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**Newsletter of the Creativity Division of the
National Association for Gifted Children
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ON CREATIVITY-THE IDEAL

The man who follows the crowd will usually get no further than the crowd. The man who walks alone is likely to find himself in places no one has ever been before.

Creativity in living is not without its attendant difficulties, for peculiarity breeds contempt. And the unfortunate thing about being ahead of your time is that when people finally realize you were right, they'll say it was obvious all along.

You have two choices in life: you can dissolve in the mainstream, or you can be distinct. To be distinct, you must be different. To be different, you must strive to be what no one else but you can be

Alan Ashley-Pitt

Inventing is practical. It is real. This issue deals with the subject that way. Both the lead (Mazer) and tail articles (Lougher) address the real world of inventors. Their results are powerful—they are all around us. The middle articles (Cooper, Valentino, Versic) are intended to provide insight into the minds, activities and output of creative/inventive youngsters.

Ron Versic, Guest Editor

ON INVENTING—THE REAL

“Great economic and social forces flow like a tide over half-conscious people. The wise are those who foresee the coming event and seek to shape their institutions and mold the thinking of the people in accordance with the most constructive change. The unwise are those who add nothing constructive to the progress, either because of ignorance on the one hand or ignorant opposition on the other.”

John Stuart Mill

And now, please submit your favorite creativity exercise to me for CREATIVITY NIGHT. Take a look at the back outside cover. Thank you. Ron

Mary Murdock,
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INTERVIEW WITH AN INVENTOR
RONALD J. VERSIC
INVENTORS COUNCIL OF DAYTON (OHIO)

VERSIC: *Please tell our readers a little about your background and career. What led you to become an inventor?*

Inventor: I was born during World War II, and I grew up in what you would call the nuclear family with a father who worked and a mother who stayed home, two older siblings, and one younger. I came from a family where the men were engineers or model makers—so they were paid to solve problems or to make things from a general concept. Around the house we always had lots of parts, machines, tools, and things like that because my father was an engineer.

I had an erector set and built all kinds of things from it. The first thing I remember conceiving and building was a little gun that would shoot two rubber bands. Of course, I couldn't take it into the classroom, but it was something to do.

My mother, for some reason, encouraged us all to go to art classes on Saturday mornings. I think she did this because my older sister wanted to do it, and my mother believed in treating us all fairly. So I went to art class and I learned to paint, to sculpt, and all of that. When I was in eighth grade, my father helped me build a go-cart. So I had parental encouragement and assistance to do these things—to make things, build things, repair things, take things apart. It's not that my parents actually said to do it, but that they let me do it. They let me do what I wanted to do.

In high school I became very science and math oriented, areas which tend to be more analytical. That continued through college and sort of cut me in half as a human. Science emphasized all the analytical methods and took all the art and the human part out of me. Fortunately, I had an instructor in graduate school who steered me to my doctoral thesis advisor, a true inventor—a Ph.D. who had U.S. patents and did industrial consulting, which in the 1960's was rather unusual. Professors were very academically oriented

then, and mostly unaware of any economic value of their discoveries. That advisor put me back on track of being an inventor. Actually, when you think about it, doing a doctoral thesis is inventing. It's finding a problem that has never been solved, defining it, solving it, writing and fully documenting the process and results, and relating them to the rest of the known knowledge.

Upon graduation, I was an inventor. I lost the inventive spirit trying to be a hard analytical scientist, and I gained it back in my last two years of graduation education.

VERSIC: *This issue of the newsletter focuses on inventing. How is technology changing our world and how we think?*

Inventor: There are really two large movements that I see. I travel to Europe two times a year. I go to South America, and I see a lot. First, computers are running everything. Even the simplest things are now done on computers. Secondly, we are approaching a true world society. The products people buy, the product promotion, and the way people think in business are all becoming world-oriented. There is a growing homogeneity in the business world, which isn't homogenous by any means, but it is also becoming more diverse in personal, private behavior.

