

Career Redux

How can one design a career when career as an institution is dead?

Entrepreneurs have an answer.

Most of us are concerned about our careers. We want a career that helps to avoid obsolescence, continually develops toward professional mastery, and retains our value to customers and clients. But the traditional notion of career—a single job at one firm held for most of one’s working life—is obsolete. How shall we attend to this concern?

The good news: a better notion of career is emerging. Many professionals have already found it extremely helpful. The bad news: few of our traditional educational institutions are able to help. We must design our own ways to make our careers prosperous and satisfying.

What is ‘Career’?

Our traditional understandings of “career” are captured well in standard dictionary definitions. They include one or more of the following notions:

- The particular occupation for which one is trained;
- A general course of conduct in life or a calling in life, visible to others in one’s community;
- The general progression of one’s working or professional life;
- Time in a profession after receiving one’s last formal degree (BS,

MS, or Ph.D.); and

- Doing the same thing over a long period of time (as in “She made her hobby into a career”).

Most working lives do not fit these notions. Many of us have changed fields since receiving our college degrees, and many will

change fields several times more. Many of us don’t want to make a

long-term commitment to any one employer.

Many of us do not even know if we have a calling. Is career a dead notion? Is all the college talk about preparation for career obsolete and misleading?

Fernando Flores and John Gray think so. They say that two lifestyles are emerging in the wake of career’s death [3, 4]. Both styles are practical responses of people in a

working world where the traditional notion of career no longer exists. One style is primarily self-directed and the other primarily community-directed. Flores and Gray use the term “wired life” for the first, and “entrepreneurial life” for the second. Unfortunately, these two terms evoke negative connotations. For example, “wired” sounds like a shallow, self-centered fad to some people; “entrepreneur” suggests greedy, unscrupulous competitor to some. I will avoid these colorful terms because I do not want to obscure the important point made by Flores and Gray.

Persons living the self-directed style are driven by a quest for growth, autonomy, and passionate expression of their creativity. They do not accept the notion of a lifelong commitment or loyalty to a single employer. In fact, they see such a commitment as an impediment. Instead, they move with their talents and inclinations, organizing their working lives as a series of projects that call forth their passion, develop their capacities, and extend their skills. They are engaged in the project, not the company. They cultivate personal public identities emphasizing their passions, technical skills, and reliability; identities that guarantee them an income stream

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LEVEL	Description	Learning Modes (% Embodiment)*	Software Engineering Examples
Novice (beginner)	Just getting started in the domain. All action appears to be governed by rules defining allowable moves and strategies. Common situations are unfamiliar and are described by more rules.	Memorization, drill, and simple practice. Demonstrations of play. Practice in simple situations (0%).	Starting programmer. Focuses on syntax, compilation, simple debugging. Basic concepts of objects. Basic algorithms. Basic program design, software methods.
Advanced Beginner (rookie)	Recognizes common situations that help in recalling which rules should be exercised. Most action is deliberate application of rules or conscious recall of prior actions in the familiar situations. Can perform simple actions for customers; needs supervision for more complex tasks.	Problem-solving and practice with rules and strategies. Play in realistic situations with supervision. Repeated practice with common situations (30%).	Comfortable with syntax. Composes basic programs to solve problems up to several pages and tens of modules. Can write simple programs for customers. Works well with direction.
Professional (competent)	Carries out standard actions without causing breakdowns. Can fulfill standard promises to customers satisfactorily without supervision. Performs most standard actions without conscious application of rules. When faced with a new situation, works out appropriate actions by application of rules.	Advanced problem-solving, coaching on problem-solving and projects. Extensive practice in both common and exceptional situations. Apprenticeship to more advanced professionals and teams. Membership in professional networks (60%).	Skilled in multiple languages. Deals with programs of hundreds of modules. Designs systems and test protocols, integrates components. Helps customers solve system design and configuration problems. Can work on teams and with customers. May be a team leader.
Proficient Professional (star)	Deals with complex situations effortlessly. Seldom thinks in terms of rules and may have some difficulty telling others what rules he or she works with. Appropriate action appears to come from experience and intuition, and is deliberately chosen. Individual performance is a benchmark for others. Considerable experience and practice across a wide range of situations over years of work.	Apprenticeship to experts. Coaching. Putting self into wide range of situations. Membership and contribution to professional networks. Teaches others (80%).	Highly productive. Designs and manages complex systems. Ingenious solutions. Clear code. Excellent problem-solver. Productivity much higher than average. Receives positive assessments from customers and other professionals.
Expert (virtuoso)	Consistently inspiring and excellent performances. Appears to solve difficult, complex problems effortlessly. Enormous breadth and depth of knowledge. Acts appropriately without thought or conscious choice of actions. Routinely forms and leads high-performance teams; admired by others as a benchmark of team performance. Performance standards are well beyond those of most practitioners.	Apprenticeship to masters. Advanced coaching, development of breadth, focus on observing and adopting style of the teacher. Teaches others. Years or decades of practice (95%).	Extensive experience with large systems. Anticipates subtle and indirect design issues. Anticipates and responds to customer concerns. Leads teams well. High productivity. Solves difficult configuration and performance problems quickly.
Master	Capacity for long-range strategic thinking and action. Sees historical drifts and shifting clearings. Has studied with many different teachers and has developed own distinctive style. Has produced innovations in the standard practices of others, altered the course of history in the field, and knows how to do this again. Teaches others to be experts and masters.	Learning continues by working with other masters as teachers. Creates and leads professional networks. Teaches others (100%).	Develops new methods and practices for the field. Admired for long, historical perspectives and strategies.
Legend	Has attained high public standing with almost mythical status as a master and performer. Leverages public standing to achieve results only public figures could attain. Work has widely accepted impact.	Same as for master with emphasis on public appearance (100%).	Widely admired software engineer who publicly set the pace for everyone else. His or her articulations shape the direction of the field.

