21st Century Manufacturing Capacity

THE FACES OF ENTREPRENEURSHIP
COVER STORY ❖

Faces of W.Va. Entrepreneurs

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Entrepreneurs ignite the spark to power our nation’s economy

By CHARLOTTE WEBER

Small businesses are the powerful engine that creates jobs in the American economy. They may be small, but there’s nothing small about their impact.

While small businesses may not generate as much money as large corporations, they are a crucial component of – and a major contributor to – the strength of local economies. Small businesses present new employment opportunities and feed the supply chains essential to the operation of the nation’s largest enterprises.

According to the U.S. Small Business Administration, America is home to 25.8 million small businesses. Since 1995, small businesses have generated 64 percent of the new jobs that have been created and have paid 44 percent of the total U.S. private payroll.

Certainly there’s nothing small about the impact of small businesses in West Virginia. Statistics show 97 percent of West Virginia companies are classified as small businesses.

If small businesses are the engine that turns the wheels of the nation’s economy, then it’s entrepreneurs who serve as the spark plug in that engine.

Although the definition of “entrepreneur” may vary a bit depending on whom you ask, the basic definition of an “entrepreneur” is one who organizes a business or develops an idea and takes responsibility for its operation, its profits and its losses.

Successful entrepreneurs are problem solvers. They look at a problem and see it as an opportunity. This may sound glib but it’s absolutely true. Successful entrepreneurs identify problems without solutions, then strive to supply those solutions. Of course, envisioning the solution is just the beginning — you then have to devise and implement it.

People who don’t like to take risks generally don’t have the qualities necessary to be successful entrepreneurs. Nor do reckless people who leap first and look later. If you’re to be a successful entrepreneur, you have to be able to examine a problem and decide if trying to solve it is worth the risk.

Famed inventor Thomas Edison, who gave us the electric light bulb, the phonograph and so much more, was of course an entrepreneur. So is computer guru Bill Gates, whose small start-up business mushroomed into an international giant. But so, too, is the guy next door who spends hour after hour in his garage, where he tinkers around with an odd-looking gizmo that may — or may not — ultimately earn him fame and fortune.

Brian Tracy, one of the nation’s leading experts on entrepreneurship, describes entrepreneurs as “a national treasure” and urges they “should be protected, encouraged and rewarded as much as possible.” Tracy is absolutely on target. Our nation’s future is in the hands of today’s entrepreneurs.

‘The Faces of Entrepreneurship’

Our cover story, “The Faces of Entrepreneurship,” takes an in-depth look at entrepreneurs in West Virginia. It offers a look at more than two dozen successful entrepreneurial ventures.

First, we start with brief profiles of four Mountain State companies whose entrepreneurial roots stretch back for decades. Over the years, Blenko, Homer Laughlin, Marble King and J.H. Fletcher have become legends in the ranks of West Virginia businesses.

Next we look at a collection of today’s businesses that display the kind of entrepreneurial spirit and flair that just may enable them to become tomorrow’s legends. The Robert C. Byrd Institute for Advanced Flexible Manufacturing (RCBI) is proud to have worked closely with many of the entrepreneurial businesses we profile.

And this issue offers still more to read on our entrepreneurship theme:

Since taking office as Huntington’s mayor, Steve Williams has frequently talked about the importance of small
businesses and entrepreneurs to Huntington’s economic future. Wanting to hear more from him on the subject, we sat down with him in his office at City Hall for the lengthy, candid conversation that begins on Page 14.

Joe Manchin learned a thing or two about business when, as a youngster, he worked in his grandfather’s grocery store and later when he worked in his father’s furniture business. Today, as a member of the U.S. Senate, he works hard at lending a helping hand to West Virginia’s small businesses. He writes about some of his recent efforts in this issue.

In each issue of CAPACITY, Editor James E. Casto writes about a new book from the business bookshelf. In this issue, he delves into Where the Jobs Are: Entrepreneurship and the Soul of the American Economy. As he notes, the book’s authors offer Congress a long list of suggested actions that would brighten the future of America’s small businesses and entrepreneurs. Here’s hoping the new Congress follows through on some of the suggestions.

“The face of entrepreneurship is changing in America,” writes Maria Contreras-Sweet, the Administrator of the U.S. Small Business Administration, in her insightful article on Page 60. As she observes: “More of those faces today belong to women, Latinos, African Americans, Asian Americans, native Americans, veterans, seniors and business owners who are socially and economically disadvantaged.”

**RCBI and Entrepreneurship**

For more than 20 years, entrepreneurs have been an important priority at RCBI. We’re committed to fostering entrepreneurship by connecting both new and existing small businesses with the resources they need to grow and prosper. The assistance we offer spans a broad range of technology-based opportunities, including Additive Manufacturing (AM).

Additive Manufacturing isn’t the wave of the future. The AM revolution is already underway, and with access to the leading-edge technology available at RCBI, you can turn your innovative ideas into reality.

Our Design Works labs offer inventors and entrepreneurs the tools they need to take their idea to market by shaping their concepts into three-dimensional digital computer models. Featuring computer workstations with the latest design software, the labs are set aside exclusively for individuals who need to design their products.

The completed digital file is then used in a 3D printer to produce a finished item or a working prototype by adding layer upon layer of a powdered, dust-like thermoplastic, composite or metal material. With the help of our trained staffers, you can use our 3D Printers to turn your concept into an actual item in hours.

This AM technology allows quick modifications and nearly instantaneous design changes so customization is easy and fast. 3D printing promises to create new industries, jobs and opportunities. You can use this innovation for a competitive advantage. We will show you how.

“**For more than 20 years, entrepreneurs have been an important priority at RCBI. We’re committed to fostering entrepreneurship by connecting both new and existing small businesses with the resources they need to grow and prosper.”**

RCBI’s Design Works labs are associated with the U.S. Fab Lab Network, an organization managed by the Massachusetts Institute of Technology’s (MIT) Center for Bits and Atoms. Since the Fab Lab launch in 2006, the initiative has evolved from a small association into a global network of local labs that enable invention and promote commercialization by providing direct access to digital fabrication tools with 3D Printers.

For more information about taking advantage of Additive Manufacturing with 3D Printers at RCBI, call us toll free at 800.469.RCBI (7224) or send an e-mail to additive@rcbi.org.

Another important effort at RCBI extends our innovation focus beyond traditional manufacturing to the farm-to-table food initiative. Agricultural Innovations at RCBI offers technical assistance to help West Virginians produce more food, more efficiently using the latest technologies and expertise.

The initiative involves realizing a vision that supports and enhances a vibrant local foods system powered by entrepreneurship and innovation.

To achieve this goal, RCBI supports innovation that helps resolve logistical challenges in the local food supply chain. Additionally, RCBI helps producers, distributors and buyers expand their network through advanced manufacturing practices and product discovery.

Agricultural Innovation is funded through a partnership with the Claude Worthington Benedum Foundation. For more information about Agricultural Innovation, contact us by e-mail at agriculture@rcbi.org.

Adequate funding is often a stumbling block for would-be entrepreneurs.

CONTINUED ON PAGE 6
Two continuing grant programs at RCBI have provided timely assistance for a number of West Virginia businesses and could be the missing link you need to get started on an exciting future.

A grant from our InnovateWV program will help you bridge the gap between concept and reality so you can take your idea to market. Combining your innovative inspiration with design, modeling and manufacturing assistance at RCBI, you’ll have the technology you need to jumpstart your idea, turn it into a prototype, then move it forward. Funding is also available for quality implementation and workforce training assistance.

Funded in part through the U.S. Economic Development Administration (EDA), the initiative is part of the West Virginia EDA University Center partnership among RCBI, Marshall University and Concord University. Share your idea with us and let us determine if we can help fund turning your idea into a commercial opportunity. Awards of up to $10,000 are possible. For more information, call us or e-mail at Innovate@rcbi.org.

Another important grant program, StartUpWV, is a joint initiative of RCBI and TechConnect West Virginia. The program assists startup ventures and small manufacturers in the use of high-technology manufacturing tools and processes to create new manufacturing jobs and to commercialize products.

StartUpWV is made possible by a grant from the U.S. EDA and funding from the State of West Virginia. For more information or for an application, call 800.469.RCBI (7224) or e-mail at Startup@rcbi.org.

As you can see, there’s a world of opportunity available at RCBI for fledgling entrepreneurs as well as successful manufacturers. All that’s required is that you reach out to us.

We hope you enjoy this issue of CAPACITY and its in-depth look at entrepreneurship. As always, we welcome your comments and suggestions regarding our magazine. You may e-mail us at capacity@rcbi.org.

Charlotte Weber is the Director & CEO of the Robert C. Byrd Institute for Advanced Flexible Manufacturing (RCBI).

Entrepreneurs, innovators, artists and manufacturers -- joined by tinkerers, inventors and hobbyists of all ages -- flocked to RCBI in downtown Huntington Oct. 3 for the inaugural West Virginia Makes Festival. Nearly 500 individuals, including more than 150 students from kindergarten through high school age, attended the celebration and design challenge. Sponsored by RCBI, Advantage Valley, the City of Huntington and Marshall University, the festival focused on innovation and fun with challenges, prizes and giveaways, as well as interactive attractions including this LEGO demonstration aimed at reinforcing STEM skills in youngsters.

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Dr. Stephen J. Kopp
MARCH 28, 1951 – DECEMBER 17, 2014

“The Marshall University family has lost a very dedicated president. President Stephen J. Kopp was an inspired and innovative leader who worked tirelessly for Marshall. As one of the longest serving Presidents of Marshall, he accomplished many things to help move our university forward. He created a culture of excellence at Marshall and worked to bridge the gap between leading-edge research and industry. We were honored to serve with President Stephen J. Kopp whether it be promoting manufacturing, hosting hundreds of West Virginia innovators and makers, or watching him captivated by the LEGO Robotic movement. We join the countless others in extending our deepest sympathies to all the family and friends of President Stephen J. Kopp.”

— Charlotte Weber, RCBI Director & CEO
No discussion of manufacturing entrepreneurship would be complete without reference to the emerging field of creative manufacturing that is making astounding progress in sustainable or green manufacturing – the vanguard of eco-entrepreneurs.

The modern environmental movement began in 1970 with the first Earth Day and the creation of the Environmental Protection Agency (EPA). Way back then our waterways and lakes were badly fouled with industrial wastes. The Cuyahoga River in Cleveland actually caught fire. Large portions of Lake Erie were a dead zone where no aquatic life could survive. The air in many of our cities was virtually unbeatable – much like Chinese cities today. The American people said enough was enough and made a commitment to clean it up.

Of course, manufacturing was caught in the headlights. Public utilities contributed their share to the pollution as did mining and agriculture, but manufacturing by its very nature – transforming raw materials into finished products – was a primary source of air and water pollution.

Manufacturing came grumbling to the table in the early years as government agencies were hammering out regulations to restrain pollution and clean up our air, water and land. From the beginning there was a dynamic tug of war between the regulators who were largely indifferent to the costs of their rules and the companies that had to fund the cleanup and still produce a profit – a tug of war that continues. A major bone of contention was the government’s reliance on strict prescriptive regulations and the industries that sought to replace them with “performance standards” that invited companies to find creative ways to achieve environmental goals.

But manufacturers took the lead and over the last 44 years have done a remarkable job of developing new technologies for operating factories with minimal impact on the environment. Over time, our entrepreneurs forged a new environmental industry in and of itself that enabled us to sell many of...
our breakthrough technologies to other industrialized countries. Today these entrepreneurs – increasingly referred to as eco-entrepreneurs – are on the verge of a new era in sustainable or “green” manufacturing that promises to be even more dramatic and productive than that earlier generation.

Sustainable Manufacturing

By sustainable manufacturing, which can have different definitions, I mean essentially the creation of manufactured products with processes that reduce negative environmental impacts, conserve energy and natural resources, are safe for employees, communities and consumers, are economically competitive and add value to finished products. The movement is being driven mainly by economics. Increasingly scarce and expensive raw materials, rising energy prices, demographic shifts and concern about climate change are driving manufacturing companies to redesign production processes.

To some, sustainable manufacturing is synonymous with “green” manufacturing and without question environmental concerns are a key aspect of it. The movement is being driven in large part by a new generation of young people who are acutely conscious of threats to our environment and determined to improve the communities they live in.

More fundamentally, the increased interest in sustainable manufacturing is a major extension of the continuing drive to improve quality, and the explosion of new technologies that apply to both products and processing in our dynamic manufacturing sector.

I have long believed that the sustainable/green manufacturing movement is a logical extension of the innovative mind of the great W. Edwards Deming, widely considered the father of the quality revolution. In his relentless quest for quality, Deming was a sworn enemy of waste – wasted materials, wasted time and wasted money. I have no doubt he would be an enthusiastic champion of the sustainable/green manufacturing movement.

The heart of sustainable/green manufacturing is the critical understanding

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that all natural resources are finite and that if we are serious about preserving our manufacturing operations we must invest serious time, thought and resources into finding ways to preserve those natural resources to the maximum extent feasible. To that end, our best and brightest manufacturing minds — a new generation of eco-entrepreneurs — are finding new ways to look at the manufacturing process as a circular flow or loop from material extraction through production to use and then after use through recycling, recovery and return to the supply chain.

This concept is not necessarily news. I recently watched a video report about the U.S. Mint in West Point, New York, where our government makes gold coins. The basic alloy of gold, silver and copper (gold by itself is too soft to make coins) is flattened out in sheets from which small circular plates are stamped, that will become the coins when struck with a die. The remaining metal in the sheets is obviously not thrown away, but rather melted down and used to make more sheets. The essence of modern eco-entrepreneurial manufacturing is to treat all metals as if they were gold and to recapture all of the material for practical use. As a practical matter, 100 percent use is seldom achieved (though I think the gold coin makers must come close).

Professor David Dornfeld, Chair of Mechanical Engineering at the University of California Berkeley, offers a set of guidelines for advancing sustainability that reflects the eco-entrepreneurial mentality at work.

- Avoid use of scarce resources in the first place if possible. If the product can be produced with less material or more readily available material, go with it.
- Light-weighting which employs lighter materials with higher strength to weight ratios (either by shape, allow content, material type or strategic reinforcement) that can meet the operating demands of the product with less material.
- Seek increased yield through improved manufacturing processes that result in more product from the input material stream. Reducing scrap, in other words. (Deming would have seen this as an extension of reducing defects).
- Reduce the footprint of resources, usually through new product development, meaning use of resources that require lower energy for processing or preparation for use in production. Here again is the need for creative eco-entrepreneurs to apply innovative thought to reducing energy consumption.
- Ensure high re-use yield and low “cost” of re-use. Re-use yield refers to the degree to which similar value of use is maintained for re-used materials. The use of gold in making coins is a prime example. Cost of re-use is the added resources required to re-use the resources which is not free. This must be accounted for in the re-use calculation to insure that you have a positive balance.
- Leveraged resources. Process technology in and of itself is not necessarily low impact but adds features to the product that over time make it a much lower impact. There may be situations in which use of a “higher impact” resource may be leveraged to produce a much lower life cycle impact in the use phase of a product.
- And finally – extended life. The longer a product lasts the lower the amortized impact. Generally this is better. It requires the ability to update products, accept “older” styles, design and build products to last longer, change consumer preferences to accept the longer use of the product — such as cars and trucks that last indefinitely.

Volkswagen

An excellent example of corporate eco-entrepreneurship can be seen at Volkswagen’s manufacturing plant in Chattanooga, Tennessee, the first and only automotive manufacturing facility in the world to receive platinum certification from the U.S. Green Building Council’s Leadership in Energy and Environmental Design certification program.

The VW plant is a classic example of eco-entrepreneurial spirit at the local level. It collects and re-uses rainwater, to flush toilets and cool its welding machines, a highly-reflective membrane used on 1.8 million square feet of roof surface to minimize the heat island effect by up to 50 degrees F, and superior building insulation provided by six inches of mineral rock wool, which results in 720,000 kilowatts each year in savings.

Unlike traditional shops that use water to collect paint overspray, the Chattanooga paint shop is the world’s first to use a dry-scrubber system. It collects the powder and sends it to a local company where it is used to make concrete. The ultra-clean paint shop will save 50 million gallons of water over a 10-year period. Also the dry-scrubber system makes it possible to recycle 85 percent of the air in the spray booths. This results in conservation of 42 percent power and 85 percent of heating energy.

Skylights are generously used throughout the building to provide natural lighting, reducing energy demand from light fixtures. Green power is supplied by the local hydroelectric dam. The use of LED lighting on the building’s exterior results in a 68 percent reduction in energy consumption accounting for up to 262,500 kWh savings each year as
well as a reduction in light pollution. The plant features the state’s largest solar array which provides up to 12 percent of the plant’s energy during peak production and 100 percent during non-production times.

There are dedicated carpool and vanpool parking spaces in the main lot in addition to preferred parking for low-emitting and fuel-efficient vehicles. The automobile manufacturing facility was built on a 1,350 acre brownfield site with no destruction of untouched nature. This plant is in the vanguard of eco-entrepreneurship – and it is poised to grow. VW recently announced it would invest $900 million to expand the plant to build SUVs, adding 2,000 jobs to the 3,200 already working there. Clearly, Volkswagen’s commitment to green manufacturing is not an impediment to growth.

**DuPont**

Few U.S. companies can boast a more dynamic commitment to sustainable/green manufacturing than DuPont which first formally committed itself to sustainability in 1994 and continues to be a leader 20 years later.

DuPont’s primary areas of emphasis are food where it invests 62 percent of its R&D budget in an effort to help end hunger; reducing energy consumption by reducing use of fossil fuels in favor of alternative sources; and protecting the environment. In all of these areas, DuPont is bringing to bear the formidable eco-entrepreneurial resources of an old-line company that has always been committed to innovation.

