

COMPETENCIES: MOVING INTO THE NEXT GENERATION

by
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All of a sudden, it seems, there is a surge of interest in competencies. It's a global surge. In the US, the emphasis is on leadership competencies. It's driven, perhaps, by concerns about losing world class status. It may be a matter of pride – the US always wants to be the best!

Other countries, also participating in the global race, see the gaps created by isolation, totalitarian policies, and even legal constraints on growth and full resource use (e.g., South African apartheid policies.) For these countries, the interest is less in leadership competence (although there are MAJOR needs here), and more in developing the technical skills base which is so essential to compete.

It makes sense that companies are beginning to care about their human competence base and how it is developing. Their market value relies increasingly on intangibles – knowledge, the loyal customer base, patents and other expressions of knowledge capital. Until now, the hard assets of the business and how we deployed and acquired capital dominated the value of most organizations. But, today, the wealth of nations depends on the knowledge and skills of their people.

In this article, I would like to provide big picture view of the world of competencies. First, we'll review the state of the practice, noting the variety of definitions of terms and methods. Then, we'll turn our attention to the emerging requirements of the new world of work: it's dramatically changing how we think about jobs and people at work. Finally, I'd like to talk about how the competency field (with some major and minor changes in paradigm) can and must respond to and help create the very best scenarios for individuals and organizations as we enter the next millennium.

THE TRADITIONAL COMPETENCY RESPONSE: WHERE WE ARE AND WHERE WE'VE BEEN

Competencies have been around as a concept for centuries. We can trace them at least back to the medieval guilds, where apprentices learned skills by working with a master. More recently, educators have created reams of knowledge and skills lists to guide school curriculum development. Taxonomies of objectives for the cognitive, behavioral, and affective domain (knowledge, skills and attitudes/values/commitments) have been built and revised for years. There are many differences in definition and approach, however. In order to make an informed and optimal choice among options, organizations and those people in them who are responsible for guiding the definition, acquisition, deployment, development, and endurance of the human competence of the business must be aware of the differences and the advantages and disadvantages of each method and approach.

There are six key questions to ask in order to understand any particular competency methodology and its current uses in organizations:

- ? What does “competency” mean? How are competencies organized?
- ? How detailed are competency definitions?
- ? How are competencies traditionally selected in and out of models?
- ? Who traditionally does the work of competency identification and model development? How long does it take?
- ? What are competencies used for?
- ? What is the source of validity?

What Does “Competency” Mean? How Are Competencies Organized?

In the job world, the word *competencies* may have one of six major meanings. Some relate to the *work* (task, result, and output competencies). Others describe characteristics of the *people doing the work* (knowledge, skills, attitudes/commitments). A final form is a hybrid which often mixes the two. I’ll call this form of competency an *attribute bundle*.

Insert Figure 1: “What is a Competency” somewhere in this section

Competencies describing the work:

-*Task* competencies. For some people the tasks and activities of a job are competencies. Whether or not they call tasks “competencies,” job descriptions and many approaches to competency today take a task approach. The task view is a product of many years of breaking work down into manageable activities and procedures in order to reduce the amount of thinking needed, to eliminate performance variability, and to spread best practices.

-*Results* competencies. This is a bit rarer, but by adding the word “ability to” to a result (“ability to produce profits”), some methodologies create what they call “competencies.”

-*Output* competencies. An output is something a person or team produces, provides, or delivers. Adding “ability to...” to an output makes it a competency for some people.

Competencies describing internal qualities of the person:

-*Knowledge, skill, commitment (affect) competencies.* Here, subject matters like “engineering knowledge;” process capabilities like “listening skill” or attitudes, values, or orientations like “integrity” or “achievement orientation” are called competencies.

-*Superior performer differentiators.* Competencies included on competency lists here are those that current superior performers have those others don’t. These competencies usually focus on capabilities of all kinds that seem to have deeper roots in intelligence and personality elements. Differentiators are currently popular in the competency world because many companies have been primarily interested in the use of competency models in selection and succession, and therefore prefer to search for characteristics that distinguish stronger from weaker candidates. Some training applications have also taken this stance.

