

Alumni Association



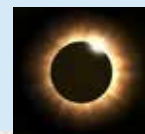
333 Ravenswood Avenue • M/S AC-108
Menlo Park, CA 94025-3493

Voicemail: 650-859-5100
Email: steering-committee-alumni@sri.com
Web page: <https://www.sri.com/about/alumni>

IN THIS ISSUE

What do the following have in common?

- A luxury yacht
- A silent-film star
- Atomic bomb tests
- Packet radio
- Humpback whales
- A solar eclipse
- Amelia Earhart



Run, don't walk, to page 7 for the answer!

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SRI Receives Its Second IEEE Milestone Plaque

By Don Nielson

From time to time, IEEE, the world's largest professional organization, makes a Milestone award to recognize a significant technical achievement in an area of technology represented in the organization. The achievement is commemorated by a bronze plaque that is placed at an appropriate site. SRI already has received one plaque for being instrumental in the first computer network transmission in 1969 (see the April 2016 Newsletter). To date, IEEE has made 177 Milestone awards, with at least 20 of them coming to Silicon Valley.

On February 16, in an elaborate ceremony at the Computer History Museum in Mountain View, IEEE again honored SRI with a Milestone award, this time for Shakey. For those not aware, Shakey was the self-evident name of the world's first (as verified by the IEEE Foundation) robot capable of

intelligent operation. Briefly, it could sense its environment and then, given an objective, reason about how to achieve it. The environment was simple: a flat floor with blocks that formed impediments to its task of reaching a specified location among them. Figure 1 shows Shakey with many of its components labeled and an illustration of it in its SRI environment on the second floor of Building E. The time frame was from the late 1960s to the early 1970s.

Many of the SRI people who built Shakey were at the ceremony. Those specifically recognized were Peter Hart, Nils Nilsson, Bert Raphael, Dick Duda, Richard Fikes, Helen Wolf, Claude Fennema, Mike Wilber, and Tom Garvey (see Figure 2). Perhaps an equal number of their cohorts from the Artificial Intelligence Center were also there, part of a full house, an audience of several hundred people. John Markoff, NY Times Pulitzer Prize winning technology writer, first interviewed Peter Hart and Nils Nilsson; later they were joined by SRI's Bill Mark and two non-SRI robotic experts, Steve Cousins of robotics company

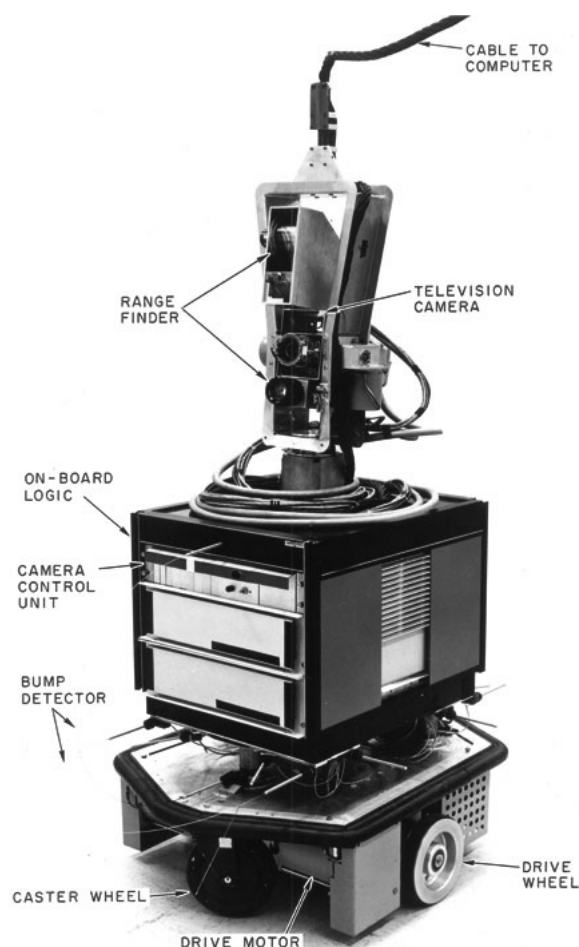


Figure 1. SRI's Shakey robot with elements labeled and in its typical SRI environment.



Figure 2. With the plaque, from left to right: Dick Duda, Tom Garvey, IEEE President-Elect Jim Jefferies, Peter Hart, Nils Nilsson, Richard Fikes, Helen Wolf, Claude Fennema, Bert Raphael, and Mike Wilber. Date: February 16, 2017.

Savioke and Matt Heverly of NASA's Jet Propulsion Lab (JPL). The latter described how the Mars rovers Curiosity and Opportunity used many of the algorithms first built for Shakey. More on that later.

A few interesting things about Shakey and its creation surfaced during the interviews. The “father” of Shakey was the lab director at the time, Charlie Rosen. Building what they chose to call an automaton was his idea, and he was the one who sold it to a storied individual at ARPA, Dr. Ruth Davis. They recalled that the initial contract was about \$300K, not small by standards of the day. Of course, that initial project, started in the mid-1960s, led to several others as Shakey not only got its “legs” but, more importantly, provided the platform for algorithmic developments that persist to this day; among them are planning and route-selecting algorithms and a 3- or 4-layered software architecture (reminiscent of the layering we had in digital networking at the same time). It was not lost on Nils or Peter that Helen may have been the first woman to program a robot!

Shakey had vision, laser, and tactile sensors aboard that provided the input necessary to observe its environment

and then deal with it consistent with the end goal it had been given. Indicative of the day, Shakey's programming resided in a very large and expensive DEC PDP-10 computer to which it was first tethered and then radio coupled. This transition led Peter to recall one of Shakey's very unexpected behaviors. The radio-linked Shakey would at times, inexplicably and briefly, rotate in place during an exercise. Just why puzzled everyone! Finally, digging into its programming code, Mike Wilber located the reason. When tethered, Shakey's movement would sometimes cause its tether, which came from the ceiling above, to be wound around too tightly at its point of attachment. So software was written to keep track of the accumulated rotation and, when necessary, stop and unwind it! The buried code, of course, was no longer needed in the radio version, and when that code was extracted, Shakey's pirouettes ceased.

As to what Shakey left to posterity, the team's approach to determining its movements was so fundamental that subsequent mobile robots could scarcely avoid using derivatives of Shakey's algorithms, nor did they. But beyond the very general planning and path-finding algorithms, Peter Hart suggested, it was the whole integrated system that was unique—it was the totality that was the capstone.

Though primitive and with no resident software aboard, it demonstrated that a degree of autonomy was possible—in fact, preferable.

Evidence of that became immediately clear as Matt Heverly of JPL showed film clips from the design of the Mars rovers. They sensed the environment in front of them, consulted their planned need to move, selected the best path forward, and then moved. It sounded an awful lot like Shakey on the second floor of Building E nearly 50 years earlier, but now another planet away. In this case, where communication delays are long and cumbersome, Shakey-like autonomy is vital.

Clearly, the SRI team deserved all the acclaim they received that night at the Computer History Museum, where the original Shakey robot is on display. Figure 3 shows the plaque awarded to SRI. You can see Shakey in action in a video shown at the award ceremony, available online at <https://www.youtube.com/watch?v=7bsEN8mwUB8>.



Figure 3. The IEEE plaque awarded to SRI for Shakey.

Late-Breaking News: SRI Receives Its Third IEEE Milestone Award

In a celebration at the Computer History Museum on the evening of March 19, SRI received an IEEE Milestone award for the “Mother of All Demos.” For those not familiar with the term, it refers to an event at the San Francisco Civic Auditorium on December 9, 1968, when Doug Engelbart and his SRI team demonstrated for the first time computing as we know it today! The occasion was the most prominent computer symposium of the day, the Fall Joint Computer Conference, a joint IEEE and ACM event that was held semiannually at that time.

