

Interview with David Tanner Director, DuPont Center for Creativity and Innovation (retired)



David Tanner, former Director of the DuPont Center for Creativity & Innovation is the author of *Total Creativity in Business & Industry*. His new book *Igniting Innovation Through the Power of Creative Thinking* is available at www.ignitinginnovation.com

During more than 30 years of service at DuPont, Dr. Tanner held many management positions including Research Director, Pioneering Research Laboratory and Technical Director, Industrial Products Division.

David has a PhD. in polymer science and holds 33 U.S. patents acquired in his early career as a research scientist. He is past-president of The American Creativity Association, and former Director of the De Bono International Creative Forum. Dr. Tanner is currently President of David Tanner & Associates, Inc., a consulting firm in Wellington, Florida, offering lectures, consulting and creative problem solving sessions. For more information, please contact daveet@aol.com

Interview conducted by Doug Berger, INNOVATE doug@innovate1st.com

Doug: How did you become involved with the field of innovation and creative thinking?

David: In the late 1980's, I was technical director of DuPont's Industrial Products Division, a group of seven businesses, including Kevlar, Nomex and Tyvek. We were under severe competitive pressure. We had strong programs on quality improvement, but so did everyone else. To maintain a leadership position, we decided it was necessary to generate entirely new ideas and concepts. So we decided to initiate a program and began by starting to do just that. We didn't announce a program, since resistance is often encountered when introducing a new management program. We took steps to provide a supportive environment for creative thinking and innovation, and to educate employees in the tools of creative thinking. The program expanded beyond the technical groups into the marketing, manufacturing, and business functions.

Over a period of a few years our division had many visible bottom-line successes. Corporate management noticed, and they asked me to organize and direct a DuPont Center for Creative Thinking and Innovation, to help spread this knowledge across the company.

Doug: You have an exposure to concerns of executives from around the world as a result of speaking with them regarding your experiences at DuPont. What are you seeing as their key concerns?

David: It varies quite a bit. In some cases, their primary interest is: "How do we enhance the environment for creative thinking and innovation in our organization? We want to have a more innovative organization. What steps might we take to do that?" In

other cases, their primary interest is the tools not the environment, and how to use these tools to solve problems.

Doug: Senior managers with a significant problem area comprise one class of interest. Their focus is, "What tools can you offer? Teach us those tools, and then facilitate us in those tools, in order to actually solve some of these challenging problem areas."

David: All innovations have a vital element in common: they're triggered by generation of a novel, useful idea. There are many tools for creative thinking. The one that most people are familiar with is brainstorming. In our experience, there are more efficient and more productive tools than brainstorming, i.e. Metaphoric Thinking and Edward De Bono's Lateral Thinking and Six Thinking Hats. I would say of all the tools, those are the most productive. (details are available in my first book, Total Creativity).

Metaphoric Thinking is a technique that generates new ideas and concepts by connecting the problem you're working on to a problem that occurs in an entirely unrelated system. The challenge is to understand how the problem was solved in the other system.

Let's start with a concrete challenge: finding an expanded market for Nomex, a flame retardant fiber. Its applications were limited because you couldn't add color through dyes. We had research people working on that problem for at least a couple of years, without any success. One of our researchers in our Pioneering Research Laboratory had attended some of our workshops on creative thinking and solved the problem using Metaphoric Thinking.

This was his reasoning: Nomex resists dyes because it has a very tight molecular structure. What other system do we know of that has a tight structure that is penetrable? Aha! The earth. The earth is difficult to penetrate, but it is penetrable. We dig mines, put up structure props, and the miners and equipment can go through. So what I'll do with Nomex is, I'll add a large, organic molecule to the Nomex polymer solution before we spin it. When the fiber is spun, it will be propped open and dyeable.

It worked. Dyes go in and then the structure collapses. This led to commercialization of an innovation called Nomex Color Guard. DuPont now had an industrial market in carpets, drapes and upholstery.

