Which Countries Are On The Brink Of Going Nuclear?

John P. Ruehl – Independent Media Institute

10-31-2024 ~ *Global nuclear tensions are rising, emboldening Iran's ambitions and putting other nuclear-threshold nations on notice. As major powers posture, countries once cautious may now reconsider their restraint.*

Following Israel's October 26, 2024, attack on Iranian energy facilities, Iran vowed to respond with "all available tools," sparking fears it could soon produce a nuclear weapon to pose a more credible threat. The country's breakout time—the period required to develop a nuclear bomb—is now estimated in weeks, and Tehran could proceed with weaponization if it believes itself or its proxies are losing ground to Israel.

Iran isn't the only nation advancing its nuclear capabilities in recent years. In 2019, the U.S. withdrew from the Intermediate-Range Nuclear Forces Treaty (INF), which banned intermediate-range land-based missiles, citing alleged Russian violations and China's non-involvement. The U.S. is also modernizing its nuclear arsenal, with plans to deploy nuclear weapons in more NATO states and proposals to extend its nuclear umbrella to Taiwan.

Russia, too, has intensified its nuclear posture, expanding nuclear military drills and updating its nuclear policies on first use. In 2023, it suspended participation in the New START missile treaty, which limited U.S. and Russian deployed nuclear weapons and delivery systems, and stationed nuclear weapons in Belarus in 2024. Russia and China have also deepened their nuclear cooperation, setting

China on a path to rapidly expand its arsenal, as nuclear security collaboration with the U.S. has steadily diminished over the past decade.

The breakdown of diplomacy and rising nuclear brinkmanship among major powers are heightening nuclear insecurity among themselves, but also risk spurring a new nuclear arms race. Alongside Iran, numerous countries maintain the technological infrastructure to quickly build nuclear weapons. Preventing nuclear proliferation would require significant collaboration among major powers, a prospect currently out of reach.

The U.S. detonated the first nuclear weapon in 1945, followed by the Soviet Union (1949), the UK (1952), France (1960), and China (1964). It became evident that with access to uranium and enrichment technology, nations were increasingly capable of producing nuclear weapons. Though mass production and delivery capabilities were additional hurdles, it was widely expected in the early Cold War that many states would soon join the nuclear club. Israel developed nuclear capabilities in the 1960s, India detonated its first bomb in 1974, and South Africa built its first by 1979. Other countries, including Brazil, Argentina, Australia, Sweden, Egypt, and Switzerland, pursued their own programs.

However, the Non-Proliferation Treaty (NPT), enacted in 1968 to curb nuclear spread, led many countries to abandon or dismantle their programs. After the end of the Cold War and under Western pressure, Iraq ended its nuclear program in 1991, and South Africa, in a historic move, voluntarily dismantled its arsenal in 1994. Kazakhstan, Belarus, and Ukraine relinquished the nuclear weapons they inherited after the collapse of the Soviet Union by 1996, securing international security assurances in exchange.

Nuclear proliferation appeared to be a waning concern, but cracks soon appeared in the non-proliferation framework. Pakistan conducted its first nuclear test in 1998, followed by North Korea in 2006, bringing the count of nuclear-armed states to nine. Since then, Iran's nuclear weapons program, initiated in the 1980s, has been a major target of Western non-proliferation efforts.

Iran has a strong reason to persist. Ukraine's former nuclear arsenal might have deterred Russian aggression in 2014 and 2022, while Libya's Muammar Gaddafi, who dismantled the country's nuclear program in 2003, was overthrown by a NATO-led coalition and local forces in 2011. If Iran achieves a functional nuclear

weapon, it will lose the ability to leverage its nuclear program as a bargaining chip to extract concessions in negotiations. While a nuclear weapon will represent a new form of leverage, it would also intensify pressure from the U.S. and Israel, both of whom have engaged in a cycle of escalating, sometimes deadly, confrontations with Iran and its proxies over the past few years.

An Iranian nuclear arsenal could also ignite a nuclear arms race in the Middle East. Its relations with Saudi Arabia remain delicate, despite the 2023 détente brokered by China, and Saudi officials have previously indicated they would obtain their own nuclear weapon if Iran acquired them. Saudi Arabia gave significant backing to Pakistan's nuclear weapons program, with the understanding that Pakistan could extend its nuclear umbrella to Saudi Arabia, or even supply the latter with one upon request.

Turkey, which hosts U.S. nuclear weapons through NATO's sharing program, signaled a policy shift in 2019 when President Erdogan criticized foreign powers for dictating Turkey's ability to build its own nuclear weapon. Turkey's growing partnership with Russia in nuclear energy could meanwhile provide it with the enrichment expertise needed to eventually do so.

Middle Eastern tensions are not the only force threatening non-proliferation. Japan's renewed friction with China, North Korea, and Russia over the past decade has intensified Tokyo's focus on nuclear readiness. Although Japan developed a nuclear program in the 1940s, it was dismantled after World War II. Japan's breakout period, however, remains measured in months, but public support for nuclear weapons remains low, given the legacy of Hiroshima and Nagasaki, where nuclear bombings in 1945 killed more than 200,000 people.

In contrast, around 70 percent of South Koreans support developing nuclear weapons. South Korea's nuclear program began in the 1970s but was discontinued under U.S. pressure. However, North Korea's successful test in 2006 and its severance of economic, political, and physical links to the South in the past decade, coupled with the abandonment of peaceful reunificationin early 2024, has again raised the issue in South Korea.

Taiwan pursued a nuclear weapons program in the 1970s, which similarly ended under U.S. pressure. Any sign of wavering U.S. commitment to Taiwan, together with China's growing nuclear capabilities, could prompt Taiwan to revive its

efforts. Though less likely, territorial disputes in the South China Sea could also motivate countries like Vietnam and the Philippines to consider developing nuclear capabilities.

Russia's war in Ukraine has also had significant nuclear implications. Ukrainian President Volodymyr Zelensky recently suggested to the European Council that a nuclear arsenal might be Ukraine's only deterrent if NATO membership is not offered. Zelensky later walked back his comments after they ignited a firestorm of controversy. Yet if Ukraine feels betrayed by its Western partners—particularly if it is forced to concede territory to Russia—it could spur some factions within Ukraine to attempt to secure nuclear capabilities.

The war has also spurred nuclear considerations across Europe. In December 2023, former German Foreign Minister Joschka Fischer endorsed a European nuclear deterrent. A Trump re-election could amplify European concerns over U.S. commitments to NATO, with France having increasingly proposed an independent European nuclear force in recent years.

Established nuclear powers are unlikely to welcome more countries into their ranks. But while China and Russia don't necessarily desire this outcome, they recognize the West's concerns are greater, with Russia doing little in the 1990s to prevent its unemployed nuclear scientists from aiding North Korea's program.

The U.S. has also previously been blindsided by its allies' nuclear aspirations. U.S. policymakers underestimated Australia's determination to pursue a nuclear weapons program in the 1950s and 1960s, including covert attempts to obtain a weapon from the UK. Similarly, the U.S. was initially unaware of France's extensive support for Israel's nuclear development in the 1950s and 1960s.

Smaller countries are also capable of aiding one another's nuclear ambitions. Argentina offered considerable support to Israel's program, while Israel assisted South Africa's. Saudi Arabia financed Pakistan's nuclear development, and Pakistan's top nuclear scientist is suspected of having aided Iran, Libya, and North Korea with their programs in the 1980s.

