



SPRING 2018

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*magazine*



# PASSION BORN From Creativity

THE POWER OF  
**Improbable Thinking**

THE BEST  
**Laid Plans**

ENVISION THE FUTURE  
**Not Just Adapt**

FUTURE-SHAPING  
**Ideas Of Dr. Seuss**



DRUMMER KENNY ARONOFF

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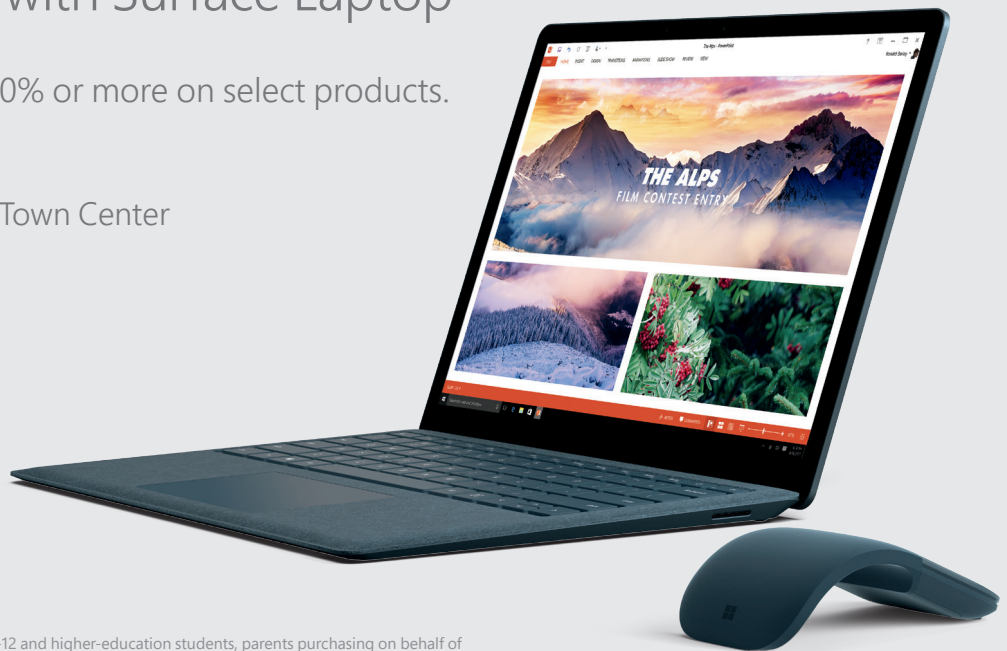


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FOR ADVERTISING/CONTENT INQUIRIES,  
CONTACT:

DR. ANTHONY PAUSTIAN  
PROVOST, DMACC WEST CAMPUS  
5959 GRAND AVENUE, WEST DES MOINES, IOWA  
50266  
515-633-2439 | ADPAUSTIAN@DMACC.EDU

**CONTRIBUTORS:**

PUBLISHER: ANTHONY D. PAUSTIAN, PH.D.  
CO-EDITOR: BETH BAKER-BRODERSEN  
CO-EDITOR: SARA STIBITZ  
DESIGNER/PRODUCTION: AMINA MIRAJ ALI

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# EDITOR'S NOTE

*Resistance. We've all faced it: that feeling of impending procrastination, that thing that happens the moment we sit down with our good intentions to create.*

It's the distracting call of ice cream to be eaten, dishes to be washed (those very same dishes that have been put off for days), or laundry to be done (that you didn't care about before). It's the call of that task you forgot that suddenly pops up when you're ready to start that big project you're so excited about.

I'm no stranger to this. My roots as a writer come from my days as a traveller; I started a blog about my adventures and people liked my writing, which serendipitously led me into professional writing. During my days as a traveler, the words flowed freely from my experiences in the world; there was no thinking about it, with no expected delivery date and no required outcome. Of course, writing for pay is a different game, with a necessary deadline and a desired client outcome. Suddenly, Resistance makes her presence known.

Steven Pressfield, the author of *The War of Art*, says it best: Resistance is the enemy of creativity. It is the beast that lies in the shadows of our mind, stopping us with fear or uncertainty or doubt. It is that thing that whispers "Don't make a fool of yourself." Above all, Resistance must be conquered not once, but every single day in the pursuit of creativity.

Writers aren't the only ones who face Resistance—it happens for everyone

who creates or must produce. The lawyer needs to draft the legal brief to convince someone else of her point. The architect needs to get the designs to his client. The producer needs to come up with the video concept to woo a prospective customer. It happens to the wannabe business owner who needs to reach out to his network and ask for help. In fact, just like the creative Muse we all hope will visit, Resistance seeks us out. According to Pressfield: "The more important a call or action is to our soul's evolution, the more Resistance we will feel toward pursuing it."

So what's the antidote to Resistance? How do you keep her at bay? We sit down and do our work, every single day. In other words, the only cure for Resistance is dedication and persistence. As Pressfield writes, "The Muse takes note of our dedication. She approves. We have earned favor in her sight. When we sit down and work, we become like a magnetized rod...Ideas come. Insights accrete."

In the pages ahead, you will read about the creative and intellectual dedication of some of the speakers for ciWeek 2018. On page 33, you'll read about the creativity and passion it took for drummer Kenny Aronoff to make it big in the world of music, and how his commitment to the song—no matter what—led him to help create some of

the biggest hits of our time. On page 27, you'll learn about Gabor George Burt, a business transformationist, who shares his approach to innovation. He uses Dr. Seuss as an example, showcasing Theodore Geisel's dedication to creativity in the face of constraint and how it can provide us with inspiration today.

You'll travel to Senegal with Dr. Jill Pruetz on page 17, an anthropologist and professor at Iowa State University. She was the first to document chimps using tools to hunt prey, and she teaches us to keep an open mind when the best-laid theories are disproven. And finally through Rod Pyle on page 7, you'll learn about thinking improbably and going for lofty goals, despite the likelihood of failure. All of them have dedicated their lives to their profession. They face down Resistance every single day and persist in the face of it. As a result, the Muse has showered them with work which serves as inspiration for all of us.



Sara Stibitz

SARA STIBITZ, CO-EDITOR. SHE MAY BE REACHED AT SRSTIBITZ@GMAIL.COM.





# Innovating since 1893

**Sometimes the most innovative thing we can do is keep doing the right things.**

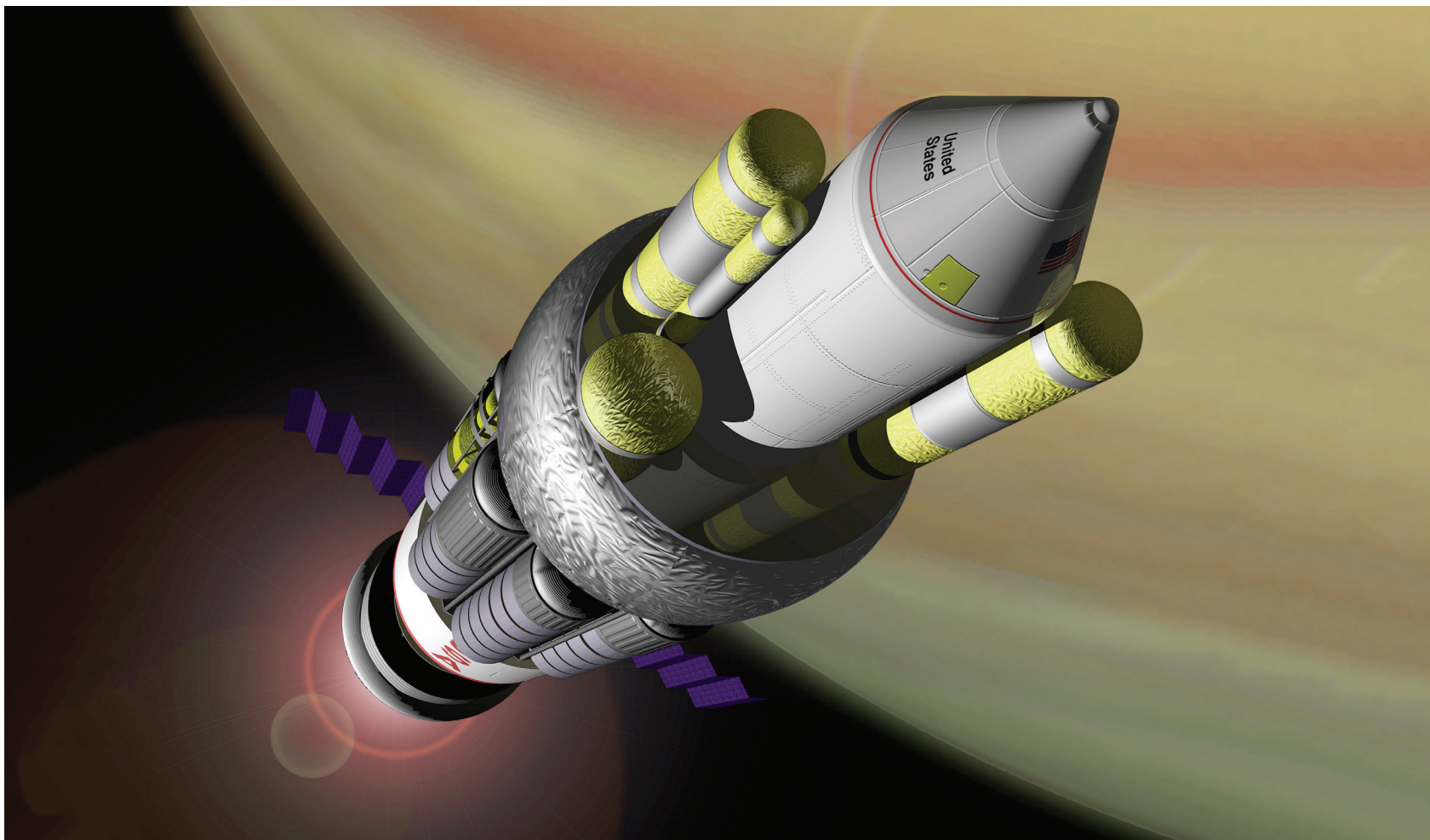
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## THE POWER OF IMPROBABLE THINKING

*How Early Ideas About Spaceflight  
Can Inform Innovative Thinking Today*



BY ROD PYLE

*Seeing the future is never easy. Consider the “world of tomorrow” as imagined during the 1930s. Flying cars, personal jetpacks, cities in the sky, and robots taking on the drudgery of everyday life were to dramatically change our lives. Some of these visions have progressed to a degree, though rarely as they were foreseen. Conversely, many developments were not foreseen with clarity: the power of digital technology, electronic miniaturization, and the overturning of many aspects of traditional culture by the Internet. Perhaps no area of future predictions missed the goals by a wider margin than in space exploration.*



AN EARLIER ITERATION OF ORION. IN ITS LARGEST FORM, ORION WOULD HAVE RIVALED THE SIZE OF LARGE NAVAL SHIPS AND BEEN CAPABLE OF REACHING MARS WITHIN A NUMBER OF WEEKS.

## Black sky thinking

Coming out of the Second World War, the United States stood at the pinnacle of technology and industrial capability. These incredible scientific and technological advances flowered in the second half of the twentieth century, especially in aerospace. Brilliant wartime refugees from Germany joined forces with others here and in the Soviet Union to create the future. By the mid 1950s, leaving this planet and establishing a foothold in space seemed a very real possibility. On the drawing boards: orbiting space stations, cities on the moon, and multiyear expeditions to Mars. All we needed was the investment and dedication to make it happen, or so we thought. In hindsight, these endeavors have turned out to be more difficult than

imagined. But great things often result from grand, unrealized notions.