We can use creative thinking tools to solve mundane but perplexing difficulties. The legal department in DuPont was bottlenecked by too many meetings. They used a tool in Lateral Thinking based upon provocations. Provocations jolt our mind out of a normal pattern of thought, such as the use of a random word from the dictionary. The more foolish, the more impractical or ridiculous it is, the better.

The word, selected at random, was "bathroom." One of the people reasoned, "Well, when I go to the bathroom, I do what I have to do, and then I leave. So, why don't we all agree that in a meeting, when people feel that the speaker has covered what's of interest to them and is no longer holding their interest, it's okay to get up and leave?" They began to adopt that. If someone wanted to get up and leave – no big deal. It wasn't considered impolite.

Another Lateral Thinking creativity tool is escape. You escape from limiting assumptions that you take for granted. A corporate IT department used this tool for original ideas to reduce costs. One of the things they took for granted was: "We reduce costs by spending less money." They escaped from this with the provocation

"Let's spend more money." An idea that paid off was, "Why don't we spend more money, but on fewer vendors? We'll reduce the number of vendors. We'll place larger orders to some vendors, and we'll get better price breaks." This led to over \$1 million dollars a year savings, based upon a one-hour creativity session.

Doug: There are both the ordinary problems and the challenging, unusual problems that we run across in the course of our every day lives. For the most part, we approach them in very conventional ways. In listening to you, our readers are probably now curious about different tools to stimulate new ideas in areas that we trod over time and time again. Let's bridge to the area of nurturing an environment for creative thinking.

David: What paid off for DuPont was a culture change model, which had been successfully used in our Corporate Quality Improvement Program. We applied it to establishing and enhancing an environment for creative thinking and innovation in our technical organization, and later on applied it more broadly across the company. This model has four primary components: giving status to the effort, putting in place rituals, using totems and avoiding taboos.

In our case, the technical unit heads **gave status** to the effort by occasionally substituting monthly, day-long technical program reviews with spirit-building creativity seminars and workshops. This substitution gave tremendous status to the effort of learning and applying creative thinking tools.

Rituals are repetitive interactions. For example, we had periodic management visits to our sites. The final hour of the visit was reserved for a creativity social hour . . . a coffee and cake session with a creativity theme. In advance of these sessions, the unit heads would invite two to three individuals doing creative work to speak to their peers about their work. The highlight of those meetings was the enthusiasm of speakers as they described their creative ideas and how they were implemented. This helped colleagues to understand the meaning and value of creative thinking.

We can't just tell people to be more creative. We need to supply examples. Let me give you a case in point. The engineers in some of the organizations said, "Well, creativity's not for us. We're process engineers. Creativity is for the R & D people." When they heard a fellow engineer get up and say, "I came up with an idea that led to an increase in throughput of the process I'm developing by 30 to 40 percent, instead of a goal of 5 percent," the other engineers began to understand the practical value. They became more active in learning and applying the tools of creative thinking.

Totems are emblems of success which can be honored through reward and recognition. Now, this is a controversial subject because some organizations believe that this causes jealousy and reduces communication among employees who feel that others may use and get credit for their knowledge, etc. Our overall experience was that these concerns were outweighed by the benefits. For example, we might give people a dinner for two or allow them to go to a conference. We felt that this was very important and for us it worked.

Taboos are behaviors that are contrary to the values we seek to affirm; things that need to be eliminated from the culture. For instance, punishing employees for taking a risk that doesn't pan out is a taboo. It's much more productive in a creative environment to learn from mistakes, rather than to punish.

Once again, we didn't announce the culture change model. We simply started doing these things – giving status to the effort, putting in place rituals, rewarding and recognizing, dealing with taboos, and so forth.

The Center for Creative Leadership has a tool to measure the environment for creative thinking in an organization. We had them come in and measure our situation, and it came out very well. They were amazed that over 90 percent of the people participated. We came out well ahead of other organizations in certain categories. One category that we learned from and dealt with was that some people were dissatisfied with the credit, or lack thereof, that they were getting when they were on a team. If they were more productive than others in their team, the whole team got credit, and they weren't recognized as individuals.

