DUAL CAREER PATHS: RECOGNIZING THE TECHNICAL CONTRIBUTOR

In order to retain and motivate valued technical employees, companies should consider developing a career path that rewards and develops the technical contributor.

by R. Bradley Hill

Many technical professionals such as programmers, scientists, and engineers may be undervalued in organizations because they do not possess the management skills necessary to "succeed." But the skills and abilities that make an outstanding manager may be very different from the skills and abilities that make a distinguished chemist. An organization's failure to recognize advanced technical skills can damage its efforts to develop and expand new technologies and products. Dual career paths provide for two equivalent career progressions, one to recognize managerial contributions and one to recognize technical contributions.

Appropriateness of a Technical Career Path

Webster's dictionary defines "career" as "progress or general course of action of a person through life, as in some profession; an occupation followed as one's life work." Working within this definition, a technical career path should support an individual's technical advancement throughout a significant portion of his working years. In addition, adopting a technical career path should benefit the company, or the expense of this alternative may outweigh the advantages.

With these thoughts in mind, consider two benchmarks for determining whether dual career paths are appropriate for an area:

1. Is the technical field or profession deep enough that knowledge and skills can reasonably be expected to grow (and therefore allow the individual to contribute at increasingly higher levels) throughout a career?

2. Are attracting, retaining, and developing these technical competencies critical to the success of the organization?

If the answer to both questions is yes, it is likely that the organization could benefit from dual career paths. If, however, an organization is considering dual career paths and the answer to both questions is no, the company is probably frustrated with the rigors of the annual merit increase ritual, and dual career paths will not be appropriate as a replacement or supplement to merit pay.

Advantages of Dual Career Paths

Dual career paths may be cost-effective in technical areas that are experiencing high recruiting and turnover costs or having difficulty attracting the talent required to meet business objectives. The existence of a technical career alternative offers the following primary advantages.

More Successful Hiring Practices. The technical career path is a powerful tool in hiring professionals who do not have managerial ambitions.

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By attracting a larger pool of qualified candidates, the company can reduce its hiring expense.

Reduced Turnover. Individuals who are encouraged to advance in the areas they enjoy and excel in will derive greater job satisfaction and be less likely to leave the company. Further, the opportunities offered by a technical career path may not exist at competitor organizations.

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Improved Training and Development Focus. With dual career paths, the training and development focus is on enhancing the skills that enable employees to maximize their contribution to the organization, unlike the traditional focus that attempts to make everyone a well-rounded employee, possessing both good technical and good management skills. For senior technical professionals, the traditional focus means spending an inordinate amount of time discussing and trying to overcome managerial deficiencies. But it is not necessary to be a decathlete to win a gold medal in the long jump. If you are coaching a superior long jumper, concentrate on producing the best long jumper. Don't spend 90 percent of the training effort getting the long jumper to throw the discus better. Similarly, don't spend 90 percent of the training and development effort attempting to make managers out of outstanding programmers.

Lower Management Costs. The rise in the level of technical ability may reduce the department's managerial requirements. Although not required to formally manage, high-level technical contributors bring higher levels of problem solving, decision making, leadership, and autonomy to the department. This may translate into a need for fewer department managers.

Higher Productivity. Attracting qualified candidates, reducing turnover, and focusing training efforts should result in a higher level of technical productivity—more (and better) new products and faster development time.

Developing Dual Career Paths

For each job family that gives a "yes" answer to both benchmark questions raised earlier and that can benefit from the dual career path advantages, form a work group that represents several constituents: individual contributors, managers, and human resources representatives. This work group is responsible for developing the new program. The first two constituents will bring technical understanding and business needs to the table; the human resources function will bring its knowledge of job evaluation and ensure that the end product does not violate the company's internal pay equity.

The development of a dual career path parallels the process used to design factor-based job evaluation plans, which measure job value in terms of such factors as problem-solving, accountability, know-how, and working conditions. Unlike the typical factor-based evaluation plans, however, the dual career evaluation is tailored to a specific job family and uses only factors that apply to both managerial and technical jobs within the family. Companies that wish to develop a primary dual career path should take these steps:

1. Select and define evaluation factors;
2. Define factor degrees;
3. Evaluate and define career levels;
4. Develop career-level descriptions;
5. Classify individuals;
6. Develop a schedule of salary grades and ranges; and
7. Communicate the program.