DuPont’s advances in energy efficiency and conservation are perhaps the company’s most significant in terms of overall potential for the entire manufacturing sector. In 2006, DuPont set a goal of growing its annual revenues by at least $2 billion from products that create energy efficiency and/or reduce significant amounts of greenhouse gas emissions. By 2011, they had already reached $1.9 billion in annual revenues from products that reduce greenhouse gas emissions and presumably have reached the $2 billion goal by now. DuPont estimates that its products will eventually contribute at least 40 million metric tons of additional CO2 equivalent reductions by its customers and consumers. Some examples of DuPont’s innovations:

- **DuPont Photovoltaic Solutions** represents the broadest portfolio in the solar energy industry with more than 10 products critical to photovoltaic production – designed to increase efficiency and lifetime of crystalline silicon and thin film photovoltaic solar modules which reducing systems cost and enabling the industry to reach grid parity faster.

- **DuPont is developing a portfolio of biofuels to help meet global transportation energy needs.** Biobutanol and cellulosic ethanol are two advanced biofuel technologies that will diversify the energy sector and reduce reliance on petroleum.

- **DuPont aims to be the leading supplier of Proton Exchange Fuel Cell Membranes into fuel cell systems that power automobiles, electronics and residences.** DuPont invented and continues to advance Nafton® membranes and dispersions which provide durability, performance and lower cost.

- **DuPont is in the forefront of wind energy which is expected to generate about 12 percent of world electricity needs by 2020, but success depends on reliability of generating equipment.** DuPont protects wind turbines by encapsulating the key components of the generator that protect them from extreme heat inherent in the generation of electricity. Products range from DuPont™ Kelvar® mechanical paper, which reduces weight and improves the structural rigidity of wind turbines to DuPont Electrical Insulation Systems.

- **DuPont contributes substantially to the continuing quest for greater vehicle fuel efficiency.** High performance DuPont engineering resins make possible replacement of metals parts and components, contributing to weight reduction, fuel savings and reduction of CO2 emissions. In a life cycle analysis of the use of virgin glass reinforced nylon in place of secondary aluminum for an engine component of the Ford F250 truck, it was found that lighter weight offset energy consumption in manufacturing, and over a 10 year period 100,000 trucks recorded a 77 billion BTU net energy savings and 11 million pounds of CO2 emissions were eliminated.

**Summary**

In sum, there are myriad technologies being developed by industry to advance the cause of sustainable/green manufacturing – some already in practice and others under development at universities, research labs and R&D facilities.

The critical ingredient in this multi-faceted explosion of creative innovation is a burgeoning population of determined eco-entrepreneurs determined to find new ways to perform old tasks that preserve our natural resources, protect the environment and enhance the quality of human life. We are building on the creative genius that propelled the explosion of industry, transportation and consumerism beginning in the latter 19th century and today holds the promise of even more profound change in the years ahead.

*Noted economist and author Jerry Jasinowski served as president of the National Association of Manufacturers and, later, The Manufacturing Institute. He writes regularly for CAPACITY.*
The future belongs to the risk-takers

By JAMES E. CASTO

In August of 2011, a few days after an ailing Steve Jobs resigned as chief executive of Apple, The Wall Street Journal wrote: “When the history of the past 40 years is written, who will be seen as the more consequential figure – the average American President, or a college drop-out who built the first personal computer in a garage and went on to lead the most important company of the 21st century? We’ll put our history money on Steve Jobs. … There’s a large lesson here about economic growth and its sources. … Another lesson here is that the future belongs to the risk-takers, who sense opportunities when others see only folly or danger.” There, in the proverbial nutshell, is the central premise of an important new book, Where the Jobs Are: Entrepreneurship and the Soul of the American Economy (John Wiley & Sons, $29.95), written by two veteran experts on the U.S. economy, John Dearie and Courtney Geduldig.

John Dearie is Executive Vice President for Policy at the Financial Services Forum. Prior to joining the Forum in 2001, he spent nine years at the Federal Reserve Bank of New York, where he held positions in the Banking Studies, Foreign Exchange, and Policy and Analysis areas. His writing has appeared in The Wall Street Journal, the Financial Times, Politico and American Banker, Geduldig is Vice President of Global Regulatory Affairs at Standard & Poor’s. Prior to joining S&P, she was Managing Director and Head of Federal Government Relations at the Financial Services Forum. From March of 2008 to November of 2011, Courtney served as Chief Financial Counsel to Senator Bob Corker, R-Tennessee. She also spent two years as the Deputy Assistant Secretary for Banking and Finance at the U.S. Treasury Department.

During the Great Recession of 2008-2009 and the difficult months that followed, nearly 9 million American jobs vanished. Today, the economy has largely rebounded but millions of Americans remain unemployed, underemployed or have grown so discouraged they’ve dropped out of the workforce. And, perhaps most alarming of all, Washington doesn’t seem to have a clue about how to put those jobless Americans back to work.

Dearie and Geduldig began exploring the reasons behind the nation’s job crisis – and how it can be resolved. Central to their effort was research based on Census Bureau data by scholars at the Ewing Marion Kauffman Foundation. They found that all net new job creation in 23 of the past 30 years came from businesses less than one year old – true “start-ups.” Thus, the two became increasingly convinced that the answer to putting Americans back to work lies in accelerating the creation of start-up ventures.

To explore that premise in depth, they set out on a remarkable road trip. Under the sponsorship of the Washington-based Financial Services Forum, they spent a summer traveling the country to meet and conduct roundtables with entrepreneurs in a dozen cities. More than 200 entrepreneurs participated – explaining in specific and often vividly personal terms the issues, frustrations, and obstacles they’ve encountered as they launch new businesses, expand existing young firms and create jobs.

Dearie and Geduldig expected to hear different things in different cities. Instead, in cities large and small in all regions of the country, the entrepreneurs’ obstacles consistently boiled down to six main points:

- Lack of adequate skills and educational preparation in the workforce.
- Immigration policies that discourage attracting skilled workers and keeping foreign students after graduation.
- Not enough sources of capital.
- Complex and burdensome regulations at the local, state and federal level.
- Taxes.
- Economic uncertainty caused by continuous manufactured fiscal crises in Washington, D.C.

“I don’t think it’s an exaggeration to say that the summer was a revelation to my colleagues,” says Rob Nichols, president and CEO of the Financial Services Forum. “I vividly recall them returning from the various roundtables they had organized around the country tremendously excited about the entrepreneurs they had met, what they had heard, particularly anecdotes and insights, and the implications for economic policy.” Dearie and Geduldig could have summed up what they learned that summer and put in a report that would be filed away somewhere and quickly forgotten – much like that wooden crate shunted off to a giant warehouse at the
end of “Raiders of the Lost Ark.” Instead, the two have put
their findings in a book, one that comes with some strong
endorsements.
Norman R. Augustine, the retired chairman and CEO of
Lockheed Martin Corp. says that “Before any candidates
for Congress are permitted to have their names listed on
the ballot, they should have to certify that they have read
Dearie’s and Geduldig’s book.”
Former MIT president Charles M. Vest, who died in
December 2013, had an opportunity to review the book’s
manuscript before his death. Vest, a Morgantown native
and West Virginia University graduate, pronounced it a
book that “will grab your lapels, look you in the eye” and
shout a clear message about the importance of start-ups.
Readers with scholarly backgrounds will be delighted to
know that the book includes more than a dozen complex
charts and graphs, along with 30-plus pages of footnotes.
But it doesn’t require a PhD. degree to grasp Dearie’s and
Geduldig’s three-part message:

First, young businesses are extremely fragile, and
yet, those new businesses that survive tend to grow
and create jobs at very rapid rates. Second, the policy
needs and priorities of new businesses are unique.
Policies intended to enhance the circumstances of
large corporations or even existing small businesses
– however well intentioned – often miss the needs of
new businesses. Third, policy help for America’s job
creators is urgently needed.

Accordingly, Dearie and Geduldig offer a laundry
list of suggested corrective actions, falling into a half
dozen broad categories.

First, they urge that Congress “establish a
preferential tax and regulatory framework to cultivate
new business formation and growth.” Essentially, this
would mean that businesses less than five years old
would have to be taxed and regulated differently than
established businesses.

Citing the frequent complaint from business and
industry that they can’t find people with the job skills
they need, the two call for a top-to-bottom shakeup of
America’s educational system, kindergarten to college
and university, with a goal of enhancing the “quality,
technical capacity and flexibility” of the nation’s
workforce.

Congress, they write, urgently needs to “modernize
immigration laws to attract and retain the world’s
best talent.”

They see new federal tax credits for those who
invest in start-ups and urge the Small Business
Administration to make its lending more available,
less complex and cumbersome and less restrictive.

Congress, they urge, should mandate a significant
reduction in “regulatory burden, complexity and
uncertainty.”

Increased federal funding of research and
development will, they say, automatically accelerate
scientific and commercial innovation and ultimately
create new jobs.

Finally – and this might be the most important item on
their long list – Dearie and Geduldig write that “reducing
fiscal and economic uncertainty” will accelerate job
growth. Of course, the odds are mighty long on seeing
that happen in the current partisan environment that now
prevails in Washington.

Yes, the future belongs to the risk-takers, people cut
from the same mold as Apple’s Steve Jobs and some of
the familiar innovators of yesteryear – Samuel Morse, Eli
Whitney, Thomas Edison, Henry Ford and others.

But the risk-takers clearly merit a helping hand if their
efforts are to flourish and produce some of the new jobs
Americans needs, and the authors of Where the Jobs Are have
performed a valuable public service by outlining how that
aid and assistance might best be rendered. Let’s hope the
White House and Congress are listening.

James E. Casto is the editor of CAPACITY.
Small business, entrepreneurship seen as key to city’s future economy

CAPACITY: Why is small business important to the city of Huntington?

With the exception of maybe a handful of really large operations, every business in our city is a small business. It seems to me that what’s important is that most of those small businesses are locally owned and controlled. Decisions about their future are made right here in our community, not in the executive suite in some distant big city.

As much as I’m pleased when any company decides to invest in Huntington, I would much rather see local people invest in a new business or expanding an existing one. While they will always have to keep a close eye on their bottom line, they’re going to make decisions based on local needs and trends. If people in Chicago are making a decision about a business operation here, all they are going to know is what’s on the balance sheet. They’re not concerned with anything else.

I may be a public official but I consider myself a businessman first and foremost. I was in banking for more than 25 years, and as a broker I worked closely with many, many businesses over that time. In the process, I learned about the importance of meeting customer needs. That’s what I’m trying to build here as may—
or – the importance of dealing not only with the people who live and work here but other people as well, including those who might be looking at perhaps bringing a business here.

If there’s any level of discretion in where they’re going to locate their new business, they’re not going to go into a community where they can’t have some level of certainty or dependability on what they’re going to be facing. If there’s some level of uncertainty, the answer is always going to be either “No” or “Not now.”

That puts the burden on us, as a city government, to define any fear or discomfort they might have and do our best to allay or overcome it. If they walk into a city hall looking for help and all they leave with is a list of telephone numbers and a message of “Good luck,” they’re going on to the next town on their list.

That’s why we’ve created the post of business services advocate, where there’s just one person they can deal with all the way – getting their business license, dealing with inspectors and such. Business people who come to City Hall are telling us that Sharon Pell is doing a bang-up job for us in that role.

CAPACITY: Let’s go back a little bit in time to when you were debating with yourself about maybe running for
mayor. You may not have written anything down on paper, but you must at least have had in the back of your mind some goals that you would like to accomplish as mayor. I’m betting that getting a fairer shake for businesses – and especially small businesses – was high on that list, right?

Absolutely, it was certainly a goal for me. In order for Huntington to prosper, to be transformed, it has to be seen as the most business-friendly community in West Virginia and this region. My thinking along that line began back when I was on Huntington City Council. I remember, even earlier, when I was an intern at City Hall back in the late 1970s, Councilman Harold Frankel said to City Manager Dick Barton: “Dick, the business and occupation tax is the worst tax you have on the books.” Barton looked back at him and said, “Yes, but it brings in the most money.”

Later, when I was working in economic develop-
ment, I was constantly being told by business people that the state’s B&O tax was a disincentive that kept companies from investing in West Virginia. In its wisdom, the Legislature got rid of the state B&O tax but left it in place for cities.

So when Mayor Kim Wolfe suggested that Huntington establish an occupation tax, I agreed to help him on that only if he would eliminate or begin reducing the city’s B&O tax. The bargain that was struck was that we would remove the B&O tax on manufacturing and cut it by half on retail and service businesses.

When I became Mayor, I advocated that the occupation tax was a bad idea and City Council agreed to repeal that action. However, we kept the elimination and reduction in B&O taxes.

When the city sales tax came along, I looked on it more or less as an experiment that would enable us to see what kind of impact it would have. Some people said of course that it would drive business out of the city. That’s not what happened. In fact, every year we have seen our revenue projections exceeded by 25 or 30 percent. It not only replaced the B&O tax dollars that we gave up, we’ve collected $2 million or $3 million more that we ever would have thought the B&O tax would have brought in.

Getting back to your original question: What was my aspiration when I decided to run for mayor?

Again let me say, my goal is to make Huntington the most “business-friendly city” in West Virginia and the region. And to do that we have to address some issues we’ve ignored for too many years.

Our long-time street flooding problem is a perfect example. By enacting a water quality fee we’ve addressed the problem for the first time in more than 50 years. That’s a long time to put up with flooded streets, intersections and underpasses every time there’s a heavy rainstorm.

And what’s important, it seems to me, isn’t just the fact that we addressed the flooding problem; it’s how we went about it. We formed a working group and brought to the table Marshall University, St. Mary’s Medical Center, Cabell Huntington Hospital, Steel of West Virginia, real estate developers, other business people and labor leaders – some of the best minds in the city.

What came out of our discussion was a consensus measure that’s palatable to business and raised the capital needed to start addressing the infrastructure needs that are at the heart of the flooding problem.

CAPACITY: You’ve talked about the opportunities ahead for Huntington and the role that small business can play in making those happen. Let’s explore that.

I see at least three areas in the city where exciting things can happen if we manage things right – one is the long-closed Huntington plant of ACF industries, a second is the Hal Greer Corridor and the third is Old Central City. All three are ripe for develop-
ment and if nurtured properly could put Huntington in the same league as Lexington, Kentucky.

The rusted-out ACF plant will never again be home to manufacturing. It’s just not in the cards. But it’s a huge tract of land adjacent to Marshall University and as big or bigger than the Marshall campus. It’s an ideal spot for a mixed used development that could include not only new MU facilities but housing, retail shops and perhaps other businesses. Small businesses certainly would be part of such a development.

In 10 years, people will not recognize Hal Greer Boulevard. The ugly 1940s-vintage public housing will be gone. In its place, will be new private development that will tremendously enhance this entrance to the downtown and will complement the huge investment that’s been made in the neighborhood by Cabell Huntington and Marshall. And again, there will be ample opportunity for small businesses.

The third area poised for growth, West 14 Street, is truly a diamond in the rough. The Old Central City neighborhood has everything that developers say is essential to growth. It has access to Interstate 64; it has access to water and rail and is near Tri-State Airport. And make no mistake about it; Central City is fertile ground for small businesses.

Yes, much of that opportunity will be in retailing. But the Heartland Corridor intermodal facility now being developed at nearby Prichard in Wayne County is going to have a huge spill-over impact on Central City, with potential investments in warehousing and perhaps light manufacturing.

CAPACITY: The first question we asked you was about the importance of small business to Huntington’s economic future. Let’s talk a bit about entrepreneurship, for the two certainly go hand in hand.

Small business is important but creating an entrepreneurial culture is even more important. I’m honored to be one of 11 mayors nationwide invited to meet with the experts at the Ewing Marion Kauffman Foundation. Headquartered in Kansas City, Missouri, the foundation aims at fostering education and entrepreneurship. I’ve been to three foundation sessions. At the most recent session there was an in-depth examination of the tax incentives often offered to lure new businesses. The verdict: such incentives are seldom worth the dollars they cost.

The main thing I’ve come away with after my visits to the foundation is a new recognition of the importance of technology in job creation and economic growth.

That, of course, brings to mind the Robert C. Byrd Institute for Advanced Flexible Manufacturing, which offers the kind of technology resources that otherwise are found only in the nation’s largest metropolitan areas. Other cities our size simply don’t possess them. One thing that’s clearly essential if our economy is to thrive and growth is an expanded ability for people to make things.

Taking a piece of steel and transforming it into something useful and valuable is what RCBI is all about and we’re extremely fortunate to have it here. It has to be a tremendous incentive to manufacturers thinking of locating here.

CAPACITY: Before we wind this up, let’s talk a bit about your “Huntington: Be Small. Live Large” effort.

What this new long-term initiative, which we debuted at a news conference at RCBI in April, is all about is supporting existing businesses, promoting local

SEE HUNTINGTON ON PAGE 65
By U.S. SENATOR JOE MANCHIN

From working in my grandfather’s grocery store and my father’s furniture business, to starting my own company, I have been closely involved in small businesses all my life. I learned at a very young age the importance of providing great customer service and going the extra mile to assist those in need, and I’ve applied this mindset to everything that I do, especially when I was Governor and now as U.S. Senator. I have always believed in this commonsense philosophy of retail government – truly listening to and taking care of the people you serve.

Today, West Virginia’s more than 120,000 small businesses make up an estimated 96 percent of our state’s economy. We all know that small businesses are the engine of our economy, providing the goods and services we depend on every day. Their success is critical to communities across West Virginia and to our country as a whole. The leaders behind our small businesses – like my grandfather and my father many years ago – face several challenges, but they power through each obstacle by staying optimistic and innovative in the face of adversity.

As a small businessman myself, I can relate to the challenges our small businesses face, and I understand all they contribute to make this country great. And, I have always put creating jobs and helping our small businesses prosper as one of my highest priorities.

In the past year, I have had the honor to participate in some major business announcements, tours and meetings across our state.