Conflicts involving nuclear weapons states are not without precedent. Egypt and Syria attacked nuclear-armed Israel in 1973, and Argentina faced a nuclear-armed UK in 1982. India and China have clashed over their border on several occasions, and Ukraine continues to resist Russian aggression. But conflicts

featuring nuclear countries invite dangerous escalation, and the risk grows if a nation with limited conventional military power gains nuclear capabilities; lacking other means of defense or retaliation, it may be more tempted to resort to nuclear weapons as its only viable option.

The costs of maintaining nuclear arsenals are already steep. In 2023, the world's nine nuclear-armed states spent an estimated $91.4 billion managing their programs. But what incentive do smaller countries have to abandon nuclear ambitions entirely, especially when they observe the protection nuclear weapons offer and witness the major powers intensifying their nuclear strategies?

Obtaining the world's most powerful weapons may be a natural ambition of military and intelligence sectors, but it hinges on the political forces in power as well. In Iran, moderates could counterbalance hardliners, while continued support for Ukraine might prevent more nationalist forces from coming to power there.

Yet an additional country obtaining a nuclear weapon could set off a cascade of others. While larger powers are currently leading the nuclear posturing, smaller countries may see an opportunity amid the disorder. The limited support for the Treaty on the Prohibition of Nuclear Weapons, in effect since 2021, as well as the breaking down of other international treaties, reinforces the lingering allure of nuclear arms even among non-nuclear states. With major powers in open contention, the barriers to nuclear ambitions are already weakening, making it ever harder to dissuade smaller nations from pursuing the ultimate deterrent.

By John P. Ruehl

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The U.S. Southwest Offers Blueprints For The Future Of Wastewater Reuse

10-31-2024 ~ *Our existing water supplies could go further by turning wastewater into drinking water.*

No country is immune from water scarcity issues—not even wealthy countries like the United States.

Population growth and climate change are stretching America's water supplies to the limit, and tapping new sources is becoming more difficult each year—in some cases, even impossible.

The Southwestern states, in particular, have faced "intense" droughts during the 21st century, and traditional water supplies are failing. As groundwater supplies in the region have depleted substantially, rainfall has decreased, and water import costs have risen substantially. According to a September 2022 Nature article about the water situation in the Southwest, there is a "very low chance for regional mega-reservoirs to regain full-capacity levels assuming current demand."

The region looks to the Colorado River as its plumbing system, which currently provides drinking water to 1 in 10 Americans—all while irrigating nearly 5.5 million acres of land. But it's also being stretched to its limits: Population growth and expansive development are increasing agricultural demands. Meanwhile, the pressure to ensure sufficient water is left in the environment to support ecosystems has accelerated. According to a December 2012 study by the U.S. Department of the Interior Bureau of Reclamation, the demands on the Colorado River are expected to exceed supply by 2040.

On top of this, each state has vastly different needs. For example, Nevada's needs are largely urban, but Arizona and California require water for huge agricultural and urban sectors. Each year, states argue over who has the superior right to water supplies. And once they have their allocation, districts frequently end up in litigation over their allotment. There is always a shortage of water, raising questions about who is responsible and how best to mitigate the water crisis.

In 2023, the depleting water levels in the river created a "crisis after decades of overuse." The seven states that depend on the Colorado River for water and power had to agree to reduce their water usage to ensure the river was still flowing. "Three states—Arizona, California, and Nevada—have agreed on a plan to conserve at least 3 million acre-feet of water by 2026—roughly the equivalent to the amount of water it would take to fill 6 million Olympic-sized swimming pools," reported NBC in May 2023.

While demand is increasing, climate change has damaged supply—and the impact is twofold: As less water comes down the Colorado River, people are using more water due to increased temperatures.

Simply put, there is only so much water.

"When you can't make the pie bigger, and you're fighting over a finite supply, it's a misery index, just an allocation pain for all parties," says Brad Herrema, a lawyer specializing in water law and natural resources.

"But if you can make the pie bigger, there's less fighting."

Turning Wastewater Into a Resource

Our existing water supplies must be expanded, and the technology exists to do this by turning wastewater into drinking water. This is not a new science, but the practice has evolved significantly in the past 50 years.

In the 1960s, water availability became problematic in rapidly growing areas in the U.S., and water managers began to consider using wastewater to augment supplies. Several water reuse projects were built in the following decades in California, Virginia, Texas, and Georgia, but larger developments in the 1990s were met with opposition. "Toilet to tap" narratives in the media fed misperceptions regarding the treatment process, which helped to dismantle public support for these projects. What "toilet to tap" misses is membrane

filtration, as of 2024, is membrane desalination, ozone, and advanced oxidation, to name a few treatment options that make the purified water entirely safe to drink.

However, advances in these technologies associated with water reuse helped boost confidence in and acceptance of the practice among water professionals in the early 2000s. Now, water reuse is entering the mainstream.

Almost half of all the potable reuse projects built in California since the first in 1962 were installed between 2009 and 2023, with several more on the horizon. With more potable reuse projects than any other state, California plans to use 2.5 million acre-feet of water per year (AFY) by 2030.

According to a document by the Environmental Protection Agency and CDM Smith Inc., potable reuse also makes up "a significant portion" of the nation's water supply once de facto reuse is factored in.

What's clear is that some major U.S. cities are already delivering recycled wastewater to consumers on a massive scale and expanding the pie. However, how a municipality can recycle wastewater depends largely on the area's geography, financial resources, and, perhaps most importantly, the public's attitude.

Las Vegas

Las Vegas recycles nearly all of its water used indoors, giving it a virtually inexhaustible supply of water for domestic consumption. The city benefits from its unique geography. Almost 90 percent of southern Nevada's water is taken from Lake Mead, which lies on the Colorado River. It is then treated and run through the city's system. After it's flushed or drained, the water makes its way to a wastewater treatment plant before it's discharged into the Las Vegas Wash. From there it makes its way to Lake Mead where it is either drawn back out or stays in the river, ensuring there's enough water for cities downstream of Vegas.

One key element that makes Vegas's reuse system so effective is "the Wash," a 12-mile-long channel that acts "as the 'natural kidneys,' cleaning the water that runs through them by filtering out [any] harmful contaminants" on its way back to Lake Mead. Thanks to the Wash, when the water is withdrawn again, it does not need to undergo a costly process of advanced treatment; instead, it undergoes basic drinking water treatment.

Another critical factor in Vegas's success is that for every gallon of water the city puts into Lake Mead, it can take a gallon back out—meaning the city is essentially recycling its indoor water in a closed loop. This is known as de facto water reuse.

Nevada is allocated 300,000 AFY of water from the Colorado River each year. Bronson Mack, public information officer with the SNWA, says that in 2019, the city actually diverted 490,000 AFY of water from the Colorado River but only consumed 234,000 AFY. About 256,000 AFY was returned to the lake.

"Our return flow credits system is unique," says Colby Pellegrino, deputy general manager of resources for SNWA. "Once we return the water to Lake Mead, we're not charged for that water. We're only charged for the total we depleted."

Mack adds that local water utilities were paying $313 for treatment and delivery of 1 acre-foot of water as of 2020, and passing that cost on to the consumer. If Vegas could not return such a large proportion of its water, that cost would rise dramatically.