Select and Define Evaluation Factors. Simply put, the work group constructs a methodology that breaks a job down into the factors that best relate to value and contribution. These factors may include:

- Knowledge and skills;
- Decision making;
- Innovative thought;
- Independence to act;
- Communication;
- Leading/directing others; and
- Planning and scheduling.

FIG. 1. Engineering Factors

Knowledge and Skills. This factor measures the level of professional and organizational information that the employee must understand to perform his job (e.g., procedures, practices, rules, and policies). Knowledge and skill may be derived from formal education, technical training, supervised on-the-job development, or innate talent.

Decision Making. This factor measures the extent to which the job is governed by specific policies, procedures, or supervision and the amount of analysis and independent judgement required. It may also measure the extent to which recommendations, actions, or decisions of the position can directly or indirectly affect costs, operational effectiveness, net income, service to the customer, and public image.

Innovative Thought. This factor appraises the position's responsibility for performing innovative work—that is, conceiving and formulating new ideas, techniques, procedures, programs, etc., and/or designing modifications to existing ones. The factor measures whether the individual is allowed to depart from accepted practices or methods; if he is allowed to depart, the factor measures how much variation is possible, and the extent to which this variation is necessary in performing the job.

Leading/Directing Others. This factor measures the responsibility for training, guiding, coaching, mentoring, or facilitating others in the performance of their work. It includes organizing work, making plans and schedules, and providing leadership toward company goals.

Planning and Scheduling. This factor measures the level of planning and organization associated with the position. It considers the level of responsibility for human resources, budget, and business and strategic planning, and the degree to which the position organizes the business unit to accomplish plans.

In defining these factors, it is important to explain them in terms that do not relate exclusively to either technical or managerial jobs (see Fig. 1). For example, "supervisory responsibility" relates only to managerial jobs. But "leadership" captures supervisory responsibility on the managerial track and technical guidance and direction on the technical path.

Define Factor Degrees. Each factor should be separated into degrees. Each degree should represent a truly discrete gradation of the factor and there should be no confusion as to which of any two degrees is higher (see Fig. 2).

In defining factor degrees, the work group may want to split into two teams: the first to define technical factor degrees and the second to define management factor degrees. Although the broad factors are the same, applying each factor to technical versus management jobs may require a different number of degrees and a slightly different orientation. The number of degrees for the technical path should be extensive enough to cover the whole range of activity—from that performed by entry-level personnel to that performed by the veterans who have spent their careers in the area. The number of degrees for the management path should cover the first-level manager up to the most senior management job in the job family. After the two teams define the factor degrees, they should consolidate them into one set. Some factor degrees may have two equivalent definitions, one pertaining to managers and the other pertaining to individual contributors.

Evaluate and Define Career Levels. The traditional job evaluation plan uses factors to evaluate existing jobs. The dual career path evaluation plan, on the other hand, uses factors to assist in actually defining the jobs. In some instances, there may not be a current job or incumbent to serve as a career-level reference point, and the process may therefore be quite challenging. The work group should start with the easy definitions. The lowest career level is likely to be defined using most of the lowest factor degrees. Likewise, the highest career level will be defined using most of the highest factor degrees. The number of intermediate levels will depend on the number of degrees in each factor and the most likely combinations of factor degrees. (See Fig. 3.)

There should be enough technical career levels to support the advancement of outstanding professionals throughout their time with the company, but not so many that promotions will be expected after some period of time or will not be perceived

FIG. 2. Degrees for the Innovative Thought Factor for Engineering

1. Work requires innovation in modifying, changing, or adapting existing procedures to accommodate a specific condition or line of research. A high percentage of work is performed following existing methods or procedures to ensure reproducibility of results and comparability of tests.
2. Work requires innovation in solving problems, devising courses of action for the development of new techniques or methods, and refashioning existing courses of action where the opportunity for innovative treatment is limited by a large volume of accepted practice.
3. Work requires some innovation in planning, executing, and analyzing data in nonroutine studies where procedures must frequently be modified. At times, the lack of accepted practice or the newness of the problem increases the need for imaginative or original treatment.
4. Work requires considerable innovative decision making about diverse administrative and/or scientific problems where there is no accepted practice or precedent. Position is responsible for generating and evaluating the direction of a line of research in light of scientific and company interests. Position may determine or recommend appropriate next steps regarding a line of research (e.g., continuation, termination, redirection).
5. Work requires constant innovation in translating policy decisions into work programs where problems are diverse and there is no accepted practice. Work may also require innovation in making policy decisions regarding specific areas of research to explore.

as significant. The number of managerial levels will not necessarily be the same as the number of technical levels, because management progression may include additional steps outside the job family.