Bill Mark of SRI’s Computer and Information Sciences Division accepted the award. The 90-minute live demonstration, a brave alternative to giving the normal descriptive paper, was Doug’s idea, but the person most responsible for making it happen successfully was Bill English. Here he is at the conclusion of the award ceremony. A more complete story of this and the other IEEE awards will appear in the next newsletter.



New Faces at SRI

New Chief Financial Officer Jim Doyle



As SRI's new chief financial officer (CFO), Jim Doyle leads SRI's finance, accounting, and payroll organizations and works closely with the company's executive leadership team to set and implement SRI's long-term strategic direction. With more than 25 years of expertise in financial management, he has a strong reputation and proven success record in providing leadership to a range of organizations. Before coming to SRI, Doyle was co-founder, board member, and CFO for Haystax Technology, a software and services company, where he successfully increased both employee numbers and annual revenues over 3 years. Before Haystax, Doyle was CFO for Applied Signal Technology (AST), where over an 11-year tenure he led and managed the financial and business operations for this provider of intelligence, surveillance, and reconnaissance hardware and software solutions. As CFO, he helped successfully negotiate the sale of AST to Raytheon, where he then served as Vice President of Finance. Earlier, he held various financial management positions at The Boeing Company and Lockheed Missiles & Space Company. Doyle holds an MBA from San Jose State University and a BA degree in economics from University of California, Los Angeles.

New Lab Director for the Artificial Intelligence Center



Sridhar Mahadevan is the new director of the Artificial Intelligence Center (AIC) at SRI. Mahadevan comes to SRI by way of the University of Massachusetts at Amherst, where he has been a full professor in the College of Information and Computer Sciences for the past 7 years and co-director of the Autonomous Learning Laboratory. Mahadevan has a broad background in artificial intelligence and is a noted researcher in several areas of machine learning, including the application of machine learning to robotics and other autonomous systems. He is a Fellow of the Association for the Advancement of Artificial Intelligence and the author of numerous highly cited publications.

Mahadevan is taking over from Ray Perrault, lab director of the AIC for more than 20 years. Perrault led the AIC

through the CALO (Cognitive Assistant that Learns and Organizes) project—the largest artificial intelligence research project to date, the creation and launch of Siri, and other famous projects and spinoffs. He followed in the footsteps of outstanding leaders in artificial intelligence stretching back to Charlie Rosen, whose seminal Shakey robot project recently was celebrated as an IEEE Milestone at the Computer History Museum (see page 2 of this newsletter).

SRI Spinoff LeoLabs Raises \$4M to Develop Space Debris Collision Avoidance Network

LeoLabs, a startup company that provides data to track space debris and prevent collisions in low Earth orbit (LEO), announced a \$4 million investment from SRI, Horizons Ventures, and Airbus Ventures. LeoLabs builds and operates phased-array radars to map and track objects in the increasingly crowded LEO environment. The company's technology was originally developed as part of research within SRI to investigate the Earth's ionosphere and is an offshoot of SRI's Advanced Modular Incoherent Scatter Radar (AMISR) system.



As the LEO ecosystem around our planet becomes more congested, the risk of collisions rises, and the need to map the orbits of spacecraft, satellites, and space debris grows with every launch. Meanwhile, new generations of commercial spacecraft, such as small and cube satellites, are adding to the risk of high-speed collisions, which could create even more space debris.

LeoLabs, based in Menlo Park, was founded to offer advanced technology to address these risks. With a worldwide network of ground-based, phased-array radars that enable acquisition of high-resolution data on objects in LEO, LeoLabs is uniquely equipped to offer foundational

mapping data and services to mitigate the risks of collisions. LeoLabs has unique capabilities that include accuracy to within 100 meters, along with verification mechanisms; data offered up on a predefined schedule; tracking of each piece of debris and object in LEO multiple times per day, thanks to its network of ground monitoring stations; the ability to track up to 250,000 new objects that are not tracked by public monitoring systems today; and an API so that customers can use the information with their own systems via tight integration. LeoLabs offers its services to commercial satellite operators, government regulatory and space agencies, and satellite management services firms.

LeoLabs CEO Dan Ceperley noted that there is a lot left to figure out regarding best practices and regulations in LEO operations, especially given the growing interest from smaller private players and new entrants into the space. LeoLabs can help with that conversation as it proceeds, Ceperley says, thanks to its continued mission to offer up as much data as possible about LEO traffic.

SRI to Lead Program to Develop Technology for Restoring Power to a Grid Facing a Cyberattack

SRI researchers are leading a collaborative team to develop technology that utility companies and cyber first responders can use to restore power to an electric grid under a cyberattack. The Threat Intelligence for Grid Recovery (TIGR) project aims to provide new tools that enable power engineers to restore and protect electrical service within 7 days of an attack that overwhelms the recovery capabilities of utilities and subsystems.

Currently, utility companies in North America have procedures and capacity to handle localized power outages caused by events such as extreme weather and high usage on hot days. However, no tools are available to resolve the type of widespread outages that can be caused by malware—malicious software such as a computer virus. The goal of the TIGR project is to develop tools that can be rapidly deployed after an attack has occurred. The tools will support resilient power recovery within 3 days and full restoration after 7 days. Today's generators have limited ability to supply power beyond 7 days, making this time frame critical for ensuring minimal disruption to the civilian power infrastructure.

Funded by a \$7.3 million award from the Defense Advanced Research Projects Agency (DARPA) for the Rapid Attack Detection, Isolation and Characterization Systems (RADICS) program, SRI leads a team of expert organizations that includes Con Edison, Dartmouth College, New York University, Electric Power Research Institute, and Narf Industries. Together, the team will develop threat analysis and characterization technology for localizing and containing malware that has breached industrial control systems, power grid equipment, and networks.



M/V *Acania* – A Brief History

By Murray Baron



Background

The Motor Vessel *Acania* was designed by J. H. Wells as a luxury diesel yacht, commissioned by Wall Street banker A. E. Wheeler. The vessel was built, with no expense spared, by the famous Pusey and Jones yard in Wilmington, Delaware, and is considered by many to be one of the very best ships that this venerable yard created. Shortly after its launching in 1929, the vessel was acquired by a French film director and given as a gift to silent-film actress Constance Bennett, who entertained aboard until the government appropriated the ship for service in the Coast Guard during World War II.

In 1958, SRI leased the ship under the sponsorship of the U.S. Government’s Advanced Research Projects Agency (ARPA), and it remained under SRI auspices until 1969. Some of the ship’s specifications are given below:

Length overall	126 ft.
Beam	21 ft., 6 in.
Displacement	247 tons
Engines	Twin GM Diesel – 280-hp each
Cruising speed	10 knots
Water tankage	2,700 gallons
Fuel tankage	12,500 gallons
Accommodations	2 triple cabins, 5 double cabins. Ship’s crew quarters for 5.

SRI Missions

Why did SRI lease a ship? In 1958, the U.S. Government was planning a series of nuclear weapons tests, called Operation Hardtack, in the Marshall Islands at Eniwetok Atoll. It was believed that such tests would produce potentially significant effects on radio frequency systems operating in the vicinity. A floating platform was needed to be stationed near (but not too near) the tests to observe such effects on communications and radar systems. Thus, ARPA contracted with SRI early that same year to lease the vessel and to equip and operate it for those tests. Very quickly after it was acquired in 1958, work began to install several radar and radio systems on the *Acania*. Because of the urgency of the project, the ship sailed for Honolulu before the radar installations were completed. Once there, installation and testing continued, after which the *Acania* sailed to the test area. The ship anchored at Wotho Atoll, where it participated in some of the ground-level nuclear tests in the early summer of 1958. However, because of the rush to field the *Acania*, it was found that not all of its sensor systems performed adequately. So the ship returned to Honolulu for further work to bring all the radars up to specs.

