze the data, and determine a response. These action research activities are akin to pieces in a complex puzzle (see Figure 1.2).

Intervention Selection

Once the performance gap and its underlying causes, means, or opportunities are identified, interventions can be selected. Performance problems, quality-improvement initiatives, and business opportunities are usually multidimensional, and more than one intervention is needed. Performance can be improved even more and maintained for a longer period of time when interventions across the performance-improvement technology spectrum are coordinated (Rosenberg, 1996).

According to well-established intervention design and selection principles, there are many different interventions to improve performance (Burke, 1982; Coleman, 1992; Deterline and Rosenberg, 1992; Holton, 1999; Langdon, Whiteside, and McKenna, 1999). Various authors have developed comprehensive classification and categorical schemes for major performance-improvement interventions. For a comprehensive understanding of several options, I recommend the *Intervention Resource Guide: 50 Performance Improvement Tools* (Langdon, Whiteside, and McKenna, 1999).

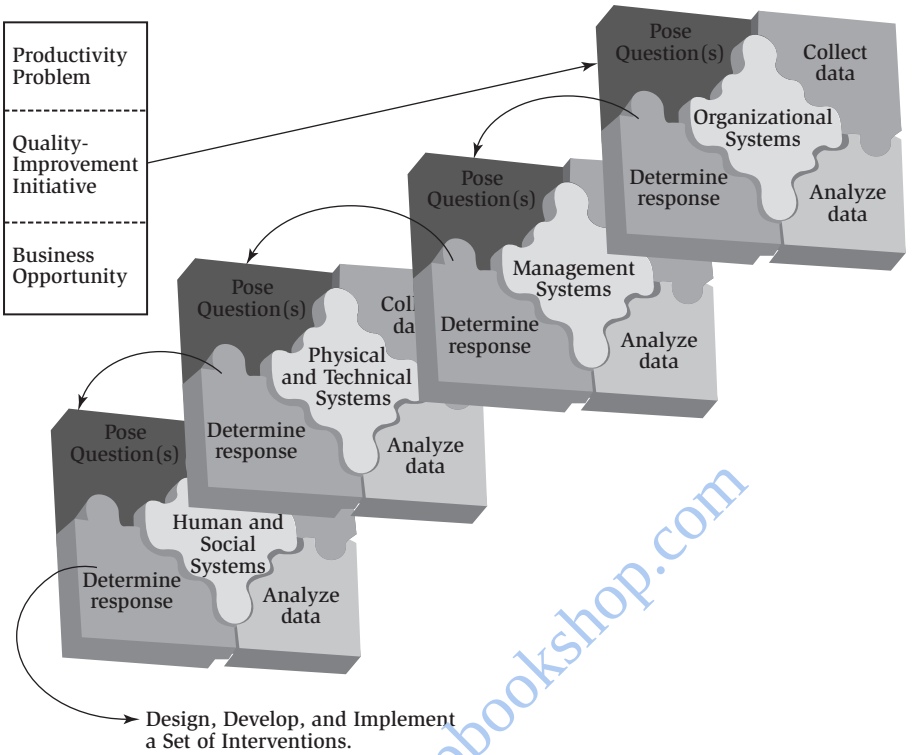

Figure 1.2. Analyzing Performance-Improvement Initiatives.

As early as 1970, Argyris developed three basic requirements for effective intervention selection: valid and useful information, free choice, and internal commitment. By valid and useful information, Argyris meant "that which describes the factors plus their interrelationship that create the problem for the client system" (Argyris, 1970, p. 17). By free choice he meant "the locus of decision making [is] in the client system" (p. 19) and the client is provided alternatives for action. No particular or specified action is automatic, preordained, or imposed. By internal commitment, Argyris (1970) meant that the client owns the choices made and feels responsible for implementing them.

Without careful planning, intervention selection can lead to disaster. To increase success, Spitzer (1992) suggests eleven principles that will enhance the successful selection of interventions. They can be summarized as follows. Choose interventions that

1. Are based upon a comprehensive understanding of the situation
2. Are carefully targeted
3. Are sponsor-based and supported

4. Employ a team approach
5. Are cost sensitive
6. Align directly with organizational priorities
7. Are well investigated and weighed against options
8. Are powerful
9. Are sustainable
10. Take implementation into consideration
11. Take an iterative approach to design, development, and implementation

Feasibility Analysis

This component of the model relates to identifying and assessing the probable or likely success of solution strategies or interventions. For most performance-improvement initiatives there is more than one intervention making an intervention set. The feasibility of each intervention as well as the bundle or set as a whole has to be analyzed (Stufflebeam, McCormick, Brinkerhoff, and Nelson, 1985; Harrison, 1994; Mitchell, 1998). These feasibility factors can be classified as practical, political, and cultural (Kirkey and Benjamin, 2005).