* Percentages are suggestive, not quantitative

Ladder of Competence

from new projects. They receive the recognition they need from professional communities, which

they appropriately join for their current projects. They see spontaneity and excellence in what they love as the most appropriate ways to deal with the fast-changing

technology marketplace and preserving their autonomy in an increasingly regulated world.

Persons living the community-directed style are driven by a quest

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to bring value to others in the communities in which they live. They immerse themselves in their communities' histories and participate in their communities' social actions. They are attuned to disharmonies, tensions, or conflicts within their communities, and they devote themselves to bringing together people to resolve these discordances. They view this style as a high good to commit themselves to the long-term well-being of their communities and to solidarity with their community members. (This is altruism mingled with self-interest; creating value and power for the community also creates value, power, and reputation for the contributor.) Flores and Gray say that successful entrepreneurs exemplify this style. This style is not limited to the business life. Many academics, civil servants, and political and cultural activists fit this definition.

These two styles share a common element: the value dimension. All professionals are concerned that their relationships bring value to their clients and earn a reputation for quality. While there are many people who clearly prefer one style or the other, there are also many who practice a mixture of the two. Successful entrepreneurs exemplify a good combination: they do the work they love; they develop excellence over time; and they build businesses whose projects

match their publicly acknowledged expertise.

Many practitioners of the self-directed life find it can bring unpleasant surprises and dissatisfaction. They have to sell their work. They might not get hired for a next project. Their former project partners may show no loyalty or lasting friendship. They may not develop a public identity. They may find themselves swamped with customer demands and unable to do what they prefer. They may also find the stream of projects, driven by the need to generate income, is too diverse to permit them to develop a coherent body of work. They may be competent or proficient in some of their endeavors but may not develop into experts. All this can add up to a lack of meaning in their working lives. Most of us would like to believe that, when we put down our tools for the last time, we will be able to look back on the corpus of our work and say, "it is good."

Practitioners of the community-directed style usually find it very fulfilling. This style includes many of the basic virtues of traditional careers. The person has a public commitment to develop a new, harmonizing practice for some or all members of the community. The community grants recognition for the work declared and for accomplishment. The person and all colleagues are loyal to one

another. The person and work group support others involved in similar ventures. The person and work group build new forms of community. The person is author of a continuous life story that gives meaning and carries the person through difficult times.

