Helping Technical Professionals Build Successful Careers

by
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Overview

More than ever, chemical company competitiveness hinges on the ability to create, safeguard, and leverage intellectual capital. Since this precious commodity resides almost exclusively in the minds of the organization's workforce—especially its engineers and scientists—helping these people build satisfying, long-term careers is key to retaining this all-important knowledge base. The "Four Stages" model, based on ongoing research, offers a powerful framework for helping technical professionals understand how to grow and add value over the long haul in today's flattened, delayered, technical organizations. Applied in such companies as Monsanto, Dow, DuPont and 3M, the Four Stages model shows how technical people can advance their careers and contribution without having to move into management roles.

Introduction

In today's environment of constant change, managers of research and technical professionals in the chemical industry need to reinvent the way we develop, manage, and reward technical talent. As we enter the new millennium, the industry has benefited from a strong resurgence of professional interest in chemistry and chemical engineering. According to ACS Employment Outlook,[1] the job market for chemical professionals in 1998 was "the best on record for the 1990s," with strong competition for both top entry level and experienced professionals (*Figure* 1). And, yet, our traditional approaches to developing people are both inadequate and anachronistic. We talk idealistically of technical meritocracies, dual ladders, and such. But the ancient-seeming "pyramidal" model of organization—which defines success as a series of moves up the ever-narrowing organization—still defines our assumptions about careers. The dual ladder concept was well intended, of course. It meant to provide a robust venue to develop and reward individuals for their technical contributions. However, it has proved as much a source of consternation. Senior individual contributors, ostensibly on a level playing field with their managerial counterparts, typically lack the authority or position to play a significant role in the decision process. And, as is frequently the case, top positions on the technical ladder are used as soft landing stations for former managers who are moved aside to make way for others. As one senior technical staff member put it: "They say we have two ladders, but in reality, we have a managerial ladder and a technical stump. It doesn't go anywhere."

Strap Hangers

In the new economy, the rules for career growth and individual development are only now being rewritten. To borrow an image from the New York subway system, technical and scientific staff and their managers feel somewhat like "strap hangers": striving to maintain their balance as the train lurches into the next dark tunnel. Their sense of instability and confusion stems from a lack of understanding of the new rules for performance and development.

In the research lab and elsewhere, the questions posed by today's professionals are these: What do I need to do to be successful? What actions on my part will help me earn the opportunity to grow and develop in my organization? What performance does my organization expect from technical professionals over the course of a successful and satisfying career—if such a thing exists anymore?

Our survey work with a wide range of technical organizations suggests that most professionals know what they need to do to perform well in their current job. Fewer than a third, however, are clear about what is required over the longer term.

Managers of research face the analogous challenge. Theirs is the task of providing technical professionals with a clear understanding of where they stand and what they need to do in order to continue to contribute at a high level of performance. Said differently, the research manager—as much as the individual scientist—needs a new vocabulary of performance.

In Search of a Lingua Franca

Over the past 10 years, technically driven organizations in the chemical industry – as varied as 3M, Monsanto, Exxon, Rohm and Haas, Amoco, DuPont, and SmithKline – have used