Hybrid competency statements:

-*Competencies as bundles of attributes.* A bundle of attributes is a large concept or label that is really a collection of knowledge, skills, commitments, and/or tasks, outputs and results. Usually when a competency takes this form, it uses a popular term like, “leadership,” “problem solving,” “decision-making,” “entrepreneurial skill.” These are all examples of an attribute bundle which contains several or many elements. Take “problem solving,” for example. It is really made up of some knowledges (the *technical knowledge needed to solve the problem*, knowledge of *problem solving methods*), some skills (*analysis skill, lateral thinking skill*), and some attitudes/commitments (*achievement orientation, service orientation*). In other words, “problem solving” is a competency bundle, whose component knowledge and skills could appear in many other bundles.

The most common types of competency in use today are the *task competency* and the *superior performer differentiator*. And, the most common focus for competency analysis is the *job*, with the goal being to produce the *ideal profile* for, say, a salesperson, a supervisor, an engineer, a credit analyst, a secretary, a general manager.

Several questions arise today, however. Is the task-focused competency the best? Should we be developing models for the future based on superior performers of the past? Is the *job* the best basis for any work analysis and model? Let’s hold these questions until we plow through a bit more of the current state of practice.

How Detailed Are Competency Definitions?

For the moment, let’s assume that any of the above six definitions of competency is acceptable. How detailed, then, should their definitions and descriptions be? To answer this question we must first address the question: How do we further define each competency? And, how detailed should we be?

Here are the kinds of detail associated with each type of “competency:”

-*Competencies as Tasks*: Break them into sub-tasks. Provide the range of situations in which the tasks will be done. For example:

Task: Sweep the floor

Sub-tasks:

- Determine the appropriate broom

 - Sub-sub-task: Determine benefits of broom X

 - Sub-sub-task: Determine the benefits of broom Y

 - Sub-sub-task: Choose the broom with the most benefits for the application

- Sweep in forward motions in direction with the prevailing air current

 - Sub-sub-task: Test prevailing air current

 - Sub-sub-task: Test several sweeping directions and determine the one with the least wayward dust

- Push piles of dust and rubbish toward door or into dustpans

- Dispose of collected dirt in bins; close top

- Retrieve any potential items of value and bring to lost and found

Range of situations for competent work:

- Most complex: clean room for circuit board assembly

- Simplest: headquarters’ offices

-*Competencies as Results*: Break them into sub-components: cascade so that the total contributions to results equal the grand result desired.

Result: Deliver 15% pre-task profit (up from 10%)

- Sub-Result: Increase margin on Product X from 60% to 80%

- Sub-Result: Increase staff/line productivity ratios from /200 to 1/300

- Sub-Result: Implement empowerment program to achieve 10% greater productivity per person in the manufacturing operation

-*Competencies as Outputs*: Identify what the receivers/customers get (whether internal or external), and either break them into sub-components *or* create quality requirements/standards to further define them.

Output: A Product Design

- Sub-Output: Engineering blueprint

- Sub-Output: Customer requirements list

- Sub-Output: A visual replica of the product

Quality Requirements for Product Design:

- meets customer requirements

- ensures long term, high profit payback to the company

- incorporates appropriate state-of-the-art technical options

- ensures a cost-of-goods of 20% to revenue

Range of situations:

- Most complex: a multi-component product that is very sensitive to environmental conditions and will be used in dangerous situations
- Simplest: a single component product that has no safety or environmental implications.

Competencies as knowledge, skills and commitments/affects (KSC's):

knowledgeable people must infer from actual quality behavior or from strategic requirements, what the human capabilities that underlie quality performance (of results, tasks, and outputs) are. Identify the knowledge, skill, or commitments (KSC) for success and then list *sample behaviors* or *tests* that would be evidence that the KSC exists:

Commitment: Achievement orientation

Sample behaviors:

- Sets stretch goals that are achievable
- Finds ways to deal with seemingly insurmountable problems in order to achieve a goal
- Uses goals as a guide to prioritizing work every day

Sample tests:

- Ring toss test to see how realistic the target goal is set (i.e., setting the spindle just a bit beyond certain success, but not so far that failure is the probable outcome, is considered evidence of a high achiever.)

-Competencies as bundles of attributes. The same process applies here as to the previous view of competencies. However, the examples would be more difficult to pinpoint to a single knowledge, skill, or commitment (e.g., a behavior for “*Leadership*” might be “gets people who must implement actions, motivated to do so.” This is a good piece of evidence that leadership exists, but what is the cause of the impact of this behavior? Listening skill? Empathy? Self-awareness? Business knowledge? Public Speaking? Integrity? Some combination of these? Bundles of attributes generally create more problems than they solve, even though their labels are comforting to the user (Users like to say things like, “I have to have leadership skills?” but such a statement doesn’t really tell us what is required!!).