Practical factors include administrative capacity, costs, workplace readiness, available technology, and timing. Political factors include perceived benefits, leadership, stakeholder readiness, and organizational power structures. Cultural factors include employer and employee development, organizational culture, and readiness for change.

Some intervention sets or bundles of interventions will require articulation and coordination. For complex feasibility analyses, a decision matrix may be helpful. Table 1.3 displays a sample feasibility decision matrix.

Design, Development, and Implementation

Any performance-improvement initiative that is worth carrying through should produce results that convert a given performance from what it is into what it should be. The initiative will pass through three stages: design, development, and implementation. The design stage involves proposing objectives as well as means and strategies for achieving the objectives. The means include identifying content and substance, and delineating outcomes. Strategies include proposing cost-effective activities and actions to achieve the objectives. All of this leads to a design plan. The development stage involves the actual production of the interventions, including a project-management plan. The interventions and the accompanying administrative support system must be validated through pre- and pilot testing. The implementation stage involves the application of the tested interventions on a large scale. Each of these stages needs its own evaluation, approval, and feedback provisions (adapted from Romiszowski, 1981).

Table 1.3. Sample Feasibility Decision Matrix.

Consideration (estimated or projected)	*Risk (R)**	*Risk Weight (W)** (1 to 10)*	*Risk Index (I)*
1. Projected return on investment (ROI): cost-effectiveness	Low = 1 Moderate = 2 High = 3	Low = 1 Moderate = 5 High = 10	I = R × W
2. Strength of support	Low = 1 Moderate = 2 High = 3	Low = 1 Moderate = 3 High = 5	I = R × W
3. Organizational change impact	Low = 1 Moderate = 2 High = 3	Low = 1 Moderate = 5 High = 10	I = R × W
4. Barriers to implementation	Low = 1 Moderate = 2 High = 3	Low = 1 Moderate = 3 High = 5	I = R × W
5. Number of interventions in intervention bundle	Low = 1 Moderate = 2 High = 3	Low = 1 Moderate = 5 High = 10	I = R × W
6. Available resources (financial and human)	Low = 1 Moderate = 2 High = 3	Low = 1 Moderate = 3 High = 5	I = R × W
7. Dependence on time, or urgency	Low = 1 Moderate = 2 High = 3	Low = 1 Moderate = 5 High = 10	I = R × W
8. Number of sites or functions affected	Low = 1 Moderate = 2 High = 3	Low = 1 Moderate = 5 High = 10	I = R × W
9. Number of people and groups affected	Low = 1 Moderate = 2 High = 3	Low = 1 Moderate = 5 High = 10	I = R × W
10. Other _____	Low = 1 Moderate = 2 High = 3	Low = 1 Moderate = 3 High = 5	I = R × W
Totals			

*Risk category descriptors can be modified. Numerical values assigned to the descriptors vary from low to high depending on the consideration; that is, whether it is more or less desirable.

**Weight assignments are made in consultation with clients and affected parties.

In most cases, the performance technologist orchestrates and manages this process. Cross-functional and interdisciplinary teams are brought together that have expertise in the various interventions. Within the team, or as separate members, there must be personnel with change-management expertise. Performance-improvement initiatives by their very nature lead to purposeful change involving the beliefs, attitudes, values, and structures of organizations. Such change will be adopted and become institutionalized only if it is planned and managed.

Evaluation and Feedback

Evaluation is the means to ascertain the worth or value of a performance-improvement initiative. It can be used to improve a performance-improvement process or to decide to discontinue the effort. It is also useful in judging the relative worth of performance-improvement alternatives. Two types of evaluation are *formative* and *summative*. Formative evaluation is used to make improvements as a performance-improvement initiative is being designed and developed. Summative evaluation is used to judge the worth or merits of a completed and fully implemented performance-improvement initiative.

There are five ways in which evaluation can be used in HPT:

1. As a means of *feedback*. As performance-improvement initiatives are being designed, developed, and implemented, one can measure progress against stated objectives, analyze what is working well and what is not working as expected, and identify potential barriers to implementation. If information products, training materials, job aids, or new tools and equipment are involved in the initiative, their usability can be assessed.
2. As a means of *control*. During development and implementation of initiatives and after they are completed, questions can be asked and answered concerning the value of the program to the organization as well as alignment issues. Measures of worth can be compared to measures of cost.
3. As a means of *power*. Evaluation data can be very powerful. These data are sometimes used politically in organizations. Given this reality, the HPT specialist must be certain that evaluation data are based upon sound evidence and are presented fairly and ethically.
4. As an *intervention*. The very act of evaluation affects the performance-improvement initiatives being evaluated. As evaluation questions are formulated, instruments for collecting data are designed and tested, and those that will be involved in the evaluation are identified, people begin to behave differently as they react to and prepare for the evaluation process. These reactions can

be positive and enhance the initiative, or they can be skeptical and lead to resistance to the initiative.

