

SpotLight

March 2024

THE PEOPLE
WHO DRIVE
OUR SCIENCE
& TECHNOLOGY

LAWRENCE LIVERMORE NATIONAL LABORATORY



ABOVE THE FOLD

ALSO INSIDE

- Jammin' in the woods
- Throwing clay
- Choosing the right line
- Check mate



ON THE COVER

Goran Konjevod can take a simple sheet of paper and create the most intricate of origami designs.



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We hope you enjoy this edition of *SpotLight*. We'd also like to hear from you. Send us your thoughts and suggestions, whether it's what you like — or even what you don't — about this magazine, or if there is something you would like to see in coming editions. You can reach us via email at osc@llnl.gov.

ABOVE THE FOLD: Goran Konjevod and the art of origami

By Jeremy Thomas

Life at the Lab

Goran Konjevod

Computational
scientist,
Computational
Engineering Division

"I've enjoyed the breadth of technical challenges available at the Laboratory, as well as working with staff of very different backgrounds. With my academic experience, I've also enjoyed being able to mentor several excellent students over the years, most of whom are now employed at the Lab."



Lawrence Livermore National Laboratory computer scientist Goran Konjevod's intricate origami creations can take hours of meticulous creasing and refinement, often to the point of physical pain in his fingers and joints. Photos by Blaise Douros/LLNL.



Through Konjevod's "organic origami" approach, objects are "discovered," rather than "designed," as he allows the paper and the folding process to form shapes naturally.

In the realm of artistic expression, few media blend precision, creativity and simplicity as elegantly as origami — the Japanese art of paper folding. Within this world of folded wonders, Lawrence Livermore National Laboratory computer scientist Goran Konjevod is pushing the boundaries of what's possible with a humble sheet of paper, positioning him among the luminaries of the modern origami community.

Born in Croatia, his mother an artist and photographer, Konjevod's fascination with origami began in childhood, nurtured by an innate curiosity and a love for geometric patterns. Origami wasn't a widely practiced art form in his home country, but Konjevod's inquisitive mind, artistic bent and natural talent set him on a path of discovery that would spark a lifelong fascination with the art form.

Konjevod remembers folding his first origami crane when he was just a child. In high school, when studying math, he fell under the mesmerizing allure of folding paper into intricate forms, moving from the simple animals, flowers and insects he found in his origami books to complex, soccer-ball-like geometric shapes, spurred by curiosity and experimentation.

"I didn't know anybody else who folded at the time when I started," Konjevod recalled.

"Initially, it was the geometry [that attracted me] and the fact you can take a piece of paper, and then you fold it and turn it into a shape. It's hard to understand how that shape came out of just the square of paper. It's like making something out of nothing."

Konjevod continued his hobby after he came to the United States and throughout his academic pursuits at Carnegie Mellon University, where he first met other "folders" in Pittsburgh. In 2005, while working as a computer science professor at Arizona State University, Konjevod went to New York for an origami convention, where he was inspired to go beyond realistic sculptures into experimenting with his own intricate designs, infusing traditional techniques with his unique vision.



Konjevod embarks on the intricate process of folding — a delicate dance of precision and patience — by pre-creasing the paper into a tight grid of squares and then creating zigzag pleats.

"After that convention, I started designing my own abstract things," Konjevod explains. "I started exploring it more as, 'OK, what happens if I do this? Or what happens if I do that? Or is it possible to make a sequence of folds and then get the paper to curve in a particular way?'"



Taking inspiration from sculptors and ceramicists, Konjevod creates objects like vase-like vessels, bowls and masks that almost seem alive.

It wasn't long before Konjevod immersed himself in the art form, attending conventions and workshops to interact with and learn from seasoned origami practitioners. He began applying to open calls for submissions at galleries and museums and was invited to his first exhibition in Vancouver, Canada.

At a 2010 TEDxPhoenix talk, Konjevod lectured on modern origami, his "organic origami" technique and how different materials and folds result in the textures and properties that influence the outcome of his creations. His approach caught the attention of enthusiasts and experts alike, paving the way for his creations to be shown at studios and exhibitions across California, the U.S. and Europe in the ensuing years.

"It's a fun thing to do; it doesn't take up a lot of resources. You just need some paper and a little bit of space," Konjevod said. "For me, it's the question that I ask myself, 'can I make this?' I have to admit, I do enjoy people's reactions when they see something and they're amazed by it, like how can that be just a piece of paper? Sometimes it's hard to understand how you can go from a flat sheet to something that looks like a three-dimensional sculpture."

A process of unfolding

For Konjevod, the creative process begins with a spark — a fleeting image or idea that often turns into a rough sketch or a list of notes on what folding techniques or structural considerations it will take to reach the final form. Konjevod says he gathers more inspiration for his work from sculptors or ceramicists than origami artists, allowing his imagination to roam as he conceptualizes new designs.