How are Competencies Traditionally Selected In and Out of Models?

We can all agree that there is a virtually endless list of competencies and other ways to describe people at work. So, on what basis have items been selected to include in a model? There are three popular approaches:

- Do a *work analysis*. Watch people do the work and record their results and what they do to achieve them. Focus on the best performers. The “Competency

Model” that results will be one that documents *all* the tasks, outputs, or knowledge/skills/commitments they demonstrate.

- Do a *Critical Incident Interview* with current performers. Ask them what situations they have been in and what challenges they have faced. Ask them what they thought, did, felt, and caused to happen in those situations. Then describe the tasks and outputs and/or *infer* the knowledge/skills/commitments (remember, KSC’s can never be directly observed).

- Do separate sets of *Critical Incident Interviews* with current *average* and with current *superior* performers. List the competencies of each. Eliminate any competencies that both average and superior performers express. What is left are the *differentiators* of current superior performance. Many experts suggest that these be the focus of interviews, development, and promotion.

The above three approaches draw on learnings from past behavior. Since the environment and strategies are changing at a rapid pace, there is a danger that what worked in the past will be insufficient – and maybe even detrimental – in the future. This leads to several other approaches:

- Create *assumptions about the future work and work environment*. Draw from trend information, industry forecasts, and the business’ own strategy. Ask knowledgeable people to *infer* from the assumptions, what the work and competency requirements *will be*. Create models that incorporate the future requirements as well as today’s best practices.

- Create *work planning processes that don’t require a prescribed model*, but rather guide individuals and teams to think through the implications of strategy and environment changes for their work and competencies.

Who Traditionally Does the Work of Competency Identification and Model Development? How Long Does it Take?

Job analysis, and its more recent derivative, competency analysis, have usually been done by third parties: human resource staff and consultants. Managers and workers may participate – but mainly to give input which is later analyzed and turned into models by someone else. Traditionally, this occurs in a job-by-job fashion – with occasional studies focusing on job families. Each job modeling effort usually requires hours of focus groups, expert analysis, validation, and communication/selling. It is *not* uncommon for an organization-wide job re-evaluation or competency analysis to take months and even years. And to cost in the millions of dollars – for the analysis phase only, excluding application!!

What Are Competencies Used For?

The most common uses for competency models in the United States have been assessment, selection, promotion, and training and development. This is probably why the *superior performer differentiator* method has been so popular in the US. With the exception of training and development, these applications are generally “win-lose:” we want the best people for a job – and only one person can be the best. Required, but average characteristics – in win-lose situations – will cancel each other out!

In countries struggling to enter the competitive race by reaching parity in technical areas, the *task* approach is the favorite. These nations just need a broad base of technical and literacy competence. Individual superiority is not really relevant concern when the national baseline is the issue.

Also, in the past 30 years of competency work, the approach individuals have taken has depended on their orientation. Industrial psychologists have stressed bundles of *attributes and selected knowledge/skills/commitments*. Educators have focused on *knowledge and skills*. Traditionally trained personnel staff have used *task-based* systems (see sidebar). In the past 30 years, the emphasis has also been on the job or a job group, and on some subset of applications (for example, training and selection).

What Is the Source of Validity?

Let’s first look at what validity is. Something is valid when it actually relates to what we say it relates to. When we say a behavior relates to or expresses a competency, we are making a (*construct*) validity statement. When we say that a competency is needed in the real world of work, we are making a (*content*) validity statement. When we say that a competency, used at one point in time, is associated with superior performance, we are making a (*concurrent*) validity statement. When we say that a competency someone possesses today will make her effective in future work, we are making a *predictive* validity statement.

When we define work and the competencies required to do it, we want those definitions to be valid. Business success and fairness both depend on this. The generally accepted way to ensure validity is to have job experts pool their expertise to define the work and competencies. In the past, we have ensured this by observing or asking what superior performers do, creating models of their performance, assessing people and predicting their likelihood of success, and (in a few heroic cases) actually tracking the hit-rate of our predictions.

COMPETENCIES AND THE NEW WORLD OF WORK

Wealth creation is increasingly a matter of competency. This is the primary reason that *competencies* have line and human resource people flocking to competency conferences and traveling the world to find “best practice” benchmarks. But, there are other reasons

why the competency field is burgeoning and recreating itself today. Here are some of the main ones.