Figure 1: Chemical Engineering Graduates, 1990-1996

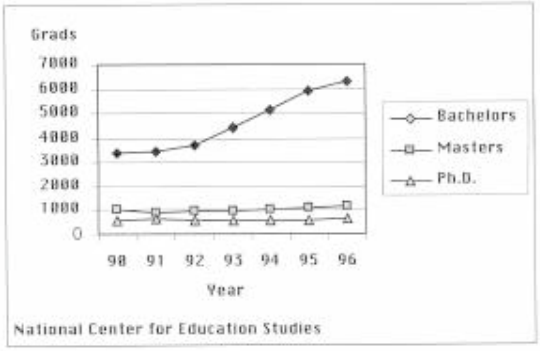

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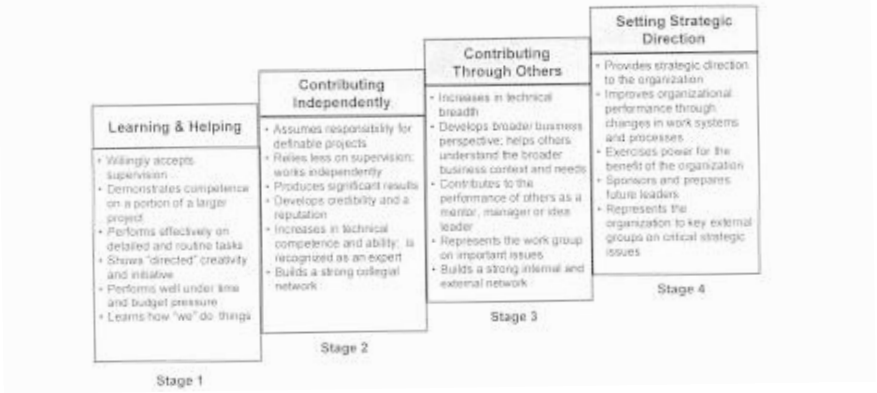
Figure 2: The Four Stages™ Model Shows How People Can Grow in Their Ability to Add Value and Have Impact in the Organization



the pioneering research of Gene Dalton and Paul Thompson (former Harvard and BYU professors) as a framework for describing what valued contribution looks like over the course of a technical career. Dalton and Thompson's research, conducted first in R&D organizations and replicated in a variety of technical enterprises, asked research managers and supervisors to answer a deceptively simple question: "What do high performers in your organization do?" The answers were all over the map. Some described high achievers as outstanding in managing the details, while others characterized their focus as "big picture." Some managers praised specialized expertise, others the importance of shifting in perspective from technical depth to business breadth. At first analysis, it seemed that what managers viewed as high performance was as quirky and idiosyncratic as the managers themselves.

Frustrated by (and distrustful of) this lack of an obvious pattern, Dalton and Thompson pushed the unit of analysis down one level. They searched for "clusters" of descriptors that had internal consistency within the varied and contradictory overall data set. A clear pattern of four distinct stages emerged as displayed in *Figure* 2.

As the figure shows, Dalton and Thompson found that there was no "one-size-fits-all" definition of high performance. Organizations expect individuals to contribute not only more, but differently, as they progress in their careers. The things that make technical professionals high performers early in their career are exactly those things that earn one a "deadwood" label later on. Some unusually perceptive people figure this out on their own; others are left to grow bitter and cynical as they see their perceived value decline over time.

As *Figure* 3 shows, performance rankings in both the original 1979 research, and as replicated in 1997, plainly indicate that those who do their jobs in a Stage 3 or Stage 4 way are judged to have made larger contributions.

Myriad Applications

For 20 years, the "Four Stages" model has been a well-kept secret among a growing number of technical and business organizations. Increasingly, as organizations seek a more helpful approach to the management of technical and scientific staff, the model has provided a framework for clarifying performance expectations and guiding career development.

The key contribution of the Four Stages model is its ability to make performance expectations *clear and accessible*. For example, Lucent Technologies, the former AT&T Bell Labs, has used the model to describe the requirements for the position of research fellow. Exxon Chemical and Rohm and Haas use it as a framework for career and performance management. Amoco and Dow, among others, have found the Four Stages model a helpful framework for giving developmental depth to otherwise "flat" descriptions of employee competencies. Sandia, Lawrence Livermore, and Los Alamos National Laboratories use the model as a basis for 360 feedback.

In doing so, these organizations provide both employees and their leaders with a way to move development guidance and performance appraisal out of the "black box" of subjectivity. Monsanto offers a particularly good example: Each year, employees of Monsanto's chemicals business reach an agreement with their supervisors on where they stand with respect to the Four Stages, and where they should be by the end of the year. A multi-rater feedback process based on the model provides objective assessment of progress and needs. In so doing, the supervisor is removed from the role of judge and placed in the far more realistic and palatable role of coach, advisor, and guide.