The space race, from 1957 through the early 1970s, saw incredible advances in aeronautical science. A time of rapid development and progress, this era also refined big ideas into smaller, workable technologies. Prior to 1960, some truly audacious plans fueled the forces that took humans or their robotic emissaries to the moon, Mars and beyond. The period preceding the space age, the 1930s through the late 1950s, was an era of improbable thinking. The formulation of those ideas were, at the time, well beyond our capabilities. They were not impossible; they merely needed to be honed down, de-scoped, and wrestled into reality. The final result would achieve more modest goals with much

different methods. The individuals who conceived these vast plans had many traits in common: a willingness to think boldly, an ability to plan with daring, and an all-encompassing sense of mission.

This process—thinking large, then refining ideas to something achievable—is similar to how we innovate today. Groups of innovators in small startups and major corporations often gather together to brainstorm new products and services that will provide value to consumers. In general terms, these groups define a problem, challenge or opportunity, to come up with a variety of potential solutions. Their innovations often begin as a series of broad-ranging, blue-sky ideas that are gradually winnowed to a subset of workable notions that can be implemented for



advantageous effect, hopefully at a substantial profit. Black-sky thinking, moving beyond what seems rational at the onset—can sometimes offer even greater innovations.

## Big ideas in spaceflight

While individuals had been thinking about “big ideas” in spaceflight since before the twentieth century, it was only in the 1930s that governments began to take these ideas seriously, primarily in terms of military applications. This is how Wernher von Braun’s interest in rocketry evolved into the V-2 missile that pounded European cities in the 1940s and was the motive force behind the rockets that hurled the first Earth-orbiting satellite, the Soviet Union’s Sputnik 1, into space. This tiny metal globe, about the size of a beach ball, did little more than monitor the Earth’s temperature and send a repeating radio beep that allowed the satellite to be tracked. However, it also sent a signal to the Western powers that the USSR had reached space before anyone else—and could soon do the same with atomic weapons.

Some truly innovative, if improbable, thinking about spaceflight fueled both of these accomplishments. University professors, scientists, engineers, government officials and military strategists had attempted to envision a future in which space played a critical role, often as the “high ground” in military terms. The remarkable end results of these sometimes wild notions have allowed us to send humans to the moon and machines to every planet in the solar system. They represent nothing less than the invention of humanity’s future in space.

## The view from 1939

Wernher von Braun’s V-2 “vengeance” weapon is well known as the first ballistic missile ever flown, but fewer know

## *The remarkable end results of these sometimes wild notions have allowed us to send humans to the moon and machines to every planet in the solar system*

of the aspirations of Eugen Sänger, another German rocket designer and contemporary of von Braun. Sänger labored to design his own rocket-propelled vehicles and tried to interest the German government in their strategic value. While von Braun was working on the V-2 throughout the late 1930s under the auspices of the German military, Sänger spent his days developing designs for his rocket-propelled, manned bomber called Silverbird.

This high-speed, high-altitude piloted rocketplane was updated to meet Hitler’s call for the Amerikabomber in 1942. The craft would fly from Europe and reach targets in the United States, bomb New York with stunning impact, then return

to Germany. Sänger and mathematician Irene Bredt took the Silverbird from the drawing board to wind tunnel testing the following two years.

The concept was not complex, though its execution would have been. The ten-ton rocketplane—with a slender fuselage more than 100 feet long and stubby wings—looked like a cross between the later X-15 rocketplane and a small space shuttle. At the rear was a powerful rocket engine rated at a highly optimistic 220,000 pounds of thrust, with the rest of the rocketplane dedicated to fuel tanks, a single pilot and a large bomb load.

The plan: The Silverbird would launch from a site off the coast of Europe, speeding down a horizontal railroad track by a huge booster stage that would push the rocketplane down the track like a rocket-powered caboose. The Silverbird’s main rockets would then ignite, sending the craft to an altitude more than thirty miles, arcing across the Atlantic Ocean above most of the atmosphere, right on the edge of space. As the craft gradually lost energy,

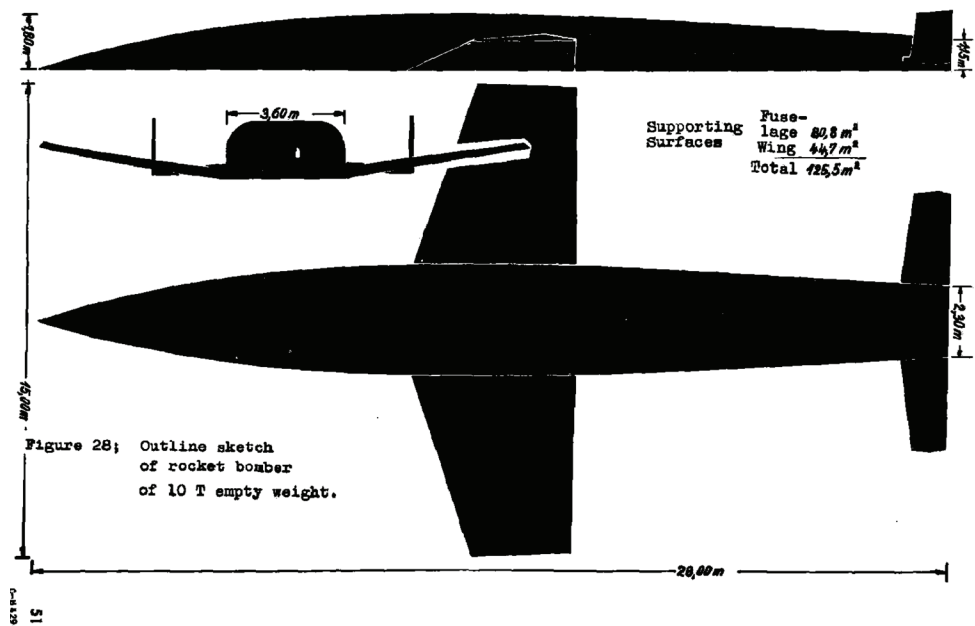


Figure 28; Outline sketch of rocket bomber of 10 T empty weight.

THREE VIEWS OF EUGEN SÄNGER'S SILVERBIRD ROCKET BOMBER.



WERNHER VON BRAUN AT THE MARSHALL SPACEFLIGHT CENTER IN 1960, SHORTLY AFTER THE FORMATION OF NASA IN 1958.

gliding after engine shutdown, it would “bounce” off the denser atmosphere below, following a suborbital trajectory toward the United States. As it neared the east coast of the US, it would dip low, speeding in a bomb-run trajectory over New York City. This target was chosen for psychological impact as opposed to any real strategic value. Hitler thought that the destruction of a Manhattan neighborhood would significantly demoralize the US. Other proposed targets included railyards, bridges and factories.

The Silverbird would have carried bombs as large as 8,000 pounds. Hitler’s preference would have been to have the atomic weapon that eluded Nazi scientists. However, at the speeds and altitudes involved, even a large conventional explosive would have been extremely powerful. Sänger estimated that the high-energy impact would carry as much as ten times the

*Hitler thought that the  
destruction of a Manhattan  
neighborhood would  
significantly demoralize  
the US.*

force of conventional explosives. After delivering its bombs, the Silverbird would glide across the rest of the US, landing in Japanese-held territory in the Pacific. It would then be loaded into a ship or submarine for transport back to Germany for reuse.

Sänger’s design was well ahead of its time, but for those reasons also unworkable. The technology, especially with Germany’s declining fortunes from 1943 on, was unable to support the project. Rocket engines were in their infancy and notoriously unreliable. Many would have exploded during testing and probably in use. Additionally, Sänger seriously underestimated the requirements for safe reentry from the edge of space, and given the metal alloys available at the time, the Silverbird would have melted and broken up during the early stages of reentry.

The project did not move beyond



planning stages or the commissioning of a few wind-tunnel models. But the extensive calculations and studies performed by Sänger and Bredt lived on. After the war, like von Braun's work on the V-2 missile, much of the material related to the Silverbird bomber was obtained by the US and incorporated into post-war aerospace designs, including the Air Force's X-15 rocketplane in the late 1950s and the space shuttle in the 1970s. Starting with a seemingly impossible idea, Sänger and Bredt innovated designs that inspired the space planes of the future. This is just one example of how early black-sky thinking led to future aerospace breakthroughs.

## Soldiers on the moon

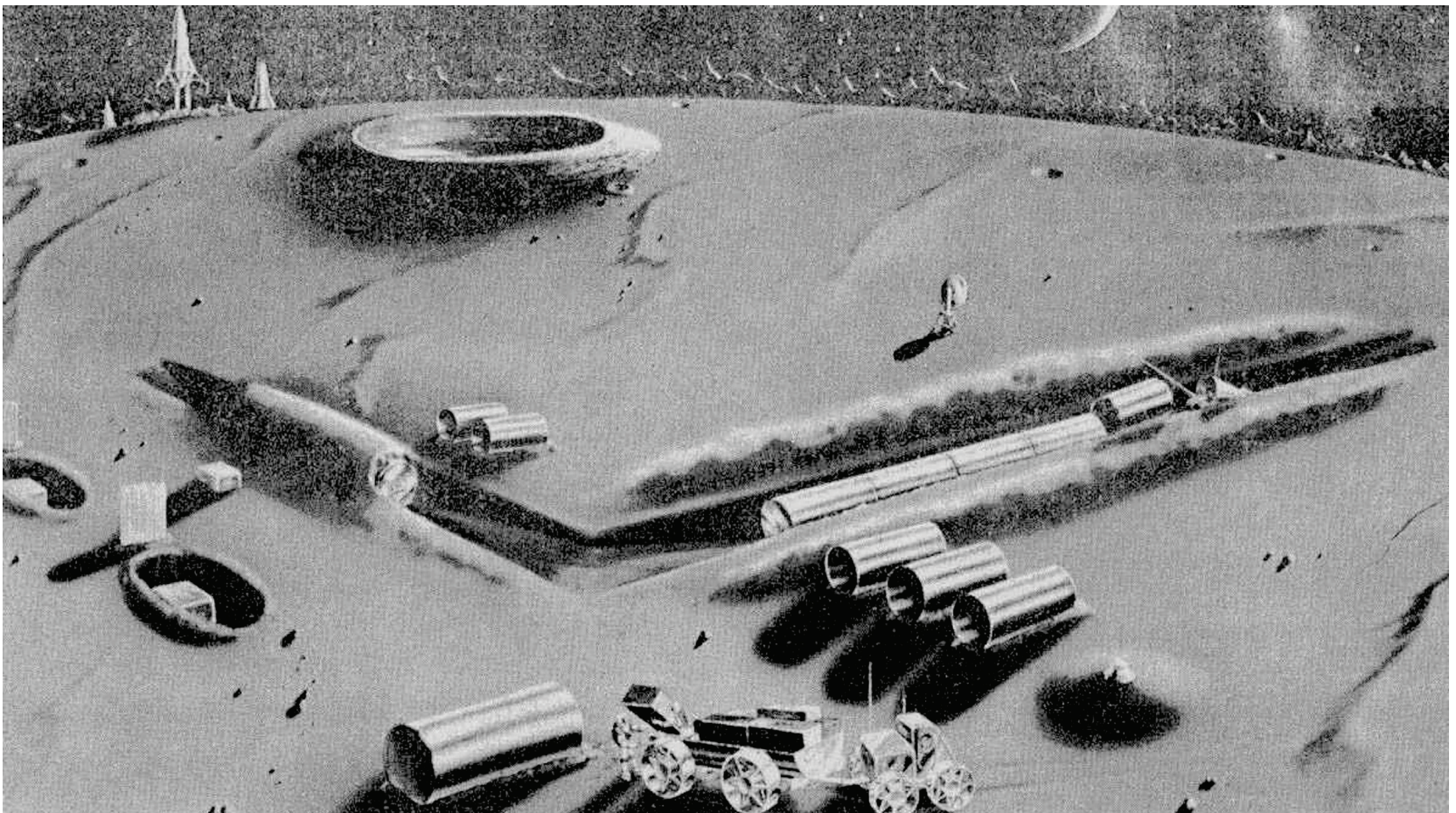
In comparison to later plans for spaceflight, the Silverbird seems

almost tame. By the mid-1950s, military planners in the United States knew that the Soviet Union was making strides in rocket design and the miniaturization of nuclear weapons, a combination viewed as a toxic brew by the West. The idea of Soviet missiles bringing nuclear fire from the heavens with virtually no warning was unacceptable to the US Army, among others. While efforts to contain the USSR progressed along a number of fronts, one such project, known as Project Horizon, went quite literally above and beyond the others.