In May, I proudly joined RCBI, the U.S. Navy, ATK, Marshall University and others in announcing their partnership and investment in a $750,000 state-of-the-art 3D metal printer that will assist small businesses and manufacturers. This technology has the ability to print with a variety of metals and it gives companies – both large and small – the opportunity to test products before full production. By having this game-changing advanced technology, we are able to further position our state for economic development and help make our existing manufacturers even more competitive.

In June, Export-Import Bank Chairman Fred Hochberg visited our great state, and we organized an informational forum for West Virginia small business leaders. The Global Access Forum was a wonderful opportunity for small business leaders to network and explore their potential for sales and customer growth not just here at home but also on the global stage. More than 150 business leaders and advocates from around the state attended the event and learned about the available programs that will keep them competitive. I look forward to welcoming Chairman Hochberg back to West Virginia again and hosting another similar event for our small businesses.

My state staff has also been tremendously active in promoting West Virginia’s small businesses. Previously, they teamed up with the U.S. Small Business Administration to offer free business outreach meetings to business owners and leaders in our state who are in need of direction. These workshops focus on providing resources to West Virginians so that they can get their small business off the ground or build onto their existing company’s success.

In addition to hosting events in West Virginia, I have
also supported key legislation that greatly benefits our small businesses. In July, nearly $13 million was deployed by state economic development agencies to grow our small businesses in West Virginia. During these rough economic times, small businesses are having a tough time gaining access to the capital they rely on to make smart investments, hire more workers and expand their operations. That’s why it is important to make sure our small businesses have the resources they need to stay competitive, create more jobs and help move our economy forward.

This past January, I introduced the Small Business Mergers, Acquisitions, Sales, and Brokerage Simplification Act of 2013 to exempt brokers involved in mergers and acquisitions of privately owned small businesses from expensive registration requirements before the Securities and Exchange Commission (SEC). This bill would pay big dividends in the future to create and preserve jobs as the new owners acquire and grow existing businesses. The legislation also preserves other investor protections under both state and federal law. Small businesses that make less than $25 million in annual earnings or less than $250 million in annual gross revenue are exempt from the SEC’s expensive registration requirements.

West Virginia is a proud and patriotic state, home to countless veterans. They put their lives on the line for our country, and should be confident that their families will be cared for in times of need. That is why I was a proud cosponsor of the Veterans Small Business Protection Act. This legislation would help the spouses and dependents of veteran-owned small businesses after the service members pass away from a disability or in the line of duty. I know West Virginians share my commitment to doing anything that we can to help make the grieving process that much easier for our veterans’ families.

There is no doubt that our great country is the business leader of the world because of our small businesses. To remain at the top, we must continue to improve this engine of growth. By harnessing the talent already inside our borders, we can make West Virginia a better place to live, work and raise a family. West Virginia has never steered away from its essential building blocks for a better future: our location, our skilled, dedicated workforce; and a commitment to grow. And, we won’t start now.

U.S. Sen. Joe Manchin, D-W.Va., was sworn into the U.S. Senate on Nov. 15, 2010, to fill the seat left vacant by the death of U.S. Sen. Robert C. Byrd. Born and raised in the small coal mining town of Farmington, W.Va., Sen. Manchin was W.Va. Secretary of State from 2000 to 2004, following his service as a state legislator from 1982 to 1996. He was inaugurated as the state’s 34th governor in January 2005, serving until he resigned to take his Senate seat. He serves on the Senate Energy and Natural Resources Committee, the Senate Armed Services Committee, the Senate Committee on Banking, Housing, and Urban Affairs and the Senate Special Committee on Aging.
This precision metal bracket represents 641 manufacturing jobs in West Virginia.

We help make the part possible.

RCBI is committed to manufacturing in West Virginia and has provided technology, training and specialized assistance to more than 5,300 manufacturers that employ nearly 81,000 workers.
Tradition of innovation, ingenuity & Mountaineer moxie is alive and well in West Virginia

West Virginians have always made things. Most of the state’s early settlers who trekked across the mountains from Virginia in the late 1700s and early 1800s were limited to what they could carry on their backs or load on a pack horse. But they brought with them at the same time a rugged determination and an ingenious ability to make things.

They cut timber to make cabins, furniture and fences. They whittled wood into bowls, cooking utensils of all types, musical instruments, gun stocks and even toys for their children. They split oak into thin strips, soaked them and wove them into baskets. Blacksmiths forged tools and hardware. Tin-smiths fashioned kitchen utensils. Brooms were made of straw or corn husks. Candles were fashioned from tallow or beeswax and hardened in metal forms. Coopers bent wood into barrels for storage of grains and whiskey. Vegetables and nuts were boiled to make dyes. Carding wool, spinning the yarn, and weaving it into cloth were a part of the pioneer woman’s work.

Beginning in the 1830s and continuing for decades, successive waves of immigrants brought their unique talents and skills to the state’s small factories, its iron works, glass companies and, of course, the coal industry.

Looking back, it’s instructive to examine the historic roots of some of today’s legendary names in West Virginia industry:

**Blenko Glass Co. Inc.**

Blenko has been a family owned and operated company since 1893 and has been located in Milton since 1921. Its exquisite color, skilled craftsmen and imaginative designs have made Blenko world famous in the time-honored craft of hand-blown glass. The company is one of the few survivors of a West Virginia glass industry that once numbered more than 400 firms.
Beset by a list of problems—including soaring natural gas prices, foreign competition and a widespread switch from glass containers to plastic—virtually all those companies have vanished. But Blenko remains and continues to delight its countless customers.

Blenko long has been known for its stained glass, which can be found in St. Patrick's Cathedral in New York City, the chapel of the U.S. Air Force Academy in Colorado, the Smithsonian Institute in Washington, D.C., and elsewhere. The company began crafting its colorful hand-blown glassware in the 1930s in order to keep afloat during the Great Depression.

The Blenko Visitors Center, located at 9 Bill Blenko Drive, just off U.S. 60 in Milton, attracts thousands of visitors each year, especially during the busy summer travel season.

For more information about Blenko and its glassware, call toll free at 877-425-3656 or log on at www.blenko.com.

**Homer Laughlin China Co.**

Founded in East Liverpool, Ohio, in the 1870s, Homer Laughlin China later moved across the Ohio River into West Virginia, building at Newell in the state’s Northern Panhandle. The town of Newell grew up around it.

In the 1930s, the company introduced its famous Fiestaware, a stylish line of dinnerware featuring a streamlined modernistic design rendered in vibrant monochromatic colors. The original Fiesta was discontinued in 1973 and is now avidly collected. Certain older pieces have sold for as much as $2,000. In 2011, Fiestaware was featured on a U.S. Postal Service stamp as part of a series that celebrated pioneers in American industrial design.

Homer Laughlin’s business peaked in the years immediately following World War II, then suffered as imported dinnerware began to make deep inroads into the American market. To compensate for the loss of retail sales, the company began producing restaurant china in 1959, which now accounts for a large share of its business.

The company successfully revived Fiesta in 1986, which helped it remain competitive in the tough home dinnerware-market. Today, its Newell factory remains one of the largest potteries in the world.

For more information about Fiestaware and the company’s other products, call toll free at 800-452-4462 or log on at www.hlcdinnerware.com.

**Marble King, Inc.**

In Paden City, there’s a busy factory that operates seven days a week, 365 days a year. It makes marbles—a million of them every day.

Berry Pink was a successful businessman who sold marbles in the 1930s and early 1940s. The marbles he sold were manufactured by Peltier Glass in St. Marys. By the late 1940s, Pink was selling more marbles than Sellers Peltier’s plant could produce, so the two men joined forces and formed a new company. Pink traveled throughout the country hosting marble tournaments and giving away marbles at each stop. He became known as...
“The Marble King,” and that’s how the new company got its name when it was founded in 1949.

The Marble King factory in St. Marys was destroyed by fire in 1958. Roger Howdyshell, who managed the plant, moved the company to Paden City, where it remains today.

Howdyshell bought Marble King in 1963 and dedicated his life to running it until his death in 1991. His daughter, Beri Fox, is now the company’s president.

Marble King is a long-time supporter of the National Marbles Tournament. But today its marbles aren’t just used as toys but are integral to a number of industrial applications. If you shake a can of spray paint and hear it rattling, that’s not a steel ball bearing inside. It’s a marble. Steel corrodes and rusts. Marbles don’t.

For more information on Marble King, call 800-672-5564 or log on at www.marblekingusa.com.

J.H. Fletcher & Co.

James H. Fletcher launched his company in Chicago in 1937, determined to develop mine technology for both improved productivity and increased safety. The following year the company’s first product — a rubber-tired, battery-powered tractor — debuted at a coal show in Cincinnati.

At that time, roof control in coal mines wasn’t much different from what it had been decades earlier. Crews hauled, sawed and lifted massive timbers into place by hand. The advent of machines dramatically changed that. Fletcher introduced its first rubber-tired timbering machine in the 1940s.

In 1947, J.H. Fletcher moved its offices to Huntington and three years later opened its plant at 707 W. 7th Street. That same year saw the company introduce the industry’s first self-propelled roof bolter. Additional innovations followed over the years, and Fletcher’s name is now synonymous with mine safety.

Even after additions were built, the 7th Street facility was no longer adequate, so in 1990 the company purchased a 10-acre site on High Street in Huntington’s Altizer neighborhood where it continues to operate today.

In 2012, the proud company celebrated “75 Years of Innovation.”

For more information on J.H. Fletcher Co., call 304-525-7811 or log on at www.jhfletcher.com.

Ingenuity, determination and hard work. Lots of hard work. Those are some of the qualities that helped make Blenko, Homer Laughlin, Marble King and J.H. Fletcher some of the best-known and respected business names in West Virginia.

And they’re the same qualities found in many of today’s entrepreneurs, some of whom surely will go on to be tomorrow’s legends.

A sampling of them appears on the following pages.
Carl Grover, president of Engines Inc., says his company is constantly looking for new things to make – things that no one else produces.

Engines Inc. serves the rail and steel industries

Carl Grover, the president of Engines Inc., likes to tell the story of how he “came to the Huntington area from Logan County on Jan. 15, 1963, the coldest day of my life with a borrowed suitcase and $50 in my pocket.”

He says he’s held on to that old suitcase in case the day comes when he has to pack it and skip town.

That doesn’t seem likely.

Today, Grover presides over a company that has locations in Milton, West Virginia; South Point, Ohio; and Huntington that offer a total of 230,000 square feet of manufacturing space.

Despite its name, Engines Inc. doesn’t build engines. It manufactures rail car parts and major sub-assemblies and re-machines worn rolls of steel for steel mills.

It’s provided custom machining and fabrication for a broad range of customers for more than 25 years. Its high-tech equipment enables it to burn, bend, punch, roll, mill, turn and grind metal to any fabrication need.

For example, the company’s Milton plant has a combined plasma burning machine and punch that takes flat sheets of steel measuring 10 by 20 feet and punches up to 45 different sizes and shapes of holes for bolts, rivets or other type fasteners. Then it can cut the sheet into as many as a thousand pieces that become brackets, stiffeners and gussets for rail cars.

“It also has suction cups that come down and pick up the steel and put it in positions,” says Grover. “The finished parts feed out on a conveyor, where the operator inspects and stacks them.”

Over the years, Engines Inc. has also taken on some unusual jobs. Several years ago it created scaffolding that was used in renovations at the Washington Monument and the Jefferson and Lincoln Memorials and the painting of a “sky mural” on the ceiling of New York City’s famed Grand Central Station.

Grover says the company also assembled the largest mining dragline east of the Mississippi River.

“Every year, we look for new things to do and new products to make,” he says. “We look for things that nobody else does.”

The company’s name comes from the fact that Grover is a machinist by trade.

“I’m an engine builder,” he says, but he’s referring to race car engines. Auto racing has been a long-time passion for him. He’s made parts for race cars, built cars for dirt-track racing and souped-up cars for area residents.
From his home office in Barboursville, Bob Shell presides over far-flung network of business interests that stretches all the way to China. Raised in Logan, Shell recalls he enrolled at Marshall University with a dream of becoming an astronomer but found he couldn’t do the math. Instead, he left Marshall and followed in his father’s footsteps in the mining equipment business. Ironically, he’s had no trouble dealing with the math in his multi-million dollar business deals.

Today, his company, Guyan International Inc. is a leading manufacturer of high-pressure pumps used in mining, construction, drilling, timbering and other industries. Guyan has manufacturing sites in the United States and China, with distribution in the U.S., China, Europe and Africa.

In 1968, the Shell family was part owner of two businesses – Guyan Machinery, founded in 1913 in Chapmanville, W.Va. and Permco, a fledgling manufacturer of replacement hydraulic pump parts near Cleveland, Ohio. Shell’s father put his young son to work at Permco where his business skills could be honed. There Shell was successful in turning the struggling company around. Not satisfied to merely manufacture replacement parts, in 1976 Shell began producing entire hydraulic pump units.

Soon Shell began overseeing the family’s interests in both Permco and Guyan Machinery. In 1985, he initiated a leveraged buyout of Guyan Machinery. Later he also took over Permco in another buyout. “The companies really took off after that,” he says.

In 1989, Shell and his wife Lena moved to Barboursville, where their home is located on a wooded site just a stone’s throw from the Huntington Mall. “I found that with a fax machine, e-mail and a jet airplane, we could make our home the corporate headquarters,” he says. Shell visited China for the first time in 1980 and returned frequently over the next few years. Obviously, he liked what he saw and senses the sprawling nation’s economic prospects. His initial foray into China was in a joint venture with a Chinese company. Later, he formed a new wholly owned company, Permco (Tianjin) Hydraulic Inc. Ltd. In 1998, the company built a new modern factory in the Tianjin Free Trade Zone.

A second wholly owned subsidiary, Permco Fluid Power Manufacturing Co. Ltd., opened in Tianjin in 2006. And today Tianjin is also the home of Permco’s China R&D Center.

Shell was named to Marshall’s College of Business Hall of Fame in 1999. In 2005, RCBI honored him with its Distinguished Alumnus in Manufacturing award.
Wallace Metal Works is a true family affair

Matt and Tessie Wallace, the owners of Wallace Metal Works, aren’t afraid to embrace new technologies as they look for ways to expand their Kanawha Valley business.

A trained blacksmith, Matt established Wallace Metal Works in 2000, and Tessie joined him in the business in 2006. She handles much of the business side of the company, while he crafts the custom wrought iron pieces in their Tyler Mountain shop. Their business has grown steadily as they have developed new products and sought opportunities for financing.

In the early years, the Wallaces focused on larger installation items such as gates, railings and fences, but their customers asked for more affordable pieces, as well.

“They said, ‘We love your work, but I don’t want to spend thousands of dollars. Do you have anything for $20 or $100?”’ Tessie said. “I love ornaments, so we decided to do ornaments.”

The first year they crafted ornaments in the shape of grape leaves and dogwood leaves, expanding in subsequent years to ginkgo, holly, oak, maple and — for 2014 — redbud leaves. They developed other gift items, including candlesticks and bowls shaped like leaves and the state of West Virginia. These smaller items proved so popular that they struggled to keep up with the demand.

Matt’s father encouraged them to consider working with the Robert C. Byrd Institute for Advanced Flexible Manufacturing (RCBI). They visited RCBI Charleston, which offers a computer-controlled Abrasive Water-jet Cutting System that proved to be just what they needed to speed production. In 2012, the Wallaces received a StartUp WV Manufacturing grant that allowed them to take advantage of RCBI’s experienced staff and lease production time on the Water-jet Cutter to produce a large number of items at once. They continue to lease time on the machine to cut the metal pieces; the pieces then are returned to their shop where Matt hand-finishes them. The ornaments and gifts are available on their website (www.wallacemetalworks.com) and through a handful of retail outlets, including Tamarack and the West Virginia Marketplace at the Capitol Market in Charleston. They also have an online shop on Etsy.

In 2013, the Tamarack Foundation selected Wallace Metal Works for a three-year Artisan Entrepreneur Program, which provides financial assistance and business mentoring. The Wallaces also received a grant from the National Association of the Self-Employed (NASE) that paid for a new drill press. To their surprise, winning the first grant from NASE...
The Wallaces’ metal creations include everything from ornaments and gifts to railings and fireplace screens.

“The Wallaces’ metal creations include everything from ornaments and gifts to railings and fireplace screens.

“With RCBI, we’re embracing the modern side of what we do, but we’re also traveling and meeting artisans to learn the lost aspects of the craft.”

TESSIE WALLACE

put them in the running for the organization’s Achievement Grant, which they also won. The couple used that money to further improve their business, including making updates to their website on which their business depends.

The ornaments and gifts are currently a sideline, but the Wallaces continue to look for ways to grow this aspect of their business. Meanwhile the large-scale installations continue. For the last year, Matt has been crafting numerous items for one house at the Greenbrier Sporting Club in White Sulphur Springs. He has produced fire-screens, railings, and fire tool sets — all hand-hammered and quite detailed.

Tessie said remaining flexible about their business model and learning from others has been critical to their growing business.

“With RCBI, we’re embracing the modern side of what we do, but we’re also traveling and meeting artisans to learn the lost aspects of the craft,” Tessie said. “We’re trying to be the best we can in the industry.”
Tim Warden jumped at the chance to own his own business. His company was honored by the SBA in 2013.
“If you know your product well, and you understand what it can do and its limitations, you can make better decisions.”

TIM WARDEN

Warden finds success in the global economy

Tim Warden, a Beckley native, now does business as far away as Thailand, Australia and South America. He owns Engart Inc., a company that makes dust extraction systems for utilities, mining companies and a variety of other industries.

Warden was working for the Beckley-based company in 2003 when its owners decided to sell. Being in business for himself was something he had always wanted to do.

“When the opportunity presented itself, I jumped on it,” he said. “I could see some opportunity down the road. I felt like we had a niche product that we could make successful.”

Engart dust management systems use energy generated by a fan to encapsulate fugitive dust particles in atomized water. The company has set itself apart from its competitors by making its collection units more compact and more efficient than others on the market. The company manufactures the units in Bluefield and employs about 20 people.

