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In This Issue . . .

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Creativity and Aging

By Gene D. Cohen, M.D.

Can creativity evolve with aging - maybe even flower with aging? If you belong to the "can't teach an old dog new tricks" school of thought, you may think that unless you've been an artist or writer or musician your whole life you're unlikely to be one in midlife - that increased creativity isn't compatible with growing older.

But research into fields as varied as neurology, behavioral science, and art history says otherwise.

So do the thousands of people who are finding that different types of creativity can accompany aging.

There is the artistic creativity of people like Bill Traylor, a folk art painter who didn't pick up a paintbrush until he was 85 years old. There is the exhilaration of the 81year-old whose late-life burst of creativity led to her discovery of literature, a discovery she felt changed her life.

Then there is social creativity, a deftness with interpersonal relationships, that older people, the keepers of the culture, have traditionally offered.

The point is not that every older person can or should be a Picasso, but that aging precludes neither-productivity nor creative energy. Moreover creative capacity after age 65 is considerably more common than most people realize.

The science of creativity

Creativity at older ages is not just a matter of anecdote; science has shown that the potential for intellectual growth with aging has biological underpinnings. Studies of the brain show that, in response to a more

Executive Trivia Question...

How did “Noxzema” get its name?

stimulating or challenging environment, brain cells sprout new extensions, improving their communication with other brain cells.

The same studies, along with behavioral research, indicate that brain cells respond to mental exercise just as muscle cells respond to physical exercise. Science, in short, supports the maxim "use it or lose it" when it comes to the aging brain.

Creatively speaking

There are several ways of categorizing the creative impulses of older persons:

1. creativity that continues with aging;
2. creativity that commences with aging;
3. creativity that changes with aging;
4. creativity in response to late-life loss.

There are famous examples of older people exuding creativity throughout their lives - Picasso experimenting with new styles of Painting in his 90s, Verdi composing new operas in his 80s, George Bernard Shaw writing new plays in his 90s.

But there are also many examples of ordinary people who turn late in life to creative endeavors not foreshadowed in their earlier years, bringing fresh zest to their adulthood.

Among my favorite examples are folk artists, many of whom turned to art after careers in unrelated fields.

William Edmonson, the first black artist to have a solo exhibit at New York's Museum of Modern Art, began to sculpt in his mid-60s, after the Great Depression forced the closure of the Nashville hospital in which he had worked all his life as a janitor. Sister Gertrude Morgan, who began and ran a New Orleans orphanage, took up painting as a hobby at age 56. Nine years later, when her orphanage was destroyed by a hurricane, she began to paint in earnest. Her art reached its maturity - and the walls of museums across the country - when she was in her 70s.

A Time to Reflect

Time to pursue new interests can be a benefit of aging. And age can bring with it a comfort with experimentation that might not have been possible in younger days. And then there's another dynamic that fuels the work of some older artists: their experience with life's losses.

The physician and poet William Carlos Williams put it eloquently when he wrote about "an old age that adds as it takes away." Williams himself suffered a stroke in his 60s, making it impossible for him to continue to practice medicine. He became severely depressed, requiring a year of psychiatric hospitalization at age 69. But he emerged from that depression and won a Pulitzer Prize for work he published a decade later.

And then there is the story of Grandma Moses, who took up embroidery at age 67 to cope with the loss of her husband. At 78, when arthritis made embroidery too difficult, Anna Mary Robertson Moses began to paint. Thus she launched a remarkable career that continued until she was 101, when she created her last, vibrant painting, "Rainbow."

All of this is not to romanticize late life loss but to recognize that men and women, without regard to age, often face loss by tapping hidden strengths.

Another way of saying it is that neither age nor loss precludes creativity; in fact, both can actually set the stage for creativity. Moreover, what is true in young life remains true in old age: We are limited in what we do only by our imaginations.

A Center for Creativity

Just off a noisy thoroughfare in a bustling Washington suburb, sandwiched between office buildings, apartments and parking lots, the Rockville, Md., Arts Place (RAP) offers a creative refuge to artists young and old. In a time of declining support for the arts, RAP shows that an art center dedicated to serving the community can still flourish.