About a year after the Soviet Union launched the first Earth-circling satellite by the Soviet Union satellite in 1957—a feat that demonstrated the Russians' ability to loft much larger masses than the US—the Army assembled a team

to design the ultimate deterrent to nuclear war. Project Horizon envisioned a US Army base on the moon, staffed by twelve or more soldiers. This off-world military presence would accomplish multiple objectives. First, it would demonstrate the technological superiority of the United States (though such superiority was far from assured at the time). Second, it would plant the American flag on the moon before the Soviet Union. Third, and perhaps most important, it would provide a platform in space from which the US could hurl nuclear death upon the USSR from a virtually impregnable base in the sky.

Of course, the Army knew that the Soviets might well send their own soldiers to the moon to counter the US threat. To prevent Soviet success,



A HIGH-ANGLE OVERVIEW OF THE PROJECT HORIZON BASE SITE.





THE DAVY CROCKETT NUCLEAR BAZOOKA WAS CONCEIVED AS A USEFUL DETERRENT TO SOVIET AGGRESSION IN WESTERN EUROPE—WHERE IT WAS ULTIMATELY DEPLOYED—AND ALSO THOUGHT TO BE USEFUL FOR THE DEFENSE OF A LUNAR BASE.

the Army's moon soldiers would be equipped with lunar weaponry to blunt any overland attack by a lunar Red Army. The American moon soldiers would be provided with sidearms, lunar-rated Claymore mines, and a moon-bazooka with a small nuclear warhead. The nuclear bazooka was tested and found to be effective, if dangerous in use (soldiers would have to fire and then duck behind rocks to avoid being irradiated since it only had a range of a few miles).

The official report on Project Horizon, which was completed in just ninety days, was submitted in June 1959. It opened with a candid statement of the primary goal: "Moon-based military power will be a strong deterrent to war because of the extreme difficulty, from the enemy point of view, of eliminating our ability to retaliate." Distance and well-armed lunar soldiers would see to that.

Many challenges were immediately obvious upon reading the report. One was the incredible mass that would have to be transported to the moon. Up to 229 flights of America's then-new Saturn I rocket would be required. For context, while 2017 was one of the busiest launch years in history, the US launched only 27 rockets in that time. Launching hundreds of rockets at the dawn of the space age would have been an expensive, daunting task.

Perhaps even more challenging were the plans to construct the lunar base. First, two men would be sent to the moon in 1965 to reconnoiter the best location for the complex. Then, in 1966, modular components would be landed at the selected location. More crews, totaling nine men, would be sent to construct the base. This would involve a pinpoint landing (hardly assured at the time), the assembly of a crane to move the modules, laborious digging of

deep trenches and lowering of modules into them, connecting the modules and outfitting their interiors, then covering them with lunar soil to protect future inhabitants from radiation and micrometeorite impacts. The men would also be tasked with setting up and starting two nuclear reactors to power the complex. Four weeks were allotted to the construction activities, with crew rotations to start later in 1966. The cost of the entire undertaking through the

*Wild ideas can ultimately spawn real benefits.*

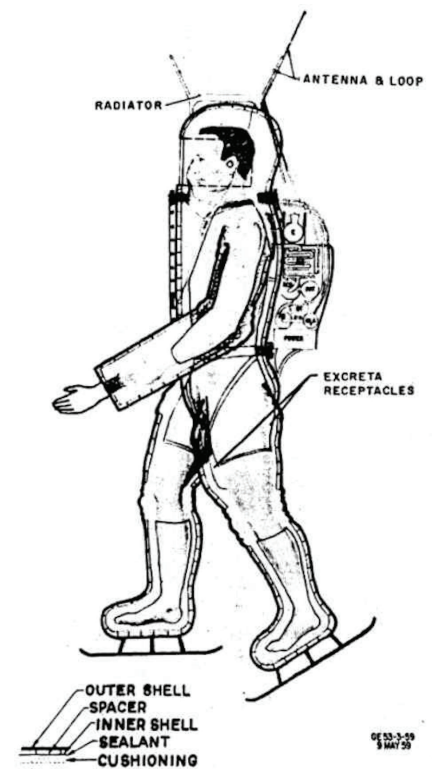
first full complement of soldiers was estimated at \$6 billion.

We now know that the Apollo program cost more than \$20 billion in 1969 (well over \$100 billion today). That effort sent nine three-man crews to the moon over five years with only the mass of their Apollo spacecraft and lunar landers riding along. It's clear that a program encompassing the scope of Project Horizon would have been far more expensive—the cost of the rocket launches alone, an order of ten times as many as Apollo, would have been stunning. The added complexities of extensive surface activities to construct the base, not to mention the operations once situated, strains credulity. To the government's credit, Project Horizon was never seriously considered once the proposal was submitted.

On the other hand, it is proposals like Project Horizon and others that spawned the drive to reach the moon. The national commitment to the Apollo program not only assured its ultimate success (by no means a foregone conclusion in 1959, much less when Apollo 8 headed into the void in 1968) but also provided many benefits to the American economy of the 1960s, as well as a vast number of technological advances that have generated dividends to this day. The smartphone in your pocket is a testament to the successes of that program. Wild ideas can ultimately spawn real benefits.

### On to Saturn via Atomic Bombs

Perhaps the most outrageous plan of the era was Project Orion (not to be confused with NASA's current Orion spacecraft). The concept was first proposed in the 1940s and extensively



THE BATTLE-READY SPACESUIT PROPOSED FOR PROJECT HORIZON.

be powered by nuclear bombs—not nuclear power, but *atomic bombs*. The Orion spacecraft would consist of a huge capsule shaped like an oversized 50-caliber bullet atop a stack of huge tubes that held hundreds of small nuclear warheads. These would be ejected at intervals of a few seconds to explode directly behind a giant, disk-shaped “pusher plate” to absorb the force to the detonation and propel the spacecraft forward. At least, that’s how the scientists thought it would work.

Designs ranged from a 1,000-ton craft to a huge 10,000-ton version that would launch from Earth via multiple atomic explosions. The larger iterations, with crews of more than 100, would ultimately travel at speeds that would allow them to reach Mars in about eight weeks instead of the six to seven months required by conventional chemical-powered rockets. With an enormous cargo-carrying ability, massive surface expeditions could be

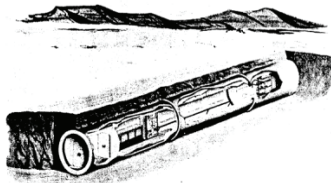


Fig. 1-2. Cross Section of Typical Outpost Compartments

*For these visionary entrepreneurs and others, the sky is not the limit. Their daring visions have resulted in workable and soon-to-be-profitable commercial operations.*

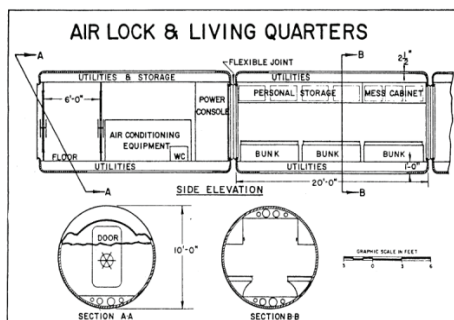
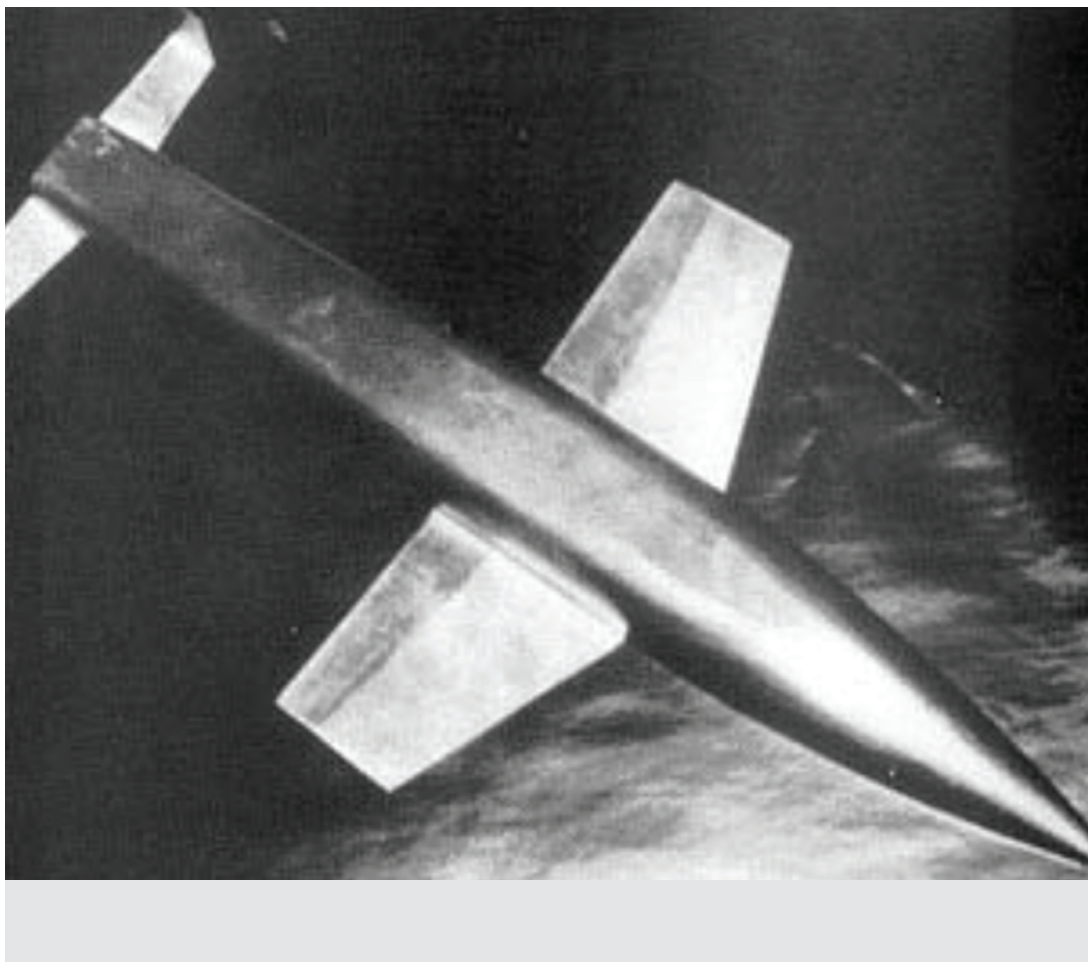


Fig. 1-3. Overall View of Initial Construction Camp

studied starting in 1958 at General Atomics with support from the Air Force and later NASA. Orion would be a large spaceship in the grandest traditions of science fiction with a total mass of up to 10,000 tons. (For comparison, a fully fueled Saturn V rocket and Apollo system was about 3,250 tons!) This does not sound outrageous when compared to moon bases and rocket bombers, except the enormous spacecraft would

A CUTAWAY VIEW OF A HABITAT CYLINDER, INTENDED TO BE LANDED UN-CREWED.





landed and pursued. Enough supplies could be carried to support the crews for years. The estimated budget, which was doubtless optimistic but not nearly as wild-eyed as Project Horizon and its ilk, was \$24 billion, or about the same as Apollo. Orion's ultimate capability was summed up by famed physicist Freeman Dyson, who worked on the project, in his Project Orion tagline: "Mars by 1965, Saturn by 1970."