De facto reuse is also vital for a city that can't afford to gamble on the weather—Las Vegas is the driest city in the U.S. When the Colorado River produced only 25 percent of its usual supply in 2002, the city was struck by drought, but its citizens still had unlimited access to indoor water.

"Vegas couldn't exist without [the] return flow credits approach," says Daniel Gerrity, principal research scientist at SNWA. "Without that, we'd have already maxed out."

Despite a wet winter in 2023 and an improvement in the water levels in lakes, "Southern Nevada's water supplies from the Colorado River at Lake Mead remain under shortage reductions," points out Southern Nevada Water Authority, warning that "The risk of shortage remains high in future years."

Meanwhile, not every city has a Lake Mead or a Wash. For places without Vegas's luck, there are other ways to ensure water reuse.

Orange County, California

Orange County Water District (OCWD) is a world leader in water reuse. Since 2008, it has provided drinking water to 2.5 million people—in a region with no more than 15 inches of annual rainfall—through its Groundwater Replenishment

System (GWRS) project. This project has helped highlight the effectiveness of IPR, giving other providers a model to emulate and providing the full-scale data that was previously missing to evaluate the viability of the process.

The water reused through GWRS would have otherwise been discharged into the Pacific Ocean. By keeping it in the system, there is less reliance on the Colorado River, easing the strain on its supplies.

The city utilizes a process called indirect potable reuse (IPR). In the absence of an environmental filtration process like the Las Vegas Wash, Orange County's wastewater has to undergo advanced treatment before it is pumped to a groundwater basin. From there, it is pumped to the consumer via a standard drinking water treatment train, making it safe to consume and completing the cycle. The process not only turns wastewater back into a resource but also saves massively on the cost of pumping Colorado River water from hundreds of miles away.

GWRS, which is a joint project of OCWD and the Orange County Sanitation District (OCSD) "accounts for approximately 35 percent of water demands," according to OCWD, and its wastewater treatment capacity was further expanded in 2023 from 100 to 130 million gallons per day. This is "enough to fill nearly 200 Olympic-sized pools and enough for a million people," according to a 2023 article by the Daily Pilot.

"Orange County is the benchmark [for] water reuse system," says Gerrity. Water managers from around the world visit OCWD to learn how they've managed such success.

Like so many regions innovating in water reuse, drought forced their hand. In 1975, "[a]s imported water supplies became less available, another source of water was needed to fight seawater intrusion. In April 1975, OCWD unveiled… [a facility that] took treated wastewater from the… OCSD, blended it with deep well water and injected it into… [a basin]. In 1977, [OCWD became]… the first in the world to use reverse osmosis to purify wastewater to drinking water standards."

The project was expanded in line with the demand in the '90s, and the GWRS, which has been operational since 2008, is now the world's largest advanced water purification system for potable use. "The largest reuse facility in the world can now treat nearly 500 million liters of secondary wastewater a day," points out the

nonprofit Water Reuse Europe.

And through it all, OCWD managed to swerve the "toilet to tap" attacks that had ruined public support for such projects in other areas of California.

How?

"People expect to find out that our success is grounded in some secret technology, but they find out it's all about education, education, education," says Rob Thompson, general manager at OCSD, which treats the water before sending it to the basin managed by OCWD. "Bringing the public on board with drinking [recycled] wastewater takes a lot of outreach. Getting over the 'yuck factor' is everything. We had to speak with NGOs, governors, the authorities, politicians—you name it—we spoke to them. Once you have enough people on board, everyone starts to think it must be okay."

"People have high expectations about the quality of their water and have a lot of questions," adds Megan Plumlee, who heads OCWD's research and development department. "We explain to the public what we're doing and how it'll benefit the district, retailers, and community."

Following OCWD's lead, San Diego embarked on a massive multi-year potable reuse project that planners say will provide nearly 50 percent of the city's water supply locally by the end of 2035. Indeed, sometimes a new process takes hold only because of a leader in the field who shows the way and proves something can be done safely on a large scale.

"We weren't the first to try it, but we were the first to succeed on such a massive scale. That's because we were the first to really embrace education. Now others are doing the same," says Thompson.

Now, 16 states have developed regulations that allow for IPR, with several more IPR projects on the horizon that will help bolster water supplies—all without putting additional pressure on the Colorado River.

Another more efficient water reuse method has yet to take hold in the U.S., though it may soon find its leader.

San Diego
Direct potable reuse (DPR) was labeled the final frontier of water reuse by G.

Tracy Mehan, the executive director for government affairs at the American Water Works Association (AWWA), in a November 2019 Opinion piece published in the Scientific American. The process does away with an environmental buffer and pumps wastewater directly through an advanced treatment train before it is purified and put straight back into the system in a matter of hours.

Given this reality, DPR can deliver water more efficiently and cost-effectively by using existing infrastructure and without needing to build expensive and energy-intensive pipelines to a reservoir or groundwater basin. DPR can also allow for more water to be recycled than IPR as there are no limitations on the reservoir or groundwater basin.

Additionally, DPR avoids regulations on putting water back into the environment by eliminating the buffer. And finally, DPR can be more reliable and efficient. Jeff Mosher, vice president and principal technologist at Carollo Engineers, a leading firm in engineering water reuse systems, explains that DPR can turn wastewater into drinking water in a matter of hours, faster than IPR or any other reuse method.

As of early 2023, only one facility in the U.S. is currently equipped to operate DPR. Big Spring in West Texas identified DPR as the most feasible way to address an urgent need to diversify the city's water portfolio and increase its supply reliability for when rains fail to fill the city's reservoirs—the project serves around 135,000 people, according to a 2019 article published in the Journal of Environmental Planning and Management.

The Colorado River Municipal Water District (CRMWD) in Big Spring began operating this plant in 2013. It could treat up to 2 million gallons per day of wastewater effluent to drinking water standards, providing a much-needed water supply amid punishing droughts.

However, DPR has yet to become a mainstream and trusted water supply system, and it remains unused beyond times of crisis and for larger communities.

Arizona and Florida are in the process of developing their DPR regulations while California and Colorado already have these regulations in place. However, most states have yet to consider implementing this technology, mainly due to a lack of public acceptance. The speed at which DPR recycles wastewater makes it particularly vulnerable to "toilet to tap" attacks, and this has consumers

concerned, who worry over the small room for error and the “yuck factor.”

An attempt to introduce potable reuse in San Diego in the 1990s failed after fears of “drinking sewage” diminished trust in the project and fostered uncertainty about the safety of the water. Fast-forward 12 years to 2011, a rebranded project, Pure Water San Diego, did things differently.

A 2012 survey carried out by the San Diego County Water Authority found that 73 percent of the respondents either strongly or somewhat favored “advanced treated recycled water as an addition to the supply of drinking water.” This figure was an improvement from the 2011 survey.

San Diego has changed its mind, and now it may one day do what OCWD has done for IPR and pave the way for DPR use on a broader scale.

With lessons learned from OCWD, outreach helped bring the community on board in San Diego. “We had to educate the community on the concept [of potable reuse],” Amy Dorman, assistant director at San Diego’s Pure Water program, says. “We ran focus groups with the community, made ourselves flexible moving forward, and recognized the importance of listening to the community. In the ’90s, there was not the right amount of education. Now it’s comprehensive. We do tours, presentations, websites, mailers and [identify] all stakeholders—[ensuring] diligent and constant outreach.”

