mass, and everything is more mobile, including designers themselves. Major design studios have offices in various countries, with various country nationals in all offices. The author cites an example of a "British designer, working in the United States, designing a product for a Japanese client, to be produced in Taiwan, and marketed to a fifth country or more." What national design would one expect from that? Motorola's MicroTAC cellular phone is made in more than 200 versions for use around the world.

Today's designers must be chameleons, designing for any idiom. Of course, as they do it, they may be in fact be *using* national idioms. German design, for example is still thought of as solid and timeless. The French go for luxury and the bizarre. The Japanese lightness and miniaturization. And, there is still much national influence on design through function, if no longer form. One designer is quoted as attributing the fax creation in Japan to their difficulties in copying *kanji* ideograms.

There are objections to these conclusions, however. One designer said that we are confusing national with corporate, that much of what we see as national design is really that of a leading firm—e.g. Braun's work in Europe. Another said so called national designs are really local designs, within countries. Those still exist. Still another said that designers are artists, and that their inspirations come from everyday life—life practices that must reflect local cultures. He complains that we are urging biological diversity but design uniformity.

Lastly, an Italian designer said design, like language, is genetic and irrepressible; even though two thousand years from now there may be a universal language (such as English) he and most Italians will still be speaking Italian. The article seems to suggest that global design may be able to coexist with local or national designs, as languages are doing now.

How Bell Labs Creates Star Performers, Robert Kelley and Janet Caplan, *Harvard Business Review* (July-August 1993), pp. 128–139

This article concerns all types of knowledge workers, but their heavy role in product innovation warrants our attention. Too, the case used in the article is a Bell Labs engineering group. The article describes the firm's problem, the approach taken by the authors, and their findings and results.

It is well accepted that knowledge workers pose special problems for their managers. Their productivity is key to corporate success, but they already work hard and resist exhortations. They have options, including holding back on output, and studies show eight-to-one differences in productivity. Productivity has been thought to be primarily a product of innate differences, cognitive and social traits that are difficult to change.

Now it appears that cognitive skills are a necessary, but not sufficient, condition. Other factors are also necessary, and they *can* be improved by training. The authors tell how they tried the customary method for identifying the stars and for identifying how the stars differ from average workers. It did not work. Their conclusion: find those workers who are on management's star list *and* on peer group star lists (there's less than a 50% agreement between the two lists). Frequently, in the knowledge field, peers know more about what their colleagues do, who actually helped others, who pushed something along when it was idle, and so on.

Critical in all this is the fact that knowledge workers often work in groups, on teams. It's not surprising then that they identified cognitive skills (technical and other) as key, but also identified *work strategies* as the other part. Nine such strategies were identified, in this order of importance: taking initiative, networking, leadership, perspective, followership, teamwork effectiveness, self-management, organizational savvy, and show-and-tell (primarily making presentations). Taking initiative and networking turned out to be the key factors that were trainable, and on which even the experts said they were often confused and needed training.

The authors developed checklists of actions in each of the non-noncognitive areas, and selected some of the experts to help develop and then participate in a series of pilot training programs. In later programs (eventually covering more than 600 of the 5000 engineers) these experts became the facilitators and eventually the faculty. Results are cited in the article, including data for women and minorities, and the productivity increases are very significant. Productivity was continuing to grow a year after training, probably because the training focused on specific actions that could be identified and altered.

Several aspects indicate the flavor of the training. One is timing, the idea that networks must be created ahead of need, and they must be carefully cultivated by the individual's "contributions" early on and continuing. Average workers tend to try setting up a network when they meet a need for one, but such entreaties bring no answers to calls and e-mail messages. So the

trainers had to carefully define each of the nine factors.

On another angle, stars consider show-and-tell as icing on the cake—helpful but not effective without the basic work ahead of them. Logically, average workers rate show-and-tell higher because they see colleagues making good presentations and getting rewards—and conclude that one caused the other. This is an example of how average workers turned the priorities of the nine factors upside down.

And taking initiative led to many surprises—average workers misread what it means, and see their own actions as ample. Stars spot immediately when a worker takes initiative in the wrong way, or at the wrong time, or with inadequate push. Results count.

The article has many more case details of interest to training professionals.

Mass Customizing Products and Services, B. Joseph Pine II, *Planning Review* (July-August 1993), pp. 6–13ff

For some time various firms have been changing their operations to increase value to their customers by what is now coming to be called mass customization.
Mass customization is seen in five variations, in a sequence from the quick and easy to the most complex. Few firms could go through the five, step-by-step, but most can see at least two usable stages, the lesser one to permit learning and adaptation in development and production.

1. ***Customize services around existing standard products or services.*** Staying with standard products permits production efficiencies, but the added services customize what the customer actually buys. Northwest is getting ready to offer Worldlink, a bundle of services available at the seat—intended for long flights, the passenger can watch a choice of movies, see a sporting event, shop, etc. They decide what they want to do, while the standardized flight itself is going along.

   A variation on this first level of customization is to study the customer's use of a product, and then prepare to offer any and all products and services involved in their use of the primary item. Subcontract if necessary, but be the general contractor.
2. ***Mass produce customized services or products that customers can easily adapt to individual needs.*** That is, make what it takes for the *customer* to do the customizing.

   Application-specific-integrated circuits (ASICs) are an example—engineers have a wealth of options so they can program operation however they want it. Prodigy offers a menu of services its customer uses to build the "product" wanted.

   This second level is, again, fairly easy to produce. Development and marketing have to make the changes, but production and delivery have less disruption.
3. ***Move production to the customer to provide point-of-delivery customization.*** An example here is the "manufacture" of men's suits. A standard item comes from the factory, but local tailoring makes the standard item into something the customer is willing to pay for. The same goes for T-shirts, Lenscrafters, and copy shops. Part of the production function is broken off and assigned delivery retailers or other resellers. Progressive Insurance has a Pacman auto insurance claims service that runs twenty-four hours a day, seven days a week, actually coming right to the scene of an accident.
4. ***Provide quick response.*** Called time-based competition, this strategy calls for time reductions throughout the value chain. Production reduces set-up time, operations shortens the order-to-delivery time, development alters products to facilitate these reductions, and marketing sells to customers whose needs can be met with time-saving methods. Motorola reduced order-to-delivery time on its Bravo pager from over a month to three hours.
5. ***Modularize components to customize end products and services.*** Bally Engineered Structures provides an almost limitless variety of refrigeration structures—walk-in coolers, refrigerated warehouses, etc., by a single process that creates a panel of urethane between two metal skins. Seven shapes (e.g., a corner piece and a ceiling piece) are fitted into whatever combination the customer needs. TWA's Getaway Vacations purchases components of tours (hotel rooms, airline seats, buses, etc.,) and then packages them into tours that customers want. They can put together a tour in six minutes.

   Drawbacks to customization include the traditional economies of scale in one standard product, customers may complain that products are overly similar and confusing (General Motors' car lines) competitors can reverse engineer against customization easily, and may lead to less innovative products over time.