Once all work and testing were completed, the *Acania* sailed to Johnston Island for the two high-altitude, high-yield (3.8-megaton) tests in the Hardtack series. These tests were called “Teak” (1 August 1958 at 47 miles altitude) and “Orange” (11 August 1958 at 27 miles altitude). Teak and Orange were moved from Eniwetok to Johnston Island because of the AEC Director’s concerns that many native islanders would be blinded by the fireball should the test take place in the Marshall Islands. Johnston Island was quite remote, the nearest inhabited island being about 540 miles away.

After Hardtack, the *Acania* was returned to the Bay Area, where SRI refurbished it with additional and improved radio frequency sensors. It was then sent to the Caribbean, where ARPA wanted to observe phenomena important to the long-range detection of ballistic missile launches and the characteristics of their reentry. This included missile launches from Cape Canaveral and intermediate-range ballistic missile reentries at Antigua. The *Acania* operated in the Caribbean until about 1960–61.

In 1962, The United States resumed high-altitude nuclear testing after the USSR broke a moratorium on testing that had been in effect since late 1958. These tests were called Operation Fishbowl. The launch site for the U.S. rockets carrying the nuclear warheads was again Johnston Island in

the Pacific, 860 miles west-southwest of Hawaii. Because some high-altitude blast effects were expected to “flow” along the Earth’s magnetic field lines, the United States needed a sensor in the South Pacific at the magnetic conjugate of the Johnston Island detonations. Since the conjugate point was not near any islands, a ship was needed to be stationed at the proper location. The *Acania* filled that need very nicely. In 1962, the *Acania* operated out of Samoa, traveling to its station at the conjugate point for each of the high-altitude tests. The beautiful photo of the *Acania* at the top of this article was taken by Boyd Fair off Samoa during this time. As far as can be determined, the ship had the following complement of equipment:

The 1962 Radio Frequency Sensors (approximate)

System	Frequency	Antenna
Radar	~ 398 & 780 MHz	30-ft. dish
Radar	~ 30 & 120 MHz	Yagi on bow
Vertical HF sounder	~ 3-60 MHz	LPA on 60-ft. tower
Riometers	30, 60, 120 MHz	LPA on 60-ft. tower



The fantail of the Acania.

Agency, and Lawrence Livermore Labs become its operator. In 1968 and 1970, the *Acania* was in Pago Pago, American Samoa, with SRI staff aboard to perform electromagnetic pulse (EMP) monitoring during the French nuclear test series. In 1969, between the two EMP missions, the *Acania* was deployed way south of Mururoa to transmit signals that would traverse the region of the French nuclear tests on their way to reception on the island of Hawaii. A large wire-type log-periodic antenna (LPA) was strung from the ship’s main mast and stretched off the stern. The vessel had to be kept pointed south, away from the test site, so that the antenna beam was directed toward it. This was no small task for the one to two continuous months of operation.

From 1974 to 1985, the *Acania* was owned by the Department of Oceanography of the Naval Postgraduate School, Monterey, which used it for oceanographic research. One of its missions during this period was ODEX (Optical Dynamics Experiment), an interdisciplinary experiment on the structure of optical parameters in the open ocean, supported by the Office of Naval Research.

However, SRI again briefly borrowed the *Acania* from the Navy in November 1981 to be part of some early internetworking experiments by the Naval Electronics Systems Command (NAVELEX). For these experiments, the SRI Packet Radio van was at the top of Mt. Umunhum, the SRI Queen Air in the sky, and the *Acania* in Monterey Bay. Together they formed a packet radio network that then used two additional packet satellite networks and the ARPANET to enable a very early demonstration of packet speech transmission to multiple sites in Europe. It was confirmation that a host of interconnected packet networks



The bridge of the Acania.

After the 1962 nuclear tests, SRI retained control of the *Acania* for a few years, although its missions were sparse. In 1966, the ship was in the mid-Pacific for three weeks to participate in an RF signal moon-bounce experiment and to observe a total solar eclipse.

After SRI Control Ended

From 1968 until 1973, sponsorship and control of the *Acania* was transferred to the Defense Atomic Support

could be used by substantially different mobile terminals to place a very long distance phone call—in this case, from the *Acania* off Monterey to Norway and England. That digital technology is now known as Voice over Internet Protocol (VOIP).

In 1986, ownership was transferred to Intersea Research Inc. of Friday Harbor, Washington. From 1987 to 1991 and from 1992 to 1996, the *Acania* was used on educational programs and research studies in southeast Alaska, primarily involving behavior of humpback whales. Taking a break from the humpbacks, in 1991 the *Acania* participated in an expedition in the Pacific Ocean in yet another unsuccessful attempt to locate evidence of Amelia Earhart's aircraft.

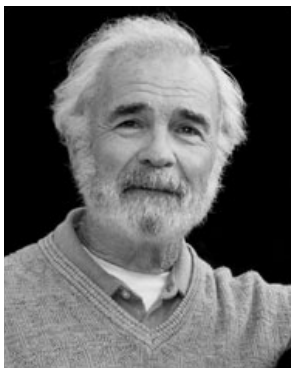
Sadly, the last known location of the *Acania* was in a Seattle shipyard in 2012, for sale for \$49,000, and rusting away.



The Acania in Seattle, 2012.

Remembering Hew Crane

By Don Nielson



Hewitt Crane

On September 12, 2008, a memorial service was held at SRI in honor of one of its most distinguished staff, Hewitt Crane. What follows is a slightly expanded version of the brief talk I gave about Hew at that time. The perspective comes from my interactions with him and a few autobiographical things he wrote.

Have you ever become faint-headed and a bit delirious from blowing up a few balloons for your kid's birthday party? If so, I wonder if you noticed that after perhaps one puff, you have to blow harder to get it to inflate. Well, like you, Hew did this puffing, but herein is a wonderful example that differentiates Hew from the rest of us. He noticed that after the hard part, a relaxation point occurs in the inflation when the size of the balloon suddenly increases more easily. Oh, big deal, you chide. But Hew didn't just leave it there. From his wonderfully extended background in seemingly everything

and his ability to leap between disciplines, he knew that this same phenomenon has its counterpart in electronics, in the negative resistance that makes oscillators and switching circuits work. But he didn't even stop there. He looked at the other side of the balloon-blowing activity, the lungs, and wondered if that same peculiarity exists there. Do the lungs have their own balloons? Well, yes, they do. They are called alveoli, and he found the same peculiar relaxation behavior there and, furthermore, in other common membranes like soap bubbles and blood vessels! So, here came a 1973 paper published in the *Journal of Biomechanics* that integrated this aspect of the worlds of electronics and physiology—all from blowing up a few balloons!

Though an electrical engineer, Hew had this fascination with neurophysiology and drew inspiration from it. Clear back in 1951-52, when working on the IAS Machine at the Institute for Advanced Study in Princeton (see picture below with some very famous colleagues), he found a parallelism with how the amoeboid tips of growing nerve fibers adaptively wove their networks and wondered why that might not be a better way to wire computers. Though that notion didn't materialize, later, when he first saw an ability to draw out a long, thin silicon crystal, he immediately thought of the axon, the electrochemical pathway of nerve fibers. From this came his neuristor, a new component for logic circuits.

His physiological interests had earlier involved the human ear, followed by a two-decade journey into human vision, one of his favorite haunts. His very innovative, vibrating-photocell solution for an autofocus camera would later find its counterpart in the vibration of the very center of the human retina as it too focuses. And then came one of his crowning achievements, the ability to gauge with great precision the movement of the human eye.

This was the early 1960s and a time when NASA took an interest in this retinal vibration, wondering if the buffeting of aircraft affected a pilot's ability to focus. That interest led to some exploratory work on an accurate optometer, as well as an instrument capable of tracking where the eye was looking. NSF would join in the long-term pursuit of the latter. Eye tracking, as it came to be called, needed a noninvasive way to measure very accurately the direction of vision. Hew, together with Tom Cornsweet, settled on using a set of reflections, one from the cornea and the other from the back of the lens. The technique was so accurate (one minute of arc) and successful that as of about 2004 almost 100 of these eye trackers had been sold around the world to enable more than a dozen medical and other uses.