Develop Career-Level Descriptions. For each career level (e.g., Senior Engineer), a description should be developed that contains the title, career-level evaluations, advancement criteria, and desired level of education and amount of experience. The body of the description will contain the career-level evaluations resulting from the preceding step. The advancement criteria will identify the prerequisite performance required to be considered for promotion to the level. For example, the criteria for advancing to Senior Engineer may be:

> "Successful performance demonstrated as a first-level Engineer with the potential to carry-out more complex work assignments. Must have received 'Exceeds expectations' performance rating during the review period prior to consideration for this position."

In addition, the work group should describe the typical education and experience requirements at each career level. Although education and experience are not an essential component of the description, they may help the general employee population understand the position's level. Education and experience should never be used as a criterion for promotion.

After the work group defines the career levels, it should assign a title to each level to denote its relative position in the career progression. The final career-level description should communicate the value and expectations of the position.

Classify Individuals. After defining the career levels, the work group should assign individuals to a level on the basis of two factors: (1) a comparison of their current position duties and responsibilities to the career path levels; and (2) the needs of the business at each career level. In other words, in order for an employee to be assigned to a higher level, the employee must be capable of performing at that level *and* the business must need to have someone contribute at that higher level. (See the accompanying sidebar, "Dual Career Paths vs. Pay-for-Knowledge.") How strictly these criteria are applied will depend on how the company chooses to manage its compensation costs.

In classifying individuals, the work group may rely on its knowledge of the positions, conduct employee interviews, or use a questionnaire to collect pertinent classification information. Larger organizations may want to use a formal nominating procedure to identify employees qualified to perform at the highest levels. This procedure would outline specific criteria for advancement in terms of product development, patents, publications, speeches, and so forth. The organization may wish to use a group of senior managers to serve as a review panel.

FIG. 3. Technical Career Levels

Job Title and Education and Experience	Knowledge and Skills	Decision Making	Innovative Thought	Independence to Act	Communicating	Leading/ Directing Others	Planning and Scheduling
Senior Engineer B.S. degree and 5 to 8 years related experience or equivalent.	Serves as a source of product knowledge in multiple areas. Does independent product development or assists others. Contributes to and helps administer the section's technical procedures, such as coding standards, design, support, etc.	Designs modules or major features. Creativity and original thought are required to develop new solutions to complex problems that are stated in very general terms or as symptoms. Handles complex product problems and is called upon to pursue customer problems when need arises. Provides judgments and recommendations to management.	Work requires innovation in solving problems, devising courses of action for the development of new techniques or methods, and refashioning existing courses of action where the opportunity for innovative treatment is limited by a large volume of accepted practice.	Performs independent product development. Has significant latitude within approved assignments or projects to meet goals and strategies for a department or group. Work is typically reviewed by a Manager and/or Principal Engineer.	Interfaces with other groups regularly. Provides significant amount of design documentation and review. Receives complex technical information, procedures, specifications, and other important information including strategic, competitive, and market-related information.	May work as design leader within a division. Coaches other Engineering members technically.	Coordinates activities within Engineering and with other divisions. Handles many simultaneous complex assignments. Provides critical date and resource estimates.
Principal Engineer B.S. degree and 7 to 10 years related experience or equivalent.	Advanced expertise in product and core technology.	Defines hardware or software technical approach and design of product or major feature. Implements complex portions of product design. Anticipates, identifies, and solves a wide array of problems where information is available. Executes study projects in support of design/ architectural activities or implementation of technical guidelines. Consults at the section/department level.	Work requires some innovation in planning, executing and analyzing data in nonroutine studies where procedures must frequently be modified. At times, the lack of accepted practice or the newness of the problem increases the need for imaginative or original treatment.	Performs technical staff functions in support of direction/technical decisions. Determines the best approach for structuring resources to meet objectives. Work is typically reviewed by a Senior Principal Engineer, Manager, and/or Technology Director.	Interfaces with others within Engineering and others within the corporation regularly. Receives complex technical information including strategic, competitive, and market-related data.	Provides design direction typically within Engineering. Provides input to management into hiring, firing, and conducting performance appraisals. May work as a design leader of a large and complex project.	Plans and schedules medium- to long-term assignments. Recommends appropriate resources for accomplishing objectives. Plans and schedules must consider and may affect related groups of individuals.
Technology Director B.S. degree and 20 or more years related experience or equivalent.	Serves as a recognized industry and company expert in one or more technologies. Provides system-focused expertise.	Defines requirements and architecture for a major program or product line. Performs research in system architecture or overall process definition. Solutions may require development of entirely new strategies, concepts, or approaches to achieve desired results.	Work requires constant innovation in translating policy decisions into work programs where problems are diverse and there is no accepted practice. Work may also require innovation in making policy decisions regarding specific areas of research to explore.	Decisions and actions are guided by long-term corporate goals, objectives, and strategies. May define new corporate-level objectives. Review of work is done at the President/VP level .	Communicates with customers and others in the industry.	Serves as a strategic visionary from technical point of view. Influences multiple organization units, goals, and priorities based on leadership, experience, knowledge, and foresight. Works at strategic levels to exploit technology for company, business, and product opportunities.	Projects future internal or external needs and provides input into long-term strategic planning objectives and strategies that may affect company-wide results. May require monitoring the planning, scheduling, and execution of activities of others to ensure achievement of objectives.