More than \$11 million was spent on studying Orion before it was cancelled in the early 1960s due largely to the establishment of international treaties banning atomic testing and concerns about the effects of nuclear fallout in the United States. Despite the fact that Dyson had estimated that only a few cancer-related deaths would result from a given launch of Orion—which he pointed out, paled in comparison to the approximately 36,000 deaths from automotive accidents each year in that era—the potentially toxic

*The era of big ideas about  
spaceflight spawned some  
of the most remarkable  
achievements of the  
twentieth century*

effects of launching Orion with nuclear bombs doomed the project. Later designs would have boosted a much smaller variant atop the Saturn V, but with funding discontinued, the project disappeared into dusty file cabinets.

The motive power behind Project Orion, called nuclear-pulse propulsion, has been much studied since then. Scientists have written papers as recently as the

past few years and continue to find merit with the idea. The efficiency of this technology, which would deliver almost all of its mass to Earth's orbit, is undeniable. Such a spacecraft could enable the human exploration of the inner solar system even when accounting for the added mass required for radiation shielding and the generation of artificial gravity. Orion was simply that powerful.

A magnificently ambitious plan for the human exploration of space, Project Orion has long been relegated to the history books. Alternative uses of nuclear energy in space are still under consideration, involving less ambitious plans to utilize fission reactors to efficiently heat fuel for thrust levels far in excess of anything a chemical rocket can achieve. The primary obstacle to such a system, briefly tested in the 1970s, is the danger of launching large masses of radioactive materials into orbit.

**Innovating for tomorrow,  
inspired by yesterday**

These and other seemingly crazy ideas for the exploration of space, never well known, have all but disappeared from popular memory. But the era of big ideas about spaceflight spawned some of the most remarkable achievements of the twentieth century and can inform our thinking in other areas of endeavor today. Few innovations occur without the birth of larger ideas whittled-down to workable plans over time, and the corporate boardroom must learn to support the conditions that will spawn such thinking. This effort need not cost millions, nor does it necessarily need long-term commitment to individual projects. What it does require is the willingness to support teams of creative thinkers: the time, space and toolsets to foster groups to think beyond the boundaries of existing technology and services. The discipline to suspend

criticism and negative feedback is important, and the ability to allow for experimentation and failure is critical.

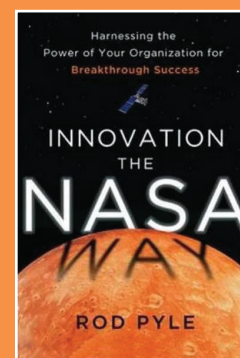
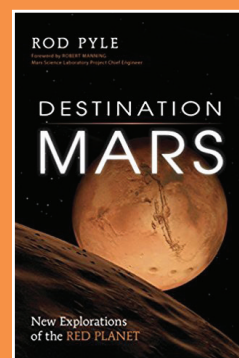
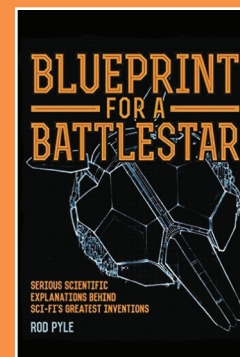
One need look no further than Google to bear out this view. Forward-looking corporate support allowed dozens of experimental projects, many of which resulted in viable products, to grow at Google Labs between 2005 and 2011. This effort has since been superseded by Google X, an independent entity that has resulted in, such projects as the self-driving car, stratospheric balloons that provide wide-ranging broadband access, and the Google Glass augmented reality project. Many more will follow. Google's willingness to devote critical resources to black-sky research and development has kept them at the forefront of innovation, and other organizations have strived to duplicate their success.

Further evidence of this kind of bold thinking can be seen in the entrepreneurial visions of people like Elon Musk and Jeff Bezos, both of whom are changing the core notions of spaceflight today. Beginning with bold (and many have thought unrealistic) visions of revolutionizing spaceflight, Musk and Bezos have succeeded in changing the cost equation of accessing Earth orbit, and both will soon be sending their own fleets of vehicles, crewed and robotic, far beyond. As this is written, Musk's SpaceX is flying payloads for dozens of customers at unprecedentedly low costs into orbit, and his newest spacecraft, the Falcon Heavy Rocket—which will be capable of carrying dozens of passengers to the moon and beyond—recently made its maiden voyage and took Musk's own Tesla Roadster as its payload into deep space. Bezos' designs for affordable, reusable rockets have been tested, with his innovative rocket engine designs being sought by multiple customers. A robotic cargo-carrying lunar lander, Blue Moon, is in development. For these

visionary entrepreneurs and others, the sky is not the limit. Their daring visions have resulted in workable and soon-to-be-profitable commercial operations. These innovators, and countless others working on smaller but promising projects, were inspired by the success of the Apollo program and its predecessors.

At the core of this kind of innovation remain the same qualities that stoked the creative fires of the earliest rocketeers: boldness, daring and a sense of mission. Creating an environment conducive to big thinking is critical, as is giving the team an ongoing stake in that success. Constructive criticism proves crucial to the process, but the suspension of negative criticism allows great ideas to surface and flourish. While many ideas proposed in the early days of the Apollo program were rejected or modified, those who claimed that landing humans on the moon was an impossible task—and there were many—were not helpful to the effort and largely ignored. Their short-sighted criticisms have retreated into the rearview mirror of innovation.

*To fuel innovation, think boldly, strive tirelessly, dare to be wrong. Allow a sense of mission to drive your vision; great achievements will often follow. When they do not, step back, take a breath, and try again.*



ROD PYLE IS AN AUTHOR, JOURNALIST, HISTORIAN, FUTURIST, AND FILMMAKER. HE HAS WRITTEN MORE THAN 13 BOOKS ON SPACE HISTORY, EXPLORATION AND DEVELOPMENT, INCLUDING *INNOVATION THE NASA WAY* AND *DESTINATION MARS*. PYLE HAS ALSO PRODUCED, DIRECTED AND WRITTEN SEVERAL EPISODES FOR HISTORY CHANNEL'S *MODERN MARVELS* AS WELL AS A DOCUMENTARY FOR HISTORY CHANNEL CALLED, *BEYOND THE WAR OF THE WORLDS*.

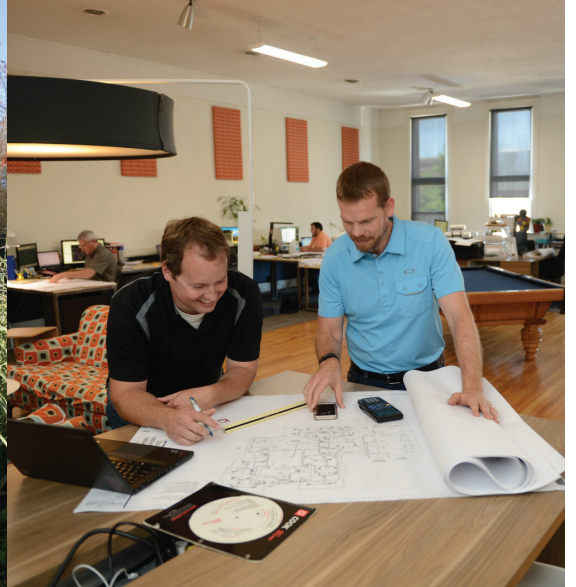
RON PYLE WILL PRESENT AT THE DMACC WEST CAMPUS ON THURSDAY, MARCH 8, AT 1:00PM.

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FROM LEFT TO RIGHT, THE ORIGINAL FONGOLI SAVANNA CHIMPANZEE PROJECT CREW.



BY JILL D. PRUETZ, PH.D.

## THE BEST LAID PLANS:

### *Studying Chimpanzees in the Savannas of Senegal*

*My trajectory as an anthropologist and primatologist has been anything but linear. It has also been anything but boring. While sometimes incredibly challenging, my path has only made me appreciate the need for flexibility and creativity in science.*





THE AUTHOR FOLLOWING CHIMPANZEE SUBJECTS THROUGH A FALLOW AGRICULTURAL FIELD AT FONGOLI, SENEGAL.

I initially fell in love with fieldwork doing archaeology, but I also did well in a primatology class and have always had an interest in animals. After joining an archaeological field school in Belize, I realized I still loved fieldwork—but less so, archaeology. Following my university degree, I volunteered and then worked with captive chimpanzees. Although I had already chosen to study primates, I became enamored with chimpanzees, and I realized studying them was my future. I did study wild tamarins, a small South American monkey, and, for my dissertation research, wild patas monkeys and vervet monkeys in Kenya. However, I was certain I wanted to return to the study of chimpanzees in the wild and, specifically, in a savanna habitat, largely because of the doctoral research I had conducted in East Africa. Compared to my experience in South American rainforests, I much preferred the dry, hot, and sparsely treed savannas.

*I became enamored with  
chimpanzees, and  
I realized studying  
them was my future.*

The best effort at studying chimpanzees living in a savanna stemmed from the Stirling African Primate Project (SAPP) out of the U.K. The project folded after four years, largely because of the failure to habituate chimpanzees at the Senegal study site. Considerable information came out of the SAPP study, but primatologists traditionally follow and gather data on habituated primates because of the wealth of information such studies can bring. Habituating wild primates to the presence of observers may take

years, and many doubted it could ever be done with savanna-dwelling chimpanzees. This was my goal, however. I was sure I could do it if given the chance.

I initially planned to reopen the SAPP study site at Assirik, Senegal, but after conducting a survey there and in surrounding areas as a postdoc, I realized my odds were better if I based my research site outside of national park boundaries. Most primatologists conduct research in protected areas, such as national parks, although the study of nonhuman primates in areas they share with people has become more of a focus in the past decade or so. Most chimpanzees in Senegal are found outside protected areas, and while they are not hunted for the bushmeat trade there, they remain wary of humans. On the other hand, apes in Senegal have lived alongside humans for millennia, and chimpanzees I encountered outside of the Niokolo Koba National Park



seemed less afraid than those within its boundaries where they rarely saw any people. In 2001, with grants from the National Geographic Society and Primate Conservation Inc., I followed our 2000 survey by initiating my own research at the Fongoli study site. I've always tried to keep my footprint and, thus, my crew, as small as possible and still get the work done (Figure 1).

Since no one had successfully habituated chimpanzees living in savannas, I knew it would be a challenge. Local people and connections in southeastern Senegal were instrumental in leading me to areas chimpanzees frequented, which turned out to be key to our success. Apes in Senegal are limited most by access to drinking water, especially during the dry season. A local hunter and village chief, who would become my first field assistant, led me to a water source apes used. We set up our observation area some distance from the chimpanzees so they could drink undisturbed, but where we would be close enough to use binoculars to observe them.