Hew's curiosity about the body's abilities led him, with Jim Bliss, to another unusual exploration. Using Bliss's matrix of tactile stimulators that echoed what an optical sensor was reading so that a blind person might "feel" the sensed text, they explored the ability of other parts of the body to "read" the stimulators.

Finally, toward the end of his professional life, he looked at the cones of the human retina and found a prescription for compressing color imagery in general.

You might say his immensely productive scientific life was a realization of how the very natural and amazing processes of the human body could be both instructive toward and benefited by the technology that was emerging around him.

May I now use this topic of vision to give you my personal impression of Hew? I saw in him two extraordinary kinds of vision. The first was the way he could foresee a solution to some vexing problem or how an opportunity would leap out at him from something he'd just learned. The second kind of vision is best thought of as a burrowing, Superman-like eye that seemed to penetrate easily down to the fundamental inner workings of something and thereon build the innovation he sought. It seemed the confidence he carried in these two visions could extend to virtually any facet of our lives. Even our social milieu, with its complex entanglements

of human foibles, predilections, and frustrations, did not escape that critical and innovative eye. An example:

The 1950s and '60s were turbulent times: the Suez crisis in 1956, the Cuban missile crisis in 1962, and the protracted social dysfunctions that surrounded the Vietnam War and that, with the student protests, came right within our own SRI sphere. I understand that in such wrenching times he sought solace in his writing. I know that I have that same tendency to go off by myself and just write. But SRI, with its wonderfully diverse atmosphere, inevitably played to Hew's broad interests, and he found himself drawn to some of that time's societal discussions going on within SRI. These discussions, along with his writings, led him first to an SRI report and ultimately to a book in which, in typical Hew fashion, he tried to inject a positive contribution by defining at length a social marketplace where ideas could be more intelligently and peacefully weighed. Later, few would know of his dogged efforts to try to get SRI to reduce its energy consumption, and he repeatedly took his conservation ideas to the very top of SRI's management.

Beyond this preoccupation with making things better, I would also say that he was quietly proud of his work and his points of view. He loved to recall that a crazy computer with no active elements, just magnetic cores, could somehow operate continuously for decades in the grime of the New York subway system and, if you would listen, why it was even more befitting in the hostility of space. (This durability was possible because, without active elements, the computer would have an extraordinary life span. For a bit more, look online at the SRI Timeline of Innovation for the description of an All-Magnetic Logic Computer: <https://www.sri.com/work/timeline-innovation/timeline.php?tag=1960s#!&innovation=all-magnetic-logic-computer>.)

I can't close this note without mentioning that Hew was one of the very first (in the 1970s) to explore handwriting as a valid computer input method. Rather than capturing and analyzing the written traces on a touch-sensitive screen as is done now, he instrumented a pen with accelerometers so that the surface and content could be arbitrary, like checks, credit card point-of-sale signatures, and even Chinese and Japanese kanji characters. A company was formed to commercialize this device.

And finally, if there were ever a prototype for an ideal staff member for a research institute like SRI, it would be Hew Crane. He seemed able to find an exhilarating discovery in almost anything that caught his attention, and much did.

This curious, insightful, innovative, and socially responsible fellow was a very uncommon man.

In the photo below, taken in 1952 or 1953, Hew is in great company: Gerry Estrin came to form and head the Computer Science Department at UCLA. Lewis Strauss was a trustee of the Institute for Advanced Study (IAS), became head of the Atomic Energy Commission, received the Medal of Freedom from President Eisenhower, and, curiously, hugely distrusted the next man in line, Robert Oppenheimer, who

had been head of the Manhattan Project but ultimately lost his security clearance, in part because of Strauss's efforts. Richard Melville would come to SRI to lead the construction of the ERMA system. Bigelow (chief engineer), Emslie, and Pomerene, along with Hew, were engineers on the IAS computer behind them. Pomerene later went to IBM and helped design the 7030 supercomputer. John von Neumann designed the architecture for the computer, was earlier involved in the design of the first atomic bombs, and was an acclaimed genius in all types of mathematics.



Engineering group and leaders of the WEIZAC project at the Institute for Advanced Study. Left to right: Gordon Kent, Ephraim Frei, Gerald Estrin, Lewis Strauss, Robert Oppenheimer, Richard Melville, Julian Bigelow, Norman Emslie, James Pomerene, Hewitt Crane, John von Neumann. (Note: The WEIZAC was the first computer built in Israel and a close derivative of the IAS computer shown here, which first went operational in 1952.)

An Exercise in Herding Cats, or How Seven Management Consultants Wrote a Book Together

By Gia Campari

How often do management consultants practice what they preach? Rarely, I'd wager. One of those rare opportunities arose when I asked for help in writing a book for which I had a germ of an idea and that I knew I would never finish on my own. And what sheer, unadulterated fun that proved to be!

Diversity is key to productivity and to creativity. By nothing else but chance, the team of seven who saw the book through to completion were delightfully diverse: a philosopher, an abstract thinker, a systems specialist, an authority on project management, an authority on coaching, a pragmatist, and an all-over-the-map creative. What more could we ask for? An implementer, actually. As a colleague commented, on hearing about our adventure, "Good luck on finding an implementer among your group of consultants!"

And implementation was indeed our weak point. However, with seven of us each kicking a couple of others in the butt when things slowed down, we managed to get the work done—and remain friends!

We tried splitting the work and did indeed complete some of the tasks in small groups, but the most wonderful part of the exercise was seeing the book literally materialize and morph in the conversations we had around a table. A purely magical experience—and the reason it took us years to complete the project. Getting seven very busy management consultants who also travel extensively (one has a division of his consultancy in Australia) around a table is no small feat.

So, what is the book about? It's about the most powerful tool in the hands of a management consultant: Questions! *The 99 Essential Business Questions*, to be precise.

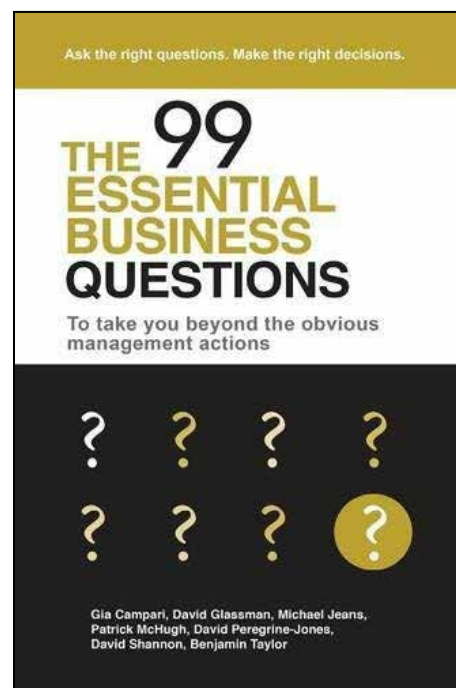
No matter what your specialty, whether strategy development, operational excellence, financial performance, coaching, mentoring, systems thinking, scenario planning, etc., you will

add value to your project and to your client by asking incisive questions.

The book starts by identifying a number of situations—internal to the organization, external, team, and personal—that many of us encounter at work. It suggests questions you could ask yourself in a particular situation. Although there may not be one right answer, there may be several good questions that will lead you to finding the answer that is right for you. Each question gets you thinking about why the question is relevant in that situation and points to the insight you may gain by asking that question.

See more about *The 99 Essential Business Questions* on the website www.99essentialquestions.com, where you can order the book and sign up for the download of the month. The book is also available on Amazon and at Barnes & Noble.

Gia Campari, coauthor, with David Glassman, Michael Jeans, Patrick McHugh, David Peregrine-Jones, David Shannon, and Benjamin Taylor.



Taxi Tales

To tip or not to tip, often a dilemma. In a taxi tale from Oslo, Norway, Peter relates such an experience.