The center brings together people of all ages from curious first-time dabblers to serious, full-time artists. RAP holds dozens of classes for children and adults, as well as panel discussions, art openings and summer camps for young people. Older artists are especially well represented among RAP's ranks, as students, members, teachers and resident artists. The dozen resident artists, the majority of whom are 50 or older, competed for the coveted studio space that RAP offers. This studio space has been a godsend," says artist Kathy Kahn, 54. “When I first got it, it was so wonderful. Having these big white walls totally changed my work.'"

At RAP, she says, she finds both a quiet place to work and a dynamic energy that comes from being around other serious artists.

Many of the RAP artists say that age has brought a freeing of their creativity and the confidence to explore new paths. “When you reach 50, its easier to give yourself permission to do what you've always wanted," says fabric artist Sue Pierce, 52, who has been making art quilts for 20 years. RAP Executive Director Christine Adams, 54, another fabric artist, also has grown more confident with age. "It used to hurt my feelings if people didn't like my work," says Adams, one of seven founding members of the center. "I feel freer to experiment now."

A tour of the center reflects RAP's commitment as a community center. Studios are lined with windows, so that visitors can watch the artists at work. An open studio door is an invitation to come in and discuss the creations. The hallways are lined with shelves where whimsical pieces of sculpture, crafted by children, are drying. In RAP's main gallery, staff and volunteers hang a new exhibit, one of 20 revolving shows RAP sponsors annually in its three on-site galleries. Some 2,000 artists apply each year for the juried exhibitions.

Under Adams' leadership, the center has developed programs for at-risk youth and disabled people and has started a coffeehouse for teenagers that regularly draws more than 50 kids. "We've become a regional arts center," says Adams. "I'm really proud of what we've been able to do for our community."

What's the right creative outlet for you? As you start to catalog your interests, think about some personal issues: Are you most interested in working alone or with others? What's your energy level?

Also, try not to pressure yourself. There's no reason to worry about failure, or being the best right from the start. The idea is to have fun, to learn about and express yourself through creative work. For many people, it's best to start small. Plant a seed, then cultivate it over time. Take a course on photography if you've always enjoyed taking snapshots. If you like the class, build on your interests - become the family's documentary photographer or film an oral history of your town.

If you like reading, set up a book club or share book reviews you've written with like-minded friends or through a newsletter.

If exotic foods are your interest, prepare more formal meals for your family, start a dinner club, write a cookbook of great international recipes.

Do something you enjoy - something that really lights you up, whether it is storytelling or chorale singing or telling jokes. Indeed, don't forget humor, it can be such a great creative spark.

The actor George Burns spoke with me about creativity and aging on the eve of his 97th birthday. He loved to perform, he said, but lower back pain was interfering with his act.

A friend had suggested that he sit down on stage if that would help. Burns reacted, saying "How can I sit down when all my life I've been a stand-up comic?"

But he decided to give it a try - and it worked. "In the future, if necessary, I'll become a lie-down comic," Burns said. Anything to keep his act - his life going.

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Executive Trivia Answer...

A product called Dr. Bunting’s Sunburn Remedy worked like a charm, but the name left something to be desired. Then one day in the early 1900s a customer told Bunting, “Your cream sure knocked out my eczema.” The clever doctor immediately combined the man’s two words “knocked eczema” and came up with “Noxzema”.

Thought To Ponder...

The worst mistakes come not from wrong decisions, but from not doing the right thing that never occurred to anybody to do.

-- Stewart Brand

The Idea Incubator

by Frank Helton

How can you tell when you have had too much sun?

University of Alberta physicist ***Stuart A. Jackson*** had just finished developing small labels that signal when bags of blood have been treated with enough gamma radiation to be safe for transfusions. That sparked an idea: Could the same approach produce a sticker for people to measure exposure to the sun's UV-B rays - the ultraviolet radiation that can lead to skin cancer? If so, then kids and sun-worshipers could tell when they've gotten enough sun for the day.

The challenge for Jackson, who is also chief scientist for Indico Technologies Corp. in Edmonton, Alberta, was to find a material that responds only to UV-B light. "With a little luck and lot of work," he recalls, Indico found a chemical that sheds hydrogen ions when struck by UV-B. Embedding that chemical in a plastic film, along with a dye that is affected by the hydrogen ions, yielded a patch that changes from clear to orange when the daily limit has been reached.