Doug: In touching on this area of creating a climate, you have talked about the culture, creativity tools, problem solving sessions and the importance of auditing progress. Perhaps you can talk about how companies are using creative thinking tools, once they've come up with the idea, to actually deal with the bottlenecks of bringing an idea to commercial value.

David: Certainly. A major technology company on the West Coast had decided to develop the next generation of their bread and butter product. They had assigned over 20 engineers along with a project manager to come up with ideas. After several weeks, they came up with three different approaches to this next generation product. However, the program was stymied because they couldn't decide which of the three to pursue.

The tool that was most productive in resolving this was Edward De Bono's *Six Thinking Hats*. It's an ingenious tool based on parallel thinking rather than argument. After less than a day of discussion using this tool, all agreed on which of the three routes was most productive and had the best chance of success. Not only that, but through the process, they came up with enhancements to the idea, making it even better.

David: Please touch on your most recent book, *Igniting Innovation*, and the big ideas that you'd like to convey.

David: The primary thrust in the book is that there are two major sources of innovation: needs-driven innovation and discovery-driven innovation. Needs-driven innovation is something that we can control. If there's a recognized need in the marketplace or with a customer or a need in the workplace, you specify the need, and then you tackle it using creative problem-solving sessions, which use some of these tools.

Discovery-driven innovation is harder to predict. However, it's important to have an environment in which if an unexpected event occurs, it's not ignored, but is viewed as something unusual, and perhaps leads to something quite innovative. Teflon, for example, was discovered that way. So was Kevlar, for that matter.

While I give examples of both, most of the book focuses on needs-driven innovation and the importance of creating a supportive environment. I describe the culture change model that we talked about, the different tools, and give specific examples as to how the different tools were applied to provide bottom-line results, including cost reduction, new products and processes, and bringing new ideas to market more rapidly.

Doug: What other ideas in the book would you like to highlight?

David: There is a chapter on how to protect inventions. If you have a more innovative organization, the research people are going to come up with more inventions. The

book describes a process for accelerating the movement of ideas and inventions into the patent application system.

Doug: What points of personal importance would you like to share with our readers?

David: There is a chapter in the book on momentum. Companies spend a lot of money sending people to workshops and seminars on creative thinking, and that's a good first step. However, when people return to their desks, they get taken up with the urgent things that they're working on, and they don't really apply what they've learned. Some don't even know how to apply it. So, the book deals with how to maintain momentum in a creative thinking program after people have returned from training programs.

There are different ways to maintain momentum. One relates to the individuals themselves. The book describes examples of people applying some of the tools in home situations when there's been an issue that needs to be dealt with, where they have an immediate interest, and then how it's done at work. Another relates to how the organization can help to maintain momentum. The book describes two ways in fair detail. One is to form a corporate center for creative thinking and innovation. In DuPont, we trained over 100 facilitators in the different business centers to facilitate creative problem-solving sessions. Another is to encourage an informal creative thinking network across the company. At DuPont, we formed what's called the Oz Creative Thinking Network. It started out with 6 people and grew to over 800. A project of the Oz group was the publication of a book entitled [Are We Creative Yet?](#) It was recently republished through the American Creativity Association.

Momentum is also aided by tracking and publicizing trends in the environment for creative thinking and innovation, and successful bottom-line innovations. There are proven processes for doing this.

Doug: What concluding comments would you like to make?

David: The interview conducted by Doug Berger, whose style of questioning was insightful and stimulating, enabled me to communicate many of the basic concepts about creative thinking and innovation described in my two books. I wrote these books to share knowledge gained about the value of learning and applying creative thinking tools in an industrial environment, and the vital role of a supportive work environment. In my view, the basic fundamentals about creativity and innovation are timeless and essential for individuals, teams and organizations to achieve excellence in their search for ongoing bottom-line innovations. I hope that this interview will be of value to all readers of this innovator publication.