Barriers are dropping. There are still artificial barriers like customs laws, but quite frankly, those barriers can't stop the flow of technology and know-how. Customs officials can't stop the airwaves. There are some natural barriers, such as time zones. I continually must think that continental Europe is six hours ahead, so I need to call them early in the morning. I have to wait until after ten or eleven in the morning to call California. There are certain business customs that I've experienced that don't show change, such as the strong, personal relationship necessary for business in Brazil.

The point is that computers seem to

control everything—even the most routine tasks. This makes manual and routine jobs disappear. People who can only do manual jobs are in surplus. They are in such surplus that employers don't pay much for them. They earn minimum wage. I also see that this technological environment is causing a leveling of prosperity around the world. The standard of living in the United States as measured in dollars of income has not increased significantly since 1972, as it did in the 1946 to 1972 period. The prosperity in other parts of the world is catching up, meaning that people have home appliances, automobiles, and other items they formerly considered luxuries. In other words, the slowing of economic growth is occurring in our personal lives but not in the rest of the world. People in other countries are acquiring the things that we now have. This puts a strain on resources. This leveling of prosperity is a definite worldwide trend.

VERSIC: *What kind of a technological world will our children live in? What kind of thinking skills will they need to keep up?*

Inventor: Let me start with a little background. I believe humans are not by nature rational or logical people. We must be educated and trained. Learning to be rational and logical is part of the necessary training that scientists, engineers, and attorneys, among others, go through. Computers run by logic, and if we are going to learn to use them and be comfortable with them, we must learn to be as logical and rational as we can be. Otherwise our thinking will always be in conflict, and we won't be able to use them well. So we need to understand and use logic. We need to see order in things. We must be able to remember, correlate, and relate. We must be able to reflect back. When we hear the things a politician tells us, we must be able to reflect back six months or a year later and say, "Is that really true? Was it really significant and relevant to my life? Or was it something generated to grab my interest or my vote?" We need to take the abilities of common sense and wisdom and learn them at younger ages.

We are entering a much more complex

life than we've ever seen in mankind's history. I saw a statistic that said the Sunday edition of the *New York Times* contains more information than a person in 1896 would encounter in an entire lifetime. I am inclined to believe that's true. We're now entering a world where we need to learn so much, and what we have already learned has changed. The ability to think, to filter out, to correlate, and to reflect back is more important than ever before, and probably begins to define and determine why there are "haves" and "have nots" and why we have unequal growth of incomes in this country. People who have no computer skills and no analytical thinking ability are minimum-wage people—people who have developed computer skills and possess analytical thinking are high-income people. They are, for example, engineers, upper management, and attorneys.

VERSIC: *How do you combine creative thinking and technology to come up with inventive ideas no one has thought of before?*

Inventor: When I see a problem or an opportunity, and I must admit that not all problems are opportunities, I look at the approach I want to take. I decide if I want to look at this problem analytically (with hard numbers, graphs, and charts), or if I want to solve this creatively. That's my first question. Sometimes there is a blend.

When I solve problems creatively, I can think outside the rules or laws, but ultimately I must live with them. So I can think outside the laws of physics, morality, society—but in the end, whatever solution I come up with must fit within those laws. The analytical approach isn't too hard. In my company we are continually getting problems, and we go back and use what everyone here calls the "bag of tricks." Where have we seen this kind of problem before? How did we solve it? What are the relevant technologies we have to solve it? That's a very good analytical approach. Sometimes creatively, we just sit back and ask ourselves, "What could we do? What would be some ways to do this." We don't worry about the laws of physics and chemistry

then. We blend laws and creativity.

Not all scientists are good at that. I know one scientist who is a walking encyclopedia of chemistry, but when it comes to creative problem solving, he is death. Everything that is suggested he thinks cannot be done. We have learned what techniques are appropriate to what problems. When it comes to creative problem solving, this particular scientist is not appropriate. He is highly appropriate to analytical problem-solving though.