Indico Technologies plans to startup SunSpots Inc. in Bellevue, Wash., and launch the product next spring. After testing the stickers on family and patients, Yale University School of Medicine skin-cancer expert ***Dr. David J. Leftell*** signed on as head adviser to SunSpots. The price of protection? About $6 for 30 stickers.

How can we decrease the cost of wallpaper?

e-books, now e-wallpaper. It looks like digital printing technology could help save the shrinking wallpaper industry. Even with new home construction at a decade-long high, sales of wall coverings continued their slide last year, falling by $1.5 billion. For paper companies, making wallpaper is expensive, storing it can lock up capital for years, and old stock keeps new trends from hitting the shelves. Digital color printing offers a whole new set of economics, says consultant IT Strategies of Hanover, Mass., allowing suppliers to update patterns as tastes change, store them electronically, and print on demand.

How can we monitor the spread of fire ants?

Fire ants, destructive insects that come in red and black varieties, may be adapting to the cold. Since these invaders first migrated from the Southern Hemisphere to North America in 1918, they have spread across the southern U.S., stinging humans and livestock and killing other insects that get in their paths. But cold winters kept them from moving north of Tennessee. Now, a team of researchers from the University of Tennessee at Knoxville reports that a hybrid of the black and red species can live much longer at cold tempera- tures than either of its parents. This hybrid is already moving north in Tennessee, and cold tolerance may aid further migration. Scientists at the U.S. Agricultural Research Service (ARS) are deploying a new set of tools for tracking insects—including fire ants on the move. Bugs can be especially hard to detect when buried deep in plants or soil, and efforts to find them by removing the root mass or flooding can damage crops. As an alternative, the ARS scientists developed portable acoustic sensors that use microphones and accelerometers to convert vibrations into electrical signals. Working with varying soil conditions, the scientists were able to create audio profiles of different insects based on the pulses they emit when they move. The sensors detected insects within three minutes over distances of 10 to 30 centimeters with 100% accuracy when there was no background noise, giving growers a noninvasive tool for determining the extent of infestation.

How can we develop warheads against malaria?

Malaria changes its form several times in the course of invading the body, reproducing in the liver, and bursting out to infect blood cells. Not only does this enable malaria to stay a step ahead of the immune system, but it also makes developing a vaccine a fiendishly difficult task.

To fight back, scientists have been trying to find ways to prime the immune system against more than one of malaria's stages. In what may be a promising step forward, a team of researchers led by ***Altaf A. Lal*** at the Center for Disease Control put together a synthetic gene made up of 21 pieces of DNA taken from nine different malaria genes representing four different stages of the parasite. In experiments described in the February issue of the *Proceedings of the National Academy of Sciences*, the researchers then immunized rabbits with the protein made from the gene. They showed that the rabbits responded by making antibodies capable of attacking and possibly blocking the parasite in several of its stages.

That's better than just one stage. But scientists caution that humans vaccinated with the synthetic protein probably wouldn't be protected against malaria. For one thing, the artificial protein doesn't have the same shape as natural malarial proteins. So antibodies generated in response may not be ideal. Also missing is a way to deliver the vaccine so that it stimulates killer T cells as well as antibodies. But in the long struggle against a parasite that kills up to 3 million people a year, the new approach may point toward eventual success.

How can we get to Mars in a hurry?

Mars-bound astronauts may someday take the A train. A for americium, that is. Researchers at Israel's Ben-Gurion University figure an americium-fueled rocket could make it to the red planet in as little as two weeks, not the eight months or more that the 300-million-mile jaunt now takes.

There's a hitch, though: The americium needed is the 242m isotope, a rare and costly nuclear fuel. Moreover, nuclear-engine research has been shelved since the early '60s, in part due to the problem of lifting heavy uranium fuel, plus a radiation shield, into orbit. But with Am242m, things could change dramatically, according to a team headed by Israeli nuclear engineer, ***Yigal Ronen.***

A nuclear-propulsion system using Am-242m could slash the weight of the fuel by as much as 99%. It could also eliminate the weight of a separate engine, like the one on NASA'S Deep Space 1 probe, which uses solar panels to power an electric engine that spits out xenon ions. Because thin strips of Am-242m don't absorb the high-energy particles produced by fission, as fat uranium rods do, the particles themselves could be vented to provide thrust. Ronen admits there are many engineering hurdles ahead, but he's confident the A train will eventually make interplanetary stops.