Dorman explains that 18,665 San Diegans have visited the demonstration facility as of 2021, while the team at Pure Water has spoken to almost 30,000 children in schools. They explain that 50,000 lab tests have been carried out on the water supply as of 2020, each meeting every regulatory standard and producing exceptional water quality—typical tap water is actually less highly treated than DPR tap water.

However, the key statistic is that 85 to 90 percent of San Diego’s water is already imported from the Colorado River and Northern California Bay-Delta. In fact, because the city is downstream, Dorman says the water has already been recycled 49 times by other water districts before reaching San Diego. She says this usually quells fears that drinking recycled water is unsanitary since, as it turns out, this has been happening for years.

“What we know now is that it’s possible to convince people,” adds Mosher. “We

have proven that every community you go into that has concerns, you can overcome."

San Diego hopes that by 2035, a third of the city's water supply will come from locally supplied, recycled wastewater instead of importing the majority of it.

For phase one, the Pure Water San Diego program—funded by the San Diego government—will use IPR to provide the city with 30 million gallons of water per day, utilizing the nearby Miramar Reservoir as an environmental buffer in a similar way to how Orange County uses its groundwater basin. "San Diego's Pure Water treatment system will be operational and providing 7 million gallons of water a day to residents by 2026," says a January 2024 KPBS article.

Phases two and three will target an additional 53 million gallons of water per day by 2035. In the absence of a groundwater basin and large enough reservoirs, Pure Water San Diego plans to employ DPR to realize the project's full scale.

Mosher says that cities with plans to do DPR one day don't want the attention to be the ones to take the plunge into doing it on a large scale. But with projects on the horizon in San Diego and El Paso, Texas, Mosher expects greater faith in the process by 2030. A 2011 public opinion poll shows that citizens are 50 percent more likely to accept recycled water when they learn that other communities have done so already.

Without a leader in the field, cities interested in doing DPR may hesitate, but Gerrity is positive about the impact San Diego can have countrywide.

"It's a good platform to go forward," he says. "We have more options for facing water scarcity, another tool in the toolbox to tap into. Conservation, potable reuse [and] innovative technologies all extend supply and give high-quality drinking water to the public."

Mainstreaming Potable Reuse

While water reuse is breaking into the mainstream, there are still challenges going forward.

It is not simply a matter of copying Las Vegas, Orange County, or San Diego. A region's geography and finances often dictate a city's water supply, which significantly impacts what kind of reuse that city can attempt. De facto reuse, as

in Las Vegas, is incredibly site-specific and requires the geography of an area to substitute for advanced treatment, while the most successful IPR projects rely on large groundwater basins and nearby reservoirs.

Both types of potable reuse are also incredibly expensive. While they may save money in the long term, they require a huge initial investment.

The federal government needs to step in to support water recycling projects. Taking a step in this direction, the Biden administration provided almost $100 million for the Pure Water Southern California facility. “Water recycling is an innovative and cost-effective tool that can help make our water supplies more reliable, helping communities find new sources to meet their needs today, but most importantly to meet our needs in the future,” said Reclamation Commissioner Camille Calimlim Touton in May 2024.

Working out what works best for one community is half the battle. Thanks to the geographical nuances that help potable reuse or de facto reuse work, there is no one-size-fits-all.

“You could take what Orange County does, and it’s going to work, but the question is whether that is the best approach for that location. So, the challenge is, now that we feel comfortable with one approach, can we do it a different way?” says Gerrity.

Mosher is trying to compile all the information on water reuse into an easy-to-read guidance document that cities considering the process can use to decide which approach may be best for them.

“It’s about getting to a point where communities who want to try DPR don’t feel overwhelmed,” says Mosher.

What’s clear is that the Colorado River can no longer be relied upon to meet the water needs of an increasing population. If we continue asking so much of it, we have to start easing those pressures. Water reuse is imperative if the driest parts of the world continue growing without destroying the environment that relies as much on water as we do.

By Freddie Clayton

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June 15, 1940 ~ The Impossible Has Come True

Paula Bermann as a nurse in the war (1915)

June 15, 1940

Since 10 May, the impossible has come true. Holland at war with Germany! For five days the Dutch soldiers fought bravely with great heroism, but due to the great superiority – air power and an army of millions and without outside help – Holland capitulated after a few days. Rotterdam was half destroyed on the very last day – a cruel fate suffered by this city and we must be eternally grateful to General Winkelman that he did not allow Holland to be destroyed. Rhenen, the Grebbelinie, Breda, Wageningen and especially Zeeland, where the battle raged for 13 days, show the traces of great destruction. I cannot write, too much has happened and my soul is still too shaken and I still too off balance to write down what is going on inside me, to gather my thoughts and cast them into form.

But I want to write again, maybe it will calm me down. But the best is already gone! I destroyed three books that I had written for Sonja since 1933, in which I wrote down all my emotional feelings in great detail and honestly, in the first horror, because I occasionally wrote down my opinion about politics and Judaism and thought that if the Nazi regime came here, they might find my books! Silly me! As if my own ideas were so interesting! Now I'm sorry and I'm suffering. I feel as if part of my soul and body is dead, because I wrote so much and it's all gone.

All the suffering of the last years, the growing up of the children, the suffering they did to me, consciously or unconsciously, the joys, big and small, that daily life brings, the enjoyment of books – all my own reviews of the more than 600 books I wrote down, I destroyed. Good books I read, the brief contents of which I wrote down, and now I am back to where I was before. Books, they are my balm. Some books I burned because I didn't want the books that contained political tendencies in my library and now I feel sorry for the poor books too. What have they done? Nothing.

And my diaries? I feel as if the pages are still accusing me today, they give me no peace and rob me of my mental equilibrium. I wrote everything down with such love, I wanted to give an account in my books, because here between the sheets I really lived. In daily life, in the struggle between wife, mother, and housewife, I am another, a "sloof", an often misunderstood woman and often a foreign German. Even my children sometimes don't like my way, which is so German for them, my accent hurts them, but they are modern children, not evil, clever, and they will do better than me, if it is in their power, to build their lives according to their own way

of life. Only Sonja, the smallest, whose life I described in my books from the age of 5, half understands me, and she suffers from the sarcastic manner of the others, who are less absorbed in the emotional life of others than she is. Sonja is soft, too good, her soul is like mine was, tender, mild, all-giving and never comprehending. Will her life be difficult?

My husband lost his job in 1932, then he became ill, which affected him mentally, so that he lost his mental vigour, his great energy, and became another man. He never found a steady job again, small stock market earnings and the pension of our fortune made it possible that we could still live well for eight years. Now the war comes and for five weeks everything lies still and nothing is earned.

What future awaits us Jews? Rumour has it that the same fate does not await us Jews here in Holland as awaits the Jews in Germany, Austria and Poland. But I have no illusions, I expect everything or nothing. I am ready for anything.

About Paula Bermann:

Paula Bermann is the author of this diary. She was born on 9 March 1895 in the German village of Konken in the federal state of Rhineland-Palatinate. Her Jewish parents died in the 1920s. They were buried in the Jewish cemetery in neighbouring Thallichtenberg.

