

Ode to E Pluribus Unum for Sunday October 3 2021

The Mountains of NGC 2174



Image Credit: NASA, ESA, Hubble Heritage Team (STScI/AURA)

This fantastic skyscape lies near the edge of NGC 2174 a star forming region about 6,400 light-years away in the nebula-rich constellation of Orion. It follows mountainous clouds of gas and dust carved by winds and radiation from the region's newborn stars, now found scattered in open star clusters embedded around the center of NGC 2174, off the top of the frame.

Though star formation continues within these dusty cosmic clouds they will likely be dispersed by the energetic newborn stars within a few million years. Recorded at infrared wavelengths by the Hubble Space Telescope in 2014, the interstellar scene spans about 6 light-years.

Scheduled for launch in 2021, the James Webb Space Telescope is optimized for exploring the Universe at infrared wavelengths.

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Maserati 450S Re-Creation



This Maserati 450S re-creation was built by the seller's facility JML Restorations in Santa Barbara, California, over the course of five years leading up to its completion in 2018. The car was reportedly modeled after the Fantuzzi-bodied 1957 Maserati 450s chassis #4503, one of nine Tipo 54 race cars originally produced for participation in FIA World Sportscar Championship racing.

<https://youtu.be/IE7iMklvA40>

Why anyone would let this go is beyond me. Get a second job as a rag-picker and hang onto it. It could be yours for under \$250,000...maybe.

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Francie Troy's Thangs

Red Fox

Out of sight but nearby, he is an elusive neighbor,
Hens and roosters at the farm
View him with disfavor.



A rusty coat, black leggings and pointy ears
His visits elicit squawks and justified fears
Intelligent, resourceful, and with canine agility
The red fox proves his independent ability
Circling miles, he is a solitary hunter
Raising a family in a protective cover
A bushy tail is his significant feature
Providing balance and warmth for this
Adventuresome creature.

Survival means learning how to be smart
More attention to brain than to needs of the heart
His hunting requires patience, and with due care,
He returns to his den with a feast to share.

Independence begins with the ability
To recognize one's own capability
Education is our bushy tail
Providing warmth and the balance to sail
Into the wild or across the sea
We learn to survive and thrive
With credibility.

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Hall and Oates



The American rock duo, Daryl Hall and John Oates, formed in 1970 in Philadelphia. Daryl Hall is generally the lead vocalist; John Oates primarily plays electric guitar and provides backing vocals. The two write most of the songs they perform, separately or in collaboration. They achieved their greatest fame from the mid-1970s to the mid-1980s with a fusion of rock and roll and rhythm and blues.

Sara Smile - <https://youtu.be/nOFCTFXn6xE>

You Make My Dreams Come True –
<https://www.youtube.com/watch?v=EErSKhC0CZs>

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1812 Overture (Tchaikovsky)



Flashmob https://www.youtube.com/watch?v=4NJRCCgK_AM

Concert hall setting <https://www.youtube.com/watch?v=QUpuAvQrC0&t=0s>

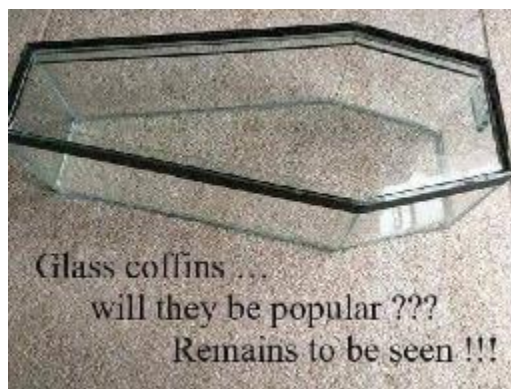
Want cannons? Watch a live performance for cannons, fireworks and tower bell:

The Year 1812 Solemn Overture, Op. 49, popularly known as the 1812 Overture, is a concert overture in E_b major written in 1880 by Russian composer Pyotr Ilyich Tchaikovsky to commemorate the successful Russian defense against Napoleon's invading Grande Armée in 1812.

In 1974, the Boston Pops added cannons, church bells and fireworks to draw crowds to their Independence Day concert. It was so successful that the inclusion of the "1812 Overture" became a staple.

Flash Mob performed by Banda Simfònica d'Algemesí on September 3rd 2016 at Algemesí city (Spain), playing Tchaikovsky's "1812 Overture.

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Aerial Footage from the 1954 Film Bridges at Toko Ri



<https://www.youtube.com/watch?v=K46-MRxjteU>

What a beautiful bird the Grumman Panther was...back when you strapped them on, not yourself into.

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The Company Some Folks Keep



Willie Nelson and The Electric Mayhem Sing 'On The Road Again'

<https://www.youtube.com/watch?v=bOamLKAb-g8>

'Angel Flying Too Close To The Ground
<https://www.youtube.com/watch?v=BPIIXhGeu7s>

Kermit the Frog Rainbow Connection Willie Nelson
https://www.youtube.com/watch?v=O_j51c7Ka5k

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A Sign in a shoe repair store :

We will heel you
We will save your sole
We will even dye for you.

In a Podiatrist's office

"Time wounds all heels."

On a Septic Tank Truck

Yesterday's Meals on Wheels

At an Optometrist's Office

"If you don't see what you're looking for
You've come to the right place."

On a Plumber's truck

"We repair what your husband fixed."

On another Plumber's truck

"Don't sleep with a drip. Call your plumber."

At a Tyre Shop in Milwaukee

"Invite us to your next blowout."

On an Electrician's truck

"Let us remove your shorts.";

In a Non-smoking Area

"If we see smoke, we will assume you are on fire and will take appropriate action."

On a Maternity Room door

"Push. Push. Push."

At a Car Dealership

"The best way to get back on your feet - miss a car payment."

Outside a Muffler Shop

"No appointment necessary. We hear you coming."

In a Veterinarian's waiting room

"Be back in 5 minutes. Sit! Stay!"

At the Electric Company

"We would be delighted if you send in your payment on time
However, if you don't, YOU will be de-lighted."

In a Restaurant window

"Don't stand there and be hungry; come on in and get fed up."

In the front yard of a Funeral Home

"Drive carefully. We'll wait."

At a Propane Filling Station

"Thank Heaven for little grills."

In a Chicago Radiator Shop

"Best place in town to take a leak."