How can we make an internal cast for a broken bone?

Forget heavy plaster casts around broken legs and arms. A better method would be to slap an internal cast around the bone itself - using the same instant-hardening gook that dentists use to fill cavities. ***Amy K. Burkoth***, a graduate student at the University of Colorado, has developed a polymeric system that can be tailored to provide bone-hard strength over various healing periods, then degrade into harmless substances the body can dispose of. Now, she's looking for funding to start a company and market the technology.

How can we fight cancer with a pill?

Toasting the end of summer with beer rather than red wine might do more for your health. ***Donald Buhler***, a biochemist at Oregon State University, has found that the hops used to make beer contain a powerful antioxidant. Called xanthohumol, it's stronger than similar cancer-fighting compounds in red wine, green tea, citrus fruits, or tofu. For maximum antioxidant effect, Buhler says, the best way to take xanthohumol would be as a pill. Perhaps soon you'll pop your hops.

How can new inventors get valuable information free?

Many wannabe inventors don't get much benefit from outfits that promise to help sell their ideas. So professional inventor ***Ronald Riley*** in Grand Blanc, Mich., is launching a Net mailing list to aid neophytes. He has lined up a panel of 20 experts to field questions in such areas as marketing inventions and patent law. Information about the mailing list is at www.InventorEd.org/forums/InventorEd-L.html.

Kids Ask the Hardest Questions

by Thomas E. Ollerman, Ph.D.

How can birds sleep with one eye open?

Sleep researchers at Indiana State University say most birds have evolved the ability to sleep with one eye open and one half of their brains awake, a phenomenon called unihemispheric sleep. According to ***Niels C. Rattenborg***, the study's lead researcher, this means the birds can get much needed rest while simultaneously watching out for lurking dangers.

To understand when, and why, birds sleep this way, Rattenborg's team videotaped resting mallard ducks. They found that when the ducks were arranged in a row, the end ducks spent three times longer in unihemispheric sleep than their center neighbors. Also, the end ducks controlled which side of the brain slept and which side stayed awake, orienting their open, wakeful eyes toward perceived threats and away from the other ducks. Measurements of brain-wave activity confirmed the behavioral studies, proving a one-to-one correspondence between open eyes and wakeful brains. Can humans sleep like this? Unfortunately not, although Rattenborg says that some sleep disorders, like sleepwalking, may have their roots in unihemispheric sleep.

How does the same thermos bottle keep hot things hot and cold things cold?

To solve the problem, all you have to do is think of heat as a kind of liquid that flows only "downhill" from high temperatures to low temperatures. The thermos bottle acts like a dam that blocks the flow of heat. It won't let heat flow "down" from your hot chocolate inside to the lower temperature air outside. But by the same token, it won't let heat flow "down" from the outside air to your lower temperature iced lemonade inside.

Another way of saying this is that the walls of the thermos bottle are a very effective heat insulator - a substance or arrangement of substances that retards the flow of heat. We're most familiar with using insulators to keep heat from flowing out of our warm bodies and houses into the cold outdoors; ski jackets, sleeping bags, and attic insulation come readily to mind. But your refrigerators are also insulated, in this case to keep heat from flowing in. Insulators work both ways.

Heat, of course, isn't a liquid, even though it does flow from one place to another. It moves in three ways: by conduction, by convection, and by radiation. Let's take them one by one and see how a thermos container fools them all.

Put a cool object in close contact with a warm one and you know what will happen: The warm object surrenders some of its heat to the cool one, so that the cool one becomes warmer and the warm one becomes cooler: Some heat has been transferred, or conducted, from the warmer object to the colder one.

But what is heat, anyway? It is the agitation, or movement, of an object's molecules. The more vigorously its molecules are moving, the warmer it is. So when you place a warm object (having rapidly moving molecules) in close contact with a cooler object (having slowly moving molecules), some of the faster molecules will collide with the slower molecules, transferring some of their energy to the slower molecules and speeding – warming - them up. That's conduction: direct molecule-to-molecule energy transfer.

