

# SKEPTIC

EXAMINING EXTRAORDINARY CLAIMS & PROMOTING SCIENCE SINCE 1992. VOL 28 NO 1 2023 \$7.95 US & CANADA SKEPTIC.COM

## ECONOMIC MATTERS

### ANCIENT APOCALYPSE

Graham Hancock's  
*Netflix* Series

★ EXAMINED ★

Is any of it true?



**IN THIS ISSUE** The Economics of Life Made Simple • Critical Analysis of America's Homeless Crisis • Interview with Vice Chair of the Federal Reserve • Graham Hancock's *Netflix* Hypothesis Put to a Test • Alternative Archaeology: Did an Ancient Apocalypse Erase the Lost Civilization of Atlantis? • The Rise of Lies & the Demise of Shame • Does Psychotherapy Work? • From Sex to Gender: The Modern Dismissal of Biology • How to Practice Science Better • Stage Acts That Perform "Telepathy"



# WISDOM of the SKEPDOG

In Memoriam

HARRIET HALL, MD (1945–2023)

We are saddened by the passing of our dear friend and columnist (since 2006) Harriet Hall, MD, who was instrumental in helping us understand what science can and cannot tell us about how to live a good life. Grateful for her invaluable contributions to science and skepticism, we share with you some wisdom from her *Skeptic* columns.

## On Psychotherapy

Some psychotherapeutic interventions have been shown to be no better than talking with a friend. Pilot programs in underserved areas are showing that brief training can enable laymen and non-specialist health workers to provide effective psychotherapy. The bottom line: psychotherapy works to help some patients, but we have no idea why. It is not based on science and there is no rational basis for choosing a therapy or a therapist. —in *Skeptic* 28.1, her last column

## On Determining Causality in Medicine

I keep having to say the same things over and over: correlation is not causation, and personal anecdotes and testimonials don't count as evidence. —in *Skeptic* 27.4

## On Fads

Why do people fall for these fads? The answer is complex. For one thing, people's brains evolved to be naturally more impressed by testimonials from their friends than by scientific studies, which they may not understand and often distrust. They may want to rebel against authority. They may mistake correlation for causation. They may feel empowered by taking action to improve their own health. They may want to become part of a special club. They may have been bamboozled by misinformation. They are not stupid, but they have not been trained in science and critical thinking skills. —in *Skeptic* 27.3

## On Abortion

Anti-abortion activists are happy to frighten women with the alleged risks of abortion, but they are careful not to divulge this crucial information: whatever the risks of getting an abortion, it's far riskier *not* to get an abortion. Pregnancy is known to be hazardous to health, and the risks of continued pregnancy and childbirth are well documented. —in *Skeptic* 27.2

## On Transgender Controversies

The science supporting transgender diagnosis and treatment is far from settled, especially for adolescent girls. Unanswered questions remain that can only be answered through good science. If experts could predict which individuals are likely to regret gender transition, irreversible damage might be avoided. —in *Skeptic* 27.1

## On Complementary and Alternative Medicine

Purveyors of so-called complementary and alternative medicine (CAM) don't have any credible scientific evidence. If they did, their treatments would not be called "alternative" but would have been accepted into mainstream practice and would just be called "medicine" (as in the old joke, "Do you know what you call alternative medicine with evidence? Medicine"). They tend not to appreciate science or even to understand it. They don't need or want scientific evidence. For them, testimonials are all-powerful and are all the evidence they ask for. —in *Skeptic* 26.4

## On Dietary Supplements

Dietary supplements and deception are constant companions. Taking a supplement is a gamble. Skepticism and vigilance are advised. *Caveat emptor.* —in *Skeptic* 26.3

## On Gwyneth Paltrow and Her Goop Company

Gwyneth Paltrow was ridiculed for recommending vaginal steaming, which involves squatting over a basin of hot water and herbs for 30 minutes or so. She thinks it can relieve menstrual cramps, cleanse the vagina and uterus, boost fertility, and even relieve headaches. Gynecologists quickly protested, saying that it had no health benefits and was dangerous, potentially causing burns and infections. —in *Skeptic* 25.4

## On Coconut Oil

The evidence that coconut oil is a health hazard is stronger than the evidence that it is a health food. Remember "the dose makes the poison" and "moderation in all things." If you like the taste, I don't see any reason a moderate amount of coconut oil couldn't be part of a healthy diet. —in *Skeptic* 24.3

## On Scientific Studies

Early studies are often superseded by later studies with the opposite findings. We should never trust a single study; we must look at the total weight of all published findings. Most published research findings turn out to be false. That might sound discouraging, but it shouldn't be. Science is a self-correcting endeavor. —in *Skeptic* 22.4

## On Functional Medicine

Language keeps changing. We used to call questionable remedies "folk medicine," "fringe medicine," or "quackery." In the 1970s, the term "alternative medicine" was coined, an umbrella term for all treatments that were not supported by good enough evidence to have earned them a place in mainstream medicine. Then came "complementary and alternative medicine" (CAM), and later, "integrative medicine." Now there's a new kid on the block, "functional medicine (FM)" which is really just the latest flavor of integrative medicine. These are all marketing terms, Trojan horses designed to sneak non-science-based medicine into conventional medical practice. —in *Skeptic* 22.1

## On Religion and Health

Religion can impact health in good ways, but often it has a bad impact on the health of the believer and also on the health of others. I fully support the right of people to follow any religion or any belief system, but I don't acknowledge their right to impose their beliefs on others. I draw the line when their beliefs cause harm or the deaths of innocent children or when they endanger public health. —in *Skeptic* 19.1