And the best one for last:

Sign on the back of another Septic Tank Truck

"Caution - This Truck is full of Political Promises"

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San Francisco's Quest for a Sexy Trash Can

*Don't bother reading this if you think The City by the Bay is...well, **sane**.*

I referenced this in last week's Walking piece and received a couple dings from readers feeling I was being ungenerous in my appreciation for the efforts of San Franciscans to keep their streets clear of trash. With sincere apologies I invite them not to read this.

Rather than use off-the-shelf models, San Francisco has engaged in a years-long process to design cans that'll cost thousands of dollars apiece. And it's not nearly done.



The three models proposed by the Institute for Creative Integration that will be tested in the

coming months.
Photo by Lydia Chávez.

by Lydia Chávez

San Francisco's aspirations for a \$1,000 trash can spiraled out of control to more than double in cost.

Here was the plan being described to him, as far as Supervisor Matt Haney could parse it: In late 2018, San Francisco had embarked on a quest to design its own garbage can — from scratch. By the summer of 2021, two-and-a-half years later, an industrial design firm had completed the conceptual drawings for three models. In July, the Board of Supervisors would vote on spending \$427,500, much of it to manufacture and test five prototypes of each model. The price tag for each prototype was estimated at between \$12,000 to \$20,000 apiece.

That was, in fact, the plan. So, Haney was confused.

"I realize we're pretty far down the path here already," he said at a Board of Supervisors Budget and Finance Committee meeting July 21. "But why did we choose this path to begin with? And why are we still doing this rather than putting out a bunch of different types of cans that already are produced, that are much cheaper, that are already performing well ... in some other place ... and then making a decision based on this? This is a very expensive, much longer, uncertain process that we've chosen."

The Public Works department had an answer: *Those other cans? Not sexy enough.*

San Francisco is "obviously very unique, and we weren't happy with the look of those cans," said then-interim Director Alaric Degrafinried, referring to the aesthetics of the off-the-shelf models.

Some of the existing cans — the ones that cost much, much less than our prototypes and have performed ably elsewhere — may fulfill the actual, functional requirements of a trash can. But, again: *Not sexy enough.*

They may not "necessarily be as pretty and as pleasing to the eye as the cans that are being designed for us right now," Degrafinried said.

Six days later, Haney again questioned the process. "It was a decision that was made by the former DPW (Public Works) director" — accused federal criminal Mohammed Nuru — "and was a decision that the current DPW leadership is not even fully aware of in terms of why that decision was made."

Still, Haney, like all his colleagues on the Board of Supervisors, approved the plan to spend \$427,500. We're moving forward in the next stage: prototype manufacturing and testing of the cans we opted to redesign from scratch. Why?

This is a story examining San Francisco's bizarre pursuit of the perfect trash can: the time it has taken, the stunning amount of money being spent, and the baffling lack of curiosity on the part of many of San Francisco's elected representatives and media observers in questioning the proposal by San Francisco Public Works to spend \$427,500

to produce 15 prototype cans. Ultimately, San Francisco will spend millions of dollars to custom-produce 3,300 public trash for its use.

How many millions remains an open question: The city's initial request for proposals, in 2018, envisioned a top price tag of less than \$1,000 a can. But that price has at least doubled, and could now hit as high as \$5,000 a can, Public Works administrators indicated in the discussions on the process. They have since stepped back from those statements, but really, no one knows how much the cans will ultimately cost.

What we have are estimates. San Francisco will spend from \$6.6 million to \$16.5 million to replace the city's existing public trash cans, and those are estimates made at the present moment. Who knows what things will cost when the manufacturing actually commences.

"The idea that San Francisco is so unique that we need a separate trash can from anyone deployed in any city around the world is preposterous," Haney told Mission Local this month. "It's something that reflects a broader and deeper brokenness of city government and the services it provides."

Dumpster diving into city trash takes time and your support. Donate today!

Why did San Francisco decide to design its own trash can?

The final decision on San Francisco designing its own trash can was made in 2018 by then-Public Works boss Nuru. While staff contributed input, Public Works spokeswoman Beth Rubenstein said, the last word went to Nuru, who, in January 2020, was arrested by the FBI and charged by the Department of Justice with fraud and lying to a federal agent. If convicted, he faces up to 25 years for various schemes, gifts and bribes; Nuru was the first domino to fall in San Francisco's ongoing federal corruption scourge.

While we cannot know what was in Nuru's head in 2018, the fraud charges and litany of horrific details revealed by local and federal probing since January 2020 might have suggested to supervisors in 2021 that they take a closer look at the \$427,500 they were being asked to spend at Nuru's insistence.

Already, they knew, Nuru had been responsible for a \$5.2 million contract to buy the earlier, much-maligned "Renaissance" trash cans from Alternative Choice. That company, intriguingly, is under the aegis of former permit expediter and contractor Walter Wong, a longtime Nuru running buddy who has since pleaded guilty to federal fraud and money-laundering charges, and has cooperated with the feds to take down other San Francisco city officials.

Other than Haney, however, no one appeared inclined to buck a decision Nuru had made. And, while Haney raised salient questions during hearings, he never pressed hard for answers — and, like his 10 colleagues, eventually voted to stay the course.

Rubenstein from Public Works explained that in 2018, the department could not find a trash can that fulfilled an exacting list of features: a rolling inside can for easy emptying, a sensor to alert workers when a can is full, durability to withstand street life, and be tamper-proof.

And “obviously,” she added, “they needed to be aesthetic.”



Ahh, those sexy streets of San Francisco
sfchronicle.com

There were no off-the-shelf models that met most of those requirements, except for the Bigbelly. But those, at a cost of about \$3,900 a can, were deemed too expensive. Nor were they particularly attractive, she said. The PEL can also fit most of the requirements. It costs \$6,400, Rubenstein wrote in an email. At present, she wrote, these were “the only two off-the-shelf cans that we’ve found that come close to satisfying most of our programmatic requirements.”

Bigbelly cans are now used by several San Francisco Community Benefit Districts, which impose a local tax on businesses to cover special services, such as extra trash collection and street cleaning. The Tenderloin Community Benefit District, for example, installed 68 Bigbelly cans in a 26-block area. It rents them for \$150 a month, or \$1,800 a year each.

In many ways, replaying the meetings in which the city’s elected representatives discuss the decision to move forward on a \$427,500 expenditure that will lead to a potentially far greater expenditure was reminiscent of Joan Didion’s scathing 1996 review of Bob Woodward’s style of portraying political events through the eyes of the main actors. She refers to Woodward as a stenographer rather than an inquisitive journalist. “These are books in which measurable cerebral activity is virtually absent,” she wrote in the *New York Review of Books*. The same could be said of the discussions at the July 21 Board of Supervisors Budget and Finance committee and the July 27 full board meeting.