When you touch a hot frying pan handle, your skin molecules are speeded up by collisions with the frying pan's faster-moving molecules. When you touch an ice cube, your skin molecules lose some of their speed through collisions with the ice molecules.

A thermos container hinders conduction because it has double walls with nothing - a vacuum - in between. Because there are no molecules in a vacuum to collide with, heat conduction can't take place through it.

Convection is the process whereby heat is transferred from one place to another by the actual bulk movement of a heat containing gas or liquid. You've heard people say that heat rises? What they really mean is that hot air rises, and along with it goes the heat it contains. That's convection. A convection oven is simply an oven with a fan in it that assists the circulation of hot air. In that case, the process is called forced convection.

A thermos bottle hinders convection simply by being a closed container.

Business View

by Thomas E. Ollerman Ph.D.

Kodak Asks Teens To Design Case That Clicks Most

For decades, Eastman Kodak Co. has turned to engineers and designers to craft products. Now, the world's biggest photography company is enlisting a new kind of expert: teenage girls. Kodak is using the teenagers - in person and over the Internet - to design a camera-case/accessory set that will be packaged with its disposable cameras and sold for a premium price for the back-to-school season.

Design experts say Kodak is one of the first companies to give consumers so much direct input. For Kodak, which has struggled to shake off its Old Economy tag and look more innovative, teenagers have been identified as a target demographic group. But others also are beginning to turn to kids for design help. Last year, Amazon.com Inc., the Internet retailer, launched a contest for the best toys invented by kids. Later this year, Amazon plans to sell two of the winning entries, including a singing and dancing doll named Mr. Itchy Pants, created by an 11-year-old New Jersey girl.

After recruiting a panel of adolescents to choose the accessories they would like, to draw sketches of them and make other choices, Kodak has come up with three alternatives, now displayed on the Alloy.com Web site, which is geared to teenagers. Features of the case may include a lipstick holder, make-up mirror and change purse. After an Internet vote on the name, design and color alternatives participants would prefer, Kodak says it will make the two most-popular alternatives and package them for sale with its Max Flash disposable camera at $10 to $I1, about $2 more than the standard version.

Kodak hired WonderGroup Inc., a Cincinnati marketing firm, to begin the design effort. The firm turned to a recruiter with a national database to select about two dozen girls to meet in Cincinnati for a design session, leading to the alternatives posted on the Web.

Making Up Success

Susan Yee made a fortune because she couldn't find makeup that made her look good - so she made her own. She started the only beauty product company in America designed to suit Asian skin coloring and it is now a multimillion-dollar business.

Yee's inspiration was born out of frustration from a 1993 trip to the beauty salon with her sister Jane. "I got a make-over and thought I looked great," Susan recalled. It cost about $200, but when they stepped outside, Jane gasped in horror when she looked at her sister. "I looked terrible," Susan confessed.

Mainstream cosmetics, designed for Caucasian skin, have pink tones and are not flattering for Asian skin, which has yellow undertones, explained Susan.

"I knew other Asian women must be having the same problem."

Six months later, she and her husband ***Larry Weinberg*** created the Zhen Cosmetic Company in the kitchen of their St. Francis, Minn., home.

"It was a big personal risk," said Susan, who was district sales manager for a retail chain.

She mixed colors and created shades herself, then sent them to hired chemists to make products to her specifications.

"I wanted the products to be water-based, since Asian skin can be oily. And they had to be fragrance-free, since many Asians have sensitive skin," Foundation and powder came first. After a year, she added lipstick, blush and eye shadow to the line.

"I always wanted my own business and knew it would take hard work. It's not unusual for me to work fourteen hours a day."

First Nordstrom department stores, then JC Penney started carrying Zhen products. Nordstrom eventually dropped them, but the company took off after that. Susan and Larry quit their day jobs and rented an office and warehouse outside their home.

Independent analysts estimate the company now generates about $8 million in revenue a year. Susan is in negotiations to expand into the United Kingdom, Canada, the Netherlands, China, Egypt and other countries. "Miracles happen, but only if you work for them."

Western Union said, Thanks but no thanks to the telephone when ***Alexander Graham Bell*** offered the company his invention in 1876. A company memo referred to it as *"... an electrical toy ..."*