Initially, Engart targeted only the mining industry but after Warden purchased the company, engineers redesigned the equipment so it could serve other industries.

“Our device had the advantages of being safer, simpler and lower cost. We redesigned the equipment and kept the concept the same, and started working other markets.”

The first non-mining customer was American Electric Power, which was willing to make an investment in the technology. Eventually, the systems were installed in several AEP facilities, including Mountaineer Plant in New Haven and the John Amos Power Plant in Winfield.

In the early years, the company was not heavily capitalized so managing the growth of the company was a critical concern for Warden.

“We had to grow a little bit at a time. We let our customers pave the way for us, and we worked closely with them to get into new markets and new parts of the country.”

Engart now services numerous industries and sells units throughout the United States and around the globe. The company was named the 2013 West Virginia Small Business Exporter of the Year by the U.S. Small Business Administration. Targeting overseas markets does present some difficulties, however.

“The cultures are different from one country to another, so it does have challenges especially with the first order or two. But we have good rapport with local people we work with, and that’s helped us.”

Warden's advice to others who went to become entrepreneurs?

“Do your homework,” Warden said. “You’ve got to come up with a product that works, but you also have to find the markets. Then you have to take the risks. Even today, we take risks all the time, developing new markets or branching out into new countries. If you know your product well, and you understand what it can do and its limitations, you can make better decisions.”
“As an entrepreneur there’s never a dull moment. You never know what’s coming but you look forward to every day because you know it’s going to be different.”

WADE LINGER

Wade Linger shows off the classic automobile his wife Jill owned when she was a teenager.
Wade Linger has started three companies since 1996. He is a serial entrepreneur. Linger said his entrepreneurial drive might be attributable to a fear of boredom.

“I was in the U.S. Air Force for eight years,” he said. “They taught me to be a computer programmer. It made my career. I worked for a couple of large companies before starting my own. I found those jobs, one way or another, became repetitious. For some reason I can’t take that. As an entrepreneur there’s never a dull moment. You never know what’s coming but you look forward to every day because you know it’s going to be different. Since 1996 when we started the first TMC there has not been a dull moment.”

Linger established TMC — The Manufacturing Co. — to build ignition interlock devices for drunk drivers. “We formed the company and designed that thing and tested the prototype and never did get it to work well enough to go to market,” he said. “I guess you would have to say my first foray into entrepreneurship was not successful in that way.”

“But it was successful in that the people on the board of directors of TMC who had invested some cash truly were angels. They asked, ‘What do we do next?’ I said, ‘One thing I do know is federal contracting and information technology.’ At that time Congressman Alan Mollohan and U.S. Senator Robert C. Byrd were active in bringing those types of opportunities to West Virginia, putting the FBI center and the NASA facility and many others here. I asked the directors to have a little faith and put a little money in and we would turn the manufacturing company into a high-tech software services company. They hung in there with me and we ultimately succeeded at that.”

In those early days Linger went after a variety of work. Examples:

- TMC designed and built a system for a Parsons pallet manufacturer that used electric eyes and some computer code to direct wood so a sawmill would get the best yield.

- Linger challenged some TMC employees to build a product based on biometric technology that the company might be able to market. “We came up with a system — you could put your finger on it and it would open a door, that kind of thing,” he said. “Today that doesn’t seem like that big of a deal but in 1997 it was.”

- A group from TMC trained the staff at assessor’s offices across the state on a new Windows-based system.

By 2004 TMC had 80 employees and about $10 million in sales. In 2005 Linger sold the company to Global Science & Technologies of Maryland.

In 2007 Linger established Wade’s Garage.
We started out in 1986, with two employees and no customers,” says J. Allen Mayo, president and CEO of Rubberlite Inc.

Today, the company has 140 employees and the products from its plant on Huntington’s Guyan Avenue are sold around the world — to more than 1,200 customers in 43 countries. The company manufactures high-tech engineered rubber and plastic foams that go into an almost unbelievable array of uses — from shoes and bras to cars and trucks, and even the Space Shuttle.

Rubberlite was founded by Mayo, who got his start in the industry working at American National Rubber in Ceredo.

“I started working at American National Rubber straight out of high school and continued there while I was going to Marshall University,” Mayo explains. “I worked there for 10 years, then took a job in Cleveland, Ohio, where I was general manager for a small startup company. After a couple of years I got homesick, so I moved my family back home. I had built up the company in Cleveland and thought I could do the same for a company of my own. My hometown seemed a good place to do it.”

Mayo put a business plan together and obtained a Small Business Administration (SBA) loan. Then, with help from the city’s Community Development Block Grant (CDBG) program, he set up shop in an old building formerly occupied by a Corbin garment factory. Mayo credits former Mayor Robert R. Nelson with helping the company obtain the CDBG funding.

The original Rubberlite operation occupied 8,000 square feet. Today, the company occupies a complex of buildings with a total of approximately 250,000 square feet. When completed, an expansion now under construction will bring the company’s total square footage to more than 300,000.

“Some people questioned why I would set up my business in Huntington,” Mayo says. “Something they failed to realize is that we were just a day’s drive or less from most of the markets we served at the time. Today, of course, much of our business is international.” The company has strong sales in Canada, Mexico, China and Europe. Last year it opened a sales office in Munich, Germany.

Mayo takes special pride in the fact that, while China...
J. Allen Mayo founded Rubberlite in 1986 in a 8,000 square foot building in Huntington. Today, the company occupies a facility of more than 300,000 square feet and has more than 1,200 customers in 43 counties around the world.

Rubberlite makes no finished products. Rather, it makes materials that go into products created by other companies in a lengthy list of industries, including footwear, automotive, electronics, medical and health care, sporting goods, aviation and aerospace.

Mayo says he believes that diversity of markets has been an important factor in the company’s success. If there’s a downturn in one market, there’s generally enough growth in another market to make up the difference.
Joe Eddy meets change head-on.
As president and CEO of Eagle Manufacturing, he guides a company that has evolved over 120 years from a glass to metal to plastics manufacturer. Change, he says, means survival, prosperity and growth.

“Eagle has been successful by not only having the ability to change and adapt, but by eagerly promoting and embracing change,” Eddy said. “First, we continue to change our products as markets change, adding new products and discontinuing products at the end of their life-cycle, which I refer to as ‘pruning to grow.’ Secondly, we also continue to change our manufacturing processes, materials and capabilities by making strategic capital investments for technology, equipment and facilities. Finally, we continue to seek ways to restructure to increase our productivity, flexibility, efficiency and effectiveness.”

Eddy’s philosophy has served the maker of industrial-safety and hazardous-material-handling products well since he became CEO in 2009. In November, the company announced a $10 million expansion of its operations in Wellsburg, Brooke County, where Eagle produces more than 1,000 products — 99.9 percent of which are made right here in West Virginia.

Eddy and his team have been quick to embrace new and emerging technologies, such as 3D Printing. The company’s purchase of a Stratasys 3D Printer and Design Works CAD software has paid big dividends.

“I gave my team a return-on-investment target of 12 months to justify the investment,” Eddy said. “In the first eight months of use, we have realized at least a 10:1 return-on-investment on the 3D Printer, utilizing it for prototype scale and full-size printing, prototype features, use and ergonomic testing, new materials testing, improved patent descriptions, scale models for trade shows, customer testing and regulatory compliance approvals.”

The addition of 3D Printing technology provides a competitive advantage, reducing time-to-market and production expenses. “3D Printing has made our new product process much faster, less costly and lower risk,” Eddy said.

Businesses, of course, operate in a climate of uncertainty and risk, dangers Eddy, rather than fears, astutely manages.

“From an innovative perspective, I believe you have to be willing to take more risks and be bold in your decisions. I have found that the worst scenario in business is indecision.”

JOE EDDY

Eagle thrives by embracing change and new technology

“From an innovative perspective, I believe you have to be willing to take more risks and be bold in your decisions. I have found that the worst scenario in business is indecision.”

JOE EDDY

SEE EAGLE ON PAGE 39
Entrepreneurship isn’t always easy. Just ask Robert Contaldi, owner of Fulmin Industries LLC, which he founded two years ago. But he does not regret his decision to start that first business – nor his purchase of a second one a year later. “Every time something gets boxed up and shipped out of here, that’s the real satisfaction,” he said.

Established in June 2012 in Ridgeley, Mineral County, Fulmin Industries LLC provides manufacturing, engineering and prototyping for the aerospace and defense industries. Fulmin International Inc., established in June 2013, provides products and services to assist with STEM (Science, Technology, Engineering and Math) education. The company manufactures products under the BotBrain Company® name www.botbrain.com.

BotBrain offers robotic sets and accessories for the classroom and other settings to reinforce STEM skills. Contaldi’s five-person company makes all the circuit boards and sensors and does all the programming for BotBrain in the same facility.

“We’re enamored with that part of the business,” Contaldi said of the educational product line. “It’s fun, and it’s inspirational.”

Contaldi has drawn on the resources of the Robert C. Byrd
Institute for Advanced Flexible Manufacturing (RCBI) for many years. The technical expertise of the RCBI staff also has contributed to the success of his venture, Contaldi said. He and his employees have trained with and leased production time on RCBI’s state-of-the-art equipment – ranging from more-traditional subtractive manufacturing using computer-controlled laser and waterjet cutters, mills and lathes to revolutionary additive manufacturing with 3D Printers.

He has plans to work with RCBI to implement an ISO 9001-based Quality Management system at his business. The modified quality system he puts in place will enable Fulmin Industries to bid on more government and commercial contracts that require quality certification.

“As a person who’s been in business a long time, you can’t know everything nor do you want to know everything,” said Contaldi, who himself is an engineer with an MBA. “RCBI has a plethora of experience and expertise to draw on.”

Contaldi observed that the biggest obstacles in running his own business have involved time and capital: There is never enough of either to accomplish all that he wants to do. He said he is split in “about 90 ways” as he handles the operations, marketing and sales for his company.

He also spends a great deal of time training employees.

“We’ll make the investment up-front if the person is willing to learn because having unskilled labor and not having them advance doesn’t really advance our company.”

Contaldi advises individuals who are considering going into business for themselves to make sure they have the commitment of everyone around them, because entrepreneurship isn’t easy.

“It’s tough on the family, and it’s tough on your social life,” he said, “but I love being an entrepreneur. I love making things, and I love creating jobs.”

ROBERT CONTALDI

EAGLE
Continued from Page 37

experience and the wisdom of others, and make a decision. Never let the fear of failure create paralysis from analysis. I believe the downside of failure is never as great as the reward of success. …”

A graduate of Marietta College in Ohio, Eddy had a successful career as a petroleum engineer and founded two successful start-up companies before accepting the job of marketing manager at family-owned Eagle. His educational background and career in the field of science “challenged my analytical and creative intellect, while also training me on risk management principles.”

Eddy’s more comfortable on the factory floor than in a corporate boardroom. He makes of point of getting to know each of his employees, listening to their concerns, understanding their jobs, and creating an environment that fosters creativity and innovation. He comes across as a man who clearly understands his company – where it’s been, where it is, and, most importantly, where it’s headed.

To budding entrepreneurs, he offers this advice:

“Question the status quo and always challenge assumptions. Take a product or service or anything you are trying to improve and ask a series of questions about it: Is there a better way … to make it? Questions are the creative acts of intelligence, and asking the right questions often causes your imagination to come up with just the right solution.

“Create a culture of creativity and innovation that encourages your employees to come up with new ideas for reaching your goals. …

“Understand your strengths and weaknesses, so that you can build on your strengths and shore up your weaknesses, so that you are always in a position to capitalize on opportunities and are prepared for any threats.

“Over 80 percent of all new products are initiated by our customers in an attempt to solve a problem. A successful strategy for innovation is, therefore, ‘know thy customer.’

“If you have desire, determination, dedication and self-discipline, use your mind and imagination, and are willing to work harder than your competition, you can shape the world to your desires.

“You can expect to have many challenges in the way of reaching your goals. Don’t let those challenges get you down. It is my experience that many times the toughest challenges present the best opportunities for advancement and growth.”

Did you know?

Eagle Manufacturing made the oiler for every Model T Ford and the oil can used by the Tin Man in The Wizard of Oz.
“The goal of Touchstone from the beginning has been to do creative things. I intentionally built a research facility without a particular central focus.”

BRIAN JOSEPH
Briian Joseph is one of those rare individuals who grew up to do just what he dreamed of doing as a child. “I had a laboratory in the basement, which the rest of the family called the furnace room,” said Joseph, the owner of Touchstone Research Laboratory in Wheeling. “My dream was to invent things, and that’s where we are today.”

Joseph is an ardent entrepreneur whose faith in his endeavor got him through the early lean years. The company now employs about 40 people at its facility in Wheeling. By design, the company does many things, including research and development, failure analysis, and materials testing.

“The goal of Touchstone from the beginning has been to do creative things,” Joseph said. “I intentionally built a research facility without a particular central focus.” Though lacking focus, the company has a “bias” toward material science, he said.

“Most things in life fail because of a material that’s not doing what we want it to do,” he said. “If you want to do creative things, material science is not a bad place to begin.”

Joseph grew up in Wheeling and studied biology and physics at West Liberty University. From there he attended Ohio State University where he studied biophysics before returning to Wheeling. In 1980, he bought a used electron microscope for $100 and rebuilt it in the basement of an old monastery.

“I started my business by going around and saying, ‘I’ll help you solve your manufacturing problems,’ and the business grew from there.” Eventually, Touchstone took over research for Wheeling-Pittsburgh Steel Corp. and became the prime research facility for Ravenswood Aluminum, now known as Constellium.

In the 1990s, Joseph’s company began participating in the federal Small Business Innovation Research program and applying for patents at a steady pace. The company has invented a variety of products, from new aluminum alloys to equipment that tells farmers the best day to pick lettuce in southern California.

One of the company’s most important products is CFOAM®, a carbon foam material made of coal that is lightweight, fire-resistant and impact-absorbing. CFOAM can be fabricated into variety of shapes and sizes for different uses, including molds for airplane parts. This focus is now a major part of Touchstone’s business: manufacturing CFOAM and molds for airplane parts.

“We’re expanding those businesses as fast as we can. We hired two more people this week,” he said.

A key factor in Touchstone’s success has been the workforce. In the Northern Panhandle, Joseph taps a pool of individuals who know how to make things – which is not the case in many parts of the country, he said.

“I can turn around and say, we need to build something like this, and there are about 20 people who can build it.”

Over the years, he also has sought the assistance of the Robert C. Byrd Institute for Advanced Flexible Manufacturing (RCBI), leasing time on its advanced machinery, including a 5-axis mill and an autoclave. He has since bought his own computer-controlled machines to expand his manufacturing operations.

“We are on our way to making an enormous impact,” he said. “I think you are going to see some pretty amazing things happen over the next three or four years.”

His advice to others who want to become entrepreneurs? Learn to communicate. Rely on public relations – not traditional advertising – when launching a new product and learn to assess and tackle your own weaknesses. Most importantly, resist giving up when times get tough.

“Most entrepreneurs fail because they quit, not because they can’t succeed. I’m a big believer in that,” he said. “There are good times and bad times in business and most people who fail go, ‘It’s getting too hard. I could go get a job if I’m going to work this hard.’ It took me 10 years to get beyond a poverty-level income in this business, but I never failed. You only fail when you give up. By the 11th year, this place just took off, and it’s been a wonderful ride ever since.”

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Touchstone founder solves problems one invention at a time
When we started out, we didn’t have any money, but we had a dream. And we didn’t ever give up.

KAY MCCLURE

Walhonde Tools Inc. of South Charleston designs, develops, manufactures and markets 10 different-sized patented precision tube and pipe fitting tools for the worldwide power, pulp and paper, petro-chemical, food and drug processing and shipbuilding/repair industries.

Walhonde’s customers include many Fortune 500 companies, the U.S Navy, NASA, contractors and international concerns. Not bad for a small, family-owned company that was created almost by accident.

The husband and wife team of Kay and Gary McClure formed their company after Gary, a construction boilermaker, thought there must be an easier way to fit pipes and boiler tubes together. He started tinkering, trying to develop a tool that would make things fit together a little better. He came up with a tool he called the Boomer that had two grips on it and a handle in the middle. The tool helped line up pipes and tubes a little better for welding. But he didn’t patent it. Instead, he simply tossed it into a closet.

But that changed in the mid-1980s. When construction jobs disappeared, Gary had trouble finding work. So he and Kay decided to do something with that almost-forgotten tool he designed. They patented it and decided to start selling it. The couple formed a company but didn’t know what to name it. Eventually, they christened it Walhonde, after the Delaware Indian name for the Coal River, where they had their little house.

Almost immediately, the young company faced a problem. During the time span from when the Boomer was designed to when it was patented, welding techniques had changed, and the Boomer wasn’t needed. So in the middle of the night, Gary came up with another design. “He woke up and told me to get him a piece of paper and sketched out his idea,” Kay said. “The next day he whittled the design out of wood. He called it the Buck. And when you put the Buck with the Boomer, it made what we called the Boilermaker, and it could be used in (the new type of welding).”

The couple took the two tools to their first trade show that year in Atlanta. The business quickly took off. At that point, Gary still was working as a boilermaker, so Kay went out to sell it. “Gary was working on a 900-foot stack at the John Amos Power Plant, so if there was a question I didn’t know the answer to, I’d beep him on his beeper, and he’d call me back when he had a break,” she said. “Or if customers wanted to talk to him directly, he could call them back. The customers never knew he wasn’t in an office somewhere, that he was actually working 900 feet up.”

Over time, the McClures heard people complain about having trouble fitting waterwall tubes in boilers. A waterwall is a row of narrow pipes in a boiler. So they developed a tool that could line up a single pair or two pair of tubes so welders could have an easier time putting them together. The tool, called the

McClures turn design idea into successful business
Wallbanger, became a top seller. The company expanded into pipe alignment after the Navy called to see whether the Wallbanger would connect pipes on nuclear submarines. It didn’t. But within a year, Gary had designed a tool that would.