On 22 August 1918, Paula Bermann married the Dutch Jew Coenraad van Es and moved to Amsterdam. In the years 1940-1944, Paula, by then the mother of three growing children, wrote a diary. In this diary she noted events that took place in the city and in the world. It ends with a note dated 19 March 1944, in which she writes that a Nazi friend is moving into a flat down the street, right next to her address in hiding. They have to leave, but where to? Shortly afterwards, after a period in hiding, they are betrayed and arrested. Coen van Es and his wife Paula died in the Bergen-Belsen concentration camp in early 1945.

Paula Bermann wrote the diary in German Kurrent script. The diary, which consists of four booklets (the last booklet, by the way, is an unused cash book for lack of anything better), was passed on to the surviving relatives after the war. It remained untouched for a long time because the foreign bookmarks could not be deciphered. When reading the German text, one must bear in mind that Paula had already been living in Amsterdam for twenty years when she began to write down the diary in her native German. Incidentally, it is all too understandable that there

are countless Dutchisms in her use of language. Such formal fault lines are telling. They document the lonely position of a German Jew in the Netherlands, who was hounded by the Nazis, her compatriots, and was not always understood by her Dutch environment, sometimes even insulted because of her German roots.

BRICS Is Mounting A Challenge To The US-Led World Order — But For Whom?

C.J. Polychroniou

10-25-2024 ~ *Brazil, Russia, India, China and South Africa held a summit to counter the unipolar power of the US and Europe.*

The recently concluded 2024 BRICS (an acronym for the combined economies of Brazil, Russia, India, China and South Africa) summit, hosted by Russian President Vladimir Putin in Kazan and attended by scores of Global South leaders, including Chinese President Xi Jinping, Indian Prime Minister Narendra Modi, South African President Cyril Ramaphosa and Iranian President Masoud Pezeshkian, was the largest diplomatic forum in Russia since Putin ordered troops into Ukraine in 2022. With 36 countries attending, and more than 20 of them

represented by heads of state, the three-day BRICS bloc of developing economies summit showed that Russia is anything but isolated on the global stage. The meeting highlighted the current geopolitical situation, the sanctions imposed by the United States on China, Russia and Iran, which all participants condemned as "unlawful," and the need for an alternative payment system. The promotion and development of alternative financial instruments to gain greater independence from the dollar is perhaps the most important concern of the BRICS grouping. Yet no concrete resolutions were made at the 2024 BRICS summit.

Still, there is much more to be read into the 2024 BRICS summit than a big diplomatic win for Putin over Russia's invasion into Ukraine, which is how most of the mainstream corporate media opted to frame the summit. First, since Putin's rise to power, multipolarity has been a central focus of Russia's foreign policy agenda, as it is seen as a counterweight to the global hegemony of the U.S. and its allies. Beijing's emphasis under the leadership of Xi Jinping is also on building a multipolar world. And more and more countries in the Global South are looking to geopolitical alliances to escape influence and economic dependence on the United States and Europe.

BRICS countries say they seek to provide an alternative to the Western-led world order as they believe it is unfair, inequitable and exploitative. And the grouping has been gaining in strength, size and significance. It is estimated that BRICS countries account for 35 percent of the world economy and 45 percent of the population. In fact, not only have the BRICS countries' share in world GDP overtaken that of G7, but the world economy relies increasingly on the emerging economies to drive expansion, according to the IMF.

At the present time, the BRICS includes 10 countries — Brazil, China, Egypt, Ethiopia, India, Iran, Russian Federation, Saudi Arabia, South Africa, United Arab Emirates — but more than 30 countries have expressed interest in joining, including NATO-member Turkey.

This development speaks volumes of the rising Global South discontent with the U.S.-dominated international order and of the increasing realization on the part of so many people across the non-Western world that Washington has no interest in peace, fairness and justice, and that the U.S. is in fact edging back toward a unipolar world. That said, we need however to distinguish the discontent of the Global South population with the dominance of the United States from the

grievances that the ruling classes of these nations express about the current world order, as their own self-preservation is what is of paramount importance to them.

There is little doubt that the Biden administration's hawkish line on Russia, waging a proxy war in Ukraine, seeking NATO's expansion, pursuing the strategic encirclement of China with the building of defense alliances in the Indo-Pacific (Japan, Australia, South Korea, the Philippines and Thailand) and backing Israel's constant use of brute force in the Middle East while "shielding Netanyahu against the reach of international justice," as historian Adam Tooze aptly put it in a recent op-ed in the *Guardian*, are all part of a U.S. bid to reassert unipolar global hegemony.

The U.S. is on decline, but it won't go down without a fight. Too much has been invested in a Western-dominated world order, and the U.S. still possesses the world's top military. Revealing the mindset of political leaders in Washington D.C., from both parties, to be sure, Kamala Harris said during her keynote address at the Democratic National Convention that "as commander-in-chief, I will ensure that America always has the strongest, most lethal fighting force in the world."

The question here is whether BRICS can usurp the U.S.-led world order. To do so, the BRICS nations would have to overcome the challenges of economic integration and deepen financial cooperation. Undoubtedly, greater collaboration and stronger coordination among BRICS countries are both possible and have in fact seen significant progress over the years. The share of global trade among the group's current members more than doubled, to 40 percent, from 2002 through 2022.

However, becoming a global economic integration project, with a common currency, which is the kind of necessary step BRICS would have to take to truly go toe-to-toe with the U.S., is simply not in the cards at the present juncture or even in the foreseeable future.

Indicative of the difficulties surrounding the vision of a global economic integration project, so far only Brazilian President Lula has come out in open support for the creation of a common currency for trade and investment between BRICS economies. Putin, for example, is in favor of switching trade between

member states away from the dollar to national currencies. But even if a common BRICS currency was to be created, there is no guarantee that it would replace the U.S. dollar. Even the euro has not succeeded in supplanting the dollar although a common BRICS currency would surely weaken the power of U.S. sanctions, which, interestingly enough, have gained more prominence as a tool of U.S. foreign policy during the last couple of decades.

Finally, given the huge differences in the form of governance that exists among BRICS member states (China is a one-party state with a mixed economy; India is a competitive-authoritarian hybrid; Iran is a theocracy; United Arab Emirates is a monarchy) there is no realistic prospect of BRICS turning into a political and security alliance against a U.S.-led NATO. Perhaps this explains the position of leaders like India's Modi, who stated at the recently held summit of emerging economies that BRICS must not be seen as anti-West or even as an alternative to global organizations. A few days ahead of the summit, even Putin himself asserted that the BRICS grouping is not "anti-West," but just "non-West."

Be that as it may, Chinese President Xi Jinping is absolutely spot-on when he said at the 2024 BRICS summit that "the world is undergoing a major change that has not been seen in a century and the international situation is changing and chaotic." Both Xi Jinping and Vladimir Putin seem to be firm in their convictions that the world must shift toward multipolarity, although the belief that multipolarity in a capitalist universe will deliver a fairer and safer world is simply not true, as history has shown. At the same time, they appear to be fully aware of the ugly fact that the U.S. will try to remain at the top of the global power hierarchy by any means necessary.

Indeed, to take one very recent example, how could international law and justice prevail when the U.S. labels the charges of the International Criminal Court against Israeli leaders "shameful" and "outrageous" but justifies similar charges against Putin? It is such hypocrisy and the plundering of international order by Western states, with the U.S. at the helm, that have led many leaders in the Global South calling for a new form of multilateral cooperation. For many of those nations, creating an alternative world order may indeed be a necessary step for their very survival. Whether such a vision will materialize or not, only time will tell.