With the exception of Haney, who received virtually no assistance from his colleagues, the supervisors focused on the existing cans, blaming them for the city’s trash problems. In both meetings, the green-hued, so-called Renaissance cans purchased

from the Wong-associated company took on an anthropomorphic role of a wayward resident: unattractive, prone to create trash and attract dumping, and requiring far too much upkeep.



San Francisco's existing trash cans.

Photo by Lydia Chávez.

At the July 21 meeting, District 11 supervisor Ahsha Safaí lamented that the current trash cans “blended so much into the landscape that at some point, in many ways, they just weren’t necessarily something that people respected and people used in the right way.”

“They often make areas more dirty, not less,” added District 9 Supervisor Hillary Ronen at the full board meeting.

Residents, then, were not to blame for dumping; the current trash cans caused dumping. Public Works and Recology were not responsible for failing to pick up trash, the trash cans created trash.

Only District 7 Supervisor Myrna Melgar suggested that other factors might be in play. “I just hope that we also pay attention to the picking up of the trash in those new, more attractive and better-designed cans,” she said.

In the end, Degrafinried lamented, “we” have to make a decision. The “we,” in this case, appeared to be the supervisors. The decision, from Degrafinreid’s point of view, was this: “Are we comfortable with a trash can that is effective, but it may not look as attractive on the streets?”

His assertions might have elicited further questions from our elected supes on the alternatives; on what Public Works had learned in the nearly three-year process about

the other available cans, such as prices and consumer satisfaction in the cities that used them; on whether San Francisco's exacting requirements were simply too demanding; on how the initial \$1,000 cost constraints in the RFP had spiraled out of control.

But no one pressed Degrafinried.

Haney's challenges also opened a door to potential follow-up questions: "One of the designs, it's almost identical to a style that is in Washington, D.C.," he offered at that same meeting. "So it's just a surprise to me that there weren't other ways to do this."

Neither Safaí nor Gordon Mar, his colleagues on the Budget and Finance committee, pursued mention of the D.C. can (it costs \$987, but has no sensor) or the other alternatives, including New York's \$632 can, Sacramento's \$1,300 can; or the Los Angeles model at \$449.51. Again, San Francisco simply wanted more than any of these other models offered.

Instead of probing, Safaí spent most of his time making it clear that he wanted the prototypes tested in his district.

"They look sleek, clean, (and it) looks like they're easy to service and maintain and monitor," Safaí said of the cans that are, indeed, sleek and appear to check nearly all the boxes of what Public Works wanted. "Appear," however, is the operative word. They are only conceptual designs. As of yet, not even engineering drawings exist.

Nonetheless, Safaí noted that, in his district, "We're ready to accept them."

On July 27, the \$427,500 expenditure to move forward with San Francisco's quest to design the ultimate trash can from scratch was approved by all 11 supervisors.

In explaining his "yes" vote, Haney wrote: "I can't accept any further delays. This needs to get done. Voting down the expenditure altogether, which is money that had already long been set aside for this purpose, would have just set us back, possibly for years. The main concern I've had is not only with the cost, it's how bungled and long of a process this has been."

And, now, that process continues.

The supes moved on to other matters. The press, which enjoyed high-trafficking stories about the city's inability to proffer a functioning trash can that costs less than a Yugo, moved on, too.

Is it now time to consider alternatives?

At this point, the city has spent nearly three years and paid out \$143,886 to the Oakland-based Institute for Creative Integration, according to its contract with Public Works. While not exactly chump change, it is still only a fraction of the \$427,500 the city will now spend to manufacture the 15 test cans and the millions it will spend in mass-producing what Haney referred to this summer as a "designer" can.

But, as of last week, no contract has been signed between APROE and the city for the next stage. So perhaps it's not too late to raise a few questions. For example: How did a trash can become so costly?

The 2018 Request for Proposals (RFP) included a stipulation around costs, limiting bidders to “a combined unit cost of less than \$1,000 each.”

The Institute for Creative Integration, one of two companies to compete for the project and the ultimate winner, reaffirmed that per-unit cost of \$1,000 per can. That limit, however, never came up at any of the July meetings where supervisors considered the cans.

By then, the predicted price of the mass-produced can had skyrocketed. Mission Local and The San Francisco Chronicle reported Public Works’ estimated cost of the 3,000-plus cans at \$2,000 to \$3,000 apiece, but Public Works acknowledged in hearings that it could be much higher.

Haney asked the Public Works representatives at the Budget and Finance committee meeting on July 21 if the ultimate cost of the new design would be comparable to the off-the-shelf models the city planned to test in the \$3,000 to \$5,000 range.

The department would “come up with something that would be comparable to the cost of an off-the-shelf can, maybe slightly higher,” said Lisa Zhou, the Public Works project leader. “We don’t know. But if it were, it wouldn’t be significantly higher.”

Zhou never explained how the cost had jumped from \$1,000 to potentially upwards of \$5,000. No one ever asked about this, either.

In a subsequent private meeting, Haney said, Public Works changed the estimate. “They told me that, actually, they believe that these can potentially be equal to or even cheaper than the off-the-shelf models,” Haney said when asked about the discrepancy. “I said, that’s not what you said in the committee. And they said, well, actually, that was wrong. We do believe it will be cheaper.”

We don’t know what that belief is based on.

Rubenstein did not recall such a high estimate and wrote in an email that the department aimed “for the lower number of \$2k but need to give a range as there are many variables whose cost we cannot yet predict (for instance, design details, material cost, supply chain issues and manufacturing location which impacts shipping cost).”

Shin Sano, the CEO of the Institute for Creative Integration, which has designed the three prototypes, thanked me for my insistent interest in their process but declined to answer a list of questions. Instead, he said, he would forward the questions to Public Works.

Tom Dair, the creative director who submitted the proposal, never responded to an email asking for an interview.

Mark Foohey, a senior mechanical engineer and studio lead from the Texas-based M3 Design, said determining the appropriate requirements are key in any project. “If cost wasn’t one of the drivers of your design, that would have been a miss.”

“Everyone was a little stumped”

Steve Thompson, director of marketing and sales for BearSaver and Securr, which sells BearSaver trash bins, represented one of the seven companies that attended the 2018 pre-proposal conference meeting with San Francisco Public Works.

Thompson's company has sold some 1,000 trash bins to San Francisco parks, but designing a from-scratch concept model is not something that Securr does, he said. In his 22 years in the business, he added, he had not heard of a city designing a model from the ground up.