With a vision in mind, Konjevod turns his attention to selecting the perfect material for his concept — a crucial step in the process. He considers factors such as the paper's strength, texture and transparency. Depending on the desired outcome, Konjevod has used his own custom paper that he dips in dyes, delicate handmade Japanese paper, or often, a sturdy paper called elephant hide from Germany. He also has folded metal mesh and thin sheet metal, and even created cast metal sculptures by using folded paper as patterns.

Once he's chosen the right paper (or metal), Konjevod embarks on the intricate process of folding — a delicate dance of precision and patience. Konjevod's technique is based on a sequence of simple folds. He begins by pre-creasing the paper into a tight grid of squares, and then creates zigzag-looking pleats. He refolds the pleats over the creases, allowing for multiple layers of repeating geometric patterns (pleat tessellations) and causing a natural, 3D shape to take form.

"When you have a lot of these folds arranged in particular ways, then that tension tries to open the paper back up and can create the curvature," Konjevod said. "After a while, you realize that you can get the paper to take on additional forms, and you can help shape it... you can almost sculpt the paper like a stretchable material. Normally if you stretch paper, it doesn't do anything until it tears; it's not like clay or rubber. But if you put a lot of folds into a sheet of paper, then you actually change the material until it's somehow almost a sculptural medium."

Surprisingly, Konjevod said his background in math doesn't factor into his process. At the heart of his philosophy lies an appreciation for the serendipitous nature of origami, as he allows himself to be open to the possibilities that unfold before him as he navigates the process. Instead of meticulously planning every fold, Konjevod allows the paper and the ebb and flow of the folding process to guide him and letting the shapes form naturally from the tension of the paper.

With enough folds arranged in particular ways, the thin paper becomes a stretchable, durable material that tension can sculpt into an array of interesting forms.



Museum-lit glass display cabinets in Konjevod's home showcase many of the delicate sculptures he has created over the years, his favorite being a stunning rendition of the Golden Gate Bridge.



Konjevod refolds the pleats over the creases, allowing for multiple layers of repeating geometric patterns (pleat tessellations) and causing a natural, 3D shape to take form.



"It's a different part of the brain [than mathematics]," Konjevod said. "You have to think about the geometry and how the shape is going to work out, so sometimes there's a little bit of planning. Other times it's just improvisation."

Improvising is one of the hallmarks of Konjevod's "organic origami" approach. He prefers to say his creations are discovered, rather than designed, a process that has allowed him to create objects like sculptures, vase-like vessels, bowls and masks that seem alive, dynamic and movable, even reshaping themselves long after the actual folding is completed. His creations can take hours of meticulous creasing and refinement, often to the point of pain in his fingers and joints.

"It's not always immediately clear how the shape will turn out," Konjevod said. "The idea sometimes comes to me in a flash, and I'll realize, 'OK, this is how something's going to work if I do it,' but the mechanics are what can take hours. Sometimes the work needs to be broken up, because my fingers are not useful for anything after a few hours of folding; it can be not only mentally challenging, but physically difficult, especially with a really fine folding of heavier paper."

With the final folds complete, he adds last-minute touches or embellishments, ensuring that every detail is perfect, and watches as the object comes into view.

"The final result is the sculpture you make," Konjevod said. "You start off by asking yourself, 'Is this possible?' And then the proof is in the physical result."