Oslo

By Peter Weissbuhm

This happened around 20 years ago, and it could not happen today. But then, on my first visit to the Norwegian capital, I had arrived in the late afternoon without a hotel reservation, unaware of how full Oslo can get in the summer. Refusing to join the long queue at the airport's hotel reservation desk, I jumped into a taxi and asked the driver to find me a hotel.

He was a gentleman of the old school, in uniform and cap, in manners and temperament about as far removed as is humanly possible from the apoplectic New York cabbies I had encountered. He explained that Oslo was full of visitors, with several congresses going on at the same time. So getting a room in the city center would be impossible. But he knew

of a few smaller hotels on the periphery that we might try, if that was acceptable. It was.

Eventually we found one, small and modest but clean and friendly. My room had a fine view of the Holmenkollen ski jump and a coiled rope under the window for a fire escape. I thanked him for his help and added a generous tip to the fare. He must have thought I had misunderstood, for he returned the tip. I tried to hand it back explaining that this was an extra for effort beyond the call of duty. At this, he drew himself up and informed me rather stiffly that he was a professional and professionals didn't take tips.

I was unsure of whether he was representative of taxi drivers in Oslo. But, having given offence once, I abstained from tipping for the rest of my stay. This may have accounted for the decidedly unfriendly looks I got from some of his colleagues.



CREDIT UNION NEWS

The advertisement features a man with glasses and a beard, wearing a plaid shirt, working in a workshop. He is holding a piece of wood and looking at it intently. The workshop is filled with tools and equipment. The text "BECAUSE I NEED MORE SPACE TO BUILD" is overlaid on the left side of the image. Below this, the text "What's your why?" is followed by the SRI Federal Credit Union logo, which is a stylized globe. To the right of the logo, the text "SRI Federal Credit Union MORTGAGES" is displayed. At the bottom of the advertisement, the contact information "Contact CUPartners Senior Loan Officer Apryll Held at 800.200.4889 x7251." is provided.

Plan to Attend the Spring Fling at Burgess Park in Menlo Park on Thursday, May 11, from 11:30 a.m. to 1:30 p.m.

Join your fellow alumni on Thursday, May 11, for a free picnic in Burgess Park.



This is a free event for all alumni members and their guests. Please send in your completed reservation form, including the number of box lunches you'll require, to the SRI Alumni Association by May 8. For questions, please contact Dave Harvey at dave.harvey620@gmail.com. We hope to see you there!

The Alumni Association Needs Your Help

The Alumni Association has openings for Steering Committee members and encourages you to lend your support. As a committee member, you will interact with former SRI colleagues as you help plan events, work on the archives, edit the newsletter, or help keep track of the association's finances. We currently need volunteers to fill the following positions:

- Main chairperson
- Hall of Fame chairperson
- Administrative assistant
- Newsletter coordinator or managing editor
- Backup editor
- Backup newsletter layout artist
- Backup treasurer

If you would be interested in volunteering for one of these positions or would like further information, please send a message to steering-committee-alumni@sri.com.

Save the Date: 2017 Annual SRI Alumni Reunion

The annual reunion will be held on Thursday, October 5, from 4:00 until 7:00 p.m. at SRI. More details will follow in the August newsletter along with the official invitation and sign-up sheet. We hope you can join your fellow alumni then.

Who Do You Believe Made an Exceptional Contribution to the Success of SRI? Nominate That Person for the SRI Alumni Hall of Fame!

The SRI Alumni Hall of Fame honors former staff members who made exceptional contributions to the success of SRI. We are seeking nominations for Hall of Fame candidates by June 2.

All former staff members are eligible, but nominees should meet the following criteria:

- Significant, lasting contributions to the success of SRI
- Contributions recognized by staff, management, or clients
- Contributions in any area of research, management, or service, such as
 - Establishing a new laboratory or a new field of research
 - Performing an outstanding recognized service
 - Clearly demonstrating qualities of leadership, vision, and creativity
- What did the person leave behind?
 - Enhanced reputation for SRI
 - New or enhanced research, business, or support activity or facility.

Please prepare a write-up of about 300 words indicating how your nominee meets these criteria. If you have questions about the nomination process, members of the Steering Committee will be happy to answer them. Send the write-up or questions to steering-committee-alumni@sri.com or SRI Alumni Association, 333 Ravenswood Avenue, AC-108, Menlo Park, CA 94025-3493. Again, the due date is June 2.



The SRI Alumni Association welcomes new members:

- Ikram Abdou**
- Jeremy Epstein**
- Marjorie Griffin**
- Alison Highlander**
- Sandra (Sandy) Hinzmann**
- James G. Little**
- Marina Lyulko**
- Ripudaman Malhotra**
- Hong Nguyen**
- Jordi Perez**
- John W. Prausa**
- Gary Price**
- Jack Tade**
- Michael Vestel**
- Achim E. H. Wolf**

And welcomes back previous members:

- Earle Jones**
- William Lee**

We look forward to your participation in the Alumni Association and hope to see you at our next group event.

Directory Addendum

The enclosed directory addendum (covering the period December 1, 2016, to March 31, 2017) contains new members and corrections. Please add it to your 2017 Directory.

Wanted: Your Submissions

We welcome articles and shorter items from all Alumni Association members to be considered for publication in the newsletter. Have you done something interesting or traveled to interesting places? Received any awards or honors? Your fellow alumni want to know! Please send items to steering-committee-alumni@sri.com.

SRI International Alumni Association

Cash Flow/Income and Expense

Year ending December 31, 2016

CASH BALANCE as of 01/01/16		\$7,723.48
INCOME		
Cash income from membership dues and fees	\$8,910.00	
Dividend income from SRI Federal Credit Union account funds	\$4.77	
Contributed funds		
SRI International	\$2,000.00	
SRI Federal Credit Union	\$2,700.00	
TOTAL INCOME	\$13,614.77	\$13,614.77
EXPENSE		
Services provided by SRI International		
Report production services	\$4,070.91	
Postage and mailing expense	\$2,087.70	
Special events and awards		
Annual reunion expense		
Food and beverage	\$2,359.27	
Recognition awards/memorials	\$63.22	
Spring Fling (Elizabeth Gamble Garden)		
Entry fee/lunch	\$642.66	
Other expenditures and costs		
Office supplies	\$10.89	
TOTAL EXPENSE	\$9,234.65	\$9,234.65
CASH BALANCE as of 12/31/16		\$12,103.60



Roy Prentice Basler III



Roy Prentice Basler III, a physicist with expertise in ionospheric radio propagation and over-the-horizon radar, died on November 17, 2016, from heart failure at Stanford Hospital.

Basler—whom many people knew as “Prent”—was born on August 12, 1935, in Florence, Alabama. After graduating from Springfield High School in Springfield, Illinois, in 1952, he attended Hamilton College in Clinton, New York. He graduated with an A.B. in physics in 1956 and began graduate studies at Caltech. He completed his Ph.D. in physics in 1964 at the University of Alaska in Fairbanks. While in Alaska, he built his own home with timber from a plot of land he bought and began to raise his young family.

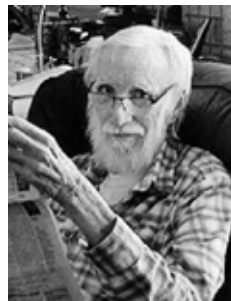
Following graduate school, Basler worked at International Telephone & Telegraph near Washington, DC, before moving to Menlo Park in 1973 to join SRI’s Radio Physics Lab. In addition to working in communications-systems technology and design, he carried out research in extrasensory perception, the colonization of space, and the search for extraterrestrial intelligence. He retired in 1994 as a Senior Research Physicist in the Acoustics and Radar Technology Department.

Basler’s wide-ranging interests included music—especially classical music and the music of the Beatles and the Grateful Dead, philosophy, literature, politics, psychology, and film.