A representative from another company, who declined to speak on the record, said "everyone was a little stumped" by Public Works' decision to design its own model. He did not attend the meeting because, he said, his company would never do that; they make their own designs for sale.

"There are companies who have done the research and groundwork ... companies that have spent millions of dollars on how to build a smart trash can that makes sense. So the city is going back into the R&D portion of it and starting from scratch. Honestly, I don't really know."

Branch Creative, a San Francisco-based industrial design studio owned by Josh Morenstein and Nick Cronan, attended the pre-bid conference meeting in November, 2018. Earlier that year, the company had been one of two finalists for a different city project that involved designing new public toilets, and had lost out to another firm.

After that happened, Rubenstein, who had been the Public Works administrator on the toilet project, reached out in August, 2018, to see if Branch Creative would be interested in submitting a proposal to design a new trash can for the city, Morenstein said.

They were. "We just wanted to do the project. We were like, 'this sounds really cool,'" said Morenstein. "You know, I grew up in the city. My family had two long-term businesses here, we wanted to design something for the city." (Morenstein's father owned a foundry in the city, and his family owned Just Desserts.)

So they drafted a proposal that went back and forth between Branch Creative and Public Works, according to Morenstein, who scrolled through old emails as we spoke. On Oct. 9, 2018, Morenstein said, they got an email asking if there was an expiration date on their \$60,000 fee proposal.

"We said 'no,'" Morenstein said. Then, on Oct. 11, they got another email saying that Branch's \$60,000 design proposal was actually one of the strongest, but that "upper management has decided to revamp the process and solicit proposals through a formal process," Morenstein said.

Morenstein and his partner were stunned and felt "dicked" around because they assumed they were close to a deal. Nevertheless, they attended the November meeting, which Morenstein described as confusing.

"There were a lot of open issues," Morenstein said, explaining that Lisa Zhou, the administrator, was unclear on what the city wanted and there were too many open-

ended questions, such as whether the inside can was to be off-the-shelf or also a new design. (Ultimately, the three conceptual designs used both original designs for the inside can and off-the-shelf models.)

Instead of submitting a proposal again, Branch Creative opted out.

And, like the price of the trash can, the price of the contract also jumped.

Public Works' RFP set a price tag of \$85,000. The only other bid of the seven companies that attended the pre-bid meeting was submitted by Yamamar Architecture. Its price was \$79,048. Yamamar could not be reached for comment. Its phone number no longer works and an email to Karen Mar, who submitted the proposal, bounced back.

The Institute for Creative Integration's winning bid was \$143,886, more than double the amount Branch Creative had proposed in a pre-bid offer, and 69 percent higher than the initial price suggested by the RFP.

Other models, other price points

Thompson from Securr still hopes that San Francisco tests one of his off-the-shelf models. It does not have a sensor system, but the city could contract with another company to do that.

However, he warned, "simplicity is the key to a successful (trash) can."

He was unenthusiastic about the proposed prototypes using stainless steel.

"They are just going to get beat up," he said. "It's a material that you might use for inside a hotel, but not on a city street."

He understands, however, the lure of stainless steel. It's attractive.

Jenny Frankel, the senior planning and development strategies manager for Seattle Public Utilities, just purchased 150 cans from Thompson. She warned at the start of our conversation that she could talk trash all day.

The cans she purchased have no sensor, but she loves the way they can be lifted and dumped by the trucks and the wrap-around art feature. In her experience, "There is not such a thing as a perfect public litter can," Frankel said. "Different neighborhoods experience different issues. One can may work really well in one area and will do very poorly in another area."

She's hopeful about the 35-gallon trash cans Seattle has purchased. She would have liked them to be less expensive, but steel costs went up and the art added to the final price. Each can costs \$1,400.

Portland, another city Haney mentioned in the hearings, also purchased cans in 2020 from Thompson. They meet all of San Francisco's requirements except the sensor. "We are considering adding them to some of our containers to prevent missed collections," Quintin Bauer, public trash collection program manager for Seattle. But Portland is still assessing different solutions.

No can is perfect, he cautioned. Cans require maintenance, cleaning and graffiti removal. Is it tamper proof? No can is, but, he wrote, "the locks are quick and simple to repair." He likes the stainless steel, which, he wrote, "is very strong, but can be damaged if they are hit by cars at high speed."

Portland pays \$1,417 for the 35-gallon can and \$1,851 for the 65-gallon can.

Thompson would like San Francisco to try a similar can. He's enthusiastic about the art wrap. Sensors could be added by another company. The one he has in mind for San Francisco costs around \$1,600, including shipping, he says enthusiastically.

It's unclear if his can is on San Francisco's list. Despite nearly three years of work, it's unclear if San Francisco has a list.

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Dancing Hippo to Hippo...and so forth.

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Calm Piano Music Relaxes Restless Bull Elephant



https://youtu.be/8NmoMe2_53I

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NASA Robots Compete in DARPA's Subterranean Challenge Final



Team CoSTAR, led by NASA's JPL, will use autonomous robots with diverse methods of movement to compete in the complex underground environments of the SubT Challenge Final. One of the robots, NeBula-Spot, walks on four legs to explore hard-to-access locations. Credit: NASA/JPL-Caltech

Led by NASA JPL, Team CoSTAR will participate in the SubT final this week to demonstrate multi-robot autonomy in a series of tests in extreme environments.

Eight teams featuring dozens of robots from more than 30 institutions, including NASA's Jet Propulsion Laboratory in Southern California, will converge in a former Kentucky limestone mine from Sept. 21 to 24 to participate in a series of complex underground scenarios. The goal: to demonstrate cutting-edge robotic autonomy capabilities and compete for the chance to win \$2 million.

Sponsored by the Defense Advanced Research Projects Agency (DARPA), the event marks the final contest in the Subterranean, or SubT, Challenge, which began three years ago, attracting engineers from around the world. The challenge is aimed at developing autonomous robotic solutions for first responders in underground environments where GPS and direct communications are unavailable.

But the technologies developed for the SubT Challenge and extreme-environment exploration on Earth also have direct applications for space exploration. The JPL-led Team CoSTAR (Collaborative SubTerraean Autonomous Robots) will demonstrate their collection of driving, walking, and flying robots that could one day be used to explore extreme terrains on the surface as well as inside the caves and lava tubes on other worlds without human assistance.