Insert Figure 2: “Competencies: Why identify them?
Somewhere in this section

Organizations are searching for new ways to integrate their people practices. They realize that past selection, development, work design and evaluation, performance management, succession and career practices, pay systems often delivered different messages about desired performance and values. It is not unusual for some processes to be open and others closed; for some to involve customers and others to be internally driven; for some to tout quality while others allow and even encourage minimum standards (how about those appraisal systems that reward those who *exceed* standards, thus promoting low goals!!)

These practices should deliver common messages and reinforce the same virtues. They also should draw on a *common language* about work that can be used across all practices. Competencies can provide this common language. But, if they are to be an integration mechanism, they will need to include both work descriptors and person descriptors. Why? Because some people practices, like work evaluation, multi-skilling, work design, performance management, must focus primarily on the work. Others, like career development, learning, selection, require us to specify KSC requirements. All people practices can benefit from both. It is a matter of emphasis.

Organizations are searching for ways to quickly link their people requirements to the business strategy. Strategies continue to outpace our ability to achieve them. Human resource plans, workforce plans, succession plans are among the common responses to this issue.

The trouble is, they have been human resource processes which are often hopelessly mired in bureaucracy and often tied to models of the past. Also, since only a few people have access to them, these plans often can't respond quickly and pervasively enough to strategic shifts. Integrating a competency review and projections into the strategic planning process can help address these issues and speed the realignment of people requirements to the strategic goals of the business.

Everyone's talking empowerment, but bringing it into daily practice isn't happening. The U.S. Department of Labor estimates that only about 7% of US businesses are implementing enough high involvement people practices to be included in the high

performance/high involvement category. And that figure is *not* growing at a rapid pace. In the meantime, the need to bring accountability and power to everyone in the organization, is increasing in urgency. It takes a self-managing person to respond to and anticipate customer needs; to care about quality and see opportunities for improvements and breakthroughs; to protect the company's resources as though they are their own. Organizations today ask people to do all these things without providing them with the tools and support for success. Systematically implemented competency menus and models, and the application tools that give them life can help transfer the people management role from HR to management and ultimately to the people themselves. Competency systems can and should provide the structure and tools for empowerment.

The role of the Human Resource Function is Changing. In the past, most HR people spent their time on administrative tasks like record keeping, payroll administration, policy enforcement. Or they spent time doing work that managers and the people themselves should be doing: managing conflicts and discipline, guiding careers, doing personal counseling, picking up the pieces when teams can't cooperate. Today, with HR staff ratios decreasing and technology taking over the administrative tasks, HR people can no longer do these things. Nor should they. There are major strategic people challenges related to such things as reorganizations, mergers, technology changes, globalization, that require a strategic HR perspective. Then, there's the massive culture shift going on as organizations move from deep hierarchies to networks as their *modus operandi*. These are the issues that HR staff should be addressing, but they are continually pulled back into the administrative and day-to-day people work of the past. Well constructed competency practices (selection, training, development, work design, pay decisions, etc.) bring the best HR practices into the hands of managers and the people themselves. Then, HR expertise can live in the tools and materials, freeing the HR staff to do more strategic work and to focus on the massive culture changes required today.

The Job is diminishing as the unit of work. We all know that traditional job descriptions are a joke in many organizations. They just aren't flexible enough for the constantly changing world. New strategies, memberships on multiple teams, customer requirements, competitive maneuvers all demand constant change in what an individual is responsible for. We need processes and language - including pay systems -- that allow this flexibility. Competency-based approaches are the answer here. Competencies can and should be organized into menus that people and teams can draw from to describe their work and do the variety of people practices on the wheel in Figure XX

New Initiatives, shifting views of best practices, and ongoing organizational disturbances. Reengineering, customer focus, total quality management, the learning organization, mergers and divestitures, outsourcing.....every time a new philosophy or initiative hits the business, it changes the competency requirements and the roles that people must play in future success. People are bound to ask, "Do I have to start all over again? Are there any competencies I can carry forward into the organization we are

creating?” A “new era” competency system has inbuilt flexibility to quickly adapt to and help communicate changing requirements.

No matter which of the above issues or combinations of issues faces us, the question for individuals arises: Where do I fit? What is the work? What competencies do I need? For organizations, it’s a question of having the competencies to thrive today and tomorrow. Competency-based approaches, going beyond the models and practices of the past, can help address these issues. A competency response is a powerful answer to the problems individuals and organizations face as we move into the next century.

All of these changes in the global and local context of work make it both more important to use competency approaches AND critical to ensure that the methods we use are right for today’s needs and environment.