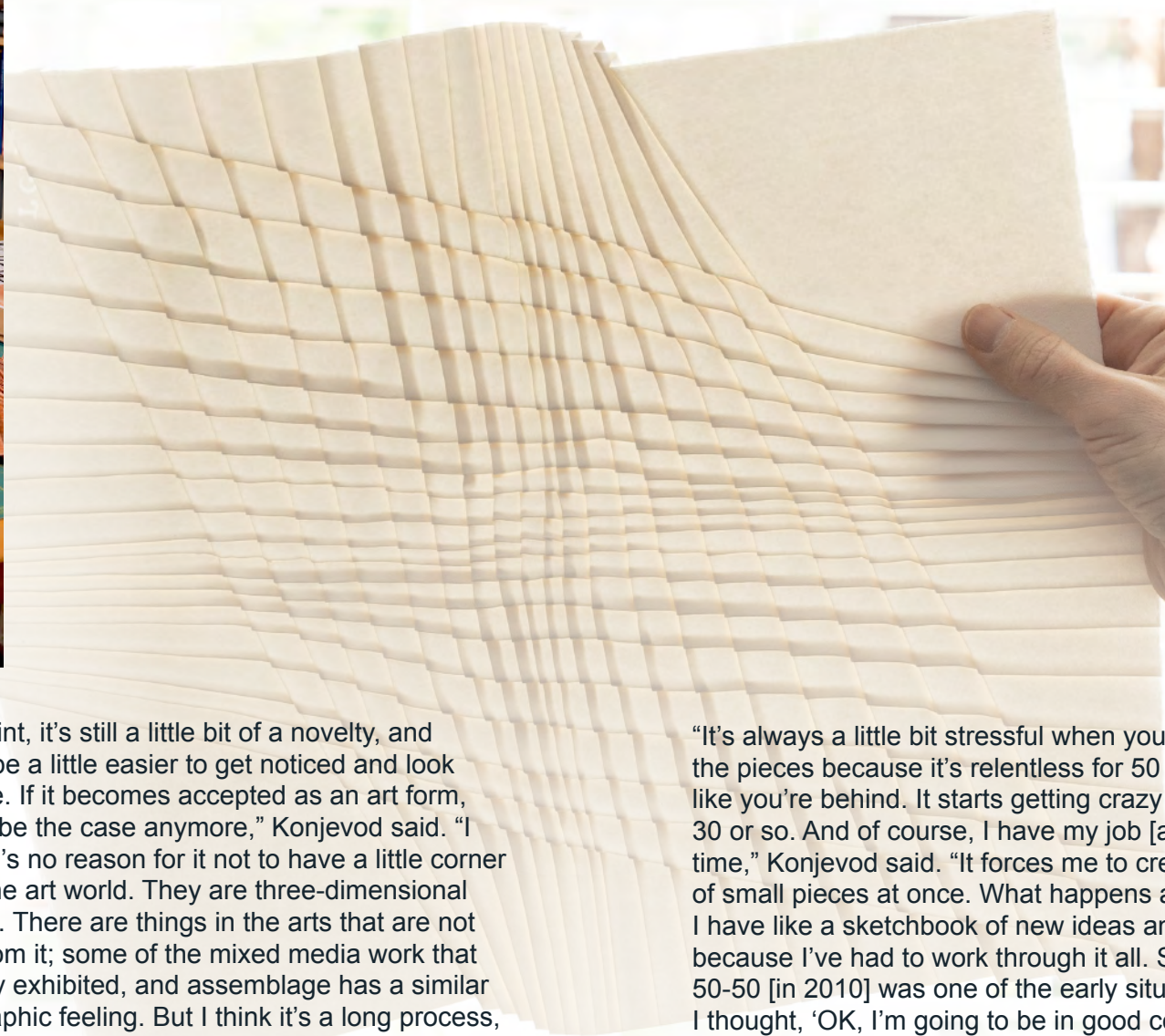
Sharing origami with the world

In his Livermore home, the walls and museum-lit display cabinets showcase many of the delicate sculptures Konjevod has created over the years, each one marking a step along his path of self-expression. Konjevod estimates he's produced at least 800 creations, his favorite being his stunning rendition of the Golden Gate Bridge — an homage to the iconic structure spanning the San Francisco Bay that for nearly a century has represented the American West's spirit of adventure and innovation.

"The bridge is special to me because it's a rare example of me designing something that's out there in the real world," he said. "It was just a lot of work to get through it, because for that one, I actually wanted it to look like a suspension bridge, so I needed to know the shape and the number of folds that go into those pieces that look like cables holding the bridge and so on. I couldn't just make it look like whatever it came out to be."



Whether it's refining existing techniques, the satisfaction of solving a complex folding puzzle or the thrill of seeing his work displayed in an art gallery, Konjevod has a passion for origami and for sharing it with the world.



From the labor-intensive nature of folding to the occasional setbacks and failures, Konjevod approaches each piece as an opportunity for growth and learning.

"It can be meditative, it can be frustrating, but for the most part, it's positive," Konjevod said. "Otherwise, I wouldn't be doing it."

With each fold, Konjevod continues to explore new possibilities in origami. Whether it's refining existing techniques, the satisfaction of solving a complex folding puzzle or the thrill of seeing his work displayed in an art gallery, Konjevod has a passion for the craft and is grateful for the opportunity to share origami with the world.

One of the most rewarding aspects of Konjevod's journey in origami is the sense of community he shares with fellow enthusiasts, educators and practitioners who gather to celebrate their shared interests and promote the art of origami. Konjevod strongly supports the community's collective goal of establishing origami as a legitimate and accepted medium in the art world.

"At this point, it's still a little bit of a novelty, and so it may be a little easier to get noticed and look impressive. If it becomes accepted as an art form, that won't be the case anymore," Konjevod said. "I think there's no reason for it not to have a little corner of the of the art world. They are three-dimensional sculptures. There are things in the arts that are not very far from it; some of the mixed media work that is regularly exhibited, and assemblage has a similar type of graphic feeling. But I think it's a long process, and it's not clear how long it'll take."

From conventions to traveling exhibitions to workshops, Konjevod has had the opportunity to connect with origami artists from around the world, exchanging ideas, techniques and inspiration. His work has been featured in dozens of galleries and art installations in the U.S. and Europe, including the annual 50-50 show at the Sanchez Art Center in Pacifica. Artists in various forms of media, including painters, photographers, potters and glass artists sign up to create 50 small art pieces in 50 days, with a jury deciding who will be included in the show. Konjevod has been chosen to participate several times.