*Team CoSTAR's Rollocopter uses a quadrotor system to fly or roll along on two passive wheels. When it meets an obstacle while rolling, it can simply fly over it.
Credit: NASA/JPL-Caltech*

The 60-member team includes engineers from Caltech, Massachusetts Institute of Technology (MIT), Korea Advanced Institute of Science and Technology (KAIST), Sweden's Lulea University of Technology, and several industry partners.

"Our focus in SubT is not the competition. Rather, this is an incredible opportunity to expedite the technology development and develop new autonomy and AI [artificial intelligence] capabilities for NASA and for the good of humanity," said Ali Agha, a JPL roboticist and the principal investigator for Team CoSTAR. "In particular, when it comes to NASA's quest in searching for life beyond Earth, the NeBula autonomy and AI technologies we develop by participating in this competition can be used in the future by robots that may explore extreme and challenging locations on other worlds where signs of extinct and extant life may be found."

The SubT Challenge began in 2018 and consists of two tracks: the Systems track and the Virtual track, both of which are split into three subdomains, or events – the Tunnel, Urban, and Cave Circuits. Whereas the Virtual competition focuses on developing software that can participate in simulation-based events, the Systems competition centers on physical robots that operate in real field environments. That's what Team CoSTAR signed on for: developing AI and autonomy software solutions for physical robots that can navigate challenging and previously unseen environments.

Wheeled and tracked robots



The SubT Challenge's range of environments require different modes of locomotion and a diverse array of robots to complete complex tasks. Team CoSTAR may use wheeled and tracked robots to cover ground faster when obstacles are few obstacles or terrain is rugged.

Credit: NASA/JPL-Caltech

The Tunnel Circuit took place in August 2019 in mining tunnels under Pittsburgh, with Team CoSTAR placing second; they took first in the Urban Circuit, held in February 2020 at an unfinished power plant in Elma, Washington. The Systems Competition Cave Circuit was canceled in the fall of 2020 because of COVID-19 restrictions.

This week's final event, held in the 4-million-square-foot (370,000-square-meter) Louisville Mega Cavern, features a combination of all three subdomains that DARPA has designed – from cave systems with irregular passages and large caverns to subsurface structures with complex layouts that reach several stories high.

Team CoSTAR relies on a diverse array of robots to fulfill the mission goals. They first send in robot scouts to explore the environment, then select a subset of robots best able to collectively satisfy the overall mission goals depending on their mode of locomotion.

"The final contest will be particularly challenging, since we must use wheeled, legged, and flying robots to access all of the complex spaces that DARPA will build into the competition. I am excited to see how our very diverse robot team will perform," said Joel Burdick, a Caltech professor and JPL research scientist who leads the Caltech campus section of Team CoSTAR.

Subterranean Practice Run: https://youtu.be/_HpWIhFFD54

Watch Team CoSTAR and their squad of robots prepare for the February 2020 DARPA Subterranean Challenge Urban Circuit during a practice run at Elma High School in Elma, Washington. The team ultimately placed first.

Credit: NASA/JPL-Caltech

The robots will also produce a live 3D map as they locate objects that represent a disaster-response and search-and-rescue scenario, such as manikins (to simulate human survivors), cellphones, and backpacks distributed throughout a large environment.

"Our participation in this exciting effort helps further one of the main goals of Caltech's Center for Autonomous Systems & Technologies (CAST): developing robots that can help find and rescue humans in future disasters," said Burdick.

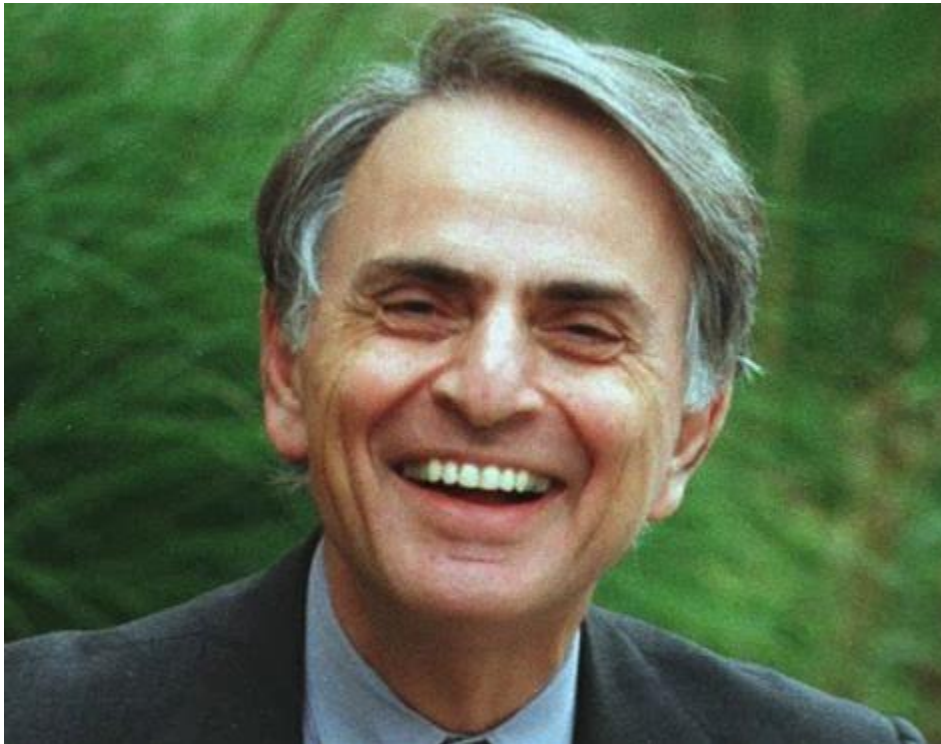
Also present will be environment-specific artifacts, such as a carbon-dioxide-emitting source that mimics a gas leak in an urban setting, or a helmet in a cave setting that would indicate a nearby human presence. The team of robots must operate autonomously, for the most part, with no or limited radio contact with a single human supervisor, and the mission must be completed in one hour. The more objects they can traverse to, reach, identify, and precisely locate, the more points earned.

"It is a complex challenge for hardware and software design, but also for the diverse team that has persevered through the challenges facing us in the competition and the real world these last three years," said Benjamin Morrell, robotics technologist at JPL and perception lead on Team CoSTAR. "It's amazing to see what the team has produced, and I'm thrilled to see our system be put to the test against some of the best roboticists in the world. I'm also excited to see how SubT will springboard further advances in enhanced autonomous robots."