Thinking in terms of the Four Stages model also re-frames the technical ladder concept. The traditional technical ladder offers only two non-managerial roles: the independent contributor and the technical mentor. In contrast, the Four Stages research shows clearly that non-managers can and do play a variety of "leadership" and "strategic" roles. In fact, the

Figure 3: Strong Correlation Between Performance Ranking and Stage

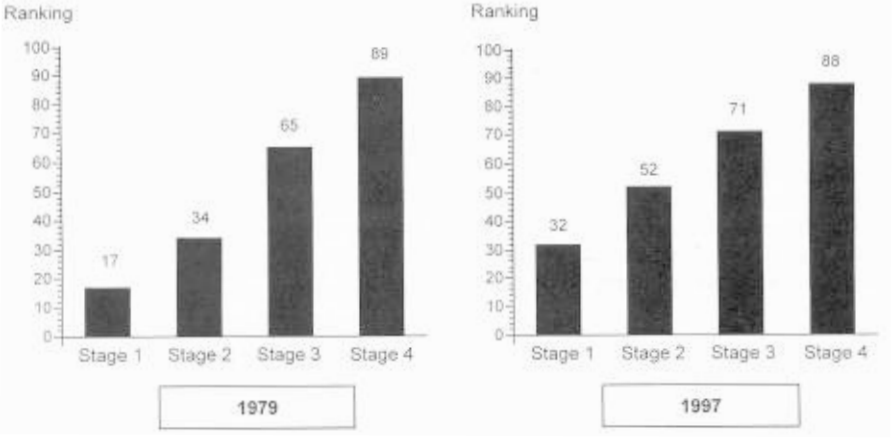
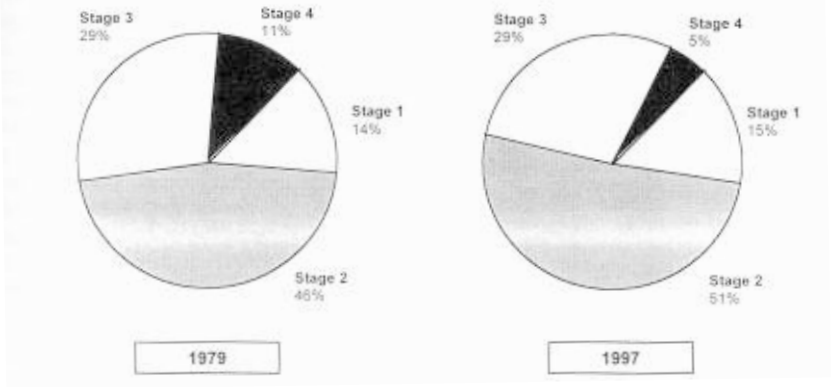


Figure 4: Increase in the Stage 2 Population, with Stage 4 Shrinking



definition of success in Stage 3 is the ability to take a broader business perspective, contribute to the development of others as an idea leader or mentor, and effectively manage boundaries by representing the interests and needs of the work group within or outside the organization.

The challenge for technical organizations is to create roles for Stage 3 and 4 non-managers that enable and support this quality of "non-assigned leadership." At Exxon Chemical, for example, the use of the model led to a redefinition of the senior technical professional role. Although populated by brilliant scientists, the company tended to limit top technical roles to research team leaders (Stage 3). Today, the chief scientists are expected and positioned to play an important Stage 4 role in directing the focus of investment in new technology. To do so, a chief scientist's committee was established and given the authority to fund experimental efforts. Similarly, at 3M, senior non-managing scientists have the responsibility and budget to champion exploratory research.

Thus, the Four Stages model brings a different, more realistic perspective to technical progression. Ladders that limit their top rungs to so-called "world class" bench scientists—or, worse, to former managers—fail to comprehend the potential range of intellectual capital contribution and, in so doing, unintentionally reward the wrong behavior. Mobil, for example, used to measure technical contribution by the number of patents a scientist produced. The Four Stages model helped them understand that senior technical non-managers who were skilled at applying technology to commercial business problems, and who attracted the interest of the businesses, usually played a more valuable role.

A number of companies have begun to innovate based on the broader implications of the Four Stages. Dofasco and R.H. Donnelley, for example, apply the model to selection and succession planning. SmithKline has used the Four Stages as a basis for compensation design, as have Monsanto's Ceregen unit, Dow Chemical, and Champion International Paper's R&D organization. Other organizations, such as Rohm and Haas, are involved in sheltered experiments of a similar nature. Having found that "pay for performance" is an attractive concept but difficult to implement, many companies turn to the model for a more empirical, equitable, and defensible framework for linking contribution and compensation.