Ladder of Competence

Let us examine how a person develops skill and recognition. About 30 years ago, Hubert Dreyfus proposed a model that, although not originally intended for this purpose, turns out to be very useful. In the 1960s and 1970s, Dreyfus was concerned about the AI researchers that claimed they would soon build expert systems—software systems that behave like human experts. Dreyfus examined what capabilities a person must have to be judged as an expert. He identified several levels of pre-expert performance, including the beginner, the advanced beginner, and the competent person. He observed beginners and advanced beginners spend most of their time choosing and applying rules, while experts respond to situations holistically, without consciously following rules. He concluded that as a person advances in experience and competence, he or she comes to rely less on rules and more on embodied actions evoked by situations and their contexts. The expert relies almost completely on

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embodied action. Dreyfus reasoned that a software system programmed with rules and facts could therefore never exhibit performance beyond that of competence—that expert systems were incapable of performing as experts.

In 1972, he published *What Machines Still Can't Do*, laying out his argument in detail. In 1992, in the third edition, he said the book no longer intended to challenge that dream, but rather to document its life and death [2].

In the 1980s, Flores adopted Dreyfus's insight as a powerful way to understand how people learn. Flores saw it as a model for life-long learning and career. This is the sense in which I will use the model here. Dreyfus's ladder of competence is summarized in the accompanying table.

Flores extended the ladder downward with two levels of incompetence. One rung below beginner is the “jerk,” the know-it-all who sees the domain, believes he or she is capable of playing, does not play by the rules, and spends a lot of time explaining away the disruptions and breakdowns he or she has caused. One rung lower is the “blind person,” who, completely unaware, stumbles into the play without realizing a game is in progress, and causes disruptions and breakdowns for the players. Such a person is often called “clueless.” In the cartoon “Dilbert,” Dilbert's boss illustrates this very person.

In his recent book, *On the Internet*, Dreyfus uses his model to challenge a central claim of distance-education enthusiasts, which is that courses offered via the Internet will allow people to obtain

degrees and high levels of proficiency faster and cheaper than in traditional schools [1]. He argues, much as he did before, that distance learning using the Internet is good for teaching beginners but is unlikely to be capable of raising a student past the level of competence. He insists the embodied expertise of the proficient, the expert, and the master depend on extensive coached practice, presence and contact between the teacher and learner, and involvement. These higher levels require teaching and learning methods incompatible with the Internet. He says that in limited circumstances, with the right teachers and modes of interaction, telepresence might possibly enable some students to reach the level of proficiency via distance education.

If Dreyfus is correct, and I believe he is, this poses a serious problem for competent, proficient, or expert professionals who have been hoping online courses might help them advance in their profession. At best, an online course can help them stay current with technologies at their current level of expertise. It can inform them of new concepts and processes, but it cannot provide them with the coached practice, presence, contact, and involvement needed to move them to higher levels.

Embodiment of Expertise

I have used the term “embodiment” several times here. This term refers to knowledge “in the body,” ready for immediate performance when the situation arises. This form of knowledge is distinct from conceptual knowledge, which is “in the mind,” ready to provide

explanation or description. An embodied capability includes a well-honed set of interpretations of the world, allowing the expert to immediately “see” what is needed in a situation and to act on it without thought.

To many, the notion of putting the body into learning is unfamiliar. Most technologies rely on difficult intellectual abstractions. Mastering them appears to be the key to advanced education. Some Internet enthusiasts take this notion to the extreme; they hope to minimize the involvement of their bodies. To them, bodily needs draw them away from learning the difficult intellectual material of the field. A few dream of leaving their bodies behind and becoming disembodied entities that live forever on the Internet.

In real life, we instinctively understand the difference between conceptual knowledge and embodied knowledge. We will choose the dentist who has crowned 100 teeth, the surgeon who has performed 1,000 procedures, or the pilot who has flown 10,000 flights. We hire managers who have demonstrated expertise in team coordination, customer relations, and employee development. We seek software engineers who have extensive experience with teams, customers, systems, and languages.

This notion that the body is peripheral to learning is unwittingly perpetuated by most engineering and science programs, which teach that action is the application of conceptual models. They teach that learning is like programming the brain. They are drawn to include “hard-core” technical topics in the curriculum, and

to leave “soft subjects,” such as communication, team coordination, customer relations, and performance-based learning to others. Software engineers, for example, learn much about requirements, specifications, prototyping, and testing, and little about the critical aspects of interacting with customers, coordinating with teammates, or producing valuable designs.

Some parts of the university experience already understand their professional graduates will be judged on how they perform and not how well they can explain concepts. These are the performance-oriented fields including music, dance, theater, painting, athletics, healing arts, and, to a lesser extent, business. Many artists, athletes, actors, doctors, and nurses devote many years to practice, training, apprenticeship, and study to achieving the highest levels of public recognition for their skill and competence. It is an illusion that the higher levels of competence are accessible only to those who have greater conceptual knowledge. Expert and master technologists all achieved their standing through extensive practice, public performance, and experience.