"It's always a little bit stressful when you're working on the pieces because it's relentless for 50 days; you feel like you're behind. It starts getting crazy after about 30 or so. And of course, I have my job [at LLNL] full time," Konjevod said. "It forces me to create a full set of small pieces at once. What happens at the end is I have like a sketchbook of new ideas and designs because I've had to work through it all. So the first 50-50 [in 2010] was one of the early situations where I thought, 'OK, I'm going to be in good company, all these people around me in the exhibition, that's great work.'"

Konjevod's star in the origami world has risen to his work being featured in international galleries and the coffee-table book "New Expressions in Origami Art," published in 2017, where he was included among the world's 25 "leading paper artists" — a recognition he calls humbling. In 2023, while in Japan to take a workshop on papermaking — which took him from cutting tree bark and boiling pulp to a finished paper product — Konjevod was highlighted on the NHK World — Japan series "Origami Magic," where he discussed his philosophy.

"I rarely use my knowledge of math or geometry in order to create my pieces," Konjevod told NHK. "I sort of think of nothing and just work through the process. The improvisation is often how I come across my designs. I see something else that I wasn't quite expecting, and it can take me into a different direction."

Looking to the future, Konjevod remains committed to pushing the boundaries of origami as an art form and exploring new avenues of creative expression, experimenting with unconventional materials and tackling ambitious new projects. In recent years, Konjevod has begun pre-painting sheets of paper with wax-based paints to explore color and texture, and has embraced digital platforms like virtual workshops and online tutorials to connect with aspiring artists from around the globe.

Konjevod's origami odyssey shows no signs of slowing down. In a world of fleeting trends, his dedication to an ancient art serves as a reminder of the boundless potential of a simple material and the timeless power of imagination.

Live from Ken's House

Connecting two passions: Music and technology

By Ben Kennedy

Life at the Lab

Kenneth Ramey

Computer scientist and developer, Computing

"The thing I love most about the Lab is the off time; the time you get to do your own thing. It's that work-life balance."



Ken Ramey playing one of more than 30 guitars he has in his home studio. Photos courtesy of Ken Ramey.

The studio features numerous guitars, microphones, drum kits and other musical instruments.

Way up in the Sierra Nevada foothills, the pines stand guard over peaceful flocks of birds and trickling mountain streams. The horizon stretches on and on and things are tranquil. But if you listen very closely, you might be able to hear a tiny bit of rock 'n roll — or the blues. It's probably coming from Ken Ramey's recording studio. With his combination of analog and digital studio tools, he helps musicians — and himself — open up and create something that expresses themselves.

"When I have people come up here and record, I try to make them OK with being vulnerable," Ramey said. "It's all right to make a mistake; it's all right to get frustrated — that's life."

Since discovering the guitar at age 6 — and seeing it get smashed by his older brother while imitating the Who's Pete Townshend — he's studied recording, worked as a carpenter and went back to school to learn computer science.

The studio, near Angels Camp in Calaveras County, was built by Ramey thanks in part to his experience working as a carpenter. He boasts a wide variety of instruments, too: electric and acoustic drum kits, multiple keyboards, a harp, a mandolin, a dulcimer and "probably" more than 30 guitars.

"I've got it so anybody who comes up can grab something and just start playing," Ramey said. "I really wanted people to come up, have a good time and just play. Record if you want, but just play. I love the whole atmosphere. The studio is just one big open spot — I don't have a control room."

The vibe, Ramey said, is in part inspired by "Live from Daryl's House," a series that brought a variety of diverse musicians to jam in the home of

singer-songwriter Daryl Hall. Hall began hosting his friends, he said, because he was tired of touring and wanted the world to come to him for a change. On that point, Ramey is a kindred spirit.

"I'm a shy person," he said. "I have people come up here and we jam all the time, but if you get me in a crowd of people, I'm on the back wall." Ramey's guests have included guitarists Robert Hartung and Dave Frye, both fellow Lab employees. "We just sit out here and geek out," he said.

When recording, there's rarely a better take than the first one, Ramey said: subsequent attempts lose some energy thanks to nerves. But if there's a tiny mistake in that first take, Ramey can jump in with Pro Tools and delete a sour note if necessary. It's a possibility that didn't exist when he was studying recording engineering in his 20s, and he's grateful for the chance to combine both of his passions.

"Now I'm working on computers to do music, so it's kind of the best of both worlds," he said. "I'm working on a computer that I love and I'm working with music that I love."

His love for music touches his family as well. "When people I know pass away," he said, "I buy an instrument, so when I play something, it reminds me of them." When visiting his mother's native Pennsylvania after she passed away, a white Fender Stratocaster around the corner from her house caught his eye. He bought it in her memory. His father asked Ramey to do the same for him when the time came, and a few years later, a Gibson Les Paul Standard joined the collection in his honor.



Ramey built the studio with help from his friend Rich Cummings and support from his wife Erin. Above, the first steps toward its construction; below, the structure takes shape.



By design, Ramey's studio is meant to be a place for him and his fellow musicians to kick back, relax and express themselves through music.