While they adjusted to our presence at the site relatively quickly, going from watching them to actually following them across the landscape took many years. Still, we were able to begin nest-to-nest follows of adult males after about four years of habituation effort. A nest-to-nest follow is when we arrive at a male's night bed or "nest" and follow him throughout the day, collecting specific data, until he makes another nest the next night. It took us another year to identify all the females in the group, as they were more timid than the males.

From an anthropological standpoint, my main reason for studying chimpanzees in a savanna mosaic habitat is because my colleagues and I believe chimpanzees can inform our understanding of how hominins



CAMERA TRAP IMAGE OF THE NOCTURNAL GALAGO SENEGALENSIS, THE TOP MAMMALIAN PREY OF THE FONGOLI CHIMPANZEES.

*Since no one had successfully habituated chimpanzees living in savannas, I knew it would be a challenge.*

(bipedal apes) adjusted to the stresses of an increasingly dry, hot and open (vegetative) environment. Many related hypotheses have looked to such an environment to explain the changes that occurred in human lineage, and I am most interested in the oldest of hominins, which lived five to seven million years ago.

My initial studies focused on chimpanzee diet and ranging behavior, as I could learn about such behavior using indirect traces of chimpanzees, such as feeding remains and night nests. However, over the years, various

discoveries have led me to change my trajectory repeatedly. One of the first such discoveries was pointed out by my head field assistant, Mboule Camara, who had grown up in the area and was the village hunter. He noted that the apes at Fongoli used caves at certain times of the year, something I had never heard of. (As it turns out, there was one such report communicated to a fellow scientist who had done ape surveys in Mali, as Jane Goodall brought this report to my attention at a meeting where I included my findings in a presentation.) I began placing camera traps in the caves, but the chimpanzees were too wary. Although I obtained good images of other animals like vervet monkeys, genets, giant Gambian pouched rats and honey badgers, it would be much later before I could see chimps using caves. I had to switch to using indirect evidence, such as feeding traces and foot and knuckle prints, to demonstrate that savanna chimps used them. I have





AN ADULT MALE FONGOLI CHIMPANZEE JUMKIN DISPLAYING BIPEDALLY AT THE EDGE OF AN OPEN SAVANNA (PHOTO CREDIT WILL AGUADO).

since been able to use camera trap technology to record various behaviors in the caves as my protocol of staying at least thirty feet from the chimps prohibits me from following them into such close quarters. They have adjusted to the cameras now, it seems.

Studying the chimpanzees at Fongoli is reminiscent of a natural history study, although we adhere to the hypothesis-testing paradigm in my field of anthropology, as do other sciences. As I mentioned, I began with studies stemming from my own dissertation research on monkey-feeding ecology, but the Fongoli chimpanzees repeatedly caused me to change gears. For example, one of my earliest project managers noted a conundrum: he had followed chimpanzee tracks to the bank of the small Fongoli River, but he was unable to see where they would have crossed. Based on early research by Jane Goodall and others, we knew that chimpanzees do not swim, and they do not even like water, at least in the wild. Yet some years later, another project manager observed

them soaking in a pool of water—unheard of for wild chimpanzees!

Perhaps the most exciting discovery at Fongoli was how these chimpanzees use tools to hunt other primates, a trait humans possess that sets our own species apart from others. Fongoli apes fashion stick tools to stab into hollow trees where nocturnal bushbabies, (small prosimian primates), rest during the day. To make things even more interesting, the Fongoli females hunt with tools more than the males do, which is the opposite of the male-dominated hunting that occurs at other chimpanzee study sites. Over the years, I have investigated different aspects of this “spear” hunting, and something I am concentrating on now is why the behavior is so seasonal. The “bushbaby season” peaks in June and July, at the beginning of the rainy season in Fongoli, and I have explored various reasons—ranging from social parameters to ecological explanations—to explain why this might be the case, but I have yet

to come up with a good explanation. I am now investigating the behavior of the prey species itself, specifically, how bushbabies use the tree cavities over the course of the year and if this practice prevents chimpanzees from trying to catch a bushbaby during the long, hot, dry season.

Since we are interested in how the bushbabies behave from a chimpanzee's perspective and not necessarily from the perspective of a primatologist (as is usually the case), we have had to get quite creative about the methods used. We combine survey methods to count bushbabies as they leave their cavities at night and follow them back there in the mornings. We also use tools normally utilized by plumbers to investigate clogged pipes; my field assistant climbs trees where we have seen chimpanzees hunt bushbabies, and he uses a borescope to take images of the interior of the cavity. This supplies data on whether a cavity is inhabited but also the architecture of the cavity and anything that might obstruct a hunting chimpanzee.

I am excited about a tool I now have in hand for a completely different project. With the assistance of my new university, Texas State in San Marcos, and the National Geographic Society, I am kicking off a project that uses a camera to take thermal images of chimpanzees to understand better the temperature stresses they deal with in their savanna environment. We also plan to use this camera to detect whether bushbabies are in cavities where chimpanzees hunt and, if so, how long the prosimian primates use the same cavities over the course of the year. Preliminary information indicates that chimps are more successful at capturing bushbabies that sleep in branch cavities compared to those in a tree trunk. These branch cavities are likely to get much hotter than the tree trunks during the dry season,





FONGOLI CHIMPANZEES DRINK FROM A RECENTLY EXCAVATED GOLD MINE.

and I am collecting data on temperature in a sample of these cavities.

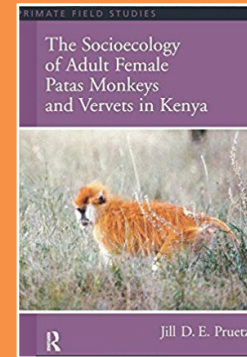
The study of chimpanzee temperature loads in various habitats and postures also provides an example of how creativity has played a big role in my research. In collaboration with a National Geographic scientist-in-residence who came to Fongoli to try out some night-imaging equipment, I designed a study that measures heat loads in chimpanzees in various contexts: stand when they sit down, and after they soak in pools of water, use caves and rest in various habitats or simply in the shade. Since my university purchased this camera for my research, I have thought of one thing after another we might do with it.

For instance, we can also look at aspects of chimpanzee health. Just yesterday, while following my study group, I noticed an adult male, Bilbo, was not using his hand while traveling. It looked a little swollen to me, and I imagine a heat-sensing camera would have shown that it was indeed infected.

Perhaps the most creativity I will exhibit will concern the future of the Fongoli chimpanzees and conserving their population as well as their Senegal habitat. I have seen the most pressing conservation issues continue to evolve over the years. From agricultural fields to wild fruit collection to migrating sheep herds to, finally, a gold rush, the conservation landscape has changed in southeastern Senegal for the Fongoli chimpanzees.

While the immediate solution to conserving chimpanzees for many people seems simple—ecotourism—this type of conservation program would not work in Senegal for many reasons. In addition to the risks for chimpanzees (threat of zoonosis, overhabituation leading to more conflict with humans, risk of poaching) and for humans (increase in chimpanzees' crop raiding, possible chimpanzee attacks) in an area where both live side by side, the logistics of bringing tourists to see apes in southeastern Senegal are also difficult. Savanna chimpanzees have much larger home ranges and longer day ranges than chimpanzees living in forests, making them more difficult to find and follow. Add to that the 100-plus degree temperatures much of the year and the high grass that makes visibility almost impossible in some months, and the result does not seem to produce a great incentive for tourism other than for the hardiest type.

This is something we are working on now with the local people in this part of Senegal. Surprisingly, one of the major players in this scenario is a corporate gold mining company. While it may seem like "selling out" to some, working with a company that is required to offset its habitat disturbance may prove to be more of a creative solution to our problems than it seems on the surface. Thus far, we have conducted extensive surveys in areas targeted by the mine



DR. JILL PRUETT IS A PROFESSOR AND PRIMATOLOGIST. HER STUDIES OF SUCH NON-HUMAN PRIMATES AS CHIMPANZEES, SPIDER MONKEYS AND HOWLING MONKEYS HAVE LED HER TO CONDUCT FIELDWORK IN PERU, COSTA RICA, NICARAGUA, KENYA AND SENEGAL. SUPPORTED BY THE NATIONAL GEOGRAPHIC SOCIETY AND THE NATIONAL SCIENCE FOUNDATION, PRUETT FOCUSES HER RESEARCH ON THE INFLUENCE OF ECOLOGY ON PRIMATES AND THE IMPLICATIONS HER FINDINGS MIGHT HAVE ON EARLY HUMAN FEEDING AND SOCIAL BEHAVIOR.

DR. JILL PRUETT WILL PRESENT AT THE DMACC WEST CAMPUS ON THURSDAY, MARCH 8, AT 11:30AM.

and expanded in other areas to explore whether chimpanzees in this region will be able to adjust to such severe disturbance. In the economic climate of Senegal today, creative—and drastic—measures are needed to ensure that this population of chimpanzees, at the limits of their range in Africa, survive for generations beyond the current human focus on gold.

*While the immediate solution to conserving chimpanzees for many people seems simple—ecotourism—this type of conservation program would not work in Senegal for many reasons.*





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BY ANTHONY PAUSTIAN, PH.D

## MEET GEORGE JETSON

*How Successful People Envision  
the Future—Not Just Adapt to It*

*I grew up watching *The Jetsons*, a futuristic television cartoon created by Hanna-Barbera in the early 1960s. As George Jetson and his family traveled around in flying vehicles while living and working in buildings that seemed to float in the sky, it was easy to think that anything representing a total paradigm shift from current life had to be light-years into the future.*



However, I recently attended the Experimental Aircraft Association's annual AirVenture in Oshkosh, Wisconsin. The largest air show in the country, AirVenture was loaded with state-of-the-art military and civilian aircraft and even modern, private-sector rockets such as Jeff Bezo's Blue Origin. But it was the smaller, more experimental aircraft that fascinated me. Despite my Air Force years on fighters (F-111s now appearing in museums), I found myself drawn to these personal flying machines the entire week there.

The options were many, ranging from flying cars to personal transport drones. On the one end: the two-seat Switchblade. Classified as a flying sports car (with wings that automatically fold in and out from the bottom of the car like a pocket knife), this amazing car/plane can reach a ground speed of 100 mph, an air speed of 190 mph, and possess a range of 450 miles! Then there was the two-seat Pal-V, a car/helicopter. Unlike the Switchblade, and a bit slower, this vehicle doesn't require a runway and can drive and take off from virtually any location.

The personal flying machine that truly amazed me was the all-electric drone developed by EHANG (listed by *Fast Company* as one of the Most Innovative Companies of 2016). About the size of a Volkswagen Beetle, this flying machine eliminated the most dangerous element of transportation—driver/pilot error. It's controlled by a fail-safe autopilot and ground-based flight control center, so the "passenger" simply climbs in, sets a destination on the touchscreen (kind of like tapping on a location in Google Maps), and taps GO. The drone does all of the work, carrying the person from point A to B using the fastest and safest route.

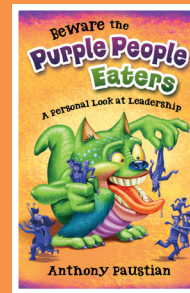
Think back thirty years to the year 1987 (or imagine it, if you were born after). A gallon of gas cost 89¢, and the price of a new Honda Civic was just over

\$6,000.<sup>2</sup> The first successful email sent from China was received by its desired recipient in Germany,<sup>3</sup> and there were a third fewer people in the world.<sup>4</sup> Web browsers like Google didn't exist, so you couldn't surf or really do anything on the Internet; a cell phone sold for thousands of dollars, required a large carrying bag, and ONLY allowed you to make a call (and in only very limited areas in the country);<sup>5</sup> and there was no GPS in your car telling you where to go.