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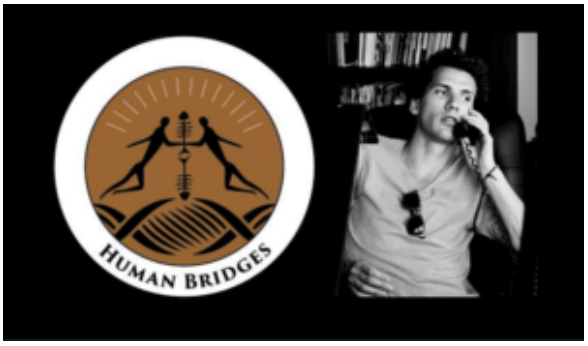
C.J. Polychroniou is a political scientist/political economist, author, and journalist who has taught and worked in numerous universities and research centers in Europe and the United States. Currently, his main research interests are in U.S. politics and the political economy of the United States, European economic integration, globalization, climate change and environmental economics, and the deconstruction of neoliberalism's politico-economic project. He is a regular contributor to *Truthout* as well as a member of *Truthout's* Public Intellectual Project. He has published scores of books and over 1,000 articles which have appeared in a variety of journals, magazines, newspapers and popular news websites. Many of his publications have been translated into a multitude of different languages, including Arabic, Chinese, Croatian, Dutch, French, German, Greek, Italian, Japanese, Portuguese, Russian, Spanish and Turkish. His latest books are *Optimism Over Despair*: *Noam Chomsky On Capitalism, Empire, and Social Change* (2017); *Climate Crisis and the Global Green New Deal*: *The Political Economy of Saving the Planet* (with Noam Chomsky and Robert Pollin as primary authors, 2020); *The Precipice*: *Neoliberalism, the Pandemic, and the Urgent Need for Radical Change* (an anthology of interviews with Noam Chomsky, 2021); and *Economics and the Left*: *Interviews with Progressive Economists* (2021).

Why Is Prehistory Inspiring So Many Artists?



Yann Perreau – Human Bridges

10-25-2024 ~ *What draws us to such a distant and long-gone time?*
A fruitful relationship has always existed between prehistory (a scientific discipline constantly refreshed by new discoveries) and the visual artists who interpret it.

Prehistory is a modern idea. The word was "coined" only in the 1830s. Before the 19th century, we didn't know much about dinosaurs or cavemen, and fossils remained a scientific curiosity. When French naturalist Georges-Louis Leclerc, Comte de Buffon published his notorious *Histoire naturelle* (1749–1788), suggesting that nature had a history and proposing the first reproduction theory, the faculty of theology at the Sorbonne University in France condemned it and threatened him with repercussions. He eventually had to publish a retraction.

Similarly, when Charles Darwin (1809–1882) published his *On the Origin of Species* (1859), his compatriots in the United Kingdom and Europe still believed that God made man "in his own image," as stated in the Bible (Genesis 1:27). Anyone claiming that all animals came from the same origin, and apes were somehow our distant cousins, was considered a fool or a heretic.

Then the first caves were excavated revealing extensive and intricate artwork on their walls. In 1879, archeologist Marcelino Sanz de Sautuola explored a new cave in Altamira, northern Spain, and brought his young daughter, Maria, with him. She spotted vivid depictions of bison and masterfully painted scenes on the cave's ceiling. These cave paintings were initially dismissed as forgeries, as

scholars of the time, with the positivist mindset, could not imagine that people from the Paleolithic were sophisticated enough to produce such complex artworks. By the early 20th century, however, as archaeologists uncovered more ancient skeletons, bones, fossils, and early human art in caves and other sites, their discoveries started to raise curiosity beyond the scientific community. Writers, intellectuals, and the public were captivated by these glimpses into our distant past.

Artists were intrigued, sometimes amazed by the mind-blowing quality of parietal art, indecipherable, complex abstract shapes and objects, and what was perceived as scenes depicting animals and humans in rituals or sacrifices. The drawings, paintings, and etchings that endlessly decorated the walls, ceilings, and floors of caves in subtle colors were often mesmerizing. Picasso was particularly inspired by various prehistoric elements, as the 2023 exhibition *No Past in Art: How Prehistory Inspired Picasso's Work* at the Musée de l'Homme in Paris showed. Gauguin, Cézanne, and later the symbolists and primitivists, also dedicated various paintings and sculptures to what they perceived as representations of our origins, rituals, and myths.

Prehistory has never stopped inspiring artists since then, captivating the most important modern art figures like Jean Arp, Giorgio de Chirico, Max Ernst, Alberto Giacometti, Paul Klee, Joan Miró; Joseph Beuys, Louise Bourgeois, Jean Dubuffet, Marguerite Duras, Barbara Hepworth, Yves Klein, and Robert Smithson. It continues to be an inspiration among our contemporaries, including Dove Allouche, Miquel Barceló, Tacita Dean, Marguerite Humeau, Pierre Huyghe, and Giuseppe Penone, to name just a few, whose works were showcased during the 2019 exhibition, *Préhistoire, une énigme moderne* (*Prehistory, a Modern Enigma*).

This landmark exhibition, which took place at the Pompidou Center in Paris, inspired me and initiated my interest in prehistory. It is not the first museum show dedicated to the topic: fossils, artifacts, and artworks discovered in caves, as well as tools, ornaments, and sculptures made from natural rocks, have been exhibited in major art institutions since the end of the 19th century.

Most of these exhibitions have already created fruitful dialogues between the past and present and parietal art and its representation by contemporary artists. When it opened its Gallery of Comparative Anatomy and Paleontology in 1898, the National Museum of Natural History in Paris commissioned the sculptor

Emmanuel Frémiet and the painter Fernand Cormon to create a vast decorative program. *Prehistoric Rock Pictures in Europe and Africa* at the Museum of Modern Art (MoMA, New York, 1937) showed monumental surveys of cave paintings with a selection of contemporary works by Miró, Klee, and Ernst, among others, in echo. "That an institution devoted to the most recent in the art should concern itself with the most ancient may seem something of a paradox," MoMA's founding director Alfred H. Barr Jr. wrote in his preface to the exhibition catalogue. "Yet, for Barr, this past had already influenced modern art, and could potentially offer museum visitors a prehistoric pedigree for it," states the MoMA website. Another major exhibition, *40,000 Years of Modern Art*, organized by Herbert Read and Roland Penrose at the Institute of Contemporary Arts in London in 1948, mixed prehistory and non-Western art with surrealist, expressionist, and abstract works.

But there is a major problem, particularly, concerning the so-called "primitive art,"—a highly contested term now. The clichés and stereotypes that this notion implies were also abundant in the early "scientific" literature dedicated to our ancestors. The first paleontologists were poisoned by plain racist prejudices, explains paleo artist and author Mark P. Witton in his 2020 blog. George Cuvier (1769–1832), the father of vertebrate paleontology whose famous taxonomy incorporated both fossils and living species, "viewed whites as the pinnacle of creation, but Blacks as ugly, barbaric persons of monkey-like appearance," writes Witton. "His work on dividing humans into 'scientifically validated' races was instrumental in later attempts at biological justifications of racism."