At that point, the little company was making everything in its garage. But as demand for its tools grew, so did the need for a bigger working space. So the McClures bought an old shopping center on Childress Road and turned it into their business headquarters, research and development center and shipping hub. Outside suppliers make all of the tools’ component parts, but the actual assembly of the pieces and shipping occurs on Childress Road.

Kay said the Robert C. Byrd Institute for Advanced Flexible Manufacturing (RCBI) has played an instrumental role in Walhonde’s successful growth. “For more than a decade RCBI has provided us with access to cutting edge technologies that we in no other way could afford — and the training and expertise we need to use it properly. This ongoing assistance continues to make it possible for us to compete and succeed in today’s global market.”

Matthew McClure, Kay and Gary’s son, is Walhonde’s
Star Technologies LLC, which manufactures a broad array of high-tech metal fasteners for the transportation industry, has no customers in West Virginia even though it sells its West Virginia-made products to customers nationwide and abroad. The Huntington manufacturer exports its fasteners to Great Britain, Japan, Canada, Mexico and a number of other countries, including such unlikely locales as Poland and Malaysia.

The Star Technologies plant produces millions of parts each year, says managing partner Rick Houvouras.

The parts Star Technologies makes aren’t sold in West Virginia because the state doesn’t have the kinds of manufacturers that use them. The company’s precision clamping devices, brackets and metal stampings are primarily used in the aircraft industry but find their way into other transportation uses as well, including heavy-duty transit buses. They’re also used in commercial heating and cooling products.

To fashion its parts, the company uses the latest production laser systems and advanced water jet technology. The parts are made from a variety of metals, including aluminum, titanium, stainless steel and Inconel, a high-performance nickel-chromium super alloy known for its corrosion resistance at high temperatures.

Star Technologies got its start in 1994, when Houvouras and a group of other local investors saw a promising business opportunity after a longtime Huntington fastener maker shuttered its operations.

Founded in 1938, Adel Precision Products Corp. played an important role in World War II, when America’s
Star Technologies got its start in 1994, when Houvouras and a group of other local investors saw a promising business opportunity.

output of warplanes dramatically multiplied almost overnight. Workers at Adel’s Huntington plant worked night and day to meet the demand for the company’s aviation fasteners. But the company had its ups and downs in the post-war era.

In the early 1990s, a California-based company bought Adel, closed its Huntington plant and moved the jobs to the West Coast. That left many of Adel’s veteran employees jobless. Some had never worked anywhere other than the fastener plant. Enter Houvouras and other local investors, who teamed up and raised $800,000 to start Star Technologies.

The new venture began operation by hiring a half-dozen former Adel employees — and pledging to them that, once the company reached a given level of profitability, they could become partners in it.

Houvouras says the former Adel employees were the key to the company’s success. “They had skills that were needed — purchasing, quality control, tool- and die-making, production expertise and engineering skills.”

A former Cabell County member of the West Virginia House of Delegates, Houvouras says RCBI has provided valuable assistance to Star Technologies over the years.

“RCBI not only allowed us to use some machines that we wouldn’t otherwise have had access to but provided training for our employees to help them use the latest technology,” he says. “RCBI also helped us obtain the quality certifications required by the major manufacturers we supply. Quality control is the foundation by which we operate. Our philosophy is a total commitment to quality and continuous quality improvement. This philosophy has been instilled in every employee at Star through training and involvement within our quality system.”

McCLURES
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Tube and Pipe Fitting Manager. He offers an example of how RCBI has assisted the company:

“We used RCBI services to redesign one of our patented tube and pipe alignment product lines, which has enabled us to make modifications that improved several of its components. These changes have helped us address specific customer needs and concerns. We used the rapid-prototyping process and made 3D drawings of all of this product line’s components and then we used the 3D printer at RCBI to make prototype components for further configuration and design. Once we completed this, we used the abrasive water-jet cutter, Swiss Turn and Okuma vertical machining center at RCBI Charleston to produce finished parts to integrate into the new tool model.”

Walhonde remains essentially a small company, even though it has customers worldwide. Despite its success, the company remains true to its roots. “We’ve just so grateful for everything that’s happened,” said Kay. “We’ve been able to experience so much that we didn’t even know existed. When we started out, we didn’t have any money, but we had a dream. And we didn’t ever give up.”

LINGER
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a restoration shop for collectible and classic cars in the Fairmont suburb of Pleasant Valley. In 2010 he and others established a new high tech firm, TMC Technologies of West Virginia.

Linger has interacted often with the Robert C. Byrd Institute over the years. Soon after he first went into business, TMC won a contract to help develop an RCBI network aimed at helping small machine shops win Department of Defense work. Wade’s Garage has used RCBI to build auto parts and train staff how to build parts.

For anyone thinking about becoming an entrepreneur, Linger offers some advice:

* “Work for a year or two in the business for somebody else. If you make it through and still think you can do it better, do an honest analysis of what it’s going to cost. Who are your for-sure customers? Figure out how much money you need to last for a year if only half of those for-sure customers come along. Then double it and unless you’re in a horrible business you’ll probably be able to succeed.”

* Linger said a Harvard Business School program taught him that “you can be very good in a bad business and still fail. The business you want to go into might be even more important than you.”

* “Be prepared for a lot of work and a lot of sleepless nights and make sure you have a family that will put up with it. When businesses are succeeding they take a tremendous amount of mind share and time managing growth and success. When they’re failing they take twice as much. Your family can easily be lost in the process. It’s easy to stand back and say you need balance. But if you’re really an entrepreneur and you feel that the next great opportunity is in front of you or failure is just around the corner, it takes a lot of fortitude to put that in your back pocket and go to the Little League baseball game. But you have to do it. You don’t want to lose your family.”

Linger thanked Murv McDowell, his mentor and the first investor in TMC. Also he credited Mollohan and Byrd for bringing federal contracting opportunities to north-central West Virginia that enabled him to move back to the state, succeed and raise his boys in West Virginia.
Meeting challenges head on is the approach that owners Marty Rice, Dave Harshbarger and Charlie Brewer have taken — consistently and successfully — for the 19 years they’ve operated Frontier Tooling and Design Corporation of Huntington, W.Va.

The three colleagues formed their manufacturing company because of their experience and expertise as plastic extrusion tooling makers developed over 20 years working for a local plastics engineering firm. Their specialized tooling products, which are often used to produce plastic parts that serve the residential-home use and automotive markets, are bought by a range of companies in the United States and abroad.

“At the start, Dave and Charlie and I encouraged each other,” Rice said. “We stood together, made the necessary commitment and necessary investments and took the risk that has paid off.”

Rice describes how they set up shop, which was essentially their computers, in their homes. From there they designed their products before bringing their design tooling files — saved on computer discs — to the Robert C. Byrd Institute along with the necessary stainless steel metal sheet-plates, and started leasing use of a wire EDM (electro-discharge machining) center to cut out the product. Along with the other high-tech milling machines and equipment at RCBI they put together their products and shipped them to an ever-growing base of satisfied customers.

“RCBI offered a platform for us to launch our business,” Rice said. “RCBI gave us the initial place/incubator to ply our trade before we made the huge investment in expensive machinery so we could, from right here in Huntington, W.Va., develop a national and international customer base that we were confident we could service and maintain.”

Rice and his business partners now own and operate a 10,000-square-foot facility equipped with precision machine tools including four CNC EDMs and four CNC Milling Centers plus ancillary machinery such as drill presses and band-saws. Rice is proud to point out that in addition to the company’s large facility equipped with computer-controlled production equipment, the operation has 12 full-time employees. He says it’s good to be able to create good jobs and support the local economy.

“With being able to add those jobs,” Rice says, “it challenges us as owners to maintain customer orders and keep the business coming in and going out — to keep our customers’ orders met. Because of the challenges through the normal ups and downs of the business climate you need to survive in the slower times and maintain the work load as well as the quality during the boom so your payroll is constant and manageable.”

Experience is essential, according to Rice. “I would encourage anyone who wants to be an entrepreneur and start a business, pursue something that you know well,” he said.

“You don’t simply start a restaurant because you like to cook. Have a solid, thorough background in the area.”

And, he cautions, it’s not the things that you think of that might cause problems. “There’s going to be a thousand things — nuances and nuisances — that come at you that you didn’t think of that create difficulties. It’s the ones that you didn’t know about or have on your radar that can cause the most problems.”

Rice said the three owners are happy they started their business. “There’s a certain amount of freedom as an entrepreneur who directs your own outcome and future — but it also presents challenges and opportunities,” Rice said. “It’s lucrative and rewarding.”
“At the start, Dave and Charlie and I encouraged each other. We stood together, made the necessary commitment and necessary investments and took the risk that has paid off.”

MARTY RICE

Marty Rice, center, and his partners Charlie Brewer, left, and Dave Harshbarger, right, first set up shop in their homes but now operate Frontier Tooling and Design Corporation out of a 10,000-square-foot facility in Huntington’s Altizer neighborhood.
“From the initial blue-sky dream to designing and making a reliable product that people need and want, then holding the finished product in your hands is quite rewarding.”

CHARLIE MCCLUNG

Seeds of entrepreneurship were sown at early age


Fulfilling a dream he says he first had when he was about 10 years old, Charlie has turned the idea of starting his own business into reality. His Big Chimney-based company, MarTek Limited, manufactures life-saving industrial products that Fortune 500 companies, as well as small businesses, have come to rely on.

In 2004 after a 35-year career as an electrician, Charlie (also known by some as Mark) chose early retirement to devote full attention to his business that develops, manufactures and distributes sought-after electrical safety products.

He says he recalls at a young age being exposed to entrepreneurs, particularly one enterprising church-member who put the notion of developing and managing a business in his mind. Decades later in South Charleston, working as an electrician/engineer by day at a major company, he developed a now-patented apparatus used to remotely operate large circuit breakers. Since then, he has put his industrial mindset in practice and worked with his business partner and life-long friend Russ Safreed to shape and grow a still-expanding enterprise that employs seven individuals full time.

“If the initial blue-sky dream,” Charlie says, “to designing and making a reliable product that people need and want, then holding the finished product in your hands is quite rewarding.”

The company, founded in 2004, designs and manufactures a patented line of electrical safety equipment used across the United States, Canada and beyond. The products, sold under a trademarked name of “Chicken Switch” and “RakTek,” are portable, remote-controlled devices that protect individuals from hazardous electrical arc flashes during high-voltage, circuit-breaker switching activities.

In just a few years of hard work, the two entrepreneurs developed, designed, produced, refined and marketed their initial product line – and have expanded it to include nearly two dozen models – thanks in large part to technical assistance from the Robert C. Byrd Institute for Advanced Flexible Manufacturing (RCBI).

“A big challenge,” Charlie said, “is learning to use the tools and resources such as RCBI that are available to you. Branching beyond my comfort zone, I’ve also learned sophisticated software packages in accounting and CAD (computer-aided-design) to the
CAM (computer-aided-manufacturing) software that runs the complex, high-tech machines used to manufacture our products.”

However, he acknowledges, “Another challenge is throttling myself to balance between work and personal life so I’m not consumed entirely by my work – regardless how rewarding it is to me.”

Their products’ increasing demand required them to move their start-up operations from his garage into a larger facility in Big Chimney.

In little more than a decade, Charlie has turned his first entrepreneurial venture – started in his two-car garage in Pinch – into quite a success story. The company’s success, starting with three basic products that has grown to fill a 6,000-square-foot operation and includes nearly two dozen models of its patented safety switches that range from control switch operators and breaker operators to racking devices. While their focus remains on meeting needs here in North America, this hasn’t stopped their product from gaining traction and use by industry worldwide.

And their business isn’t slowing. Charlie proudly points to a new, computer-controlled, Haas vertical mill he just installed as well as 3D Printers they’re using for prototypes and limited-run productions. He says MarTek is primed to diversify further by entering and serving even more markets.■
After 90 years in business, Preiser Scientific Inc. remains nimble, adjusting as necessary to changes in markets here and abroad.

Benjamin Preiser founded B. Preiser Company Inc. in Charleston in 1924 to sell laboratory equipment and supplies to customers in West Virginia and Kentucky. His son, Alvin E. Preiser, said his father was interested in coal, oil, and gas – products that came from the earth – and developed the motto: “Through science and industry, man will extract the secrets that nature so jealously guards.”

Alvin Preiser joined the company in 1954, and in 1960 the business’s name was changed to Preiser Scientific. The company now employs about 40 people.

From its earliest days to the present, Preiser’s main customers have been laboratories that serve coal mining, chemical, water testing and other industries — as well as education institutions — that need scientific instruments and laboratory supplies.

The company, with headquarters in St. Albans, manufactures about 50 products used in coal testing at a facility in Nitro. The company also represents 2,000 different vendors and has more than 100,000 scientific equipment items in its product line. In addition to its St. Albans distribution center, the company operates a distribution center in Louisville, Ky., and has an office in Beijing, China. The company’s extensive line of products and the services provided to laboratories around the world set Preiser Scientific apart from its competitors, Preiser said.

“Coal-related industries are among our best customers. We think our coal-testing equipment is among the best in the world,” he said. “We think it provides the greatest accuracy to the people who are doing coal testing.”

Over the years, the company has responded to changes in the coal industry. For example, when new safety regulations were enacted in the 1960s and 1970s for the coal mine industry, Preiser added the kinds of products required for testing.

The company became involved in exporting in the late 1970s and early 1980s when Island Creek Coal was hired to consult on the construction of a new mine in China. Island Creek recommended Preiser as the source of the laboratory coal testing equipment, and the Chinese mine became the company’s first international customer. Preiser Scientific now exports its products to more than 100 countries.

“Our people are world travelers,” Preiser said. “We have guys – engineers and salespersons – who’ve been to dozens of countries. They can tell you great stories and experiences from each one of them.”

In 1997, Preiser began working with the Quality Implementation group at the Robert C. Byrd Institute for Advanced Flexible Manufacturing (RCBI), and

“It’s not easy to start a business. It’s not easy really to stay in a business. It’s very competitive. You have to have the will to be successful.”

ALVIN PREISER

Preiser evolves to meet changing demands of industry
the company was registered to ISO 9001: 1994 in 2001. The company has been recertified since then, most recently in 2013, with assistance from RCBI.

Preiser said the biggest challenge to the company in recent years has been the decline in the domestic coal market brought on by stiff environmental regulations. Fortunately for Preiser Scientific, the coal market remains strong in other countries. Many countries around the world rely on coal because it’s readily available and affordable, Preiser said.

Despite the challenges posed by regulation and competition, Preiser continues to serve its current customers and seek out new ones in West Virginia and farther afield. He advises potential entrepreneurs who are preparing to establish their own businesses to have a thorough understanding of their product and services and to have the proper financing in order to be successful.

“It’s not easy to start a business. It’s not easy really to stay in a business. It’s very competitive,” he said. “You have to have the will to be successful. But the people who have all that – they generally will do reasonably well.”

Alvin Preiser stands in his company’s St. Albans headquarters. Preiser Scientific Inc. manufactures dozens of products used in coal testing at a facility in Nitro. Alvin Preiser now runs the company his father Benjamin founded in Charleston in 1924.
Linda Losey has written a best-selling book. Ridden across country on horseback – alone. She’s weathered flooding, a hurricane and even an earthquake. Little surprise then that when Linda set out to create a limoncello that rivals the best liqueur Italy has to offer, her dogged determination was her greatest asset.

“I had this vision,” Linda said. “One of my problems is I can see things, see my end goals and can bring them to life. That’s a blessing and a curse. I’m a bulldog – determined, stubborn. My passion is creating. I was born to give birth.”

Together with husband Tom Kiefer, Linda began researching how to make limoncello in late 2010. Neither had experience in distilling spirits. Linda’s background is in marketing and public relations; Tom’s in civil engineering.

What they did have were a few bottles of top-tier limoncello purchased on a recent trip to Italy. They began experimenting, inviting family and friends to compare their distilled spirits to the crème de la crème in head-to-head taste tests. And, voila!

“We won 100 percent of the time,” Linda explained. “Tom said, ‘I think we’ve got something here. I think we could probably make this.’ ”

With their winning recipe in hand, Linda and Tom purchased 12-acres and a dilapidated 1840s cabin in Charles Town. With the help of Linda’s former husband Rob Losey (who is a co-owner), Bloomery Plantation Distillery blossomed within a few months.

Today, the mini-distillery has 15 employees and serves up a variety of handcrafted cordials, everything from Black Walnut, Pumpkin Spice and Peach to Chocolate Raspberry and Ginger Shine. Many of the ingredients are grown on site, including walnuts, raspberries, pumpkins, ginger and, yes, even lemons.

“Lemons aren’t supposed to be grown in West Virginia,” Linda said, “but, by God, they are.” Albeit, in a greenhouse.

“What I love is supporting local farmers. What we don’t grow we buy locally, what we can get here.”

The couple chose Jefferson County, West Virginia, because of its proximity to their farm in Maryland, because Pennsylvania and Virginia did not allow distilleries to have tasting rooms, and because Maryland, at the time, required a tasting room to be part of a winery.

“West Virginia was great,” Linda said. “They said, ‘Sure, come on down. The only requirement is that you produce 25
percent of your raw agricultural ingredients.”

Bloomery’s SweetShines are sold in Tennessee, Virginia, West Virginia and the District of Columbia. “We’re in talks with distributors in Canada and the UK, and Rob just returned from Germany,” Linda said.

“We want to take it national. We want to grow the brand,” Linda said. The SweetShine line, which the company whimsically touts as an “artisanal blend of virtue and vice,” has been honored with numerous five-star awards.

Visitors can savor sweet sips in the cozy sampling room, which occupies part of the restored cabin. More than 45,000 unique visitors have passed through Bloomery’s doors since 2011, hailing from across North America and, indeed, from around the world.