Whether or not we realize it, we've been adapting to huge paradigm shifts throughout our entire lives: gas-powered automobiles transitioning to all electric, self-parking, or even self-driving cars; rotary dial telephones evolving into smartphones with more computing power than the sum total of all computers that sent men to the Moon; and storefront, face-to-face retail shopping slowly giving way to online shopping. Even those who still shop in person often use smartphones instead of cash to compare prices and pay for merchandise.

While personal flying/driving machines are still nowhere near mainstream, I can't help but wonder what life will be like thirty years from now.

And then there are the people who lead the paradigm shifts. Gene Roddenberry was able to imagine a future in *Star Trek* totally different from what was considered normal in the 1960s. That vision of the 23rd-century inspired a generation to imagine and create, and now we use many of those imagined 23rd century innovations today. Steve Jobs pictured a world where everyone had a personal computer, and now we all have one, either in our pockets or on our wrists (or both). John F. Kennedy envisioned Americans walking on the Moon, which resulted in the development of thousands of new innovative products we all take for granted every day.



DR. ANTHONY PAUSTIAN IS THE PROVOST FOR DES MOINES AREA COMMUNITY COLLEGE IN WEST DES MOINES AND THE AUTHOR OF *IMAGINE!*, *BEWARE THE PURPLE PEOPLE EATERS*, AND *A QUARTER MILLION STEPS*. HE IS ALSO THE HOST OF A WEEKLY PODCAST THROUGH IHEARTRADIO CALLED "A STEP BEYOND."

DR. PAUSTIAN WILL BE DOING AN INTERVIEW PRESENTATION WITH JONATHAN FRAKES ON WEDNESDAY, MARCH 7, AT 2:30PM.

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Change happens, and its impact is inevitable. What separates the successful leader and entrepreneur is an ability to imagine, envision and **be open** to a future that's different from today... and not just react to it as it happens.

Who knows? Today's concept of automobiles may no longer exist in thirty years. Someone like a Roddenberry, Jobs or Kennedy may lead a shift in paradigm, and we could all fly around in our own personal flying machines to our homes in the sky...just like in *The Jetsons*.

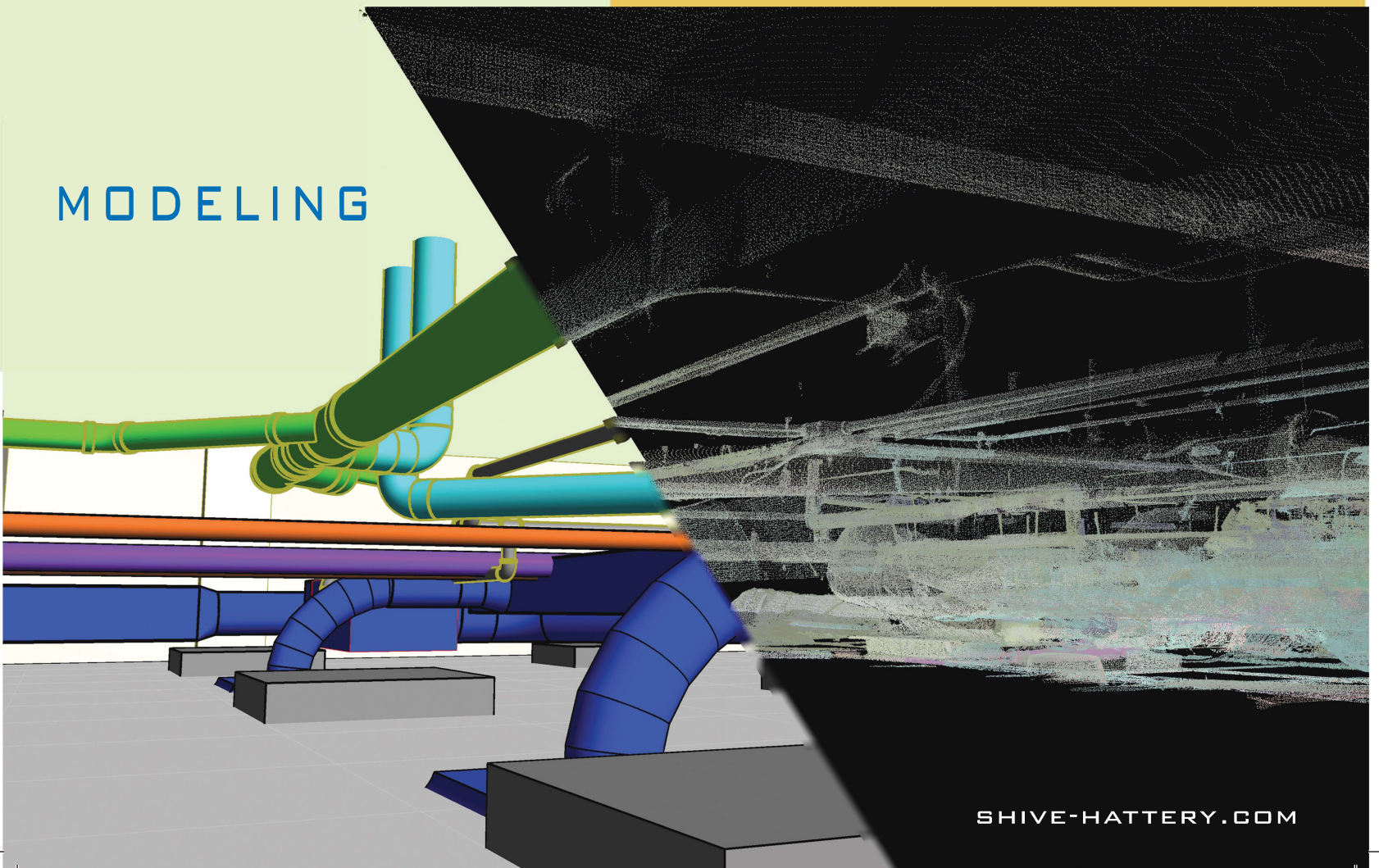
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MY LIFE AS A CIRCUS—PAINTING BY TRACY BOOTH. USED WITH PERMISSION.



BY GABOR GEORGE BURT

# WHAT DOES DR. SEUSS

*Teach Us About  
Future-Shaping Innovation?*

*Think left and think right and think low and think high.*

*Oh, the thinks you can think up if only you try!*

*~Dr. Seuss*

*In today's border-less business environment, you are either actively shaping the future of your market space, or you are left in the wake of others who are.*





WHAT SNEETCHES TEACH UP—ILLUSTRATED BY DOMINIC DORAIS BURT, AGE 8, BASED ON THE STORY BY DR. SEUSS.

So how can you be among the future-shapers? To answer this critical question and lay the foundation for your company's ongoing relevance, you should strive to accomplish three key attributes for all your market offerings. To see how you measure up, give yourself the following test:

**1. Are your consumers infatuated by your offering?** Future-shaping companies understand that regardless of industry, simply satisfying customers or clients is no longer enough. A much deeper and more emotionally-charged connection must be forged. Infatuation is the perfect form of consumer attachment, because it implies a powerful but fleeting emotion, which you can therefore restoke repeatedly.

**2. Does your offering create lifestyle or workstyle enrichment?** In other words, does your offering really matter to the way your customers live or work? How can you position

and package it in a way that causes true enrichment?

**3. Does your offering overstep traditional boundaries?** Does it challenge conventional market assumptions? Is your offering simply vying to be better than other solutions within an already established market space, or does it overstep perceived boundaries to create new, broader market space?

As a way of illustrating the application of this test, I would like reference no other than the incomparable Dr. Seuss. Theodore Geisel, the creator of the Dr. Seuss children book series, brought to life stories and characters that redefined a whole segment of the book industry and exponentially grew its target audience in the process. Here is how: In the 1950s, so-called "early readers," books designed to teach children to read in the U.S., could only contain the 223 frequently used words approved by an official reading list (called the "Dolch" list). The idea was to teach children to read through repetition.

Not surprisingly the books were boring and unimaginative and hence did not inspire youngsters to read. Breaking the mold completely, Dr. Seuss stories took these same 223 words, but did not see them as limitations, rather as building blocks. Geisel set out to combine the best of what they had their simplicity, with the entertaining story and moral message of traditional fairy tales, while adding his trademark zany humor and illustrations to the mix. As a result, he created timeless books not only kids but adults love to read. *The Cat in the Hat*, the first in this series was published in 1955, when the author was the tender age of fifty-one.

So how does Dr. Seuss measure up to the 3-question test? Let's take a look.

## Are consumers infatuated?

Absolutely. Dr. Seuss created stories that grab the imagination of children to such an extent they yearn to read every book in the series, and still love to read and reference them as adults. That is an astonishing, lifelong infatuation. As proof of the emotional attachment that Dr. Seuss stories evoke, consider this: Theodore Geisel passed away in 1991, yet the Dr. Seuss Facebook fan page has more than 2 million followers today.

## Does the offering create lifestyle enrichment?

It sure does. Giving young children a means to enjoy the process of learning to read is an empowering enrichment that will have a cascading, positive effect on their subsequent education. And stories that entertainingly pack a moral message continue to enrich our lives as grownups.

## Does it overstep traditional boundaries, challenge conventional wisdom?

While all constituents involved (authors, kids, parents, teachers) accepted existing limitations, namely that the strict official reading list negated the possibility of creating educational books children enjoy, Dr. Seuss did not. He overstepped this perceived boundary and drove the market in a new direction. In doing so, Dr. Seuss created a new offering that grabbed children's imagination and therefore their attention as well.

The narrowest utility of the Dr. Seuss books is still early readers. But he was not satisfied to compete strictly within this narrow segment. Instead, he elevated his books to the much broader utility of educational entertainment by combining the best elements of traditionally separate offerings and adding new ones of his own.

### Lessons from Zax and Sneetches

Not surprisingly, we can find these pivotal business themes in Dr. Seuss stories themselves. One of my favorites is about the Zax, imaginary creatures who can only go in one specific direction and are very stubborn. In the story, two Zax, one headed south, the other north, happen to meet in the middle of the desert, each perfectly in the other's path. Neither of the two is willing to budge, fully expecting the other to get out of the way first. So they remain there, locked in a stare down, obsessed completely with winning the standoff.



LESSONS FROM ZAX—ILLUSTRATED BY DOMINIC DORAIS BURT, AGE 8, BASED ON THE STORY BY DR. SEUSS.