For more information about Team CoSTAR, visit: <https://costar.jpl.nasa.gov/>

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Carl Sagan's 1994 "Lost" Lecture: The Age of Exploration



https://www.youtube.com/watch?v=6_-jtyhAVTc

Only the pale blue spot https://youtu.be/6_-jtyhAVTc?t=3714

He was only 62 when he died in 1996, but in those few short years he opened the eyes of many of us not only to the beauties of the Earth, Solar system, Galaxy, and the Universe, but to the possibilities that lay both within and beyond each. His Cosmos

series and its efforts to knit human experience into something meaningful and fulfilling stands as a monument to his genius...along with that of Ann Druyan and Steven Soter, his collaborators in the magnificent enterprise.

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Igor Moiseyev Ballet



<https://www.youtube.com/watch?v=pQ4-O7W1R04>

In case you can't read English, Репетиция "Метелица", "Скоморошыи игрища", "День на корабле". Балет Игоря Моисеева. How to go about building synchronicity.

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Yumpin' Yiminee. F-1 Cars at Nurburgring



<https://youtu.be/TBcpBmnlCUw>

Peter Brock says, "I've seen many still shots of this "jumping place" at the 'ring but never any video showing the distance traveled...this almost looks like computer work! Imagine not having any front wheel contact going into that right hander. Scary!

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Musings From Colin's World - What Makes Canada Canada?



As an American, I suppose it's not unusual that my knowledge of our neighbor to the north feels unsatisfyingly incomplete.

I've traveled to different parts of Canada at various times of my life, for a variety of purposes. But I don't have a simple definition of what binds it all together. The problem is too much, not too little. I would have trouble answering the question: What is it that distinguishes Canada from America? What makes Canada Canada?

I am reminded of the Indian parable of the blind men and the elephant. My impressions have been so widely varied that each could give me a completely different picture. It's like having a few pieces of a jigsaw puzzle that don't seem to fit together.

The similarities to America are easy to see. But what lies outside the similarity is harder. For example, some of my favorite music came from Canadians. Before I discovered that they were Canadian, I just assumed they were American. Even after I knew they were Canadian, I couldn't pinpoint what about them was different from Americans.

What makes Joni Mitchell, Gordon Lightfoot, Neil Young, The Band, Oscar Peterson, The Guess Who and Celine Dion "Canadian"? They seem more different from each other than they are from Americans. And yet, I know they know the difference. Why is it so hard for me to discern?

The same could be said of Jim Carrey, Elon Musk, Mike Myers, Keanu Reeves, Sandra Oh, Ryan Gosling and Steve Nash.

I do like Canadians. When I meet someone who says they are Canadian, I expect to like them. And they never disappoint. Canadians seem to know things we Americans don't, as if they harbor some national secret.

Just this morning I asked a native Canadian, who is now a dual Canadian/American citizen, how she would define the difference between Canada and the U.S.

"That's a complicated question," she said. "When I was growing up in the '60s and '70s our popular culture was so dominated by American culture that I wasn't sure what our culture was. Of course, Canada has a population of 38 million and America has 328 million, so it dominates by sheer numbers. But since the '70s, we've developed more of a sense of our own culture."

The conversation was interrupted before I could learn much more. But though I'm intrigued about the question, I don't have to define Canada to enjoy it, and to be drawn to it. There is much to love. It's vast.

Ninety percent of Canada's population lives within 100 miles of the U.S. border. More than half live in two of Canada's 10 provinces, Ontario and Quebec.

That means Canada, the second largest country in the world after Russia, is mostly wilderness. Even in the southern strip where the big cities are, the wilderness is never far away.

That appeals to me. Growing up in small town suburbia at the edge of the open country, I hungered for the excitement and cultural richness of the big cities. But after living for decades in Greater New York City, I increasingly long for the wide open, natural areas. Canada has those in abundance.

The Breakout

My first experience of Canada was one of those fortuitous incidents that breaks into your life out of nowhere and changes everything. It was one of the luckiest moments in my life, one of those times when the phone rings and nothing is ever the same again.

I had been working in nightclubs as a piano player in a small combo. Someone who had seen me thought of me when their band needed a new piano player while touring in Canada. The call from Canada was an offer to join them and go on the road playing music. It was a dream come true for me, to get paid to travel and play music. Two of my greatest loves in one package.

The band was traveling west across the strip where most Canadians live, just north of the U.S. border. I accepted their offer, packed up and hit the road. As they traveled

west, I went north, and we converged in Thunder Bay, Ontario. Just the name of that place, which I had never heard of before, set off explosions of romance and adventure in my mind. A whole new world opened to me.

The band picked me up at the bus station, took me to the hotel and we jumped into the work of integrating me into their band. I never looked back. My life would never return to what it had been. Thunder Bay was my jump-off perch to a new life, and for that it will always hold a special place in my heart.

There wasn't much time for sightseeing. Most of my memories are of being in a hotel, practicing. But I did get out a bit to look around. It was exciting to me, the thrill of the new everywhere around me. Thunder Bay is on the shore of Lake Superior, the largest body of freshwater in the world. It feels like a coastal city, though it's hundreds of miles from any ocean.

In between rehearsals I got to explore the downtown area and the waterfront. I was ecstatic just to be in a foreign country. I felt liberated from my dead-end hometown. It ignited a joy of travel that has never waned.

Our tour continued across Ontario and Saskatchewan, culminating in the city of Winnipeg, which I developed a deep fondness for, before returning to the States.

A couple of years later when I was based in New York City still playing in bands I got my second chance to experience Canada. It was a two-week stint in Montreal. Again, I experienced the ecstasy of international travel, but it was very different from the middle provinces.

I had never been out of North America, but Montreal felt like a European city. It was founded in 1642, and the tiny cobblestone streets felt more like Europe than any city I had known.

It had the strong French cultural element alongside the British culture. The American influence was conspicuously low key. Everything was new and fresh. It was two weeks of fascination and euphoria.

I returned to Canada years later to attend a conference at the Banff Springs Hotel in Banff, Alberta, in the glorious Canadian Rockies. It was like some kind of fairytale magical realm, or perhaps a province of heaven. The beauty of the snow-covered peaks was breathtaking. And it had little in common with my previous experiences in Canada.

I've visited other areas, including Calgary, Vancouver and Toronto. There are other places I particularly long to see, such as the Maritime provinces on the North Atlantic coast, and Quebec City. And I wish to explore further some places I have seen, such as the national parks of Alberta and British Columbia; and Toronto, which is one of the most international cities in North America; and Vancouver, which is one of the world's most beautiful cities. I still can't define what makes Canada Canada, but that's okay. I'll keep working on that.