The centrifugal force is with her

by Patti Koning

Life at the Lab

Jasmine Isaacson

Executive assistant
to the chief of staff,
Strategic Deterrence

“After seeing a model of the W-87 reentry cone, I was inspired to make a clay jar in that shape.”

When Jasmine Isaacson wants to relax, she throws clay.

“Making pottery is tactile and peaceful,” she said. “I don’t have to think about much, and when I’m done, I’ve created something of use.”

Wheel throwing is a method of forming clay into shapes on a potter’s wheel. It’s part simple mechanics — the centrifugal force of the spinning wheel inclines the clay to stretch and move outward — and part delicate control by the potter, who controls the clay with their hands.

Isaacson took her first pottery class as a teenager in Seattle but didn’t return to the craft until after college, when a family friend was giving away a pottery wheel. She found she had to take more classes to remaster the art of centering the clay.

“I grew up immersed in the arts,” she said. “My mother is an artist who works in glass casting. It’s a tough profession, so I knew I didn’t want to pursue a career in the arts. But I also had all these wonderful experiences and sources of inspiration. She had the tools for anything I was interested in.”



These unusual mugs were mementos from an annual “crab stamping” get together with friends. Photos by Blaise Douros/LLNL



To create this bowl depicting waves and clouds, Isaacson used a different glaze for each delineated section.



Executive assistant by day and master potter by night — Jasmine Isaacson spends her free time crafting functional works of art on the potter’s wheel.



To craft this tree trunk vase, Isaacson threw the trunk, then hand shaped and carved the details and branches.

Isaacson fired her pieces at her mother’s kiln until she moved to the Bay Area a few years ago. Leaving Seattle also meant leaving behind many of her creations.

“That’s the thing about making pottery, you end up with a lot of stuff. Before I moved, I had a party and everyone got to take home a few pieces,” she said. “I still have a very full shelf in my garage. Most of what I make I give to family and friends.”

Isaacson was a community outreach specialist for the FBI before joining LLNL as an executive assistant in Strategic Deterrence, supporting the chief of staff.

“I enjoy everything about my role here,” she said. “This is an easy place to have a big impact. Everyone is so busy, so having someone to pay attention to the details goes a long way.”

She set up a home pottery studio that includes a kiln. Most of her weekends are devoted to pottery. Her wheel is outside, so the weather dictates her ability to throw. The clay dries too quickly on a hot summer day and doesn’t dry properly on cold, wet days.



Isaacson took inspiration from the W-87 reentry cone for this challenging jar.



The fruits of a busy weekend.



A glimpse into some of Isaacson's varied creations, ranging from plates to vases to cups.

Making pottery is usually a multi-day process. After Isaacson forms the clay into the desired shape, she lets it dry overnight until it's leather-hard: stiff enough to work on without becoming distorted. The next day she places the shaped clay upside down on the pottery wheel and removes clay to shape the "foot" of the piece, a process known as trimming. On a recent weekend, she threw 25 cups.

While many of Isaacson's creations are functional pieces, crafting each by hand allows her to customize and add artistic details. Sometimes she finds inspiration in unusual places — like the W-87 reentry cone.

"I saw a model of it not long after I joined the Lab. It was a fun challenge to make an enclosed form in a cone shape," she said. "And then there is the added novelty for people who recognize what it is."

For anyone interested in learning how to create pottery by throwing clay, Isaacson recommends taking a class at one of the many Bay Area pottery studios.

"Centering clay is really challenging," she said. "You have to get a feel for it. The same goes for trimming,

you must keep your piece perfectly centered as you trim. Everyone's technique is a little different, so it's worth trying different instructors. I learn something new every time I take a class, and working in a studio also means you don't have to invest in costly equipment or deal with the extensive cleanup."

One hazard of throwing clay is inhaling silica dust, which becomes airborne in dry clay and small dry particles. Free crystalline silica can scar lung tissue and cause irreversible loss of breathing capacity. This is why Isaacson sets up her pottery space outside.

As a potter, one of her goals is to learn the technique that artist Dave Shaner used in his Hanging Landscape pieces, which are closed clay spheres hung vertically.

"My parents have one of his Hanging Landscapes, but over the years a few pieces broke. I tried to remake it but didn't quite get the technique right," she said. "Very little has been written about Shaner's process, but we do know he made the spheres by throwing clay. So, it's going to be a lot of trial and error. I'm up for the challenge."



Isaacson spins the world away on the potters wheel.

NAVIGATING OFF-ROAD *Adventure*

By Paul Rhien

Life at the Lab

Benjy Grover

Transformation Office, Director's Office, and associate program director, program enablement, Strategic Deterrence

"With more than 20 years of experience at LLNL, I've spent most of my career leading highly technical teams and organizations through change and growth. This is an exciting time to be at the Laboratory as we are looking to transform many aspects of our operating model to transition to a more modern and employee-focused approach."