The existence of a managerial and a technical career path does not indicate that the company employs two distinct categories of employees. One advantage of the dual career path system is that it offers greater choice. Employees do not need to "commit" to a career path and should feel free to move from path to path as their goals and interests change over their careers.

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Develop a Schedule of Salary Grades and Ranges. Each career level should be compared to market to ascertain the competitive wage. Education and experience can help to simplify the market comparisons, but they should be used only as a quality review, to verify that job content comparisons are consistent. Because the highest-level technical jobs may not have market reference points, the company will need to compare the expected contribution of these jobs to jobs on the management track. If the work group is uncertain about the proper grade assignment, it should err on the low side. It will be far easier to raise the grade if job contributions exceed expectations then to lower the grade if contributions fall short.

The range of pay at any career level should be related to the length of time the company expects the outstanding performers to be in the job and the anticipated increases they will receive. The longer the expected time at a career level, the wider the pay range should be.

In order to experience the advantages described earlier, the company should develop dual career compensation levels that meet the needs of the job family. Although it is essential to maintain internal equity, the company must be prepared to tailor the pay structure to the career path and not automatically retrofit the new career levels into the existing structure. The objectives of the dual career structure—to attract, retain, and develop outstanding technical contributors over their career— may be different from the goals of the company's base salary program. Therefore, a different number of grades and salary range widths may be required.

DUAL CAREER PATHS VS. PAY-FOR-KNOWLEDGE

Pay-for-knowledge programs compensate individuals for advancement in job-related skills or knowledge. In some respects, this is similar to the aim of the dual career path. However, the two programs differ in several ways:

Pay advancement opportunity. Under pay-for-knowledge, the company defines the opportunity for advancement in terms of individual skills, whereas under dual career paths, it defines advancement opportunity in terms of job (career level) value. Therefore, the individual controls his advancement under pay-for-knowledge, while the company controls advancement under dual career paths.

Factor basis. Pay-for-knowledge programs base advancement on one factor category—knowledge and skill. Under a dual career path program, knowledge and skill are usually one of several factors pertinent to both management and technical jobs.

Pay for knowledge and skills. Pay-for-knowledge programs compensate individuals for the *existence* of knowledge and skills. Dual career paths compensate individuals for the *application* of knowledge and skills.

Learning curve impact. Pay-for-knowledge programs typically try to push employees more quickly along the learning curve. Dual career paths try to move the learning curve to a higher level.

Although pay-for-knowledge and dual career path programs both provide a reward mechanism for technical contributors, the broader and longer-term focus of dual career paths may require a deeper commitment on the part of the company.

Communicate the Program. The involvement of a work group representing individual technical contributors and managers in the job family serves as a primary communication mechanism throughout the development of the program. The company may have solicited input from individuals regarding their duties and responsibilities during the classification stage (step 5). However, the