We often try to solve problems both ways. We first make a decision between the two approaches. Sometimes, if we can't solve a problem analytically, we go after it creatively. Sometimes we just use the calendar. We sit and wait. We'll wait for weeks and something will come up. I love to go to flea markets, plant tours, conventions, and trade shows because often I walk in with a bag of problems to solve, and I see the solution in an unrelated area. That's the way we go after many problems by blending the creative and analytical approaches.



VERSIC: *What are your views on the use of technology (e.g. computers, the Internet) as tools in the classroom?*

Inventor: It is essential to teach skills for utilizing technology. The computer is a tool. It is a means to an end. It always bothers me, hours a day playing on the Internet, because they have taken a tool and made it an end. One doesn't pound a nail into wood for the fun of it. There's a larger purpose. We must realize that security and stability are illusions. As long as we live, change and insecurity are going to occur. The Internet and computers are tools to teach us what is changing and how to use change to our

benefit. The truism is true: learning is a lifelong experience.

VERSIC: *Are we sacrificing students' education in other subjects such as art to make way for computer literacy?*

Inventor: First of all, art is essential. There is no real difference among the activities of an inventor, an engineer, and an artist. They all use creative skills—they just have a different physical manifestation of what they produce. Art, whether it's play, music, or portraiture, produces or brings forth emotion. Good art makes me cry. That's a part of our life—a necessary part of human beings.

Computer literacy, as I said, is a tool—a means to an end. Computers have a value because they let us individualize learning. We all live and learn at different rates in different subjects. Computers add efficiency, enabling instruction or learning to move on an individual basis. It's not an either/or matter. Computer literacy is a necessity, but art is a necessity also if we are to be whole human beings.

VERSIC: *You teach the art of innovation and creativity to gifted students in two area inner-city schools. What creativity thinking skills do you emphasize? Why?*

Inventor: It is unfortunate that before I can talk about creative thinking skills, I have to address two other subjects. First, students need to stay in school and not drop out. In a society that doesn't believe in deferred gratification, this is very difficult. Some students would rather drop out of high school, get a job, live minimally, but think they are having a good time and enjoying themselves. Secondly, gifted students need to go to college. Both of these subjects are related to what students may face at an inner-city home. When these students go home, they may see people who never went to college and/or who went to high school and didn't complete it. They may be told, "You can't go to college. There's no money. There was no money for us and there will be no money for you. Besides, no one in our family ever went to college. Why do you want to be so different?"

This of course, is not really true for gifted students, particularly if they happen to be of a

racial or ethnic minority. Schools are actually looking for such students, but going to college requires consistent work. Put yourself back in the home of a socially or economically disadvantaged youngster in the inner city. They may not know anybody who goes to work every day. Maybe people get jobs now and then, but they don't work every day. They may not know people who have an education and who have good jobs that result from it. It is unfortunate that I have to talk about these subjects first.

I have used program where we take apart equipment. The purpose is to put equipment and tools in front of the youngster and to take apart the equipment. We asked: Who invented this machine? What does it do? What are the names of these tools? What are these parts made of? What do they do? If we take these parts and randomly disperse them, how do we assemble them to invent something new?

Then we get into deeper subjects. What were earlier versions of this machine? What will new versions be like? What kind of energy runs this machine? What kind of energy comes out? How does this machine work with people or things?

I start with something that looks like fun—taking apart equipment and not having to put it back together. But then I build into the higher-order thinking skills from that.

VERSIC: *You have created the inVenture program to ignite the creativity of students. Tell us about it.*

Inventor: InVenture is designed for grades 7-12. There are similar programs such as Invent America and Invention Convention designed for lower grades. Most of these programs try to follow a sequence of steps. The first step sensitizes students to their surroundings, problems, difficulties, and improvements that they can see. This is art, empathy, and feeling. It is not logical or rational, but from this students try to define the problem in written terms that are more concise, numeri-

cal, and factual.