In the United States, the influential president of the American Museum of Natural History (AMNH) Henry Fairfield Osborn (1857–1935) was a supporter of Hitler. He exploited his research to promote racist and eugenicist ideas, points out Witton. Osborn commissioned one of the earliest depictions of prehistoric life, Charles Knight's mural "Neanderthal Flintworkers" (1924), hung in AMNH's Hall of the Age of Man. Many of Osborn's contemporaries, including Margaret Mead, were troubled by the racist character of the imagery. The faces and looks of the Neanderthal men and women depicted in this iconic—though controversial and scientifically incorrect work—were inspired by features of non-white peoples, instead of being deduced from their bones.

A Eurocentric mindset has continued to characterize the collective representation of prehistory until recently, sometimes reducing it to a more subtle form of

“primitive art.” In 1984, MoMA dedicated a survey exhibition to *“Primitivism” in 20th Century Art*. MoMA bragged about being the first institution to “juxtapose modern and tribal objects in the light of informed art history.” But the exhibition omitted dates of the Indigenous works and explanations of their functions, as art historian Thomas McEvilly remarked in his Artforum review of the show. He criticized *Primitivism in 20th Century Art*as expressing “Western egotism still as unbridled as in the centuries of colonialism and souvenirism.” Since then, the museum has made its *mea culpa*, addressing the controversy on its website.

The Pompidou exhibition’s three curators, Cécile Debray, Rémi Labrusse, and Maria Stavrinaki, write on the museum website that *Primitivism in the 20th Century Art* did not include prehistory “which, in fact, is fundamentally different from it. For the modern Western world, the ‘primitive’ is generally rooted in specific cultures, usually described as exotic; the question of temporality is secondary to its geographical and cultural otherness. Prehistory, on the other hand, is seen above all as an indefinitely stretched time span, and thus largely indecipherable (whether in terms of nature or the first human cultures).” Labrusse dedicated a book to this paradoxical situation. “Prehistory is precisely what is *pre*, meaning *out of* history,” he told me in an interview in October 2024. It “radically overturned our dream of mastering linear time, as 19th-century historicism chose to formulate it.” Here lies the paradox that attracts so many artists to prehistory, according to Labrusse: “Because it is largely indecipherable (whether in terms of nature or the first human cultures), it remains fascinating.”

From *Prehistory, a Modern Enigma*, I remember the scenography. Tall walls, obscure corridors, grandiose frescos, and a prehistoric cave reconstituted at the center of it. In this spectacular setting, amid fossils, Cro-Magnon skulls, tools, and Paleolithic carvings, there were more than 300 works of art by modern and contemporary artists. Plus elements of popular culture: surveys of archaeological excavations, advertisements, and extracts from books (*The Quest for Fire*, a hugely popular Belgian 1911 fantasy novel) and cult films such as *The Lost World* (1925), *King Kong* (1933), or *2001: A Space Odyssey*(1968). This undertone in the exhibitions shows what the curators of the Pompidou exhibition describe as the “invention of the concept of prehistory.” How artists and society have succumbed to the appeal of origins in the modern era, “yielding to a fantasized vision of what came before history.”

The exhibition opened with Odilon Redon and Paul Cézanne, at the turn of the

20th century. Cézanne was an amateur student of geology and paleontology. He visited prehistoric caves and painted the rocks on the Mediterranean coast with his close friend Antoine-Fortuné Marion (1846–1900), who later became a noted geologist and paleontologist. The show also exposed the Venus of Lespugue, the famous prehistoric ivory statuette, dated around 23,000 years ago, which inspired Picasso and Giacometti (both owned plaster casts of it). She stands there, in an exhibition room at the Musée de l'Homme, surrounded by bronzes from Matisse, Miró, and other modern artists who were equally fascinated by her and other statues from that time.

"*Préhistoire, une énigme moderne*" brilliantly demonstrated how prehistory inspired modernity, an artistic movement that was, paradoxically, about the future. Photos of the 1889 Paris World's Fair show how the Eiffel Tower and various cutting-edge technologies were exhibited alongside Neanderthal skeletons. A Max Ernst painting of "petrified forests, glacialized landscapes, and sedimented earth," created after World War I, raised questions about whether these were depictions "from after humanity, or before it?" as modernism developed toward "a prehistoric vision of time before humankind," according to a 2019 New York Times article.

This feeling got stronger with the tragedies of World War II when many intellectuals and artists turned their back on the notion of progress, digging in reverse into the beginning of life, extinct species, the first hominids, the lost cultures of the Paleolithic era, and the Neolithic revolution to grapple with the possibility of extinction, of earth without humankind. "Nourished by archaeological discoveries, but far from simply reflecting on them,… prehistory…[functioning] as a powerful machine for stirring up time," write the curators. "This time machine constantly shapes the mental boundaries of modernity and provides concrete models for all sorts of experiments."

The exhibition also explores the mysteries of shaped rocks and tools, an intimate relationship to animals, ecological issues, and apocalyptic wonder in chronological and thematic parcourse. These themes are part of the collective representation, the idea of what prehistory is and how the inspired artists, whose works were exhibited, felt from Louise Bourgeois, Joseph Beuys, Lucio Fontana, Max Penck, Robert Morris, Robert Smithson in the 1980s, the Chapman brothers, Pierre Huyghe, Tacita Dean, Marguerite Humeau, Dove Allouche, Jennifer Allora and Guillermo Calzadilla, Jean-Pascal Flavien, and Bertrand Lavier in the last few

years. “Prehistory is not an object given to artists to interpret; it is created by them” states Labrusse.

“I think artists are either Paleolithic or Neolithic. I am decidedly the latter said minimalist artist Carl Andre, according to the previously mentioned NYT article. His Stone Field Sculpture in Hartford, Connecticut, could have belonged to the Neolithic times. Painters and sculptors sometimes like to experiment with the artistic canons and the tradition of “getting back to our roots,” to the “early man,” as a 2024 exhibition at the Hole Gallery shows. “Based around an out-of-print anthology devoted to prehistoric collections unearthed by archaeological expeditions in Algeria, French artist Camille Henrot’s… [*Prehistoric Collections*] treats this ethnographic material as motifs of a contemporary grotesque,” states the Perimeter Books’s website.

Meanwhile, Mark Dion’s immersive, uncanny installation at La Brea Tar Pits and Museum in September 2024, *Excavations*, displayed new work alongside “early museum murals, dioramas, and maquettes of Ice Age mammals in a playful… presentation,” the museum website states.

Labrusse recalls feeling “powerless” when he started applying his scientific skills and methods to prehistoric art (he is a professor of art history at *École des Hautes Études en Sciences Sociales*). “History requires context, facts, and elements to narrate it. These things are almost nonexistent when one looks back so far behind in time,” he explains. Many social scientists who study prehistoric history testify to a similar challenge. There is little evidence from prehistoric times and huge gaps of time for which the evidence is completely missing. “Prehistorians have the scientific honesty to recognize an irreducible ignorance, an impossibility of bringing out meaning,” notes Labrusse. “It is impossible to give a social, political, or aesthetic meaning to these societies.” During a podcast interview in 2019, he explained feeling first “like falling into a hole, caught up in an abyss of darkness. Then, as in *Alice in Wonderland*, you start to see through the looking glass.”

For him, the turning point came while exploring a prehistoric cave, a “very intimate, life-changing experience,” he says during the interview with me. Discovering parietal scenes in the cave of Roucadour, Labrusse felt “as if they were contemporary. There is no context there, and things seem to float outside of any attributable meaning, so their appropriation is immediate, easy.” I learned this way to “let go of the burden of history,” which “dissolved like a soap bubble.”