He was preceded in death by his beloved wife, Sally Diane Ferris Basler. Survivors include a daughter, Elizabeth Basler; four sons: Ethan, Jason, Julian, and Joshua Basler; three sisters: Mary Dahlgren, Andrine Cleaver, and Virginia Davidson; a brother, Christian Basler; and ten grandchildren.

Based on an obituary published in the San Jose Mercury News/San Mateo County Times on December 4, 2016.

Jim Blackburn



Retired physicist James “Jim” Homer Blackburn of Cave Creek, Arizona, passed away on November 11, 2016. He was 86.

Jim was born on November 25, 1929, in Ohio. He graduated from Wooster High School in 1947 and served four years in the United States Navy. He earned a bachelor’s degree in 1956 and a master’s degree in physics from Ohio State University in 1957. Jim married Marla Kay Bose of Strasburg, Ohio, on March 17, 1957.

Jim worked at Los Alamos National Laboratory in New Mexico before he moved to SRI in 1965. He was a Physicist in the Fast Reactions Department of the Poulter Lab until 1969. He later worked for Honeywell in Minnesota and for Alliant Techsystems Inc., before retiring to Cave Creek, Arizona.

Jim will be remembered as a craftsman, artist, and outdoorsman. After retirement, he was an active member of the Sonoran Art League. He enjoyed drawing, painting, silversmithing, and woodworking. Jim spent many hours hiking as a volunteer guide for both the Desert Foothills Land Trust and the Cave Creek Regional Park.

In addition to his wife, Marla, survivors include their two daughters, Heidi Sill and Jamie Brigham; three granddaughters: Tahlia, Dominique, and Heather; and Jim’s half-sister, Margaret “Peggy” Penwell of Citrus Heights, California.

Abridged from an obituary published in The Arizona Republic on December 4, 2016.

Alan Burt*

Longtime SRI staffer Alan Burt passed away January 9, 2017, after a brief battle with cancer. He was 83.

Alan was born in 1933 in Hollywood, California. He joined the U.S. Air Force and was stationed in Japan, where he attended Sophia University in Tokyo.

He graduated from the University of California, Berkeley, and later received his MBA from San Jose State University.

Alan worked at Lockheed Missiles & Space and then joined SRI in 1968. He was a Business Administrator in the Physical Sciences Division. His ebullient personality over a long career made him well known throughout SRI. Alan retired in 1994 as the Senior Business Manager in the Computing and Engineering Sciences Division.

Alan and his wife, Lucille, retired to Medford in the Rogue Valley, Oregon.

People who knew and loved Alan will remember his incredible talent with photography, and he leaves us with a catalog of beautiful photos from his life, travels, and his own backyard. Some of Alan's favorite photographs are on his website at http://www.pbbase.com/alan_burt/artistic_renderings&page=all.

Alan was also brilliant with computers and rescued numerous family and friends from disaster by repairing, updating, and securing their computers and devices. Alan was an active member of Computerbugs, a computer club in Grants Pass, Oregon.

Perhaps Alan's greatest love (besides Lucille!) was music, singing, and barbershop harmony. Alan was a member of the Society for the Preservation and Encouragement of Barbershop Quartet Singing in America for more than 50 years. He was a member of the Peninsulaires in the Bay Area and joined the Rogue Valley Harmonizers upon moving to Medford. During his barbershop years, Alan acted as show chairman many times, served in chapter officer positions, and won awards during his singing career, including several Barbershopper of the Year awards.

Alan is survived by his wife of nearly 42 years, Lucille; six children and stepchildren, all of whom he loved equally: Edward Moran of Bellingham, Washington; Eric Bier of Palo Alto, California; Robert Moran of Dayton, Nevada;

Kathleen Moran Miner of Medford, Oregon; Allison Witt of Fulshear, Texas; and Alisa Johnson of Saratoga, California; and numerous grandchildren.

Expanded from an obituary that appeared in the Medford Mail Tribune on January 13, 2017.

Don Creswell*

Donald Creston Creswell died on December 8, 2016, in Redwood City's Sequoia Hospital, following an acute illness. He was a resident of San Carlos.

Born in Baltimore, Maryland, Don graduated from the Johns Hopkins University, where he studied business and engineering. He was a graduate student in marketing and business at Stanford University.

Don came to SRI in 1977 as an International Marketing Planner in the Decision Analysis Group headed by Jim Matheson. He left in 1987 to join Matheson in forming the Strategic Decisions Group (SDG). Don and Jim, with Peter McNamee and David Matheson from SDG, formed another firm—SmartOrg—in Menlo Park in 2000, where Don was still working when he died.

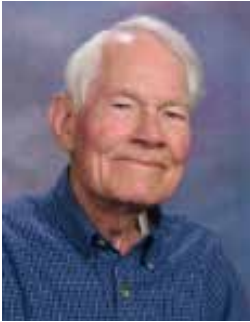
His work history also included stints at Ampex Corporation and as a Vice President of Pan American World Airways.

Don was active in local sports, serving as a top referee in AYSO and CYSA throughout Northern California. He led many local referee organizations and trained many youth referees in San Carlos. He was active in the NASL, and his passion led him to the top level as Director of Referee Assessment for the United States Soccer Federation.

Don loved music, especially jazz. He played the organ and piano and was active in many local jazz organizations. Many people will remember his rousing performances on the pipe organ at Redwood City's Pizza & Pipes.

He is survived by his wife, Terri; son, Creston; daughter-in-law, Kristy; granddaughter, Miren; and dog, Bessie. His two sisters, Jean and Eileen, and a brother, Doug Creswell, still live in the Baltimore area.

Based on an obituary posted online at Funerals.com on December 15, 2016.

Ted DuBois

Edmund Louis (Ted) DuBois passed away at his home in Sonoma, California, on August 13, 2016, at the age of 97.

Born in Boston, Massachusetts, he grew up an army brat. Graduating from the University of Illinois in 1941, he was immediately commissioned as a Second Lieutenant in the U.S. Army. He served in the South Pacific as an antiaircraft defense officer. Ted served 30 years in the army, fulfilling assignments with the Joint Chiefs of Staff at the Pentagon; with the NATO command in Paris, France; and as commander of missile defense for the West Coast. The army sent him to the University of Chicago for a master's degree in nuclear physics and to the Army War College. He retired as a Brigadier General at Fort Baker in 1971.

Ted married Ethel (Mac) McDonald in 1944; they were married for 39 years and had five children.

After his military career, General Dubois worked for SRI from 1972 until 1980 as a Senior Operations Analyst in the Systems Evaluation Department.

Retiring once again, he began a third life at Creekside Village in Sonoma, California, where he played a very active role in the retirement community. For three decades, he directed and performed in musical revues and plays.

He loved to ski, especially at Alta, Utah, where he skied until age 88. Ted enjoyed many trips to Europe with his close companion, Lucinda Hamilton, sightseeing and gathering research for his writing.

He authored a memoir of war in the South Pacific (*A Lesser Tale of the South Pacific*) and a trilogy of historical novels. He was putting the final touches on the last chapter of the third novel when he died. Ted will be remembered as a traveler, bon vivant, deep thinker, and raconteur.

Ted was predeceased by his wife, Mac, and their son, Ted Jr. He is survived by his partner of many years, Lucinda; three sons: Jack, Larry, and Geoffrey; daughter, Diane; and five grandchildren.

Based on an obituary published in the San Francisco Chronicle on September 4, 2016.

Robert Frenkel

Robert Frenkel, 89, died of Alzheimer's disease in Portland, Oregon, on February 20, 2017.

Robert "Bob" E. Frenkel was born in New York City on June 1, 1927. He discovered his lifelong love for the natural world in Central Park—his backyard. In the late 1940s, he attended Kenyon College, where he survived a jump from a burning dormitory; he broke so many bones he was told he'd never walk again. Undaunted, Bob recovered within a year and graduated. He went on to obtain a master's in metallurgy from UC Berkeley.

In 1952 he came to work at SRI as a metallurgist. While at SRI, Bob met and married Elizabeth "Liz" Mills.