As diverse as Canada is, one thing that is consistent throughout my Canadian travels is beauty, from the cities to the Rockies to the wilderness.

And it's right there, so close, so accessible, yet still so exotic. I need to go back, to explore further. This is a good time for it.

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Your English Lesson for Today...There'll be a Test



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Summon the Heroes



<https://www.youtube.com/watch?v=nlwWRcPIYo8>

Col. Jason K. Fettig conducts John Williams' "Summon the Heroes" on June 27, 2021, at the Wolf Trap National Park for the Performing Arts in Vienna, Va. This concert was part of Wolf Trap's opening weekend of 2021 summer performances.

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Record Setting Runs Bonneville Speed Week 2021



<https://www.youtube.com/watch?v=xVBVzPrRpw0>

Backyard dreams come to fruition on the Utah Salt flats. The great American tradition.

If you don't like the rumble of heavy horsepower, don't watch.

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Earth's Core is Growing 'Lopsided' and Scientists Don't Know Why

By Brandon Specktor – Live Science Senior Writer

The core is losing heat faster under Indonesia than it is under Brazil, and that's messing with the seismic waves passing through it.



*Earth's solid inner core may be growing in a 'lopsided' pattern, new research suggests.
(Image credit: Shutterstock)*

There's a mystery brewing at the center of the Earth.

Scientists can only see it when they study the seismic waves (subterranean tremors generated by earthquakes) passing through the planet's solid iron inner core. For some reason, waves move through the core significantly faster when they're traveling between the north and south poles than when they're traveling across the equator.

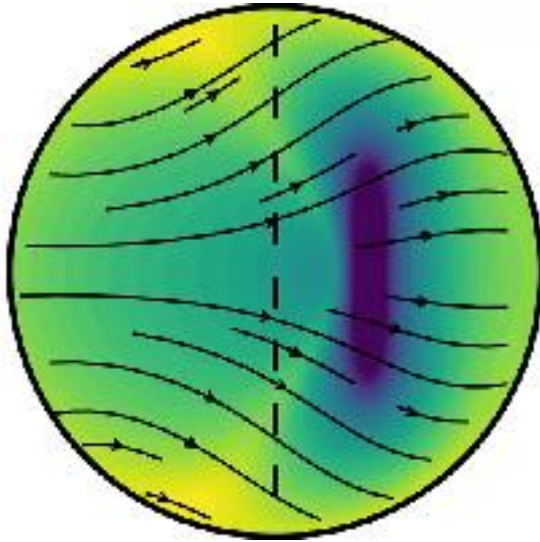
Researchers have known about this discrepancy — known as seismic anisotropy — for decades, but have been unable to come up with an explanation that's consistent with the available data. Now, using computer simulations of the core's growth over the last billion years, a new study in the June 3 issue of *Nature Geoscience* offers a solution that finally seems to fit: Every year, little by little, Earth's inner core is growing in a "lopsided" pattern, with new iron crystals forming faster on the east side of the core than on the west side.

"The movement of liquid iron in the outer core carries heat away from the inner core, causing it to freeze," lead study author Daniel Frost, a seismologist at the University of California, Berkeley, told *Live Science*. "So this means the outer core has been taking more heat from the east side [under Indonesia] than the west [under Brazil]."

To visualize this lopsided growth in the core, imagine a tree trunk with growth rings radiating out from a central point, Frost said — but "the center of the rings is offset from the center of the tree," so that rings are spaced further apart on the east side of the tree and closer together on the west side.

A cross section of Earth's inner core might look similar to that. However, this asymmetric growth doesn't mean that the inner core itself is misshapen or at risk of becoming imbalanced, the researchers said.

A new model by UC Berkeley seismologists proposes that Earth's inner core grows faster on its east side (left) than on its west.



The team's model proposes that Earth's inner core grows faster on its east side (left) than on its west. Gravity equalizes the asymmetric growth by pushing iron crystals toward the north and south poles (arrows). This tends to align the long axis of iron crystals along the planet's rotation axis (dashed line), explaining the different travel times for seismic waves through the inner core. (

Image credit: Marine Lasbleis)

On average, the inner core's radius grows evenly by about 0.04 inches (1 millimeter) every year. Gravity corrects for the lopsided growth in the east by pushing new crystals toward the west. There, the crystals clump into lattice structures that stretch along the core's north-south axis. These crystal structures, aligned parallel with Earth's poles, are seismic superhighways that enable earthquake waves to travel more quickly in that direction, according to the team's models.

Unpacking the snowball

What's causing this imbalance in the inner core, anyway? That's hard to say without looking at all the other layers of our planet, Frost said.

"Every layer in the Earth is controlled by what's above it, and influences what's below it," he said. "The inner core is slowly freezing out of the liquid outer core, like a snowball adding more layers. The outer core is then cooled by the mantle above it — so to ask the question of why the inner core is growing faster on one side than the other might be asking the question of why is one side of the mantle cooler than the other?"

Tectonic plates could be partially to blame, Frost said. As cold tectonic plates dive deep below the Earth's surface at subduction zones (places where one plate sinks below another), they cool the mantle below. However, whether mantle cooling could impact the inner core is still a subject of debate, Frost said.

Equally puzzling is whether or not the lopsided cooling in the core could be affecting Earth's magnetic field. The modern-day magnetic field is powered by the movement of

liquid iron in the outer core; this liquid's movement is powered in turn by heat lost from the inner core. If the inner core is losing more heat in the east than the west, then the outer core will move more in the east too, Frost said.

"The question is, does this change the strength of the magnetic field?" he added.

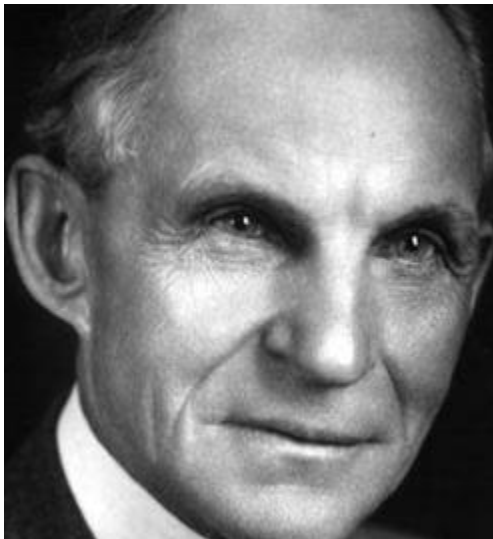
Questions this big are beyond the scope of the team's new paper, but Frost said he has begun work on new research with a team of geomagnetists to investigate some possibilities.