5. As a means of *research.* This is the most important and often the most overlooked role that evaluation can play in the HPT process. As performance-improvement initiatives are evaluated, data can be collected and analyzed in ways to add knowledge to HPT principles and practices and provide knowledge that can be generalized to future efforts. Evaluations can be designed to provide reliable and valid data to ascertain what worked, when, and how it worked. This information, when shared with the field, will advance practice.

IS THERE MAGIC IN HUMAN PERFORMANCE TECHNOLOGY?

There is no magic in HPT. There are no easy-to-use cookbooks or templates for doing HPT. To be an effective human performance technologist takes hard work and dedication to its study and practice. Each organization and its performance-improvement challenges are unique and require individualized study and attention. The clever title *Figuring Things Out*, a 1982 book by Ron Zemke and Thomas Kramlinger, best captures the job of the performance technologist. Zemke and Kramlinger explain that figuring things out is process oriented, and that there are political, strategic, tactical, and technical considerations that need to be taken into account as problems are matched with techniques. They explain in great detail research techniques and procedures including "time studies, task listings, S-R tables, behavioral frequency counts, behavioral algorithms, focus group discussions, one-on-one interviews, consensus groups, the critical incident technique, fault tree analysis, and much more" (pp. vi–x). Since 1982, other performance technologists and quality-improvement specialists have added to this tool list with data-gathering and analysis techniques such as mapping and indirect estimations, content or document analysis, the community forum, the nominal group technique, focus groups, DACUM, Delphi technique, concept mapping, cross-impact analysis, future wheels, fishbone diagramming, affinity diagramming, cause-and-consequence analysis, fault tree analysis, Pareto diagram, force-field analysis, control charting, deployment charting, benchmarking, and so on (Gilley, Eggland, and Gilley, 2002; Ishikawa, 1987; Juran, 1988; Langdon, 2000; Mears, 1995; Rothwell, 1996; Witkin and Altschuld, 1995).

At the core of HPT is formalized speculation: hypotheses or statements of conjecture about the relationships among variables are stated and tested.

Sometimes the variables can be quantified, and sometimes they are qualitative or contextual. In either case, data describing the variables and their relationships with other variables can be collected. These data can be transformed by analysis to information that can be used in decision making by performance-improvement technologists and clients. This is the essence of a basic action research routine:

- Look

  Gather relevant information: gather data

  Build a picture: describe and define the situation

- Think

  Explore and analyze: What is happening here? Speculate or hypothesize

  Interpret and explain: How and why are things as they are? Theorize

- Act or intervene

  Plan and report

  Implement

  Evaluate [Stringer, 1996, p. 16]

The behavior and actions of successful performance-improvement specialists may at times seem magical. In my judgment, if you scratch below the surface, you will find four success criteria. First, the HPT specialist recognizes that performance improvement is not something we do to or for organizations and their members; rather, it is something we do with them. We are collaborators. "In the collaborative style, decisions regarding actions to take and implementation plans are all shared responsibilities" (Robinson and Robinson, 1995, p. 20). Second, HPT requires a team effort. The performance-improvement specialist is like an orchestra leader, coordinating and integrating the efforts of team members and clients that have cross-functional and interdisciplinary responsibilities and expertise. The third factor has to do with appreciation for and tolerance of iteration. As depicted in the performance-improvement-process model (Figure 1.1), evaluation and feedback connect the major elements of the model in a nonlinear or repetitive way. At any given time in the process, one may have taken five steps forward and have to go back two or three steps to collect and analyze new data and to change or modify responses to those data. Fourth, and related to the iteration requirement, is to avoid letting solutions or interventions prematurely drive the process. This is a particular problem when the client and project team members have expertise in or an affinity for specific interventions.

CONCLUSIONS

An immediate appeal of human performance technology is that all organizations are human performance systems. Organizations can be viewed as operational, process, technical, or financial systems, but they are still founded by and for people. HPT is symbiotic in that it views organizations and their members as one. Its foci, or units for analyses, are individuals or workers, units or teams, departments or divisions, branches or subsidiaries, and the community or society. It is a process that begins and ends with results and the ultimate goal of creating value for an organization, its members, and the society it serves. HPT has been applied in all sizes and types of organizations, including private businesses, government, social service and nonprofit organizations, educational institutions, and the military. The field of HPT has evolved over a period of fifty years, and as a whole the field itself is not a passing fad.