Benjy Grover, Lawrence Livermore National Laboratory transformation officer, finds balance and adventure beyond the workplace on an off-roading excursion in his Jeep Wrangler Rubicon to Hell's Gate near Moab, Utah. Photos courtesy of Benjy Grover.

Benjy Grover is a familiar face at Lawrence Livermore National Laboratory. As LLNL's newly appointed transformation officer, he is at the center of helping drive many of the Lab's ongoing and future transformation efforts in culture, people management, policy, business systems and strategic planning.

Outside of work, Grover finds joy in exploring off-road trails in his Jeep, a hobby he's discovered in recent years. This parallel journey reflects his ability to navigate both the complexities of organizational change and the rugged terrains of outdoor adventure.



Trail-blazing roots

"My dad had a Jeep Cherokee growing up, and I always thought it was the coolest car. It was just his daily commuter vehicle, but it planted the seed," Grover said. His desire to explore the outdoors took root during college when he inherited his father's old Jeep, and the love for off-roading grew stronger with time.

In the fall of 2019, Grover took the plunge and purchased his dream Jeep. "I wanted a four-wheel drive that could take me places, and I was very particular about it. I wanted a vibrant orange Jeep Wrangler Rubicon," he said.

Little did Grover know that this decision would grow into a full-fledged hobby, filled with challenges, upgrades and memorable adventures. Discovering a group of men that explored trails together on the weekends, he started joining them on their outings, gradually pushing the boundaries of his Jeep's capabilities.

"It just became this snowball effect," Grover said. "First, it was, 'Maybe I should get a lift,' and then it was, 'Maybe I should get a winch.' Many joke that Jeep stands for 'Just Empty Every Pocket,' and that's true. The ability to upgrade is unlimited," he said, highlighting the addictive nature of upgrading his Jeep. From rock sliders to larger tires, Grover has made enhancements to his Wrangler for the ever-demanding trails.

From lockdown to lifeline

During the COVID-19 pandemic, off-roading became more than a hobby for Grover, but a real lifeline.

"When everything closed, the national forests remained open, providing a sanctuary for us. It helped us keep our sanity," he said. Grover found solace in exploring trails with his three sons, turning the off-roading trips into a cherished family activity.



Grover and his sons pause for a picturesque lunch break on a family excursion to "Little Moab" on the Niagara Rim Trail in Stanislaus National Forest.



Grover tackles technical obstacles, including boulder fields, tree roots and steep inclines on the Niagara Rim Trail — embracing the challenge and capturing the thrill of off-road exploration.





Grover has earned six Badge of Honor awards from Jeep, a recognition of completing challenging trails.



Descending a snow-covered obstacle on Slick Rock Trail — nature's icy touch added difficulty to the descent.

While his wife accompanied him on one off-roading adventure, Grover acknowledged that being a passenger might not be as thrilling. The real excitement lies in the driver's seat, tackling obstacles and making split-second decisions to conquer challenging terrains, he said.

Weekend excursions have taken Grover and his friends to various trails across Northern California, with favorites like Niagara Rim, Slick Rock and Deer Valley. They also have taken trips to the off-roading mecca of Moab, Utah, tackling renowned trails such as Hell's Revenge and Elephant Hill. Notably, Grover has earned six Badge of Honor awards from Jeep, a recognition of completing challenging trails.

Future aspirations include conquering the infamous Rubicon Trail in El Dorado County, California, and exploring high-altitude passes in Telluride, Colorado.

Overcoming obstacles

Grover's off-roading journey isn't just about conquering trails. With its array of challenges, off-roading has become a multifaceted outlet for Grover.

One of the significant challenges lies in navigating tricky terrain. Grover emphasizes the importance of choosing the right lines — or paths over an obstacle — as well as the right tire placement, especially when tackling boulder fields, tree roots, or steep inclines. The technical aspects of off-roading provide a constant source of problem-solving and challenge that he finds exhilarating.

"It's a lot of problem-solving when you're off-roading. You're constantly assessing the terrain, choosing the right course and helping others navigate obstacles," he said. "The thrill of overcoming these challenges becomes a driving force, keeping the excitement alive in every adventure."

Spending time working on his Jeep and off-roading excursions also underscores the importance of finding balance and pursuing passions beyond the workplace, Grover said.

He recalled a class taught by a psychology professor at UCLA. "The professor said that many of those that worked on the production line for Ford Motor Company, when they went home at night would play chess to wind down and relax, because they had done strenuous physical work all day."

"I sometimes feel like I play chess at work every day. So, this is a way for me to do something that's completely different," Grover said. "I spend much of the time I'm at work attending meetings or dealing with complicated issues. This gives me a great hands-on outlet."



Grover's son, right, assists by providing guidance ahead of an obstacle on the Top of the World trail in Moab, Utah.



Tom Langland's long-lived love affair with chess

By Steve Wampler



Life at the Lab

Tom Langland

Computer scientist, enterprise assessment management, Computing

"I've been here for 37 years. The Lab has a relaxed atmosphere, and I don't have to wear a suit and tie. It's straightforward work. They tell me what they want me to do and I make it happen."