Bob left SRI in 1959 and returned to UC Berkeley to follow a career path more closely aligned with his interest in the outdoors. He received a Ph.D. in geography, specializing in ruderal vegetation along California roadsides.

In 1965, Bob joined the geography faculty at Oregon State (Corvallis, Oregon). His specialty areas were biogeography and plant ecology, particularly in salt marshes. After retiring in the 1990s, he continued to conduct research as an emeritus professor.

Among Bob's more notable achievements was his seminal work on salt-marsh restoration at Oregon's Cascade Head. Bob had a long history of environmental activism and leadership, particularly with the Sierra Club and The Nature Conservancy. In 1997, he received the George B. Fell Award for exceptional accomplishments from the Natural Areas Association.

Bob loved to share stories and slideshows of his adventures, from climbing Mt. Orizaba in Mexico to a 6-month bicycle trip through Europe in the early 1950s.

Liz shared his passions for mountains, hiking, environmental activism, international travel, good food and wine, music (particularly chamber music and the Oregon Bach Festival), and family.

Survivors include his wife, Liz; son, Stephen Frenkel; and daughter, Ann Frenkel.

Based on an obituary published in the Albany Democrat-Herald on February 24, 2017.

Jean Furnish



Jean Furnish was born on Christmas Day 1924 and died on Christmas Eve 2016, a day shy of her 92nd birthday. She was born in Schenectady, New York, and lived in Los Alamos, New Mexico, from 1950 to 1954 and again from 1959 to 2016.

From 1954 through 1958 she worked at SRI as a bibliographer in the Aerophysics department. At SRI, she met Alfred Furnish, and they married in 1955.

In addition to giving time to her family, she devoted time and energy to the choir at Trinity on the Hill Episcopal Church, choral music, and piano. Hiking, sailing, and skiing with her family were important, and she had a love for puzzles and mysteries. She thoroughly enjoyed her work at the Los Alamos National Laboratory Technical Library, where she served while Los Alamos was a closed town and for decades afterward.

Jean is survived by her husband of 61 years, Alfred; two sons, Mike and Chris; three granddaughters: Lisa Mauser, Sarah Furnish, and Rebecca Furnish; grandson, Matthew Furnish; and two great-grandchildren, Nicole and Joshua Mauser.

Based on a piece published in the Los Alamos Monitor on January 8, 2017.

Tracy Herrick



Tracy Herrick died on November 29, 2016, at age 82, after battling Parkinson's disease for 14 years. He had spent the preceding happy Thanksgiving days with family.

Tracy Grant Herrick was born in Cleveland, Ohio, on December 30, 1933. He earned advanced degrees in economics from Oxford University and Columbia University. Tracy moved to Palo Alto with his family in 1970, when he joined SRI as a Senior Economist with the Long Range Planning Service.

He left at the end of 1972 to join the Bank of America. While a Vice President of the Bank, he wrote *Bank Analyst's Handbook* (1978), which is still the authoritative reference on the subject.

Tracy retired from Jefferies and Co. Inc. as a member of the board of directors, following a quarter century with the firm. Every month he had issued "The Money Analyst," an analysis of the impact of money on financial markets.

He was one of the founders of the Private Bank of the Peninsula (now Avid Bank).

Tracy was also a talented writer, able to simplify the most complex concepts. Books authored by Tracy include *Timing: How to Profitably Manage Money at Different Stages of Your Life*, 1981; *Power and Wealth—How Presidents Cause Stock Market Crashes and Rallies*, 1988; *Tales to Tell: Memoir*, 2012; and recently, *Smash-Up! Economics* (his personal forecast of the future of United States), 2016.

Tracy had a passion for classical music and was an inveterate concertgoer. He was a lover of words, corny jokes, Spike Jones, beauty in the smallest of places, conversation, surprising details, ice cream, family meals, '47 Packards, and big hugs.

The most painful event in Tracy's life was the death of his son, Alan, in a car accident at the age of 24.

Parkinson's disease got in the way for the last 14 years of his life, but Tracy persevered and never complained. He spent his last day working on projects in his home office, with classical music playing in the background.

Survivors include Maie, his wife of 53 years; daughter, Sylvi Herzog; and two granddaughters, Noora and Siena.

Adapted from an article that appeared in Palo Alto Online.

Larry Holbrook



Larry Holbrook passed away at home in Burbank, California, surrounded by his family, on the morning of January 30, 2017. He was 74.

Larry Lynn Holbrook was born in Sayersville, Kentucky, on February 13, 1942. He moved with his family to Detroit, Michigan, in 1949. In 1959, after graduating from Cass Technical High School in Detroit, he signed up for a 4-year hitch in the U.S. Air Force.

In 1963, Larry moved to California to work at Lawrence Livermore Labs. There he met and fell in love with Margaret Covell, whom he married in 1965. He and Margaret attended Cal State Hayward. After Larry graduated in 1968, he worked for SRI from October 1968 until July 1972. He began as a Chemist in the Poulter Lab and later became an Environmental Specialist in the Health and Safety Department.

Larry worked briefly at Safety Specialists, Inc., before joining Hewlett-Packard (HP) in Palo Alto in 1973. He received his MBA from Santa Clara University in 1976. He spent most of his career at HP, retiring in 2000 as Manager of Corporate Environmental Health and Safety.

In 1969, Larry and Margaret moved to San Jose, where they raised their two daughters. Larry enjoyed coaching their soccer and softball teams and supporting their high school marching band. The family enjoyed traveling together all over California. In retirement, Larry and Margaret continued to travel and enjoy cross-country trips, cruises, and trips to Southern California to visit their daughters. They moved to Burbank in 2011 to be closer to their daughters and granddaughters.

Larry is survived by his wife, Margaret; two daughters, Heather and Holly; and two granddaughters, two sisters, and three brothers.

Adapted from an obituary that appeared on the Neptune Society website.

Tom Mell

Tom Mell died on November 26, 2016. He was 90.

Thomas Loyless Mell was born on June 9, 1926, in Bryn Mawr, Pennsylvania, where he grew up and graduated from Radnor High School. He was an excellent math and science student and was admitted to the Massachusetts Institute of Technology (MIT). After 2 years at MIT, Tom served in the U.S. Navy for 2 years in the South Pacific and then returned to graduate from MIT. Tom worked for the Honeywell Corp. in Cleveland, Ohio, and then formed his own company, which made measuring equipment for the mining industry.

In 1966, Tom was looking for a new job, and he remembered his visits to San Francisco while stationed at Treasure Island. With these good memories in mind, he joined SRI in Menlo Park. He started as an Industrial Economist in the Electronics and Automation Economics Department. He worked as a management consultant with client companies in the United States, Sweden, Switzerland, and other countries. When Tom left SRI in 1984, he was the Director of Electronics Industries Research. He had made good friends at SRI and, with his friend Alan Purchase, organized reunions of their former colleagues every December.

After 2 years living in San Francisco, Tom moved to the Oak Creek Apartments in Palo Alto, where he lived for the rest of his life. He took up tennis there, and it was at the tennis courts in 1980 that he met Martha Symonds. They began a loving relationship that lasted for 36 years. Tom and Martha loved to hike in the mountains. Their travels took them to Colorado and Wyoming, Switzerland, Italy, France, and many other countries in Europe and South America. They especially loved New Zealand, which they visited nine times. At home, Tom and Martha enjoyed golf and long walks together, especially at the Palo Alto Baylands and on Crissy Field in San Francisco.

Survivors include—in addition to Martha—nine nieces and nephews, 17 great-nieces and -nephews, and one great-great-niece, all descendants of his late sisters, Margaret Mell Morton and Mary Mell Battey.

Based on an obituary that appeared on the Alta Mesa Cemetery & Funeral Home website.

Donald Bruce Miller

Donald Bruce Miller of Corvallis, Oregon, died Friday, August 12, 2016, after a long struggle with Parkinson's disease. He was 85.