“One of the great things we do is customer service, customer engagement, which I think is important in any business,” Linda said. “We have a unique cast of characters. Everyone participates in that. Customers call this ‘the happiest place in the world.’ ”

Linda credits much of the success of Bloomery to that cast of characters, whom she describes as a like a family. The group often has potluck dinners on Saturdays, dines out together or just sits around a bonfire and socializes.

“Everybody’s allowed to be who they want to be here,” Linda said. “Not just allowed,” interjected Eric Bell, CFO and Operations Manager, “but encouraged.” “I have a team of 14 here,” Linda continued. “Thank God they’ve bought into my vision, and they carry it out very well. I just trust that everyone is going to give me their best – and they do.”

Linda believes that entrepreneurial success requires three “C’s”: courage, commitment and creativity.

“These three things are essential,” Linda said. “I could add another “C”: challenge. Don’t be afraid of challenges because you’re going to meet challenges. Oh my gosh, every day.”

Bloomery Plantation Distillery is open Monday through Thursday, noon to 6 p.m. and Friday and Saturday, 11 a.m. to 8 p.m. For more information, visit the website at bloomerysweetshine.com.
Craig Hartzell, president and CEO of Azimuth Inc., came to West Virginia in 1985. He was working for a small defense contractor lured to the state by the late Sen. Robert C. Byrd. In 1988 Hartzell started Azimuth, a company that supplies complex electronics, software mechanical engineering and manufacturing for federal agencies including the Department of Defense, FBI and NASA. The company, based in Morgantown, has more than 50 employees.

“The sole reason I started this company was, after living here for several years, I wasn’t leaving,” Hartzell said. “I had a strong desire to work for the military and I wanted to do it from West Virginia.

“I’m a disabled U.S. military veteran,” he said. “I served in the 5th Special Forces Group. That was a rough-and-tumble, serious bunch of people that raised me as a very young soldier. I’m an old busted-up paratrooper.

“Serving in a line unit has a life-long effect on a person. Ask any Marine or any Army line-unit guy. It impacts the rest of your life — in most cases in a very positive way, I believe. I’ve worked in some fashion for the military — either in uniform or as a contractor — my entire adult life. That’s what gets me up in the morning.

“There isn’t a person in this company that does not have some sense of obligation and pride and motivation to support the defense of the United States. Sit back, take a breath and think about what we do and who we do it for — there’s a level of motivation there you don’t find in most jobs.

“I’m a rusty engineer. I know enough about engineering to be able to identify extremely competent talent. I am very good at only a few things. One is identifying people who are much smarter than I am. I have the ability to accept that. Our little company is held in high regard by a number of very serious federal customers.

“The Robert C. Byrd Institute has been extremely supportive of us. We’ve handed them a number of challenges, mostly in the area of high-end machining. The major job we succeeded at together was Naval Special Warfare-related work. We designed an integrated bridge, or dashboard, for a 90-foot patrol boat. They went on the boat with us and worked with us as if they were a part of our company.

“The boat’s bridge was laid out in a standard fashion — mechanical dials and gauges and a bubble compass and all of that. We did a complete retrofit. We designed an integrated bridge for command, control, communication and navigation. It started with a SolidWorks 3-D drawing. Then we went to blue foam — a full-size mockup. We took it to the customer, who made some adjustments. We put it on the boat and did the form-fit-function. Then we went to RCBI and they trained us on the capability of a six-axis, highly accurate end mill. We purchased carbon-fiber panels and laid out the design. My folks worked down there a good month at RCBI. We took that boat from just gauges and whatever to a very sophisticated electronics system.

“One of our more challenging jobs is with West Virginia University and the Personal Rapid Transit System. We’ve re-done a part of it in concert with WVU engineers. The current PRT car — the onboard computer — is a product we designed and manufactured arm-in-arm with WVU. We reduced the physical size and weight of the cars dramatically and replaced 21 circuit boards — 1970-71 technology — with four boards we designed and manufactured. I couldn’t do something like that on my best day but I’m good enough to be able to hire the guys and gals who can.”
Craig Hartzell describes himself as a “rusty engineer” and says his talent is identifying competent people to work for his company. His company, Azimuth, supplies the Department of Defense and other federal agencies.
Once tennis partners, Ed Waske and Bob Martino are now business partners whose Bridgeport-based company, Engine & Airframe Solutions Worldwide, provides repair and maintenance services to aircraft companies around the globe.

Martino, a dentist, is chief executive officer of Wilmar Management, a company that manages seven dental offices in West Virginia and five in Tennessee. He is also CEO of EASW and finds similarities in running both businesses.

“It’s about customer service,” he said. “I think that’s where the similarities come in, treating people right, making sure that they have a great experience. That’s what we try to do in the dental world, and that’s what we try to do in the airline industry world.”

Waske, chief operating officer of EASW, worked for many years for Beechcraft and Pratt & Whitney Canada, traveling the globe identifying problems with aircraft and fixing them. His position as a senior field representative with Pratt & Whitney eventually brought him to Bridgeport, where the company operates a facility in the industrial park adjacent to North Central West Virginia Airport. Waske and Martino teamed up in 2006 to launch EASW, first leasing a hangar, then building their own facility. Martino runs his management business upstairs while EASW operates downstairs.

About 70 percent of the company’s business addresses aircraft emergencies – those that result in “AOG” (Aircraft On Ground), meaning that the aircraft has mechanical issues serious enough to keep it from flying. Much of the work they do is on private corporate jets for companies such as NetJets and Pratt & Whitney. Those companies have their own aircraft maintenance staff, but call on EASW when they are short on personnel or lack the expertise for a certain job.

“We are known for being faster, better and safer,” Waske said. “We work on all the aircraft with the understanding that our family members could be the next ones flying on it.”

The company has about 25 employees, most of whom are technicians who travel all over the world to repair aircraft. Their jobs are demanding and require a great deal of dedication, Martino said. Employees of EASW share in the profits of the company through a bonus system.

“The better we do, the better they do,” Martino said. “You can’t grow if you go forward and everyone else stays back. You have to grow together.”

The company has worked with RCBI over the years to manufacture tooling necessary for particular jobs. While it may take months to get a particular piece from a supplier, EASW can design the tool itself and manufacture it at RCBI in a matter of days. Saving time is vital in the aircraft industry, Waske said.

“We had one job that was for a hospital, and it was critical to their mission,” he said. “We had all the tooling but one piece, and nobody had it. So we designed the tooling, went over to RCBI, and they helped us make it. We were on site within two days to get the hospital aircraft back up.”

Waske advises other people who want to start a business to do as he did: Learn from those with experience in starting and running a successful operation. Martino said it’s important for entrepreneurs not to get bogged down while seeking the perfect answer or solution to each problem.

“What I’m best at is making decisions,” he said. “I’m not talking good decisions — I make a lot of bad decisions, but I make the decisions. That’s the key. A lot of people want it perfect, and they get stuck. Sometimes you have to get moving.”

Martino also said self-confidence is important when it comes to entrepreneurship.

“You just have to look across America and say, ‘If that guy’s doing it, then I can do it.’ That’s probably what people say about me. ‘If that guy can do it, so can I.’”
Ed Waske, left, and Bob Martino launched Engine & Airframe Solutions Worldwide in 2006. The Bridgeport company now has about 25 employees, most of whom are technicians who travel the globe repairing aircraft.
West Virginia's Eastern Panhandle is a little greener — both figuratively and literally — thanks to Brian Tanguay. The entrepreneur and owner of Tangy Produce has parlayed his passion for gardening into a full-time business, providing fresh, locally grown produce to dinner plates across the region.

And he's doing it in an eco-friendly manner, without pesticides or herbicides, using a method called aquaponics, which requires less water, less space and is less labor intensive than traditional farming. Aquaponics is a combination of hydroponics: the growing of plants without soil, and aquaculture, or fish farming.

Here’s how the process works:

Fish (in this case white and red niles and blue tilapia) are raised and fed in a tank of water. As they breathe and excrete waste, ammonia is generated. This ammonia is converted to nitrates by beneficial bacteria. Worms consume excess solids from the fish waste and contribute micronutrients via their castings. That water is recirculated across plant roots, which absorb the nutrient-rich water and act as biofilters for the fish. The filtered water is recirculated to the fish tank and the process begins again. The end result: organically grown produce and organically raised fish.

“In 2010, after several years of raised-bed gardening in my backyard with increased effectiveness, I searched the phrase ‘growing vegetables underwater,’ which led me to aquaponics,” Tanguay said. “Once I began reading about AP, I saw the value in this symbiotic, all-natural method of producing vegetables and fish. I began more in-depth study and then started attending classes.”

Tanguay resigned his job as an engineering and reliability manager in 2013 to devote full time to his aquaponics operation. He constructed his first aquaponics system in April 2013 in his basement. By July of that year, he was selling produce. Today, his Shepherdstown company grows several varieties of lettuce, herbs and leafy greens such as kale and collard greens in a 2,300-square-foot commercial greenhouse.

Consumers can harvest their own greens on-site, purchase them on Saturdays at the nearby Charles Town Farmers market or even pick their own at the Black Dog Coffee Company in Shenandoah Junction, where Tanguay has installed a portable aquaponics system.

He also sells his produce to a couple of local restaurants and this winter launched a community supported agriculture (CSA) initiative, in which the company delivers fresh produce to 32 customers who paid for their shares in advance.

The CSA has helped finance a wood-fired heating system so produce can be grown throughout the winter. Additional upgrades and expansion are in the works.

“Our intermediate range goals ... include the expansion/completion of our current greenhouse and the addition of two to three more greenhouses,” Tanguay said. “We also want to expand our distribution to restaurants and begin growing more specialized products.”

Long range, Tanguay hopes to develop a fish breeding program, raising different breeds of fish, pairing warm water fish with warm weather crops, and cold water fish with cool weather crops.
“I like the independence and autonomy that I have from being an entrepreneur. I like seeing the fruits of my labor, study, risk and financial investment being transformed into a viable, healthy, positive and valued business.”

BRIAN TANGUAY

Like many entrepreneurs, Tanguay attributes his success, in part, to a sense of vision, the ability to see the end result before it becomes a reality. He also said a strong work ethic, perseverance, good people skills and the ability to recognize and learn from his mistakes have paid dividends.

Of course, that doesn’t mean entrepreneurship is easy. “Because I started a business with zero experience or prior knowledge, it has been challenging at every turn and requires all of my innate and learned abilities to learn, grow and develop momentum,” Tanguay said.

He also credits his fiancée, Colleen Curran, with encouraging him to pursue his dream. “She has been at my side every step of the way, and has learned much about aquaponics in general and Tangy Produce specifically,” Tanguay said. “She is a regular at the farmer’s market and is a favorite of our customers. Colleen is the breadwinner in our home and cheerfully supports me financially as I pursue my business.”

For Tanguay, the challenges of entrepreneurship pale in comparison to the rewards of pursuing a passion and seeing his small business grow and prosper.

“I like the independence and autonomy that I have from being an entrepreneur,” Tanguay said. “I like seeing the fruits of my labor, study, risk and financial investment being transformed into a viable, healthy, positive and valued business.

“My personal rewards include freedom and satisfaction: freedom to explore, freedom to take as much or as little risk as I care to, freedom to go in whatever direction makes sense to me; the satisfaction of knowing that my efforts are resulting in a solid — albeit modest — contribution to the local food scene; the satisfaction of knowing that I can build something from nothing; the satisfaction of knowing that my produce is impacting people’s lives in the area for the better; the satisfaction of knowing that there is a good chance my efforts will leave a lasting legacy for my children, should they desire to pursue it for themselves.”

Private tours of Tangy Produce’s greenhouse are available Monday through Saturday by appointment by calling 336-905-5904 or by e-mailing brian@tangyproduce.com. For more information, visit the website at www.tangyproduce.com.
America’s future is in hands of today’s entrepreneurs

By MARIA CONTRERAS-SWEET

In appointing me Administrator of the U.S. Small Business Administration, President Obama tasked me with three objectives: run an effective SBA, be a strong voice for America’s small businesses, and take the agency to the next level. I embraced this exciting and worthy mission, knowing small businesses are the backbone of our economy.

Small firms make up 99.7 percent of American employers. They generate two out of three net, new private sector jobs and account for half of all private sector employment. The future of our country is truly in the hands of the American entrepreneur.

SBA programs are infusing dollars into local markets to improve the domestic economy. Entrepreneurs inject capital into the economy more quickly as they cover payroll, buy equipment, and acquire real estate. Not only is SBA-backed capital more likely to be spent at home than abroad, but it’s also circulated faster in local communities, spurring more economic activity. With this in mind, I am eager for this opportunity to be leading the SBA.

You see I immigrated to this country from Guadalajara at the age of five, not speaking a word of English. My mother worked at a poultry processing plant so her six children could have opportunities she never had. My life’s journey has been one of seizing opportunities to help my family and build my community.

From grade-school hall monitor, to corporate executive, to California Cabinet Secretary, to bank founder, to now, a member of the President’s Cabinet, I was taught it’s not the titles we have that matters, it’s what we do with the titles we have. I’m living my American Dream. Now, I want every entrepreneur to live theirs.

The face of entrepreneurship is changing in America. More of those faces today belong to women, Latinos, African-Americans, Asian Americans, Native Americans, veterans, seniors, and business owners who are socially and economically disadvantaged.

Living the Dream

Today, all of the jobs lost in the Great Recession have been recovered, yet our nation still faces a profound challenge: capital is not reaching small business owners equitably. The face of entrepreneurship is changing in America. More of those faces today belong to women, Latinos, African-Americans, Asian Americans, Native Americans, veterans, seniors, and business owners who are socially and economically disadvantaged. Too many in these groups cannot access the requisite expansion capital. Your gender, your race, your age, or your neighborhood should never impact whether you can get a small business loan. Only your creditworthiness should.
At the SBA, we will assure a continuum of support, especially for our underserved businesses. We’ll expand access to our core programs that we refer to as the “three Cs” – capital, consultation and contracting. And it goes without saying we’ll remain focused on our disaster assistance programs, so homeowners and business owners can access our help when they need us the most.

To advance our work on behalf of America’s entrepreneurs, I’m focusing my initial efforts in three areas:

First, we will modernize and implement smart systems, so the SBA keeps pace with technological advances that are changing how we do banking and conduct business. To encourage our lending partners to provide more capital to Main Street, we will automate our credit analysis using predictive systems.

Second, we will create a more inclusive organization by tailoring programs that embrace our nation’s dynamic demographics.

Third, we will serve as a “market maker” for small companies by opening new business channels within the federal government, corporate supply chains, and international commerce. We will be modern. We will be inclusive. And we will make new markets. This is how we’ll move the dial for entrepreneurs from all walks of American life.

### Responding to Diversity

On an encouraging note, our lending to African Americans is up 29 percent over the last year. That’s important, because the Urban Institute found that women and minorities are three to five times more likely to be approved for an SBA-backed loan than a traditional loan.

Four out of five loan applications we receive from Hispanic-American and African-American business owners are for $150,000 or less. These smaller loans, then, are a vital part of our promise of equal opportunity in America. If a bank can’t quite say “yes” to a borrower, we’re asking them to partner with a microlender or a Community Advantage lender that can.

We also have a special obligation to serve those who served us so well: our veterans. They fought for our freedoms, and now many are ready to fight for their dream of starting a business. Our armed forces have a track record of producing outstanding leaders. Veterans own two and a half million businesses that generate more than $1 trillion in sales a year.

This year, the SBA will counsel and train 15,000 transitioning service members through our Boots to Business...
Program. We’re helping them apply their military discipline and training to their dream of starting a business. America spends an average of $31,000 per service member to get them battle-ready while this program costs an average of $411 per veteran to get them business-ready.

While our veterans represent an important group for the SBA, the fact is, we offer counseling for all entrepreneurs at every stage of the small business life cycle. We help small businesses start up and scale up, and we provide access to new markets so they can really take off.

Last year, about one-quarter of the companies capitalized by our Small Business Investment Companies were owned by minorities, women, or veterans – or those who conduct their business in rural or distressed urban areas. We’re focused on increasing these numbers through sustained outreach and through our Impact Investing Initiative.

But promoting inclusion is not just about gender, race, and socio-economics. One of the biggest demographic shifts affecting small businesses has to do with the fact that we’re living longer. The global population of those 65 and over is expected to triple by mid-century. More and more of our retiring Baby Boomers are starting a second act and finding fulfillment in entrepreneurship. Americans age 55 to 64 are creating nearly a quarter of our new businesses. With their life’s experiences in their tool box, they are actually building businesses in larger numbers than their youthful counterparts. While there is evidence that our Encore counseling program for the 50+ group continues to be well received, considering the magnitude of its potential impact, a thoughtful examination is warranted about the program’s expansion potential, so that we might enrich their golden years.

Areas of Opportunity

Finally, the SBA will be a market maker by opening up new areas of business opportunity for small companies. We will be adaptive to signals in the domestic and global markets, and we will create the conditions for entrepreneurs to secure government contacts, enter corporate supply chains, and export their products globally.

These initiatives are not the end of our conversation but are a good start. We must adapt to smart technologies. We must be responsive to changing cultures, new lifestyles and evolving demographics and psychographics. Finally, we must continue to anticipate and seize what portends for tomorrow’s markets. To repeat, the SBA will be modern, inclusive, and be a market maker for small businesses.

My arrival in this country has brought me untold opportunities. My gratitude is matched only by my motivation to open more opportunities to every American who shares the entrepreneurial spirit. I never imagined that I would be here today. But now that I am the head of the Small Business Administration, I am dedicating myself to making small businesses big businesses. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal. The hallmark of my work will be to foster entrepreneurial equality, preserving our nation’s preeminent role as the world’s leading economy. Let’s make small business a big deal.
Think young people have an entrepreneurial edge? Well, you might just want to think again.

By DAVID VAN DEN BERG

One of the most iconic faces of entrepreneurship in American history is one that appears on signs all across the nation. “Colonel” Harland Sanders started franchising his Kentucky Fried Chicken restaurant at age 65 with a family recipe for fried chicken and a $100 Social Security check. That was in 1955. Less than a decade later, Sanders had 600 franchises in the United States and Canada.