LLNL computer scientist Tom Langland loves chess. Over the years, he has directed or helped oversee more than 1,800 U.S. Chess Federation officially rated tournaments and more than 200 local tournaments. Photo by Blaise Douros/LLNL.

"I have always been enthralled with chess and now I receive immense satisfaction as I give back to the community and watch other kids get the same enjoyment as I did many years ago," Langland said.

At 63, Langland got his start in the world of chess more than five decades ago in 1972 as a 12-year-old sixth grader at Kachina Elementary School in Phoenix, Arizona.

It was the same year that the American chess grandmaster Bobby Fischer dethroned Soviet world-champion chess player Boris Spassky in Reykjavik, Iceland, in what was dubbed the match of the century.

"I was captivated by chess in grade school in Arizona during the Fischer chess boom. I was one of the many people who started to pay attention to it because of the Fischer-Spassky matches," said Langland, who joined his school's chess club and recruited others to join.

After continuing to play chess in high school, Langland started college at Arizona State University (ASU) in Tempe, where his chess life grew by leaps and bounds.

When Langland first walked into the lower level of the university's student union, he spied a pool table, video games, a bowling alley — and multiple chess boards.

"The student union was a place where you could go and hang out in between classes. When I wasn't in class, that's where I was. That was the most fun I've had in my life. We would sit around and chat and play chess all day."

At ASU, Langland participated in about 10 U.S. Chess Federation tournaments each year, directed several tournaments and, in 1980, emerged as the under-21-years-of-age runner-up Arizona junior champion.

If Tom Langland were a chessboard piece, he wouldn't be a bishop or a knight. It's likely he'd be a king.

The Lawrence Livermore National Laboratory computer scientist is one of 50 tournament directors certified by the United States Chess Federation (USCF) to oversee tournaments throughout the United States.

Among those individuals, 20 have won the federation's tournament director of the year award, something akin to being inducted into a tournament directors Hall of Fame. Langland is one of the 20.

Moreover the U.S. Chess Federation has selected 10 special referees, who are on call during weekends to assist other directors and to adjudicate appeals by players of decisions made by tournament directors. Langland is one of them, too.

After moving to California and marrying his wife, Dana, Langland to return to his chess boards. He soon won the Stockton Chess Club championship over about 30 competitors, something he has done twice since then.



Langland instructs players about the use of a chess clock during a recent competition in Mountain House. Langland hosts monthly chess tournaments in the San Joaquin County area for children to compete against kids from other local schools. Photo courtesy of Tom Langland.

Passing it on

"When I became a father, I became active in my kids' school parent club. After being awarded the volunteer of the year for my work on the school website, I looked to find another way to become involved. A teacher wanted to start a chess club, and that was a perfect opportunity for me," Langland said, smiling.

In about 2005, with his oldest son, Jordan, in second grade and his younger son, Steele, in kindergarten at Art Freiler School, a kindergarten through eighth grade school in Tracy, Langland started organizing the school's chess club.

The Freiler School chess club burgeoned to dozens of members, who then needed more competition, so Langland organized clubs in at least five other Tracy schools and set up chess tournaments.

For his efforts setting up chess clubs and tournaments, the San Joaquin County Office of Education presented Langland with its Golden Apple award in 2009.

Even today, 19 years after he started setting up chess tournaments for Freiler and other schools, Langland still organizes once-a-month K-12 chess tournaments for 40-60 young people, drawing competitors from Tracy and other nearby communities, including Stockton, Manteca, Modesto, Brentwood and Livermore.

"My sons, Jordan and Steele, saw the trophies that I was giving out and began entering local and U.S.

Chess Federation tournaments. I quickly then became the typical crazy nervous chess parent and my wife told me that I should get in and help before she went crazy watching me suffer. Soon, I was organizing or directing several tournaments a month."

For Langland, seeing his family grow to enjoy his hobby in much the same way that he does has been a little like entering a dream world.

"Through chess, I have the best of both worlds. I love being a tournament director and playing chess. And now, to have the involvement of my family in chess tournaments and chess activities means everything to me. It's been a slow pathway toward our family's involvement in chess and it's something that I never could have predicted, or even imagined," Langland said.



Langland with his sons, Jordan (left) and Steele on the floor of the 2017 U.S. SuperNationals in Nashville, Tennessee. Photo courtesy of Tom Langland.

"Chess is more than a hobby. It's been an avenue for me and my family to reach out and touch people. It's a way that I can share what I know about chess with kids and adults over a board, sharing a love of the game."

His wife, whom the young chess players have nicknamed "Mrs. Tom," often helps set up chess boards and collects the results of the tournament matches. She serves as a referee for kindergarten through fifth-grade matches. "She loves refereeing the games of the little kids and seeing their matches," Langland said.