New Research, New Dilemmas

In 1997, with a number of companies and the co-sponsorship of the IRI, we launched a second major study of the Four Stages model. This study is still in process, but initial results make two essential statements. First, the stages remain an effective way to describe the progress of careers in technical and other professions. Second, viewing the organization through the lens of the model identifies a number of areas of concern for technical organizations and their leaders.

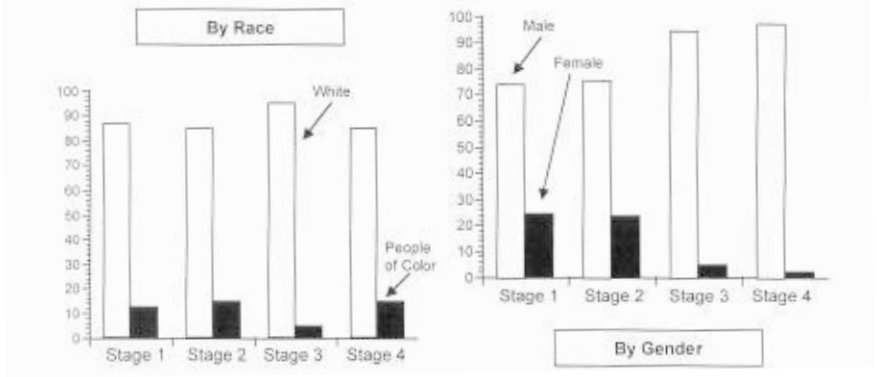
Figure 4 compares 1979 and 1997 results for percentages of people in each stage. While the set of companies studied in 1979 is not identical to those studied in 1997, both data sets are made up of primarily R&D organizations in large U.S. corporations. As these data show, we are seeing more professionals in Stage 2, and fewer in Stage 4, than 15 years ago. We interpret this partly as evidence of restructuring, leading to downsizing and early retirement packages. The problem it poses is significant; during the next decade, competitive dynamics and technology change will combine to demand a strong mix of new blood and seasoned strategic thought and know-how. Yet, we note from the recent Stages research, a thinning of that senior talent base.

Figure 5 provides an analysis of the roles played by individuals at various stages. Startlingly, the data show more Stage 2 employees are in managerial roles, up from 1% in 1979 to 11% in 1997. Granted, these recent data are preliminary, taken from a study at three R&D labs at a prominent chemical company. But our work in numerous technical organizations suggests that the data are fairly representative of organizations that reward top technical people by promoting them to management jobs. Little wonder they end up with a measurable percentage of "Stage 2 managers." These well-meaning individuals have neither the

Figure 5: The Increase in "Stage 2" Managers Is Cause for Concern

	% Non-Managers		% Managers	
	1979	1997	1979	1997
Stage 1	100	100	0	0
Stage 2	99	89	1	11
Stage 3	65	70	35	30
Stage 4	26	50	74	50

Figure 6: We Need to Do a Better Job of Developing Women and People of Color



skills nor the mindset to develop more junior colleagues. Their orientation is individualistic and competitive. They tend to micromanage (if they manage at all), and are often described as "managers from hell."

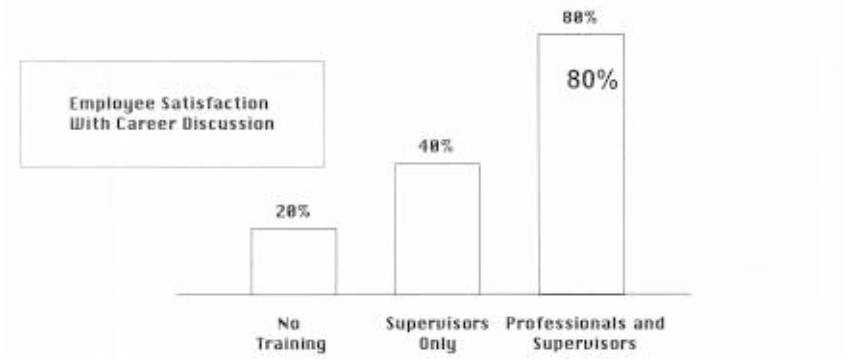
Another striking finding from the data in *Figure* 5 is the increasing percentage of non-managerial roles played by Stage 3 and Stage 4 scientists. The rising percentage of Stage 3 and 4 non-managers, presumptively the result of de-layering, calls for organizations to ensure their Stage 4 non-managers are positioned to fully play a strategic role. To do less is to squander a significant opportunity to broaden the leadership base of their organizations.