Once students define the problem, they begin problem solving. We basically tell them it's okay to think differently. It's okay to look at things differently. At this point we are trying to allow creative problem solving—I'm not so sure we teach it as much as we remove the barriers and allow it to occur. Out of that, we look for some kind of concrete physical solution. We expect students to create a model of the solution to the problem, even if it is made out of cardboard. The students also outline how they will distribute, sell, and market the item. In the end, we have taken students through the entire inventing and business process. Each student has earned a junior Ph.D. in the inventing process by identifying and solving a problem new to him or her.

If you look at companies, you'll notice they are often called by two names—Proctor & Gamble, Hewlett-Packard, and Bell & Howell. Why? If you get back into it, you'll see that there is one person who is the creative genius, who can solve a problem, physically make the product, and put it on the loading dock; that's as far as it goes. Then there is another person who is a genius at marketing and distribution. This person can create the hype and the advertising, which isn't necessarily rational and logical at times. He knows how to appeal to people—to get them to buy the product. I usually call these two people Doc the Nerd and Sammy Salesman. Doc the Nerd is afraid of his shadow, but he is very truthful, honest guy. When he puts something on the loading dock, it really does what he says it does. Sammy Salesman comes up and says, "Hey, if I tell you this product cures cancer, are you going to buy it? Because it cures cancer?"

These two people would normally never get along, but they are both essential to a commercial enterprise. After all, when it comes down to it, we are really talking about creative people who are effective in society, who add to society, who support themselves

and their community, who create jobs and create prosperity. Both of these people are effective in breaking from established norms and creating a positive result.

But inventing can also be an everyday process of single events. People think of inventions as airplanes or nuclear reactors, but that's not really all inventing. Inventing can be solving everyday problems—little problems that we can solve quickly, cheaply, now, and effectively, and then go on with life. We may solve the problem, and then forget about the invention. But we have applied creativity to solving a tiny little problem. For example, something falls and wedges behind the refrigerator, and you need to get it out. You cannot move the refrigerator. You take a coat hanger, tape it to the end of a broom handle, stick it down behind the refrigerator, and pull the item out. When you're done, you take the tape off of the broom handle, crumple up the coat hanger, and throw it away. You have the lost item, and you go on with life. That's what I mean by simple, single-event, everyday inventing.

VERSIC: *Tell us about the Invention Fairs held at schools. Do you see students exercising creative thinking skills through their projects?*

Inventor: I see a great deal of variability, because students are variable. They have different abilities and creativity, different levels of sensitivity. I see some inventions that are absolute junk to me; however, the student has amazing selling skills to convince somebody to buy this. I see other students who apply great deal of methodology to refining their inventions. They come up with charts and graphs about how they got to the end. All of these students are doing well and responding well. They are just showing different abilities in that long process I described, which goes from sensitization all the way to marketing.

I'd like to emphasize that invention

fairs are for everybody. Inventing is an essential part of life. It is nothing but one manifestation of creativity, and in the Invention program, inventing can be creating a poem, a ballet, a song, or a story. We see a great deal of variability in the students, and we see a great deal of variability in the outcomes. I think that's good, and I think that's right.

VERSIC: *Do you have any closing comments for our readers?*

Inventor: People often are like fish in an ocean. We swim around, the temperature is about the same, the environment is about the same, and we don't recognize what is going on above or below the surface. Right now, as always in the last 300 years, we are undergoing a number of social and technological changes. One of these is the growing disparity in income in the United States. People are baffled by it because there appear to be multiple causes. My views on the causes should be clear from the prior comments.

One thing I see for sure—
youngsters who don't learn to think, who don't learn to use computers, who engage in dangerous social habits like illegal drugs and promiscuous sex, will always be at the bottom of the economic ladder. They will be so far down that they cannot support themselves. If they work full time in a minimum-wage job, they cannot truly live a quality life. This is all the more reason for people to acquire good thinking skills. If they want to be in a top socioeconomic group, they must be able to use computers, use technology, evolve with those changes, and make use of them.

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