After years of playing chess, Langland's sons — Jordan, 27, who lives in Tracy, and Steele, 26, who lives in Irvine — also have earned certifications from the U.S. Chess Federation as tournament directors.



The chess team from Art Freiler school with their top 10 award for the Intermediate section at the 2007 U.S. National Junior High School Championship in Sacramento. Players from left to right are Logan Larsen, Christopher Troye, Steele Langland, Jordan Langland and Josh Morrison with coach Tom Langland in back. The team of second–fifth grade students competed against 33 other teams in their division from throughout the nation made up of sixth–through eighth graders. Photo courtesy of Tom Langland.

Every spring, the Chess Federation holds three National Scholastic Championships for kids in elementary (K-6), middle school (K-8) and high school (K-12) Then, every four years, all three levels are brought together under one roof for the SuperNationals tournament.

Langland has been on staff for four of these enormous events where more than 5,000 players and their parents take over entire hotels and convention centers.

“It is amazing to see a huge hotel and convention center with every hallway, lobby and ballroom filled with kids and parents enjoying chess. Even arriving and departing from the airport, I saw kids playing chess games.”

Through the years, Langland has directed or helped oversee more than 1,800 U.S. Chess Federation officially rated tournaments and more than 200 local tournaments.

One of his all-time favorite tournaments was the 2017 SuperNationals event in Nashville, Tennessee, with more than 5,000 young people gathered under one roof.

“This was the first time that my sons were old enough to be tournament directors. It became a family affair as my wife, Dana, came along as our support crew. I was in charge of a section of 300 kids, dealing with touch-move complaints, kicking under the table and criers.

“Parents, kids and teams save up money all year to attend this event. It is certainly a high-pressure event for everyone. I try to calm them, but still enforce the rules. Seeing my boys working on the floor was a thrill and late-night room service was a special treat,” Langland said.



For years, Langland thought that his favorite chess memory came in 2016 when he won the tournament director-of-the-year award for that year. Now, however, he can say that the highlight of his career came in 2023 when his son, Jordan, won the same award.

“We’re the only father–son duo in which both a parent and a child have won the tournament director-of-the-year award.”

Years of study

It took Langland six years, from 2006 to 2012, to complete the five levels of certification — club, local, senior, associate national and national — to attain his full-fledged accreditation as a tournament director.

“The Bay Area has chess tournaments every weekend,” he said. “So that gave me the opportunity to achieve my certification more quickly.”

“The final test for the national-level certification is an essay assessment, equivalent to a college-level examination. Even though the official rulebook is more than 200 pages long, passing the rigorous test requires you to understand and apply the philosophies behind the rules in tough situations not explicitly covered by the rules,” Langland said.

Among a tournament director’s tasks are setting up the chess sets with their board numbers, placing notation sheets for recording the players’ moves, setting up computers and printers for pairings and providing the pairings.

The U.S. Chess Federation is the governing body for chess in the United States and each state has its own governance organization that reports to the federation. Since chess is so popular in California, the USCF split California into two states — Northern and Southern California.

In addition to his tournament-director responsibilities, Langland has been the president of CalChess, the governing body for chess in Northern California, for the past 14 years.

These days, there are very few adult exclusive chess tournaments, according to Langland. “There are many young people in the Bay Area and the U.S. who want

The playing hall of the 2017 U.S. SuperNationals in Nashville, Tennessee. This record-breaking event was the largest chess tournament in the world. Langland was responsible for the K-6 championship section of more than 300 players competing for huge trophies, national championship titles and thousands of dollars in college scholarships.



Langland presents the top college-team award to the team from UCLA at the 2019 U.S. National Amateur Team West Championship held at the Santa Clara Convention Center in Santa Clara. Photo courtesy of Tom Langland.

to play chess. The kids have the time; the adults don’t. Adults seem to have grown busier and it takes a full day or two for a tournament.”

Langland has served as the chief tournament director for numerous national championships, but one of his career highlights — and a bucket-list item — was serving as the chief tournament director for the prestigious U.S. Open in Rancho Mirage, California, in 2022.

“This is a real test of a director’s abilities. Since this is truly an open event, players anywhere from beginners to grandmaster attend,” he said. “The event is played over a grueling nine days, so it also is an endurance event, not only for the players but the staff as well.”

“This U.S. Open was especially draining for me since this one was located in the desert two hours outside of Los Angeles during the summer. One of the most difficult parts of my job was I had to wear a suit and a tie every day. I have worked at the Lab for more than 30 years and never worn a suit and tie, but yet for the hobby I enjoy it was mandatory.”

Langland joked that he enjoyed the 2022 U.S. Open when it was over, calling it grueling and exhausting: “Even though I had 10 assistants, I was the first one in and the last one out. But I am totally thrilled that I did it.”

“Over the years, I am now a national tournament director, have directed more than 1,000 tournaments, served on many U.S. chess committees and I have enjoyed every moment. Chess is still fun and funny.”

SpotLight

THE PEOPLE
WHO DRIVE
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