Today, one of the prominent faces of entrepreneurship is Mark Zuckerberg, the 30-year-old billionaire and cofounder of Facebook, the social media Web site that’s one of the 10 most visited sites in the world. Zuckerberg took Facebook live from his Harvard dorm room in 2004, dropped out of school and relocated to Palo Alto, Calif., where he now runs the company.

Popular perceptions may suggest people like Zuckerberg and his Facebook co-founders represent the future of entrepreneurship. But they’re actually outliers, says Duke University professor Vivek Wadhwa. He co-authored a paper on technology entrepreneurship for the Ewing Marion Kauffman Foundation, and found that the average and median age of founders of technology firms was 39.

“Experience is the most important ingredient of success,” Wadhwa says. “The stereotypes are inaccurate and a legacy of the dot-com days.”

The age group that had the highest rate of entrepreneurship across all industries from 1996 through 2007 was 55 to 64. The age group of 20 to 34 had the lowest rate during this period, which included the dot-com boom.

Entrepreneurship in the age group of 55 to 64 is hardly a new phenomenon. People in that age range are far more “experienced, balanced, and wiser,” Wadhwa says. They also have less of something else — fear. “The strongest factor that prevents people from becoming entrepreneurs is the risk,” Wadhwa adds. “Once you’re in this age

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group, the risk and the fear is much less.”

Other factors can explain the prevalence of entrepreneurship among older adults. For one, people 55 and older may have more wealth they can use to launch a business, notes Dane Stangler, a Kauffman Foundation analyst. Also, some older adults may not possess the skills most in demand in a rapidly changing economy so they find themselves turning to self-employment as a way to making a living. That fact “lurks in the data” but is hard to tease out, Stangler says.

Stangler says these older and bolder adults could fuel an entrepreneurship boom. The country is now experiencing rapid growth in the numbers of people in the 45 to 64 age group, and life expectancy keeps growing. By 2050, American life expectancy is projected to be 83 years, compared to 78 now. If the rate of entrepreneurship in this group stays constant, this could all translate to a multitude of new companies in the future.

Rising entrepreneurship among older adults isn’t confined to one type of business either. “The pattern generally holds across industries,” Stangler says. “There’s no industry that stands out for being where the young people are starting companies, and another where the middle age and older demographic groups are starting companies.”

While more senior entrepreneurs may be forming companies, how likely is it those companies will produce major innovations like Facebook? Might an older entrepreneur be more likely to start a “lifestyle” firm, while a younger person more apt to start a groundbreaking one? “Such a concern makes sense, but further research needs to be done,” Stangler writes.

Kauffman Foundation research also demonstrates that immigrants tend to be more entrepreneurial than native-born Americans. One in four engineering and technology companies launched between 1995 and 2005 had an immigrant founder.

Immigrants are also more likely to start businesses of all types. They had higher entrepreneurship rates across all industries every year from 1996 through 2008. In that last year alone, the gap between the overall entrepreneurship rates of the two groups was the widest in the survey period: The rate was almost twice as high for immigrants as it was for the native-born population.

This article is reprinted from Econ Focus, the quarterly magazine of the Federal Reserve Bank of Richmond. The views expressed are those of the contributor and not necessary those of the Federal Reserve Bank.
HUNTINGTON
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business and inspiring entrepreneurs.

One thing I learned back when I was working in economic development is that here in Huntington we have a great many services we offer the business community – and would-be businesses – but too often we don’t work together to provide those services. It’s not that we’re necessarily competing with each other; it’s just that we’re each doing our thing and not working together when we should.

So, we invited people to come to the table to talk about pooling and coordinating their efforts, and I’ve been gratified by their response to our invitation. We recognize that we’re a small community, and we need to recognize that as an asset.

My administration’s focus from day one has been to seek job growth in our community. “Huntington: Be Small. Live Large” is a result of that ongoing effort. Helping our existing small businesses, creating opportunities for new startup companies and entrepreneurs are the core of any success we will have in moving Huntington forward.

THE WILLIAMS FILE

- A 1974 graduate of Huntington High School, Williams earned a bachelor’s degree in political science with cum laude honors from Marshall University in 1978 and a master’s degree in public administration from West Virginia University in 1980.

- He is president of Marshall University’s M Club and serves on the boards of Marshall’s Big Green Scholarship Foundation, Alumni Association and Society of Yeager Scholars.

- A member of the Huntington Rotary Club, he is a senior warden and Sunday school teacher at Trinity Episcopal Church.

- Married to Mary Poindexter Williams, he has two stepdaughters, Nikki and Laura Urban.
By ROBERT ATKINSON

With U.S. job growth still anemic, some have latched on to a compelling explanation: “the robots are taking our jobs.” According to this line of thinking, high productivity driven by increasingly powerful IT-enabled machines is the cause of U.S. labor market problems, and accelerating technological change will only make the problem worse.

These arguments are not new. Over the last century whenever unemployment has risen some have always blamed machines. But what’s different today is how widespread this “neo-Luddite” view has become and how well-received it is. Now it’s not just the tin-foil hat crowd that is warning that robots kill jobs; many elites now make the claim.

In perhaps the most widely cited tract making this case, MIT professors Erik Brynjolfsson and Andrew McAfee state in “Race against the Machine” that “it may seem paradoxical that faster progress can hurt wages and jobs for millions of people, but we argue that’s what’s been happening.” In a New York Times op-ed entitled “Sympathy for Luddites,” Paul Krugman warns that “a much darker picture of the effects of technology on labor is emerging. In this picture, highly educated workers are as likely as less educated workers to find themselves displaced and devalued.”

Even television’s “60 Minutes” has jumped on the bandwagon, claiming in a program entitled “Are Robots Hurting Job Growth?” that “technology...is putting new categories of jobs in the sites [sic] of automation—the 60 percent of the workforce that makes its living gathering and analyzing information.”

Indeed, this is what is most troubling. In the past, neo-Luddite anti-progress views were episodic, emerging occasionally when
joblessness spiked but then receding, and they were going against the grain of the uniquely American faith in the desirability and inevitability of progress. Today that faith is waning, which points to the real threat that anti-robotism presents: the view that machines are a problem and not the solution saps the American spirit of its relentless and aggressive support for innovation and progress.

As we have shown in our recent ITIF report, “Are Robots Taking Our Jobs, or Making Them?” there’s only one flaw in this Luddite, anti-machine narrative: it is completely wrong and not supported by data, scholarly evidence or logic.

These neo-Luddites make a fallacious correlation between today’s high unemployment and the cool technology they see around them (e.g., smart phones, airport kiosks, IBM’s Watson on Jeopardy). They believe that when technology allows more work to be done with fewer workers, those jobs are gone and the workers are added to the unemployment rolls.

But this is what economists call the “Lump of Labor” fallacy, the idea that there is a limited amount of work to be done and if a job is eliminated, it’s gone for good. But this is a false reading of the process of technological change because it doesn’t include second order effects whereby the savings from increased productivity are recycled into the economy in the form of higher wages, higher profits, or reduced prices to create new demand that in turn creates other jobs.

Certainly U.S. history bears out the notion that productivity growth goes hand-in-hand with growth in employment. Indeed, America’s most productive years have been followed by our years of lowest unemployment. This correlation is shown in the 2011 McKinsey Global Institute report, “Growth and Renewal in the United States: Retooling America’s Economic Engine” which looked at annual employment and productivity change from 1929 to 2009 and found that increases in productivity are correlated with increases in subsequent
employment growth.

It’s also borne out by virtually all scholarly research looking at the relationship between productivity and job growth. Some few studies find that employment decreases in the short run in response to a productivity shock, but that jobs grow in the medium to long term. Most studies find no negative effect on employment, and some have found a positive relationship, with increases in productivity leading to more jobs. An OECD study sums it all up: “historically, the income-generating effects of new technologies have proved more powerful than the labor-displacing effects: Technological progress has been accompanied not only by higher output and productivity, but also by higher overall employment.”

Even many of those who acknowledge that new jobs will be created worry that this time is different and that there will not be enough of them to replace the lost ones, even in the long run. They warn that a time will come, sooner than we think, when even new “jobs” will be better done by machines, and unemployment will skyrocket.

How do we know that humans will always be better at some work – or more importantly, enough work – than machines? One reason is that our economy is complex, with a broad range of industries and occupations, some amenable at a particular time to automation, most others that are not (think physical therapy, business consulting, landscape gardening). Another is that technological change doesn’t happen overnight — and current productivity increases are actually trending down. But the main reason is that human wants are close to infinite – we need look no further than the fact that most people would love to win the Powerball lottery. With the average U.S. household income around $50,000 a year, most Americans would have no problem spending all the money they make if their incomes increased by a factor of 5 or even 10. And as long as that is true, those wants will require labor to fill them.

It is time to consign neo-Ludditism and its particular refrain that technology costs jobs once and for all to the dustbin of history. Robots, automation, machines, productivity: these are key enablers of human progress and absolutely no threat to overall employment.

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ROBERT ATKINSON

ROBOTS

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Robert Atkinson is president of the Information Technology and Innovation Foundation. His commentary is reprinted, with permission, from a blog at rosindustrial.org.
Graphic: The National Institute of Standards and Technology (NIST) is an agency of the U.S. Department of Commerce
Inc. magazine says AST is number one in West Virginia

Allegeny Science & Technology (AST) of Bridgeport is one of America’s fastest-growing private companies according to Inc. In its rankings for 2014, the magazine listed AST as No. 268 among the Inc. 500 and the Number One Top Rated Company in West Virginia.

With offices in West Virginia, Maryland, Virginia and Idaho, AST’s growth is helping create job opportunities across multiple markets. Now close to 70 employees, the company has experienced a near 50 percent increase in staff since the rankings were completed.

AST provides services such as program management, financial analysis, software and systems engineering for customers such as the Department of Energy, Department of Defense as well as NASA, DHS, the FBI and other Intelligence agencies.

Constellium secures agreement with Boeing

Constellium, whose Ravenswood operation is Jackson County’s largest employer, has announced that it has been awarded a multi-year agreement with aerospace manufacturer Boeing to support the aircraft maker’s leading commercial programs.

Under the new agreement, Constellium will supply Boeing’s aluminum products for airframes using Constellium’s current and advanced-generation aluminum alloys. The products will be supplied from Constellium’s two major manufacturing sites at Ravenswood and in Issoire, France.

The contract includes the continued supply of AIRWARE®, Constellium’s low-density aluminum-lithium solution, for the Boeing 787 Dreamliner.

Diamond Electric moving its headquarters to W.Va.

Diamond Electric is relocating its North American headquarters to West Virginia. The move will consolidate the automotive ignition coil manufacturer’s main U.S. office with its existing operation in Eleanor, Putnam County.

The parent company, Diamond Electric Manufacturing Co., Ltd., has headquarters in Osaka, Japan.

Since Diamond Electric opened its first manufacturing plant in West Virginia in 1997, the company has chosen to expand its operations in the Mountain State multiple times, and the operation in Eleanor has grown into the company’s largest production facility in the world.

Diamond Electric supplies ignition coils to Ford, Chrysler, Toyota and Subaru. It employs 335 workers in West Virginia. The move of the company’s headquarters is expected to add 10 to 15 positions at the Eleanor site.
Study credits North Central Airport with $1 billion economic impact

A new study reports that the North Central West Virginia Airport in Bridgeport generates an annual economic impact of $1.05 billion. According to the study, the airport creates more than 3,400 jobs (directly and indirectly), generates an annual $23 million in state and local tax revenue and brings nearly 3,000 visitors a year to the region. The study was conducted by Sixel Consulting Group Inc.

Operated by the Benedum Airport Authority, the airport serves as home base for companies in the aerospace industry, such as Aurora Flight Sciences, Bombardier, Pratt & Whitney, Lockheed Martin, KCI Aviation, Engine & Airframe Solutions Worldwide, FMW Composite Systems and HQ Aero.

Irish medical manufacturer expanding in Kearneysville

The West Virginia Economic Development Authority (WVEDA) has approved two loans to help an Ireland-based medical manufacturer expand its facility in Jefferson County. The company, Randox Laboratories, makes and distributes products for medical diagnostics, drug testing and other targeted screening procedures.

The authority approved a 20-year, $1.6 million loan that will go to expansion of its Kearneysville facility and another 10-year $1.1 million loan that will help the company purchase new equipment.

Randox employs 27 people. Warner said it plans to employ 53 after one year and 112 after three years.
More than a year after it announced its initiative to help rebuild the U.S. manufacturing sector, Walmart says it is making progress, but a lot more needs to be done.

At its second U.S. Manufacturing Summit, Walmart executives told manufacturing company executives that the world's largest retailer will bend over backwards to give them an advantage over foreign sources of products. The goal is to create good jobs and customers with money they can spend, since many Americans are too poor to even afford shopping at Walmart.

Walmart described a handful of American manufacturing companies that have been awarded contracts and are gearing up production.

But there are challenges to Walmart’s goal of purchasing $250 billion in additional American-made goods over the 10 years ending in 2023, the biggest of which is the depletion of the American supply chain for component parts and materials. In a request for proposals for patio furniture, Walmart found that American manufacturers could not come close to competing with low-priced imports in seven of the 12 categories of products it hoped to buy from U.S. producers.

Nevertheless, Walmart is now stocking its shelves with American-made coolers, candles, pet treats, pacifiers, garden containers, footwear, taco plates, Lincoln Logs, Weber barbecues, carpets and television sets. On its Walmart.com online “USA website” the company has increased the number of American-made items from 500 to more than 15,000 and has quadrupled the number of U.S. manufacturers selling goods.

"It is a journey with a destination of a recharged economy where manufacturing is an engine for jobs," said Michelle Gloeckler, Walmart Executive VP of Consumables and U.S. Manufacturing. “We come here today with a deeper understanding of the challenges that make U.S. manufacturing more of a reality.”

Newly named Walmart CEO Doug McMillon told the manufacturers at the summit that the company will not change its strategy of generating low margins on high volume. Stephen Quinn, Walmart’s Chief Marketing officer, added: “What our customers have in common is they like to save money for a very good reason: They have seen their incomes stagnate. For 90 percent of Americans, incomes have decreased over the past five years. So over time, our customers say that it has become even more important for them to get the lowest price on everything they buy.”

But price is not the only factor in customers’ buying decisions. Customers want to buy quality products, “but they also want to know where their money goes and whether it makes a difference in the world,” said Quinn. “That is where the American Jobs Initiative is really meaningful for our customers.”

Walmart is discovering that Americans are extremely concerned about stagnating economic growth and that they lack confidence in the U.S. economy. “They want both of those back,” said Quinn. “There is an eternal struggle over the dignity and scarcity of work and how important work is in people’s lives.”

The result: Walmart shoppers find the Made in the USA initiative “very compelling because it really matters to customers where their products are manufactured,” Quinn told the 1,000 or more attendees at the summit. “They are very savvy at understanding that U.S. manufacturing is good for America and it’s good for their own community.”

“After 18 months of implementing its Made in USA strategy we have already seen the impact on sales of many products that have moved their manufacturing back to the United States,” Quinn told the audience in a glitzy two-hour-long corporate presentation. “We have seen sales of candles, socks and TVs grow well above the average for those categories at Walmart and it is based on nothing more than the quality of those
products being made right here in the U.S."

Walmart’s Made in USA manufacturing advertisements have registered the highest impact among viewers for any of its advertisements, not just for likability “but for motivation to buy,” said Quinn. A Walmart ad that ran during the winter Olympics about putting Americans back to work in the manufacturing sector “created a sensation,” Quinn noted. “We have seen that play out on our Facebook page and Twitter engagements, on Google and with 6.2 million views of the ads on Youtube.” The ad created a 22 percent lift in brand interest on Google.

A similar ad that ran on July 4 with the theme of rebuilding the U.S. manufacturing sector to make the United independent and free created some of the highest customer scores ever for a Walmart ad, leading to the Made In USA program reaching new highs for awareness.

“We know that customers prefer products that are made in the USA so it follows that if it’s going to change customers’ minds, they really have to know about it,” said Quinn. “And that starts with the silent salesman: Your packaging. It is critically important that your package clearly communicates that your product supports American jobs. Remember, people typically don’t spend more than seven seconds scanning products in an aisle, so let’s make sure they see that information early.”

The program is making a difference for dozens of American manufacturing companies and for thousands of Americans who were desperate for a decent job.

Quinn told the manufacturers the following story: “Early one morning a beach is littered with thousands of starfish that had been washed up by the tide and were vulnerable to exposure. An old man is throwing starfish into the ocean. Another man approaches him and says, ‘Why are you bothering throwing them in the ocean? There are too many of them. You can’t possibly make a difference.’ To which the old man leans down, picks up a starfish and throws it in the ocean and says, ‘Made a difference to that one.’"

Added Steve Bratspies, Walmart Executive Vice President of General Merchandise: “America, we got this. We are not waiting for anything.”

On-shoring of American electronics still rare

Reshoring of electronics industry production back to North America is not a big trend, according to a survey by IPC - Association Connecting Electronics Industries. Over the past 15 years, high-volume electronics production left the United States, and “most of it is not expected to return,” says IPC in a study on the issue. Companies are beginning to reconsider their overseas cost structures, “but only a few have taken action.”

In a follow up survey to one it conducted in 2013 of electronics companies that said they are reshoring production from Asia (mostly China) to the United States and Mexico, IPC found that “while many executives are interested in on-shoring and assessing its potential for their own companies, few companies to date have taken action,” according to its study. “On-shoring is still a relatively rare phenomenon.”

When IPC asked 100 companies in 2013 if they were considering bringing production back to the United States and Mexico, 16 companies said that they were doing so. These OEMs, printed circuit board manufacturers, materials suppliers, electronic manufacturing service firms and an equipment supplier were asked this year to provide more information about their reshoring experience.

“When data from this small sample is not statistically significant. It offers preliminary indications on how on-shoring has affected the companies that have adopted this strategy,” says Sharon Starr,
IPC director of market research.