Born in Columbiana, Ohio, on September 7, 1930, Don graduated from Columbiana High School (1948) and Manchester College in Indiana (1952) with distinction. He received his master of science (1955) and Ph.D. (1957) degrees in chemistry from the Ohio State University. He worked as a research chemist for Conoco in Ponca City, Oklahoma (1957–65).

Don worked at SRI as a polymer chemist in the Chemistry Lab from 1965 until 1972.

After a period at NASA Ames Research Center, he moved to Corvallis, where he worked on environmental studies in several departments at Oregon State University until his retirement. His research resulted in more than 30 patents and research publications.

He enjoyed traveling, hiking, birding, whale watching, and cross-country skiing. His travels took him to more than 30 countries in Europe, Asia, Africa, Australia, and Central America. His hobbies included attending opera and symphony concerts, woodworking, and gardening.

Survivors include his brother, Edward of North Manchester, Indiana; niece, Michele Miller Bever of Hastings, Nebraska; nephew, Michael Kenton Miller; and grandniece and grandnephew, Carly and Zachary Miller, all of Henderson, Nevada.

Based on an obituary that appeared in the Corvallis Gazette-Times on August 15, 2016.

James Moffet



James Moffet of Huntsville, Alabama, died at a local hospital on January 13, 2017, just short of his 88th birthday.

Born January 18, 1929, into an Irish Catholic family, James Clement Moffet III was the eldest of four siblings who grew up in Philadelphia, Pennsylvania, during the Great Depression. As an adolescent, he was

fascinated by radio, and it was this interest that ultimately shaped his hobbies and career. He later became a ham operator. He worked at three newspapers to put himself through La Salle University in Philadelphia and went on to Marquette University in Milwaukee, Wisconsin, to receive a master's degree in applied physics.

After college, he went to work for General Electric in Philadelphia. During this time he met and married his first wife, Cay. The two settled in Valley Forge, Pennsylvania, and had two children. In 1968, he moved the family to Orlando, Florida, where he worked for Martin Marietta

for 2 years before joining SRI in Huntsville, Alabama, in 1970. James was a Senior Research Engineer in the Systems Research Department when he left SRI at the end of 1977. He accepted a director's position as a Systems Engineer at Teledyne Brown, the firm from which he later retired.

James and Cay followed many interests. They joined a square dancing club and integrated into southern culture. He crafted hundreds of rebus puzzles, which were distributed on the Internet and later cataloged on an Italian website. James was also a very sentimental individual who saved his children's toys, letters, and art works.

He was preceded in death by his first wife and mother of his children, Catherine "Cay" Anselotto Moffet, and by all three of his siblings. He is survived by his second wife, Martha Blackwell Moffet; two children, Jamie Moffet and Bambi Reynolds; three stepchildren and six grandchildren and step-grandchildren; and several nieces and nephews.

Based on an obituary published in The Huntsville Times on January 15, 2017.

Robert Parkhurst

Longtime SRI researcher Robert "Bob" Parkhurst died Tuesday, November 29, 2016, at age 84. He lived in Redwood City.

Bob was born in Whittier, California, in 1932 and grew up in Sherman Oaks, California. After graduating from UCLA, he did a tour of duty as a naval officer. Bob earned a Ph.D. in organic chemistry at the University of Utah.

He joined SRI in 1959 as a Senior Organic Chemist in the Pharmaceutical Chemistry Department and retired from the Bioorganic Chemistry Department in 1996.

After he retired, Bob continued his interests in art, local affairs, and family history. He loved to spend time with his grandchildren.

Bob expressed a long-held wish to be buried at sea.

Survivors include Marge, his wife of 48 years; son, Ken, and daughter, Jen Parsons; and six grandchildren: Kenichi, Anderson, Josef, and Nichola Parkhurst and Adelaide and Sawyer Parsons.

Robert Sharpless



Robert Sharpless died peacefully at his home in Palo Alto on December 24, 2016. He was 84 years old.

Robert (Bob) Sharpless was born on September 11, 1932, in Whittier, California. His family's deep Quaker roots go back to

John Sharpless, who came to the colonies with William Penn in 1692.

Bob was mechanically gifted, even as a boy; he built his first car at age 14 out of an old bomber fuel tank. He used these skills to help others throughout his life.

Bob attended George Fox University and then completed his bachelor's degree in physics at San Diego State University. He went on to earn a master's degree in physics at the University of Washington, where he met and fell in love with Clara Nielsen. They married in Everett, Washington, in 1959 and moved to California.

In 1960, Bob came to SRI to work as a molecular physicist in the Atmospheric Physical Chemistry Department. During the next 55 years at SRI, Bob worked on a broad range of research experiments and projects for government and private corporate clients. He served in the Applied Physics Lab as well as the Applied Electromagnetics and Optics Lab. He rode his bike to work most days for some 50 years and retired from SRI on May 28, 2016.

In 1968, Bob was asked to help assess the future viability of a camp on Catalina Island run by Intervarsity, the Christian campus ministry group he volunteered with. This special place—Campus-by-the-Sea, on a lovely private cove—became one of Bob's longest-running projects. His family visited every year for work projects, and it became Bob's favorite place on Earth. He last visited in September 2015.

In 2006, at age 74, Bob heard about the plight of the Congolese in the Democratic Republic of Congo. He spent 2 weeks there in the Gemena area, repairing generators and water-purification systems, and getting to know the people and their needs. Through the Peninsula Covenant Church in Palo Alto, he continued to help them recover from the ravages of civil war. Bob also became affiliated with Congo Voice, an orphanage in Congo.

Bob is survived by his wife, Clara; two sisters, Helen and Shirley; three children: Mary, Larry, and Leonard; and five grandchildren.

Based on an obituary published in the San Jose Mercury News/San Mateo County Times on January 7, 2017.

Robin Welch



Robin Welch, a resident of Mountain View, died December 23, 2016, with his family by his side.

Robin Ivor Welch was born in Douglas, Arizona, on March 13, 1930. Robin spent a happy childhood in San Francisco, enjoying the outdoors with his family and graduating from Lincoln High School.

Robin's studies at UC Berkeley were interrupted by the Korean War. On December 11, 1952, serving as a Lieutenant in the U.S. Air Force, Robin was in a jet crash; he emerged paralyzed from the waist down, never to walk again. But he persevered to receive bachelor's, master's, and Ph.D. degrees from UC Berkeley in Wildland Resource Management.

Robin had a rewarding career, including a period at SRI from 1966 to 1970, as a Research Engineer in the Systems Analysis Department.

He later taught at Texas A&M University before immersing himself in the space program. Robin managed the Western Regional Applications Program at NASA and then moved to the Earth Satellite Corporation. He was an expert witness on a Lockheed C-5A accident investigation before retiring from the Lockheed Space Station Program.

Robin was a remarkable athlete and a master teacher of hunter safety for the State of California. He summed up his philosophy in his 2009 autobiography, *In Search of Eagles*.

Survivors include his wife, Thalia; four children: Leann Sanders, Nadine Floryancic, Cathleen Remenaric, and Brian Welch; two sisters, Helen Newick and Dorothy Bolander; and loving grandsons, great-grandson, sons-in-law, nieces, and nephews.

Based on an obituary that appeared in the San Jose Mercury News/San Mateo County Times on December 28, 2016.

Arnold Williams

We only recently learned of the passing of Arnold R. Williams in February 2016 from bone cancer at the age of 77. He was employed at SRI as a Senior Technical Illustrator in the Physical Sciences Division from 1978 until 1994. No further details were available to us at press time.

At press time we learned of the recent death of former SRI staff member **George M. Muller**.^{*} His notice will appear in the August issue of the newsletter if we're able to obtain additional details.

^{*}Member of the SRI Alumni Association



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*Editorial committee: Mimi Campbell, Klaus Krause, Judy Lhamon, Caren Rickhoff, and Bob Schwaar
Design & layout: Linda Hawke-Gerrans*