THE NEW DIRECTION FOR COMPETENCIES: ALIGNING TO THE NEW WORLD OF WORK

As we move into the new world of work, our methods of competency modeling must change, as must our view of the role of competency systems. Here is what I believe are the main changes that must occur.

Shift the focus from the job to the organization. In the past we have analyzed jobs. This has taken weeks and years and job models are obsolete before they are even used. We can identify competencies for the entire organization – using modern large system meeting processes. We can do this in several days and then provide individuals and teams with tools and processes for creating valid models for their current work – and adjusting them quickly when conditions, customer requirements, and strategies change. This means we create more *menus* and fewer models. The *models* themselves can then be constructed real time by the users.

Speed up the analysis – dramatically. Spend less time analyzing and more time on applications. The analysis process, whether it focuses on a job, team, unit, or entire organization, should and can be very quick – almost “just in time.” On an ongoing basis, it should become part of the strategic planning process of the business – finally enabling us to quickly connect the people requirements to the business. Then the real time and effort can go to the applications themselves. Virtually every people practice of the business can be transformed by a modern competency approach. Let’s spend our time and money on applications. That is where the pay-off is. The era of months and years and thousands and even millions of dollars of analysis is over – and with good riddance. Competency menus and models of the future will be commodities, with the real added value in the applications.

Insert Figure 3: People Practices Application Wheel here.

Stop the secrecy and dependency on experts. Internal staff, managers, and the people themselves, with proper tools and training, can create and use models for themselves. If they don't develop these skills and have these tools, the organization will be endlessly dependent on outside experts because models must continually flex to meet changing requirements, team configurations, and continuous improvement brainstorming. Outside experts have a duty to make the organization able to do its own competency work.

Use both the language of work and the language of people. We don't have to choose whether menus and models list the work to be done or the people requirements to do it (see Figure 3). The most valuable menus and models will include both. I prefer to use *outputs* as the language of the work and *KSC's (knowledge, skills, and affects)* as the language of people. Outputs are the language of the customer – they want deliverables, not activities and tasks. Outputs are also more durable than tasks. In a quality and continuous improvement environment, we want tasks to continually improve and change – even disappear. While this may be true for outputs, the products, services, and information that customers receive are less prone to change, except in quality and features. KSC's are the enabling resources that people bring to the work, enabling them to produce, provide and deliver outputs. Both outputs and KSC's are also useful building blocks for menus and easy for people to use in constructing job models, selection profiles, development and career plans, team designs, and other things.

Be simple. Models of the past have tended to be long, very detailed, filled with jargon, and generally not very user friendly. Certainly, many have been very accurate and insightful. But many potential users have refused to use them. So, “if a model falls in a forest and there is no-one there to hear it, does it make a sound?” We can have rigor and validity and still keep things simple. To do this we need to discipline ourselves to models and menus that users want to use when they see them. We must make our application tools very simple and short. We must encourage conversation amongst customers, the worker, teams, managers – the real work experts – as our real source of validity. The bonus we get is mutual clarity about the work and greater commitment by all stakeholders to get it done – with quality!

Democratize the process. Besides involving large numbers and all segments of the organization's people in developing menus, bring the menu and modeling process to everyone – especially to people in the main value stream of the work. They face the paying customers. They are where the work that adds value to the product and service is done everyday. They are where quality lives and dies. This does not diminish the importance of managerial and staff work. Done well, this support work can have vast leverage for present and future performance. But the US's preoccupation with leadership competence only or primarily is eroding our ability to remain competitive into the next century. Everyone's competence is important. The competency processes should, therefore, involve and affect everyone.

On a related note, we must see the new generation of competency approaches as one of the most powerful tools at our disposal for bringing accountable participation into every corner of the organization. Competency approaches are transparent. When we say, “here are the outputs and knowledge/skills/commitments that are important in this company,” when we say, “here is the output and knowledge/skills/commitments profile for this team or job,” then we are being open about our models. Anyone can and should question management’s or a team’s integrity if they hire people who operate to a different profile or if they create an organization that contradicts their competency descriptions.

SUMMARY AND CONCLUSION

We are living and working in a New World of Work. It is global, fast-paced, customer-driven, expectant of quality, and intolerant of delays and excuses. At the same time, people and their competencies – their very passion for work – are (and some wish this wasn’t true) becoming a source of unbeatable advantage.