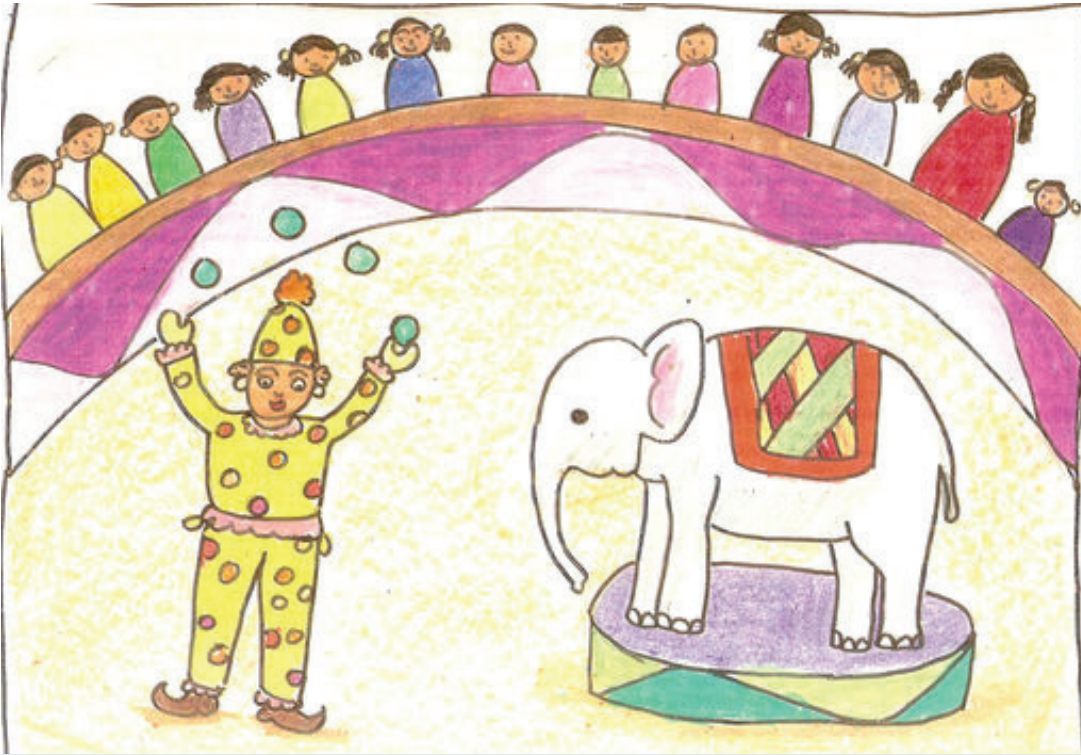
*“And it happened that both of them came to a place  
Where they bumped.  
There they stood.  
Foot to foot. Face to face.”*

*“And of course the world didn't stand still. The world grew.  
In a couple of years a new highway came through  
And they built it right over those two stubborn Zax  
And left them there, standing un-budged in their tracks.”*

The two Zax become so preoccupied and consumed by each other's presence that they don't notice the world passing them by. Similarly, companies that focus too narrowly on beating their competition are in danger of losing out on substantial new market opportunities being created all around them and becoming inconsequential to consumers.

In another of his stories, Geisel fabricates two distinct categories of fantastical creatures called Sneetches. One group has green stars on their bellies, while the other group does not. What those without stars desire the most in the world is to have stars themselves, which of course is impossible, at least until an enterprising, high-energy character by the name of Sylvester McMonkey McBean rolls into town with a strange contraption that can magically stamp stars. But alas, as soon as all the bare Sneetches get stars on their stomachs, those originally with stars no longer want theirs. So, their stars are removed by McBean's machine. This cycle continues over and over until all the Sneetches run out of money and finally realize that it doesn't really matter if they have stars or not. McBean was able to instantaneously provide the Sneetches with exactly the offering that infatuated them the most at any particular time, which they deemed most indispensable to their lifestyle. And for their part the Sneetches could never remain satisfied once they received what they coveted, but always wanted what they didn't have.





MY LIFE AS A CIRCUS—PAINTING BY TRACY BOOTH. USED WITH PERMISSION.

## Nomophobia and the Greatest Show on Earth

An almost Dr. Seuss-like phenomenon from our world today is the advent of nomophobia, the fear of being phoneless. Imagine your worst nightmare coming true: You wake up one morning, and you can't immediately locate your smartphone. How will you possibly get anything done? What emergency steps would you have to take in order to survive such a calamity?

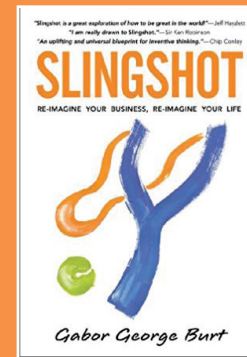
Nomophobia describes the deep anxiety people feel when separated from their handheld device. A new study finds that nomophobia is on the rise, as people “form closer bonds with smartphones and view them as an extension of themselves”. Wow! How much more infatuating and indispensable can an offering be than to spawn a new expression just to describe the panic people feel when they are without it? Of course, twenty-five years ago, when phones were still attached to fixed locations,

the idea of mobile phones would have seemed as whacky as one of Dr. Seuss’ fantastical characters. The industry that soon transformed the way people live and work around the world emerged because companies dared to challenge conventional wisdom and overstep traditional boundaries. What would it take to transform your product or service into an offering that sparks similarly intense customer dependency?

Here is a more current example: After 146 years, Barnum & Bailey Circus, calling itself “The Greatest Show on Earth,” closed its tent forever earlier this year. As per Yahoo News, “The iconic American spectacle was felled by a variety of factors: Declining attendance, high operating costs, changing public tastes and prolonged battles with animal rights groups all contributed to its demise.” But its fate could have been avoided by understanding the importance of the three attributes discussed above. Because just as Barnum & Bailey’s was fading towards oblivion, Cirque du Soleil was born as an offshoot of traditional

circus. Back in the mid 1980s, its founders had the foresight to reimagine the core offering to be relevant to new generations, and successfully blend it with elements of theater, ballet, opera, and dance. The result: an entirely new type of live entertainment that ignited consumer delight, a global following, and twenty concurrent, life-enriching productions worldwide.

Theodore Giesel was neither the most outstanding illustrator nor poet, yet his Dr. Seuss books transformed the way children learn to read, and they remain cross-generational favorites decades later. He not only embodies the core attributes of future shaping businesses, but also a refreshing and empowering shift in strategic focus: You don’t need to be best at what you do, as long as you can be most relevant. In other words, the recipe for success is not to strive to be best simply by traditional criteria, but rather to reimagine market boundaries in a way that makes your offering the most infatuating and enriching to consumers. Let Dr. Seuss show you the way.



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PASSION BORN FROM CREATIVITY. USED WITH PERMISSION.



BY KENNY ARONOFF

## PASSION

### *Born From Creativity*

*My passion and creativity when playing drums and making music, whether live or in the recording studio, has driven me to have a successful life and career for four decades in one of the most difficult businesses in the world, the music business—and I LOVE it!*

*I have used creativity and passion as fuel to never stop getting better.*





THE BEATLES ON THE ED SULLIVAN SHOW. USED WITH PERMISSION.

The moment, the exact *minute* my life changed was 8:05 p.m., Sunday, February 9, 1964, in a small town in western New England, Massachusetts. I was outside playing with my identical twin brother when my mother yelled for us to come inside NOW!

We both thought we were in trouble. It was Sunday night and we should have been getting ready for bed, but as we ran into the family room, my mom was pointing to our black-and-white RCA TV (a model complete with rabbit ear antennas wrapped with clumps of aluminum foil scrunched up on the ends for better reception). She was watching the *Ed Sullivan Show*, and four guys dressed in black-and-white suits, with long hair, were playing a song, tapping their feet and bobbing their heads in time to the music, “She loves you, yeah, yeah, yeah!”

WOW... BAM! Blown away with what I was seeing, I felt electrified, high, and energized. I saw the final twenty seconds of a song, twenty SECONDS, and it was the greatest thing I’ve ever known. I didn’t know who these guys were or where they were from, but at age eleven, I knew one thing: I wanted to be in their band!

“Mom, who are these guys?”

Mom replied, “They’re called the Beatles.”

*“In order to do great work, you have to love what you do.”*

*~Steve Jobs*

We suffered through the other show guests, and the Beatles came back on for their second act. While the girls were screaming, we could hear Paul count in “one two three four,” and they started playing “I Saw Her Standing There.”

Literally, after another twenty seconds, about the time Paul sang, “and the way she looked, was way beyond compare,” I begged my Mom to call and tell them I wanted to be in their band!

And I wanted to play drums!

My mom knew I was serious, but obviously she didn’t call the Beatles. It didn’t matter. I was hooked. My passion

to be in the Beatles was real, my passion to play the drums was real, and two weeks later I started my own band, The Alley Cats, and we, (of course,) played Beatles music.

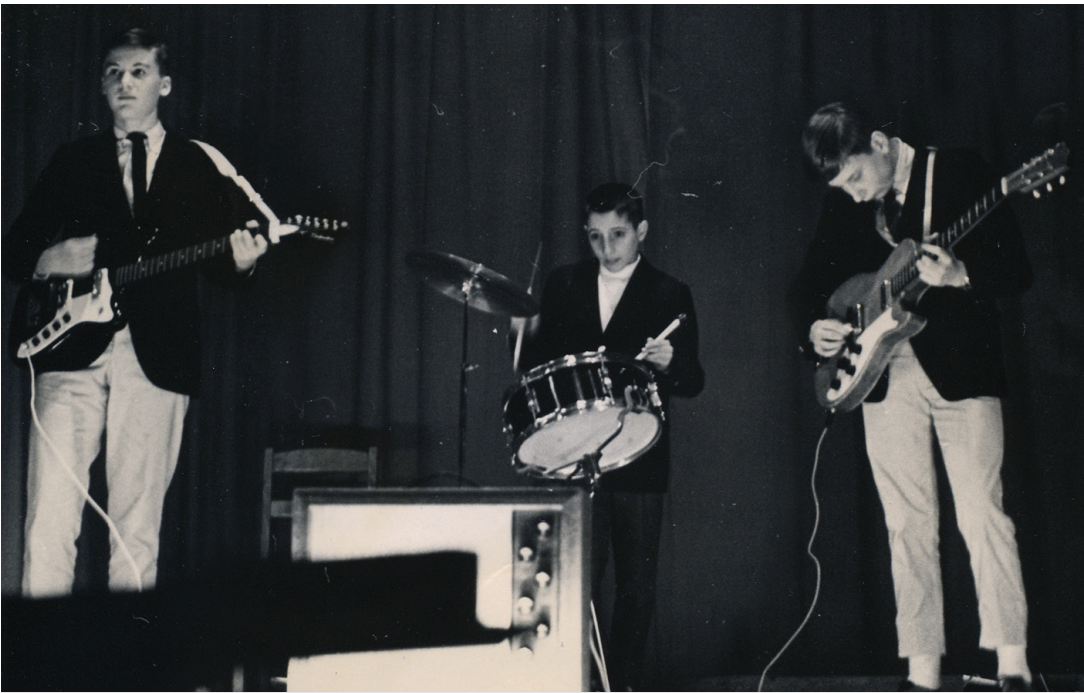
Fast forward to 2014. Fifty years to the day, to the hour, to the minute after I saw the Beatles on the *Ed Sullivan Show*, I was onstage performing with the two remaining Beatles, Sir Paul McCartney and Sir Ringo Starr.

The Beatles were being honored on the fiftieth anniversary of the exact *Ed Sullivan Show* appearance I saw on TV when I was eleven years old. In 1964, 73 million people in America saw that show, inspiring millions of people to become musicians, yet only one drummer who saw that show in 1964 was on stage performing with them fifty years later: ME. My passion to be in the Beatles, my passion to play drums had come full circle.

Tom Hanks and his wife, Rita Wilson; Sir Ringo Starr and his wife, Barbara Bach; George Harrison’s widow, Olivia Harrison; Yoko Ono and Sean Lennon; Johnny Depp; Sean Penn; and Sir Paul McCartney and his wife, Nancy Shevell, all had ultimate seats right in the middle of the venue. After my last performance I walked right past them to join my wife. When I saw Ringo and his wife, I was so excited to see them applauding me with huge smiles. Wow! That made me feel good and it made my night, make that my life.