A third trend, shown in *Figure* 6, relates to the data on Stage by race and gender. This is a cause of great concern. As these data suggest, the race and gender mix in Stages 3 and 4 is significantly skewed. While women represent 20% of the population in Stages 1 and 2, they make up less than 5% of Stages 3 and 4. The dilemma is similar, though not as pronounced, for people of color: there are insufficient Stage 3 and Stage 4 women and people of color to provide the mentorship and sponsorship these groups need to grow, develop, and perform to their potential.

The Importance of Education

As a description of the important transitions that professionals must make as they develop, the Four Stages is for individuals *a model of choice and trade-off*. Stage 2, for example, is literally a crossroads for technical contributors. Scientists and researchers most often begin their career with a preference for remaining in an "independent contributor" role. In fact, the most readily identifiable role in a research or technical organization is the Stage 2 individual contributor—the expert or specialist working as a member of a technical team.

Figure 7: Familiarity with the Four Stages increases the effectiveness of career discussions



However, the dilemma for the long-term Stage 2 performer is that continued recognition and reward requires (1) that the individual stays at the "cutting edge" of his or her discipline, and (2) the discipline itself remains strategically important to the organization. While individuals, through Herculean effort, may satisfy the first criteria, the second is usually out of his or her control. We have all heard the stories of highly trained Ph.D.s now working as financial planners or real estate agents because their employer canceled a project, or significantly reduced or eliminated a whole technical discipline that was no longer crucial to the business.

For technical professionals such as those in Stage 2, education in the Four Stages appears to help individuals take informed ownership of their career, and helps coaches to support their people in building proactive development plans. Gene Dalton, an author of the original Four Stages research, used to say that the most important 30 minutes in an organization was the annual development discussion between supervisor and employee. For technical professionals in most organizations, supervisors and employees don't share a "common language" for talking about performance and development. Hence, these 30-minute discussions tend to be hit-or-miss in their effectiveness.

By contrast, a recent study found that when *both* supervisors and employees were familiar with the Four Stages model, the productivity of development discussions was very strong. More specifically, in the absence of education, only 20% of employees were satisfied with the value of their development discussion. When supervisors *only* were familiarized with the Four Stages, that number jumped to 40%. And, when both employees *and* supervisors were educated and had a common framework to draw upon, 80% of employees reported high satisfaction with their development discussion (*Figure* 7).

Summary

What is abundantly clear—in the chemical industry and elsewhere—is that improving technical professional productivity and development has never been a more important or pressing challenge. People management is an expensive proposition that must pay off *no less rigorously* than any other area of investment. The cost of inattention is high, of course, with respect to the long-term competitive capability of the organization. For

example, in the course of a recent restructuring, a leading consumer foods company identified that just the direct cost of administering their performance appraisal system exceeded $1,000,000 per year in full time equivalent staffing. Management was unaware of the true magnitude of expense and clearly dissatisfied with the return. Good people were leaving, moving over to competitors. The performance management and development system was not doing its job. What they lacked was a systematic process for really growing and retaining the talent they needed.

John Akitt, former President of Exxon Chemical International, put it best in a speech he gave several years ago, "The best chemical companies embrace and develop good ideas, and turn them into products faster. What separates them from lesser performers is their ability to attract, develop, and utilize technical talent. Growing capable people is absolutely the difference between winning and losing in this industry." His words ring as true now as they did then.

Reference

(1) *Chemical and Engineering News*, 76, No. 43 (January 6, 1998).

About the Authors

Jon Younger is a Managing Director and currently CEO of the Novations Group, a strategic change management consulting firm. He has led the introduction and application of Novations' proprietary Four Stages model in a variety of leading companies, in the chemical industry and elsewhere. Prior to co-founding Novations, Mr. Younger led an internal consulting team for Exxon Chemical. He holds a Ph.D. in Social Psychology from the University of Toronto, where he also taught. His e-mail address is jyounger@novations.com.

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