In the context of all this, companies are pursuing a number of related goals: how to integrate and simplify their people practices; how to get a faster translation of their strategies into action; how to create conditions where people take the risks and have the trust needed to innovate and go the extra mile with the customer; how to free the shrinking cadre of human resource professionals to do more strategic work and less administration and handholding; how to provide structure and guidance in a world where the job is disappearing and all our people practices, which depended on the job, seem irrelevant; how to keep one’s sanity in the face of constantly shifting views of what’s world class.

Organizations have been dabbling in competency models and systems for generations. There has been a surge in the last 30 years, and it has taken unique directions in the USA and other highly developed first world nations. It’s moved in other directions in third world and emerging nations. Most methods have been job-focused and concentrated on a few HR applications. They have been developed and driven by consultants and HR experts. All of these efforts have helped us make gigantic strides in understanding work and how to define it and the people who do it.

But, it is time to make some great leaps forward. We can move away from the job. We can make the process of work design and competency definition a far more participative process. We can vastly simplify and, at the same time, link many human resource/people practices so that managers, teams, and individuals actually WANT to use them and find them helpful. We can use the next generation of competency systems as a major vehicle for clarifying and implementing strategy.

To do this, we will draw on what we have learned from the past; let go of practices and assumptions that no longer serve us; and innovate for better and better ways to connect people to work.

Pat McLagan is the author of the 1983 and 1989 ASTD competency studies, many published articles, and the books *Change Is Everybody's Business*, *The Age of Participation: New Governance for the Workplace and the World* (with Christo Nell), and of *On-the-Level: Performance Communication that Works* (with Peter Krembs). She is known internationally for her pioneering working in strategy execution, competency-based people practices and organization transformation. Pat is a recognized leader in the management field, with operation centers in the USA and South Africa. She is professor of Human Resource Management at Rand Afrikaans University in South Africa, the 15th person and 2nd woman to be inducted in the HR Hall of Fame and is also a member of the International Hall of Fame for Adult and Continuing Education. She has played leadership roles in many professional institutions. Her goal is to help nations, organizations, and people move into the new world of work and competence. She can be reached at patmclagan@mclaganint.com.

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Competency Approaches Through History

There have been three main schools of competency research and practice that have been popular in the workplace since the Second World War: the *differential psychology approach*, the *educational and behavioral psychology approach*, and the *management sciences approach*. Each grew out of its own philosophical framework, and has its own language and application focus. Here is a brief description of each and what distinguishes them:

The Differential Psychology Approach. This approach focuses on human differences, especially capabilities that are harder to develop. People who practice this approach tend to have psychology training. They emphasize intelligence, cognitive capabilities, hard-to-develop physical abilities, values, personality traits, motives, interests, and emotional qualities. That is, they focus on process capabilities and drives vs. on subject matter or knowledge. They also single out those qualities that superior or “maximum” performers possess that average of “typical” performers don’t exhibit. The “bell shaped curve” is an important concept here, for the underlying belief is that human talents are distributed in a bell-curve, with very few people at the top and bottom ends of the curve. Fleishman, Goleman, McClelland, Herrnstein, Rokeach are some thought leaders for this approach.

The Educational and Behavioral Psychology Approach. While the “differential” approach emphasizes the unique and primarily innate abilities that people bring to work, the “educational, behavioral” approach is driven by desire to shape and develop people so that they can be successful. The differential proponents also have this concern, but it is not their main focus. People who practice this approach tend to have education background. Their models and menus include subject matter and knowledge areas as well as some of the process and affective areas of the differential approach. Also, their models usually include *all* the competencies that are important to quality performance, whether they distinguish superior performance or not. Often, proponents of this approach also focus on the performance environment. They believe that the environment (including education) is often a more powerful determinant of behavior than genetics. For the differential practitioners, the emphasis would be reversed. Bandura, Skinner, Gilbert, Rummel, Bloom, and Krathwohl are chief proponents of aspects of this approach.

The Management Sciences Approach. This approach produces job descriptions and job evaluations. So, it mainly defines the *work to be done*, often spending a lot of time on work and task analysis and documentation. The models that emerge from this process include task and activity lists, and descriptions of tools and processes needed for effective performance. Knowledge, skills and other personal characteristics needed to do the work

may be added to the description, but are usually a secondary emphasis. Job evaluation consultants, personnel administrators and compensation specialists, reengineering and total quality experts, task analysts are the major purveyors of this approach. Taylor, Hammer, and Jaques are some of the key thought leaders here.