I got on one knee in front of Ringo, and before I could say anything he said, “No thanks, I’m already married.” I stumbled around, trying to figure out something cool to tell him and finally said, “YOU’RE the reason why I play the drums. YOU’RE the reason I made rock-n-roll my life. I know you’ve heard it a million times, but that’s the truth.”

I’ve had the privilege of working with The Rolling Stones, Sting, John Fogerty, Bob Dylan, Bruce Springsteen, John



THE ALLEY CATS 1964. USED WITH PERMISSION.

Mellencamp, Sir Elton John, Rod Stewart, Joe Cocker, Lady Gaga, Bruno Mars, Alanis Morissette, The Smashing Pumpkins, Jon Bon Jovi, Melissa Etheridge, Johnny Cash, Willie Nelson, Avril Lavigne, Dolly Parton, B.B. King, Buddy Guy, Ray Charles, and Celine Dion.

After four decades of playing music, I've discovered every person on that list shares and understands these two principles:

1. **Everyone's job is to be creative.**
2. **You have to serve the song.**

## Everyone's job is to be creative

Try giving yourself an honest evaluation about your creativity. If you conclude, "I'm not creative," to quote my good friend Sammy Hagar and a Van Halen tune, stop "right here right now." EVERYONE has the ability to be creative. EVERYONE! Start right now: think about how your creativity is unique and how to make it a bigger part of your job and your life.

In music, everyone has to think about how to be creative, no matter what their place in the band. *How can I be creative in a way that makes this song a #1 hit*

*on the radio?* A #1 hit means millions of dollars for the artist and company. That's why we're hired.

In the John Mellencamp Band, if you didn't come up with creative ideas, you lost your job. The flip side: if you came up with a brilliant creative idea once, John expected you to come up with more whenever he presented a new song to the band. I delivered creative ideas for John's music on nine albums over seventeen years because I understood how to be creative, and John knew how to inspire me. My job wasn't to come up with the lyrics people would be singing in the shower—that was his job—and he wasn't to come up with beats people would be air-drumming while driving. That job was mine.

John once said in a rehearsal, "I'm looking for ideas. I write the songs, but I need you to come up with creative ideas that are cool to make my songs hit records."

When we finished the *Uh Huh* album, even though the album was mixed and mastered, John didn't feel we had a #1 hit song yet. I unexpectedly got a call from him, who was super excited about a new song he had just written. He was

very passionate about being a creative songwriter, he was unique as an artist, and he understood the power of his creativity and of mine.

He was at my house in twenty minutes. As he walked into my drum room all he said was, "This is a hit song, Kenny. Don't fuck it up." I instantly felt tons of pressure to be creative and not blow it. John didn't waste any time; he sat down and immediately started playing the song on the acoustic guitar. I listened intently, trying to come up with a simple, creative, and unique beat that would please my boss. The result was a very simple groove I had never played before and have never played since, but it served his song. The song was "Crumbling Down," and it became a #1 hit on the radio.

## You have to serve the song

You can't do what I do and work with the people I work with and not have an ego, but here is the irony: nothing destroys teamwork faster or more efficiently than egos out of control.

It's not about you. It's about the song,



LEFT TO RIGHT ME, SIR RINGO STARR AND SESSION DRUMMER GREAT JIM KELTNER. USED WITH PERMISSION.





IN 1982, OUR RECORD COMPANY PRESENTED US WITH GOLD AND PLATINUM RECORDS CELEBRATING THE SALES OF OUR *AMERICAN FOOL* ALBUM (A RECORD THAT WON TWO GRAMMY AWARDS.) KENNY IS ON THE FAR RIGHT STANDING NEXT TO JOHN MELLENCAMP. USED WITH PERMISSION.

the band, the team. So it's not whether you have an ego, it's how you deal with your own ego and others that will get you to the top or drop you off a cliff.

### Let me give you an example.

The way I serve a song, the artist, the band, the team, is to understand my purpose as a drummer: to try and get the song I am recording on the radio to be a #1 hit. Period. That means I do whatever I need to do to help make that song become a huge success. It's not about me; it's about the song, and the TEAM recording that song.

The ideal team is greater than the individual. We have all heard the expression there is no "I" in team. As true as that is, there is a "me" in there, and "me" is a part of the team. The bottom line: Together Everyone Achieves More—that's a TEAM.

By 1979, I had gotten into the John Mellencamp Band, and to me, it was like joining the Beatles. Five weeks later we were making a record in Los Angeles. I was so excited. I told everyone I knew

(and some I didn't) that I was going to L.A. to make a record. Two days later, the leader of the band told me to go home. He gave me my pink slip because I "didn't have enough experience making radio-friendly records." In fairness, I had zero experience making radio-friendly records, but it was soul crushing, and I was devastated. I looked him in the eye and said, "No. I'm not going home." Everyone was shocked into silence. Saying "no" to the boss was like telling a marine sergeant "no" after he told you to do 100 push-ups. In the next two minutes, I needed to show how my passion and creativity could benefit both of us. I asked him, "Am I still your drummer?" He looked confused but eventually said, "Yes, you're just not making this record with us." So I said, "Okay, well, I'm going to stay and watch these session drummers play my drum parts, and I'm going to learn from them. And we're both going to benefit because I'm going to get better, and you'll have a better drummer in your band, and you don't have to pay me for being here." (That's what probably

sealed the deal!) I watched, listened and learned, and I was still pissed, but my passion was stronger than ever.

Fast forward two years. I was twenty-eight years old, and I had never played on a hit record. I was at Criteria Studios in Miami, and this would be my first record with them.

They had already recorded five records, but none of them had a #1 hit. Of course, I wanted to be the drummer that came into their band and helped them get a #1 hit single.

The band was hanging out in the big recording room, talking, waiting to get started, when I walked the co-producer Don Gehman with a silver metal box in his hands. I asked, "What's that?" And Don said, "It's a drum machine." Next I asked, "What are you going to do with that?" He replied, "We're going to try and use this drum machine on that ballad that we couldn't make work for the record—you know the one with the great chorus."

We had experimented with different ideas for this song, but failed every time, and now I thought, "I'm going to be replaced by a drum machine? You've got to be kidding." This felt like Los Angeles two years before all over again.

I'm in the lounge at Criteria Studios, staring at a drum machine that is about to replace me. First, I got replaced by two session drummers. Now a drum machine? No way. And this is where serving your ego and serving the song intersect. I grabbed the machine from Don, read the manual, and programmed a drum beat into the machine for them to use for the song. I was pissed, but I was also beginning to understand my purpose in the band and how to serve the song.

But then something unexpected happened. Two hours later, I heard my boss, the lead singer, yelling, "Aronoff



"I'll never be as good as I *want* to be... but I am willing to spend the rest of my life, trying to be as great as I *can* be..."

**KENNY ARONOFF**  
JOHN MELLENCAMP, BOB SEGER,  
JOHN FOGERTY, ELTON JOHN

USED WITH PERMISSION.



KENNY PLAYING FOR SIR RINGO STARR.  
USED WITH PERMISSION.

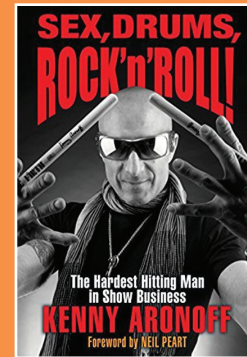
get in here, we need a drum solo!" I walked down the hallway, thinking, drum solo on a ballad? I guess the drum machine didn't fix the song after all. It just helped make the song a possible contender for the album. But now they wanted me to come up with a drum part, or solo, to help save the song.

To have a drum solo on a ballad for pop radio is kryptonite for a drummer. It had only been done before a few times successfully. I had been fired by these guys before. Now they expected me to save this ballad, which they didn't want me playing on in the first place, with a drum solo. I sat down at the drums

and started with a simple "boom-bam" on my bass drum and snare drum. Everyone loved what I was playing, but then I hit a dead end, paralyzed. I'm summoned into the control room, where nine people give me their opinions and suggestions. NINE! That's all I hear: nine voices suggesting things, and in all the chaos and under that pressure, I realize it is up to me to solve the problem creatively, or I will be replaced. Again.

Eventually I walk back to my drum set, thinking, *I have forty feet to save my career.* "What are you going to play, Kenny?" Thirty feet. What am I going to play? I don't know. Twenty feet. Ten feet. Five feet. One. My back is to the control room. I'm still thinking, *What am I going to play?* Turning around, I see nine faces looking at me. I grab my drum sticks, sit down, and a bell goes off in my head.

It was an idea I'd already tried, but this time I had the inspiration to shift the idea just a little bit—by one 1/8th note. I wasn't sure it would work, but I decided to trust it. At that moment, my ego and creativity collided. I trusted my creativity, and the fear that paralyzed me ten minutes before vanished. And for the first time, my hands played what



KENNY ARONOFF IS ONE OF THE WORLD'S MOST INFLUENTIAL AND IN-DEMAND DRUMMERS. *ROLLING STONE* MAGAZINE NAMED ARONOFF ONE OF THE 100 GREATEST DRUMMERS OF ALL TIME. HE'S SPENT 17 YEARS WITH JOHN MELLENCAMP PLAYING THE UNFORGETTABLE TUMBLE THAT LEADS INTO THE CHORUS OF *JACK AND DIANE*. HE'S ALSO KEPT THE BEAT FOR THE ROLLING STONES, BRUNO MARS, LADY GAGA, BOB DYLAN, PAUL MCCARTNEY AND MANY MORE. HIS PRESENTATIONS INCLUDE LIVE PERFORMANCES, ENTERTAINING ANECDOTES FROM HIS ROCK STAR LIFE, AND TIPS FOR SUCCESS.

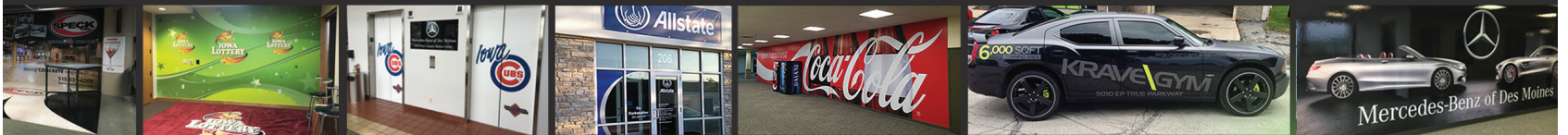
KENNY ARONOFF WILL PRESENT AT THE DMACC WEST CAMPUS ON WEDNESDAY, MARCH 7, AT 6:00PM.

would become one of the most "air-drummed" solos of all time. It sounded so good that John yelled, "Don't stop! NOW, play a beat." I let a beat flow out, and it reignited the song and the whole session. And the rest is history. The result would become John Mellencamp's first #1 hit song and his most successful hit ever, "Jack and Diane."

Today I have been playing drums for over fifty years, and from the very first time I heard the Beatles, I knew what my passion would be. Playing the drums with a great band of musicians, I learned that passion wasn't enough, and I needed to be creative in order to create the Kenny Aronoff sound, the Kenny Aronoff brand, so people know what they are getting when they hire me. Passion, creativity and ego can be magical when used to your advantage. All three have taught me that I will never be as great as I want to be, but I am willing to spend the rest of my life trying to be as great as I can be.



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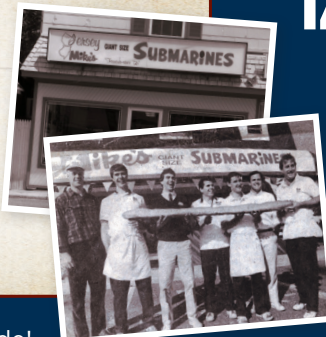
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