Is HPT a cure all or end all for all organizational challenges or problems? The answer is no. It is not an effective approach for organizations to use when they are involved in goal-free or goal-conflicted activities. If results are a nonissue, HPT will not help in planning or decision-making activities. It is often ineffective when predetermined or suboptimal interventions drive the process. Finally, the HPT process is data-driven. If clients are skeptical about data gathering and analysis or only accept data as valid if the data support their preconceived views of problems or improvement initiatives, then the HPT process will falter.

How does HPT distinguish itself from other fields and disciplines involved in improving organizations? (1) Largely, HPT is evaluation- and change-driven. At each stage of the performance-improvement process, activities and outputs are evaluated and focus on the ultimate target of organizational results. Solving problems, improving organizations, and actualizing opportunities by their very nature mean change. In HPT, before, during, and after the performance-improvement process, change is managed. (2) The characteristics of HPT are dynamic and ever-changing. It is not identified with one person or one institution. (3) When practiced properly, HPT is nonideological in two important ways. First, it draws upon a variety of research and evaluation methodologies, letting the questions posed drive the methods employed. Second, there is no intervention bias. The selection, design, development, and implementation of interventions are driven by organizational needs and capabilities. (4) Finally, as a field of practice, HPT is eclectic. It selects what is best from a number of fields of study in terms of theories, models, and practices including, but not limited to, applied math and statistics, communications and cybernetics, economics, folklore, general systems theory, human capital theory, human resource development and management, instructional systems design and technology, management science, political science, psychology, quantitative and qualitative

research and evaluation methods, sociology, systems design, the engineering disciplines, and more.

There are concerns and challenges facing the field of HPT. In my judgment, prominent among them are three. The first concern has to do with one of the strengths of HPT. Being an eclectic field has a downside. Drawing upon the principles and theories of numerous academic disciplines and other fields contributes to a lack of clarity for HPT. Scholars and practitioners alike have had difficulty in clearly articulating and agreeing upon foundational issues: "It is now time to bring clarity to definitions for the field" (Irlbeck, 2002, p. 87). Second, HPT has been and continues to be a largely North American and European enterprise. Strides are being made in South America and the Asian Pacific Rim. With economies expanding all over the world and more international trade agreements materializing on a regular basis, HPT needs to increase its influence and impact globally. The third concern has to do with a new type of partnering for the field of HPT. There are other established and emerging disciplines and fields of study that have organized bodies of knowledge and practice that address issues of performance by individuals and organizations. Examples of established disciplines are organizational development, human resource development, health and safety, total quality management, instructional technology, and reengineering and restructuring. Examples of newer and emerging disciplines are appreciative inquiry, communities of practice, informatics, knowledge management, lean manufacturing, learning organizations, rapid development and reflection, Six Sigma, and sociotechnical systems. By partnering with individuals and other organizations that represent many of these areas, there are some potentially positive outcomes. Several of these areas are experiencing what training personnel experienced years ago as HPT evolved. They find that their field or interest area is solution-driven, and this does not always fully address performance-improvement needs. They too are looking for more comprehensive solutions and may be attracted to HPT. At the same time, all of these areas have perspectives, tools, insights, and sometimes established credibility with organizations that HPT professionals need to learn about and utilize. In short, experts from these areas often make natural team members or partners for performance-improvement initiatives, and if treated respectfully they will become enthusiastic partners. The International Society for Performance Improvement, the flagship organization for HPT professionals, is addressing this issue by forming professional communities within its ranks to broaden its membership base and to help its current members learn about and network with these companion disciplines and fields of study (Svenson, 2005).

In closing, this is an exciting time for the field of human performance technology. More and more evidence is being compiled through action research and the presentations of case studies that show the significant impact HPT can have on adding and creating value for all types of organizations and the people they

serve. This evidence is exemplified in the *Got Results* presentations and publications of ISPI that "demonstrate how practitioners can and do use meaningful measures of performance outcomes to evaluate and make decisions about performance interventions and ongoing performance systems" (International Society for Performance Improvement, 2005a). Both ISPI and ASTD have published books of authentic case studies in performance improvement and closely aligned areas (Deterline and Rosenberg, 1992; Esque and Patterson, 1998; Hodges, 1999; Phillips, 2000; Rothwell and Dubois, 1998). Articles, monographs, and books abound that will help you explore and learn about this exciting and dynamic field. For starters, begin with the publications of ISPI: *Performance Improvement, Performance Improvement Quarterly,* and *PerformanceXpress.* The remaining sections and chapters of this handbook will also help you to gain greater insight into the field of human performance technology. In looking to the future, I find a statement by Joe Harless (1997, pp. iv–v) insightful: "[I]f today we are concerned primarily with improvement of human performance at work, can concern with human performance in *all parts of lives* be next?"

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