He recalls being tempted to touch these walls, reproducing these same gestures that the first men did back then. “Science now tells us that *Homos sapiens* has been the same for 100,000 years, even 300,000 years. Individuals have the same capacities, even possibly the same feelings as us today.”

The limits of science, when confronted with prehistory, are also an opportunity that artists have often seized to contribute to the field in their own way. It gives them a chance to tell this story differently. Aware of this, contemporary prehistorians sometimes invite painters or sculptors to work with them to create interdisciplinary meaning, an epistemology articulating a subjective point of view (art) with an objective approach (science).

The French government invited artists Ernest Pignon-Ernest, Giuseppe Penone, and Miquel Barceló, among others, to bring “Other Perspectives” to the Chauvet-Pont d’Arc cave. To understand how a howl decorating the cave had been originally drawn, Barceló recreated first the same wet surface that was used by his predecessor as a canvas 35,5000 years ago. He then drew a few lines like a graffiti artist in less than 10 seconds. His audacious and instinctive gesture was brilliant: the resulting drawing looked remarkably similar to the original one. “Only an artist can do this with his subjective impulsivity,” comments Labrusse. “A historian would not have dared to do it, keeping a rigorous mindset in his attempt to reproduce the drawing and, ultimately, failing to do so.”

In another style, the notorious Adrie and Alfons Kennis, twin brothers who are “paleo artists,” are creating lifelike figures of early man that are touring museums and galleries around the world. Their hominids are fascinating and are another example of what art and science can do when working hand in hand.

By Yann Perreau

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Source: Human Bridges

Credit Line: This article was produced by Human Bridges.

COP16: It's Wild-West Capitalism Versus Life On Earth

10-23-2024 ~ *The stakes for our collective future could not be higher, yet many decision-makers are doubling down on destructive policies.*

All eyes should be on the salsa dancing capital of the world, Cali, Colombia, where representatives of 190 nations are joined by a broad swath of global civil society and international Indigenous delegations to participate in the United Nations Biodiversity Summit (aka COP16).

I've been struck that many people (even among those who generally track the larger annual climate COP process) are not familiar with the biannual biodiversity COP (conference of parties). This is a shame because the stakes for our collective future could not be higher: The Global Biodiversity Framework (GBF) is the most crucial official treaty among the world's nations to halt the extinction crisis. Its implementation—COP16's primary goal—is critical to striking a sustainable balance between human civilization and the natural world.

We know by now that we are in serious trouble: More than one million species face imminent extinction, entire ecosystems are unraveling, and the very fabric of Earth's life support systems that we all depend on—*for literally everything*—is convulsing on the brink of collapse under an onslaught of reckless resource exploitation, toxic pollution, and corporate greed. We also know that decision-makers at the highest levels of government and business not only have their heads in the sand but are doubling down on the kinds of short-sighted, profit-at-all-costs Wild West capitalism that got us in this mess in the first place.

This is why it was such a big deal when, in 2022, at the conclusion of COP15 in Montreal, 196 nations adopted the historic GBF, an ambitious pact to halt the extinction crisis and begin to reverse the destruction of nature by 2030. Of course, the GBF is imperfect and insufficient. However, given the current state of world affairs, it firmly qualifies as better than nothing and even a good start—mainly because it is the best we've got going. Now, countries are meant to present their detailed plans in Cali to implement and pay for this noble commitment.

The theme of this year's biodiversity COP is 'Peace with Nature,' and Colombia has embraced its role as host to the world with gusto. The streets of Cali have been painted an exuberant rainbow of colorful birds, prowling jaguars, and other myriad representations of the richness of life. The president of Colombia, Gustavo Petro, gave a fiery opening speech starkly outlining the predicament we face, holding no punches about the role of the rich world in creating this escalating catastrophe and the responsibility wealthy countries bear in supporting the developing world in solving it. The atmosphere surrounding COP16 presents a microcosm of our moment in history, with a chaotic chorus of international voices gathered to negotiate, cajole, and sometimes battle it out over how far and how fast we can agree to push the envelope on change.

Besides the heads of state shuttling around in black SUV motorcades, thousands of other stakeholders are flooding the city this week as well, both inside the formal UN Blue Zone on the outskirts of the city, where you need a delegate badge to enter, and outside, in the publicly accessible Green Zone along Cali's main downtown riverfront. Alongside my organization, Rainforest Action Network (RAN), are hundreds of our non-governmental organizations from around the world, as well as dozens of Indigenous delegations and lots of unaffiliated activists of all stripes. There is hope and solidarity in the air, and it is undeniably exciting and inspiring to stand shoulder to shoulder with so many passionate advocates gathered to speak truth to power to achieve a better outcome for future generations.

And, ominously, there are the legions of businesspeople in suits and ties. Two years ago in Montreal, everyone in the environmental and human rights realm was commenting on the unprecedented abundance of bankers and corporate lobbyists, and it appears that this year, that trend has continued its sharp trajectory upward. On the one hand, the masters of finance seem to have realized

that the real solutions we are seeking must necessarily involve structural changes to business as usual that would undoubtedly impact their bottom line and, on the other hand, that there may be great profit opportunities in some of the corporate-driven 'solutions' being proposed.

The thing is, we largely know what must be done to avoid the most catastrophic outcomes on the horizon. It's just that nobody with real power sees any short-term gain from doing these things. Governments must pass finance regulations to stop the funneling of hundreds of billions of dollars into expanding nature-destroying sectors like soy, beef, and palm oil ever deeper into primary tropical forests. Wealthy nations must act to relieve the unsustainable debt and trade agreements that limit conservation options for so many developing countries.

We must shift the foundational dialogue from viewing nature through a transactional lens to embracing a holistic understanding of biodiversity. This includes listening to and incorporating the knowledge of traditional and Indigenous communities into our policies and economic models. We must transform the current landscape of corporate impunity into one where accountability prevails.

Sadly, there are already those dubbing this the 'COP of false solutions' as industry twists itself in knots to contrive increasingly Orwellian schemes that sound good on the surface but deftly avoid real change to the lucrative system from which they have grown fat. Along with an alphabet soup of innocuous sounding, corporate-driven initiatives like the TNFD (Taskforce on Nature-related Financial Disclosure) is the newly ubiquitous concept of biodiversity credits, a dark mutation of the carbon credits debacle, which is every bit as ludicrous as it sounds.

Left to their own devices, the financial sector's solution to the crisis resulting from the commodification of nature is to find new ways to commodify nature. This is why a big part of our mission here is to call BS, push back against these hare-brained schemes before they take root, and leverage whatever influence we have to bring frontline demands to the table.

Longtime observers of this decades-deep process know better than to expect an immediate, transformative breakthrough here in Cali. But the fact is, change is coming, and on some level, everyone knows it. History is full of flipped scripts,

unexpected shifts, and dramatic realignments of power. There is simply no way the current economic system can persist indefinitely on a finite planet. And when the big shifts inevitably do come, we, and life on earth, will be far better off if we have built the infrastructure of a new direction forward.

The crippling grip of our current dominant economic model can feel pretty disempowering and limit our imaginations of what is possible. So it's our job to keep our eyes on the prize, dream big, and demand the real solutions that science and morality dictate, not just the ones corporations and politicians will tolerate.

By Laurel Sutherlin

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