The total investment made by those companies through 2013 was $200 million (creating a total of 666 new jobs). That investment represented about 5 percent of the companies’ total value. Through 2014, nine companies indicated they would be reshoring production back to North America, with a total investment valued at $136 million, “just under 1 percent of the companies’ global value,” according to the IPC follow-up survey.

Of the 10 companies that did return production to North America, half experienced an increase in production costs, but “more striking is that the other half saw no change in production costs,” notes IPC. Shipping costs, management costs and inventory costs declined for most of the companies that returned; on-time delivery and time-to-market improved for most as well. Two of the 10 companies experienced an increase in sales.

There are still significant deterrents to reshoring: the higher costs of U.S. manufacturing, taxes and regulations, the shift of markets overseas and the lack of suppliers.

China mum on statistics about international trade

The World Trade Organization, the global arbitrator of unfair trading practices, admits that it doesn’t know if China is gaming the global trade system.

In its latest “Trade Policy Review of China,” the WTO says “the extent to which China supports exports and the different sectors of the economy is not clear.”

In conducting its annual review of China’s economy and its myriad government trade policies, “specific information regarding [state subsidies for exports] was not provided to the Secretariat in the context of this Review,” according to the WTO. The last time China provided the WTO with any information on export subsidies was in 2011 for a period that covered 2005 to 2008.

“China maintains a large number of support programs at the sectorial, regional and enterprise level to attain different economic and social goals,” states the WTO. “The different support programs range from those designed to attain major policy goals (i.e. economic growth) to those aimed at boosting specific industries, but they are intertwined. The application of these programs is not always transparent. A full identification of these programs was not possible for the Secretariat in the context of the current review, as specific support measures are often the result of internal administrative measures that are not always easy to identify and generally only available in Chinese.”

Exports continue to play a big role in China’s growing economy. Export growth “expanded rapidly” over the past year, to $2.21 trillion, accounting for 24 percent of the country’s GDP (down from 26.7 percent in 2013). Chinese exports have increased by 40 percent since 2010. As the world’s largest seller of goods, China’s top export products were office machines, telecommunications equipment, textiles and clothing. While manufactured goods accounted for 94 percent of exports, manufactured goods accounted for 58 percent of China’s imports in 2013.

With so much at stake globally, the WTO was not able to determine if there are state subsidies for exports because the Chinese government’s budget “is not a public document, hence, it is not possible to identify outlays,” says the WTO. “Support is also provided through different financial mechanisms.”

The WTO has determined that the Chinese government provides “industry-specific subsidies for inputs, land and technology to firms that the central and provincial government perceives as strategically important or to revitalize them as the National Development Reform Commission calls for in its National Old Industrial Base Adjustment and Renovation Plan (2013-2022).” The WTO notes that under this plan, state-owned enterprises “and favored companies can purchase inputs below cost and directly from each other, affecting competitiveness.”

China’s government continues to “enhance the coordination between credit policy and industrial policies.” It is speeding up and broadening financial assistance to small and medium-sized companies “by adopting measures to prevent and alleviate local debt-related risks.” The People’s Bank of China “has guided financial institutions to intensify financial support to areas such as scientific and technological innovation, emerging industries of
strategic importance and service industries,” notes the WTO. Financial institutions were told to “extend credit support for railways, shipping, thermal power and steel, and were encouraged to use credit products flexibly to support profitable export-oriented enterprises.”

The country’s export-import banks are aggressively lending money to foreign entities to buy Chinese products.

The Chinese government has established new rules to foster competition and combat monopoly practices and has set up a system of antitrust reviews of mergers and foreign acquisitions of domestic companies. But the government has excluded state-owned enterprises that are considered “vital to the Chinese economy” from the competition laws, says the WTO. The government also applies price controls to commodities that “have a direct impact on the national economy and people’s livelihood.”

China’s tariffs on imported goods have not changed since 2009, with the average tariff on non-agricultural products standing at 8.6 percent, as compared to an overall tariff rate on imports of 1.18 percent for the United States.

The United States is not guaranteed economic benefit from the increased production of natural gas, notes the DSB. “Being resource-rich will certainly contribute to economic vigor in the United States, but capitalizing on this new resource will depend on the ability to distribute the goods produced as a result of relative energy price advantages. Selling agricultural, energy and manufactured products requires ready access to the global common, and all global distribution mechanisms are ready targets for adversaries of the United States seeking to gain competitive advantage.”

The rise of technically and economically strong foreign adversaries will challenge U.S. superiority in speed, stealth and the precision of weapons systems. Other countries “are likely to develop counters to some or all of the foundation technologies on which the U.S. has come to rely,” states the DSB.

“The advantages provided by capabilities such as GPS, Internet-based network communications, satellite reconnaissance and stealth aircraft will be diminished and, in many cases, eliminated. To maintain superiority, it will be necessary for the military to develop new capabilities or tactics, techniques and procedures to continue to be effective when capabilities on which it has relied over the past two decades are degraded or denied.”

“The United States can no longer plan to rely on unquestioned technical leadership in all fields,” states the Defense Science Board. In Iraq and Afghanistan, the U.S. military has exposed its capabilities, tactics and vulnerabilities. “Military actions requiring expensive platforms and equipment with long logistical support tails generate vulnerabilities ripe for exploitation, as the use of improvised explosive devices in Iraq and Afghanistan demonstrated, where a technologically unsophisticated adversary created damage that was disproportionate to the technological and financial investment. By 2030, the increasing distribution and linkages available for technology development will likely enable creation of similar destructive asymmetries on a global scale.”

U.S. offshoring threatens military superiority

The shift of manufacturing from the United States to China and India is a leading threat to the U.S. military advantage, according to the Defense Science Board in its “Technology and Innovation Enablers for Superiority in 2030” report recently posted on the web for public viewing, “Movement of critical manufacturing capability offshore may pose significant challenges,” warns the DSB.

The shift of manufacturing to foreign nations “also affects U.S. technology leadership by enabling new players to learn a technology and then gain the capability to improve on it. An additional threat to defense capabilities from offshore manufacturing is the potential for compromise of the supply chain for key weapons systems components.”

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In its report the DSB says the Defense Department must assess the revolution taking place in manufacturing technology, caused by the rapid and rising global demand for high-tech manufactured goods. The use of computers, low-cost sensors and robotics could radically reduce the cost of producing weapons systems, giving “new meaning to the old adage ‘quantity has a quality all its own,’” says DSB.

In order to counter adversaries’ own capabilities, the DOD should develop a “reliance on very large numbers of reasonably capable systems. For example, by taking advantage of advances in manufacturing and developments in guidance, navigation and control, it may be possible to field a cruise missile with modest capabilities at a cost of between $100,000 and $200,000.”

The DSB report notes that additive manufacturing could eliminate the need to store and ship inventories of spare parts, but that DoD “should consider not only what capabilities are enabled but also what a potential adversary could do with this technology. The Department must maintain cognizance of manufacturing advances and drive the implementation of these advances into its supplier base as they occur to hedge the economics and time associated with today’s manufacturing capabilities.”

China is top market for industrial robots

For those who are convinced that the deployment of advanced robotic technologies will make the United States more competitive against China, beware: Chinese companies are installing a lot more industrial robots at a faster rate than are American manufacturers. America’s competitors are not standing still, not in China, Korea, Japan or Europe.

In 2013, China became the largest market in the world for industrial robots, at 36,560 units, accounting for 20.5 percent of the 178,132 global installations. Chinese companies that manufacture industrial robots installed 9,000 units in China, a sales volume that was triple the level of 2012.

Foreign robot suppliers increased their sales by 20 percent in China in 2013, according to the International Federation of Robotics (IFR). Between 2008 and 2013, total sales of industrial robots in China increased by 36 percent per year.

By comparison, 23,700 industrial robots were installed in the United States in 2013, a number that represents two-thirds the Chinese total and 13.3 percent of all global installations. European companies installed 24.3 percent of all industrial robots in 2013 at 43,300 (an increase of 5 percent from 2012) and almost double the number of American installations. The U.S. market for industrial robots increased by 6 percent in 2013.

Japan also was a bigger market for industrial robots, with 25,110 units installed in 2013, an increase of 12 percent from 2012. Korea wasn’t far behind the United States at 21,300 units installed in 2013, followed by Germany at 18,300 units.

Global sales of industrial robots increased by 12 percent in 2013, with a total market value of $9.5 billion, a new record. The figure does not include the cost of software, peripheral equipment and systems engineering. If those costs are included, the total market value for industrial robotic systems is estimated to be $29 billion.

Globally, the automobile industry was the biggest buyer of industrial robots at 69,400 units, up by 4 percent over the previous year and accounting for 39 percent of all sales. The electrical/electronics industry was next, with robot sales increasing 11 percent to 36,200 units.

The rubber and plastics industry was next at 12,200 units, or about 7 percent of total sales followed by metal and machinery (at 16,500 units, the same level as in 2012); food and beverage (at 6,200 units, up 28 percent); and pharmaceutical and cosmetics (at 2,000 units, up 69 percent over 2012).

The total worldwide stock of operational industrial robots at the end of 2013 was in the range of between 1,332,000 and 1,600,000 units, says IFR.
China challenges U.S. in Additive Manufacturing

China is making a “bid for leadership” in the development and deployment of 3D printing technology, according to market research firm Lux Research.

“China is rapidly embracing 3D printing itself, and sales of printers there will grow four-fold to 37,800 printers in 2018 as revenues more than triple to $109 million,” says the research group. “While those sales are still small in absolute terms, the rapid pace of adoption of 3D printing shows that China also aims to be a future leader in this new manufacturing method. Indeed, the education sector, aided notably by government policy, will be the largest market in the near term, growing at 39 percent annually.”

Richard Jun Li, Lux Research director and author of the report “China’s Growing 3D Printing Ecosystem,” adds: “While 3D printing has been touted as a way for Western economies to compete with China’s manufacturing advantages, the Asian giant is also taking rapid strides to parlay its traditional strengths into 3D printing as well. Far from being disrupted by 3D printing, China will thrive as its expertise in electronics, manufacturing and its growing domestic market make it a threat and an opportunity for aspiring 3D printing value chain participants.”

Chinese 3D printing companies produced 21,550 printers in China in 2013, of which 12,810 were exported. Those printers are competing on cost with leading brands such as MakerBot, 3D systems, EOS and Stratasys, says Lux.

Growth in manufacturing sector likely to continue

The U.S. manufacturing sector is entering what is shaping up to be a sustained growth period, according to the MAPI Foundation. Manufacturing production increased by 4 percent during the first half of 2014,
and by 5 percent for the three months ending in July. Meanwhile, U.S. Gross Domestic Product (GDP) grew by only 0.9 percent.

For the year, MAPI is predicting that manufacturing production will be up by 3.4 percent. Next year it is forecast to increase by 4 percent, followed by 3.6 percent growth in 2016.

“Manufacturing will continue to grow faster than the overall economy,” according to MAPI Foundation chief economist Daniel Meckstroth.

The reason: “Demand has shifted toward manufactured goods. Durable goods, equipment and construction have long lives and therefore are temporarily postponable, especially during economic downturns and times of uncertainty.” That uncertainty is lifting a little bit, Meckstroth said. Consumers are buying big-ticket items like cars; they are getting jobs and increasing their net wealth; their debt burden has dropped; and interest rates remain low.

MAPI says that 19 of the 23 industries it follows will grow in 2014, with three remaining flat and one -- paper production -- projected to decline. “Growth leaders include construction machinery with 11 percent annual growth and housing starts with 10 percent.”

In 2015, all 23 industries are expected to grow, with housing starts leading the surge with a growth rate of 29 percent and aerospace products and parts at 10 percent.

U.S. drops to 6th place in Innovation Index

Despite its reputation for being an innovation powerhouse, the United States dropped a place in the latest Global Innovation Index, falling from the fifth spot in 2013 to sixth in 2014, behind Switzerland in first place, Great Britain in second, then Sweden, Finland and the Netherlands.

Why does the nation with the world’s greatest concentration of research universities and national laboratories along with inventors of GPS, the Internet and semiconductors rank behind Great Britain and Switzerland, inventor of the coo-coo clock?

Because the United States ranks 41st in the world in tertiary education and because it has “relatively low levels of student exchange with the rest of the world” (where the U.S. ranks 49th), say the creators of the Global Innovation Index (GII). “The level of tertiary [college] graduates in science and engineering is also low (84th) although it has seen improvements in its weaker areas including ecological sustainability (58th up from 74th in 2013) and intangible assets (72nd up from 86th in 2013).”

The United States does not rank well in many areas. Its rank in “political stability” is 38; in “government effectiveness,” it is 18; in “regulatory environment” it is 13; in “ease of starting a business,”
it is 39; in “ease of paying taxes” it is ranked 46; in “graduates in science and engineering” it is 84.

In other areas the United States is highly ranked. In market sophistication,” it is ranked 1; in “university industry research collaboration” it is ranked 3; in “domestic-resident patent applications” it is ranked 1; in “computer software spending as a percentage of GDP” it is ranked 1; and in “video uploads to Youtube” it is ranked 1.

Manufacturing accounts for 69% of R&D spending

The U.S. manufacturing sector represents 12 percent of the U.S. Gross Domestic Product, but it accounts for a disproportionate share of the research and development conducted in the United States. Manufacturing companies performed 69 percent of all domestic R&D in 2012, with 82 percent of funding coming from companies’ own resources, according to the National Science Foundation. Of the total $302 billion spent on R&D in the United States in 2012, manufacturers accounted for $208 billion. Companies in nonmanufacturing industries performed $94 billion of domestic R&D (31 percent of total domestic R&D performance).

Within the U.S. manufacturing sector, computer and electronic products was the biggest spender on R&D, at $65 billion, followed by pharmaceuticals ($48 billion), transportation equipment ($42 billion), and machinery ($14 billion). Among the nonmanufacturing industries, software publishers spent the most at $28 billion, followed by scientific R&D services at $16.5 billion.

Private-sector companies funded $247 billion of the total $302 billion spent on R&D, with $30.6 billion coming from federal sources and $24.3 billion from “other sources,” such as companies located outside the United States, state government agencies, foreign government agencies and laboratories, and other organizations located in and out of the United States.

Manufacturing industries spent 3 percent of their total revenue on R&D, with pharmaceuticals leading all other industries at 12.7 percent of R&D intensity, followed by aerospace (10.1 percent), computers (9.8 percent) and transportation equipment (4.6 percent).

Companies with the highest number of employees (more than 1,000) spent the least on R&D, as measured by R&D intensity (3.1 percent).

Pension insurance plan could soon go bankrupt

The government agency that insures employee pension programs and assumes control over those that have gone bankrupt might soon go bankrupt itself. “Despite the improving economy, an increase in probable multiemployer plans insolvencies has dramatically worsened the financial position of the multiemployer [pension insurance] program,” writes Secretary of Labor Thomas Perez in the introduction to the Pension Benefit Guaranty Corporation’s Annual Report.

The PBGC’s acting director Alice Maroni also uses the word “dramatic” when describing the increasing deficit for the PBGC’s multiemployer pension insurance program, which covers 10 million people in 1,400 plans. Currently, plans that cover 1 million people “are substantially underfunded and without legislative changes many of these plans are likely to fail,” Maroni notes. “The program’s increased deficit is largely due to the expected insolvency of additional multiemployer plans within the next decade. When the program becomes insolvent, PBGC will be unable to provide financial assistance to pay guaranteed benefits for insolvent plans.”

In its fiscal year 2014 ending in September, the agency said it assumed responsibility for the benefits of 53,000 people involved in 97 failed single-employer plans. It started paying benefits to 28,000 retirees in single-employer plans and it paid $5.5 billion to 813,000 retirees in more than 4,600 failed single-employer plans. There are an additional 595,000 people who will receive benefits from the PBGC when they retire.

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“I’ve missed more than 9,000 shots in my career. I’ve lost almost 300 games. 26 times I’ve been trusted to take the game winning shot and missed. I’ve failed over and over and over again in my life and that is why I succeed.”

Michael Jordan
Five-time NBA MVP

“The critical ingredient is getting off your butt and doing something. It’s as simple as that. A lot of people have ideas, but there are few who decide to do something about them now. Not tomorrow. Not next week. But today. The true entrepreneur is a doer, not a dreamer.”

Nolan Bushnell
Founder of Atari Inc. and Chuck E. Cheese’s Pizza

“A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty.”

Winston Churchill
Former British Prime Minister

“Make your team feel respected, empowered and genuinely excited about the company’s mission.”

Tim Westergen
Co-founder of Pandora Radio

“Chase the vision, not the money; the money will end up following you.”

Tony Hsieh
CEO of Zappos.com
“It doesn’t matter whether the Dow is 5,000 or 50,000. If you’re an entrepreneur, there is no bad time to start a company.”

Guy Kawasaki
Former Apple and Google executive

“All time is a good time to start a company.”

Ron Conway
Angel investor

“Part of the challenge of being an entrepreneur, if you’re going for a really huge opportunity, is trying to find problems that aren’t quite on the radar yet and try to solve those.”

Sean Parker
Co-founder of Napster

“Whether you think you can, or think you can’t — you’re right.”

Henry Ford
Founder of Ford Motor Company

“Entrepreneurship is the very backbone of our country and what makes us great — we are a nation of founders.”

Nancy Lublin
CEO of Do Something Inc.
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The U.S. Bureau of Labor Statistics estimates employment in occupations related to STEM skills — science, technology, engineering and mathematics — will add 1 million new jobs by 2025.

The SBA says small businesses generate more than 50 percent of the nation’s Gross Domestic Product (GDP).

According to the U.S. Census Bureau, self-employed individuals who have no paid employees operate 75 percent of the nation’s businesses.

Federal statistics show that 97 percent of West Virginia companies are classified as small businesses.

A 2010 poll from Junior Achievement found that 51 percent of the teenagers interviewed wanted to become entrepreneurs.
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