Originally published on Live Science.

Climate scientists might want to factor this into their calculations and predictions. Of course many, certain in the validity their beliefs, may not choose to.

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Henry Ford...an Enviro Before it Became Fashionable



On June 16, 1903, the Ford Motor Company was established. Henry Ford was the founder. This was not his first rodeo, as he had previously operated the Henry Ford Company. He left that company and took his name with him. What became of the Henry Ford Company? They became known as the Cadillac Motor Company

Ford's Model T, which would number in the millions sold, required 100 board feet of wood to build. Ford despised waste. His motto was, "Reduce, reuse, and recycle." He was also a nature-lover, an environmentalist of his time. His escape from the stress of life was camping in the great outdoors. Frustrated by the mountains of sawdust his lumber mills created, he and his partners sought a way to utilize the scrap wood and sawdust into a useful (and profitable) product.

An idea came to him one day as he was camped with some friends in the wilds of Michigan. After his party spent a long time collecting sufficient wood for a campfire, an idea spring in Ford's mind. Upon returning back to the lumber mill, he shared the idea with some of his partners and set to work on it. The idea? Lumping a fistful of

sawdust and cornstarch with a bit of tar to form a briquette. After charring it, it performed exactly what Ford imagined it would. He then built a charcoal briquette factory adjacent to his lumber mill where the waste from one became the fuel for the other. A new Model T was now frequently sold with a bonus bag of Ford Charcoal Briquettes, so you could drive into the woods to camp and not worry about finding campfire wood.

So now you know. Ford not only created the modern automobile industry which takes millions to work and back each workday, but he also created the weekend grilling and



camping industries.

In 1951, the Ford Charcoal Briquette Company was sold. The new company was named after Ford's real estate partner who helped him find the land to supply wood for building the early Ford automobiles - E.J. Kingsford. Kingsford Charcoal is the largest producer of charcoal briquettes in the world.

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Turtle Riding a Jellyfish



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Mouse vs Maze



https://www.youtube.com/watch?v=RqoCTb2_6oM&t=1s

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The Genius of 3D Printed Rockets



<https://www.youtube.com/watch?v=kz165f1g8-E>

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My Walking Thoughts

October 3, 2021

With my back still doing its 'thing' I'm substituting exercycle riding for walking--a half hour, 7.5 miles, 250 calories—then doing another half hour of gym equipment work, and I feel I'm losing ground. Perhaps not, but it feels that way.

Maybe it's that I hate the idea of losing battles I've waged for years. For instance, I can't help thinking of how much I miss the rice-rocket murdercycle I gave up riding three years ago at the pointed suggestion of my son Dan, who himself rides bikes all over the place.

I think what lies at the core of my angst is the fear that one of these days my kids are going to show up on the doorstep and as a group tell me it's time for me to stop driving. I've promised to do so--and I will--but I may never recover from the deep funk it will put me in.

I can admit it now, that as early as twelve, I would 'borrow' my parent's car when they were out for the evening. Somehow I avoided being caught or being involved in an auto accident. If you had asked me at thirteen what I wanted to be when I grew up I would without hesitation have said sixteen...the age *not* of enlightenment, but freedom.

And boy was it, even though I didn't get my first car for nearly three more years. Instead, I depended on the good offices of my friends who had wheels, so by no means was I landlocked.

The early 1950s in Southern California were a golden age for teenagers, who as I, viewed the automobile as a genuine magic carpet with which not only did we identify, but by which we were identified.

The freedom the car presented to us was unprecedented, giving us the means to avoid much of the oversight our elder brothers and sisters endured in their inability to mosey down the street when things got too hot at home. It seemed wonderful at the time and was so in those halcyon days (holy moly, I've wanted to find a way to use the term for years and here I finally have). But the piper's fee from a societal standpoint was more than I and my peers had bargained for.

I am probably overstating my or our culpability in the matter, but that sudden burst of freedom afforded by the auto had a demonstrably bad impact on a number of things, perhaps the worst of which was our 'responsibility' in the conduct of our lives, our relationship with our families, and our obligation to the communities there to nourish our tender, only partially formed minds.

It's funny looking back at it now how short that wide open period in our lives was...like the wild west, it was there and gone in a wink, leaving in its wake the sense it should have lived forever.

We of the fifties had experienced some of the great depression, most if not all of World War Two, followed by visions of the future whose fulfillment seemed within easy reach. For me at least this backdrop made life in the seventies and eighties more challenging, or perhaps better put, less rewarding, and suspect I was not alone in this.

Now in my dotage I'm able to view what to many appear as reprehensible attitudes, expectations, and behaviors in today's crop of teeny weenies, that may be different but not necessarily more destructive than what I brought to the table three-score and ten years ago.

Root 66



Tom and I passed by Milton, another Florida town with which I was destined to spend some of the most interesting days and nights of my life flying the wonderful North American T-28 Trojan tandem seat trainer, whose performance (the Navy version) was only slightly below that of many World War Two fighters. I could talk about the aircraft and the training until I find some cows who need to come home, so I'll leave that to another time.

Suffice it to say here that town of Milton was unremarkable and the base with its two separate airfields was out of sight to the north. So onward a piece we came to Defuniak Springs where we cut south to the coast road and on to Panama City,

Now it may or may not be true that the city was given its name by an enterprising developer who put together three separate factoids: (1) It had a port, (2) the construction of the Panama Canal had received a great amount of press in places like

Chicago, and (3) if you drew a line between Chicago and the Panama Canal it ran through the area, so voila you had a 'natural' fit for winter (or summer)-weary Chicagoans. Sounds a bit complicated to me but I like a good story, so why not?

Anyway, back to Root. After a nice stroll on the area's beautiful white-sand beach, Tom and I spied a pair of lovelies in the era's hint of Bikinis to come, and dropped by for a visit. Being apprised of our venture the two invited us to their motel room—a suite--for a beer.

Oh boy.

After the beer, the young ladies disappeared to the other room leaving Tom and me to flip a coin to see which us got whom...or so we thought. Instead, after several minutes the girls reappeared with luggage in hand and announced they were on their way back to Loxley, Alabama from whence they hailed.

Noticing our crestfallen looks, they made it up to us by explaining the suite was paid up through the next day and we were welcome to stay there and enjoy what was left in the fridge. So despite fallen crests and wounded pride, the short acquaintance was not a total loss. Lots of turkey, bread, mayonnaise, lettuce, eggs...and two beers that I gifted to Tom.

Next week Root 66: To the Halls of the Halls

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