This is why in the accompanying table I show how embodied learning dominates the highest levels; the teaching and learning modes shift from rule-following and drill at the lowest levels to extensive practice, immersion, apprenticeship, and coaching at the highest levels. The highest and most respected form of knowledge is that which can be expertly performed. This can happen only if the performer fully embodies the

knowledge. It is a paradoxical hallmark of embodied knowledge that practitioners often cannot say why they do what they do. This is also fortunate, because little would get accomplished if we had to stop and think through every situation before acting. We can safely say that learning to be an expert or a master is a bodily art, even in highly technical fields.

It should now be clear why most universities cannot teach technical professionals to attain proficiency, expertise, or mastery. Most universities declare their primary mission to be bringing students from beginners (as freshmen) to advanced beginners in their fields (as bachelor’s graduates), and to entry-level competence (as master’s graduates). The curriculum is perfect for beginners—oriented around facts, rules, concepts, statements of principle, procedures, and methods. A curriculum that can raise graduates to higher levels would be of a completely different character: it would rely heavily on immersion, apprenticeship, and personal coaching. Such an undertaking is outside the mission of most current universities and requires a considerable investment because it is labor intensive.

Given the financial climate, it is unlikely many will make the investment. Many professionals are so seduced into the illusion that learning is acquisition of data and information, they believe the Internet and the computer chip, with ever-cheaper bandwidth and processing power, should make education less expensive and faster. Few are willing to pay the costs of the training they need to achieve the professional mastery they yearn for.

What It Means for You

Whether you practice a self-directed or community-directed career style, you must produce public value to attain your goals. This concern will move you over time to the higher levels of competence where you can provide even more effectively for your commitment. You will, however, need to take charge of your own learning. The universities are unlikely to help you because they are not geared for teaching people how to perform at levels beyond entry-level professional.

In planning your ongoing learning, nothing is more important than finding good teachers. You will have the best results by finding practicing professionals more competent than you and can coach you. Join their teams. Involve yourself with their ways of thinking and acting. Learn the ropes they already know. Ask them for challenging assignments that promote your growth. Practice. Remember, 90% of communication effectiveness depends on your body language and tone of your spoken language, rather than on content; persuade your teachers to help you see these aspects. Look for the practices of excellence and engage in them. Be prepared to repeat this with several teachers over time. Imitate the style of each teacher. You will eventually develop your own style.

You also need to develop and participate in professional networks—not online virtual chat communities, but people who come together in person to discuss common concerns. Form a circle of well-connected friends who can advise you. Do the same for them.

October

A special section on developing and integrating enterprise components and services, detailing such topics as:

Overcoming independent extensibility challenges
 • Implicit multilevel modeling in flexible business environments • Beyond component-based computing • Enterprise services • Lessons learned from a nationwide CBD promotion project • Enterprise application integration and complex adaptive systems

Also in October, a series of perspectives on creativity and interface, including:

- Creativity, art practice, and knowledge
- Enhancing creative design via software
- Creative support tools
- Collaborative creativity
- Characteristics of successful creativity support applications
- Supporting experimentation with Side-Views
- Re-creating the reader

And look for:

- Email winners and losers
- Managerial information overload
- Cultural differences in the online behavior of consumers
- A new way to teach OO thinking to procedural programmers

Go to conferences. Seek out the most influential speakers. Listen and talk to them.

Remember always that the levels of competence are assessments made by other people who interact with you and observe your performance. Unless you learn to bring value to them through your interactions, they will not form a sufficiently high opinion of you; they will judge you not to be knowledgeable or competent. Learn to listen for concerns and formulate offers addressing those concerns. Waste no time on actions and projects that do not bring value.

And, last but not least, allow yourself to develop great curiosity about other people. Your curiosity will inspire your teachers and will bring you unexpected, valuable knowledge. Curiosity's child—the certainty that what you don't know vastly exceeds what you do know—will, over time, infuse you with humility and strip away your pretensions. Think of the masters you admire most. Most are unpretentious and eager always to learn more. Paradoxically, the way to mastery is the way of a permanent beginner. ■

REFERENCES

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