## SkepDoc's Rule

The single most important thing you can do is remember the SkepDoc's Rule: before you accept any claim, try to find out who disagrees with it and why. There is always disagreement, even about whether vaccines cause autism and whether men landed on the moon. Once you have located the opposing arguments you can evaluate which side has the most credible evidence and the fewest logical fallacies. It's usually easy to spot the winner. —in *Skeptic* 18.2

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**The Skeptics Society**

3938 State St., Suite # 101

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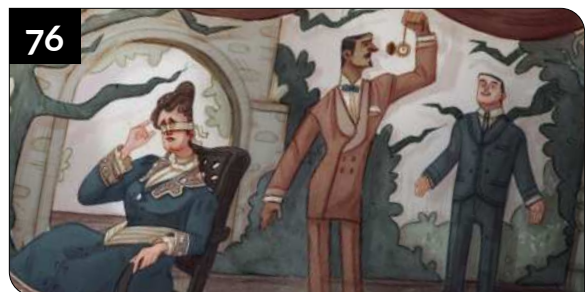
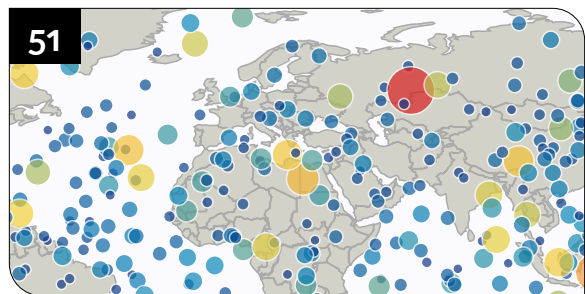
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“

No science in the world  
is more elevated, more  
necessary, and more  
useful than economics.

—Carl Linnaeus, Swedish naturalist (1740, Academy of Arts)

# THE ECONOMICS OF LIFE MADE SIMPLE

BY MARK SKOUSEN

If you want to make sense of GDP, inflation, interest rates, and economic policy, this is the article for you. We will address the following questions:

1. What is the secret to the success of capitalist nations, which have grown by leaps and bounds in the past 200 years?
2. What drives the economy—consumer spending, business investment, or government stimulus?
3. Why are young people so attracted to democratic socialism, and is there a better alternative?
4. Should valuable goods and services such as college education, medical services, and transportation be made available to the public for free?
5. What is money, what is it based on without a gold standard, and can cryptocurrency ever replace it?
6. Are booms and busts and periods of inflation and recession (like we're experiencing now) inevitable?
7. Do economists offer any solution to the global warming threat?

To answer the first question, let's start from the beginning. In 1776, the same year the American colonies declared their political independence, a Scottish professor of moral philosophy, Adam Smith, wrote a declaration of *economic* independence called *The Wealth of Nations*, although its full title reveals it to be a work of behavioral science: *An Inquiry into the Nature and Causes of the Wealth of Nations*. It was the first major treatise in economics; it became a bestseller, and Adam Smith became known as the “father of modern economics.”

## World GDP Per Capita in 1990 Dollars Since the Year 1 CE

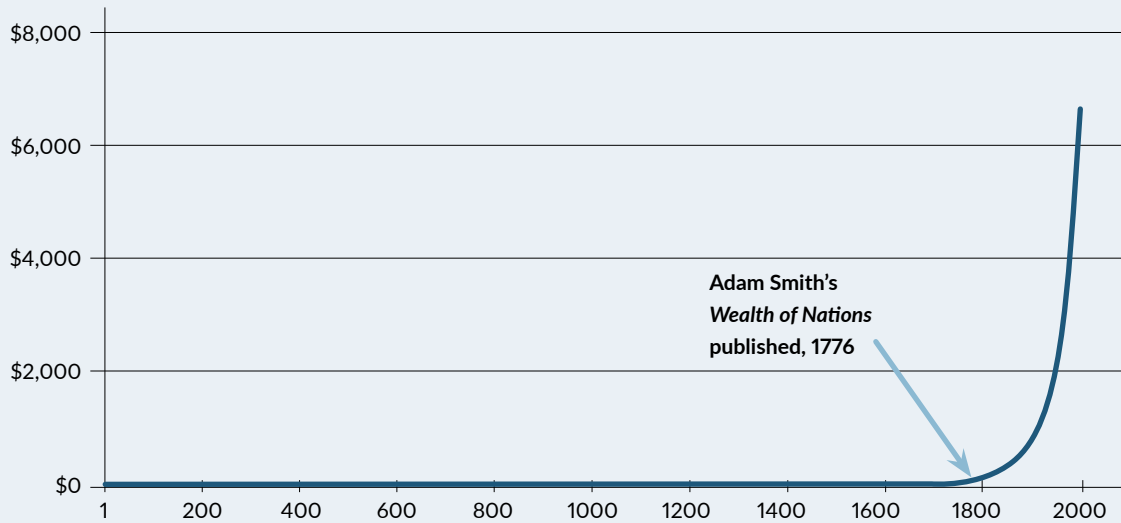


Figure 1. Source: Statistics on World Population, GDP, and Per Capita GDP. 1–2000 CE. Angus Maddison; IMF

### Professor Smith Goes to Washington

In his classic work, Smith addressed the question, “What public policy would be the most conducive to increase the wealth of nations?” His model was revolutionary. As Columbia professor (and founder of the National Bureau of Economic Research) Wesley Mitchell stated, “Adam Smith did for economics in many ways like what Charles Darwin did for biology...a new framework.”<sup>1</sup>

Basically, Smith rejected the traditional model of authoritarian government at the time. Back then, the state had its hands in everything. England, France, Russia, and other European states constantly interfered in the economy by regulating foreign trade, granting monopolies to certain industries, licensing various occupations, setting wage rates, and even requiring permission to move from one town to another. Labeled “mercantilism,” the government sought to control every aspect of economic life with the purpose of achieving the most rapid growth of a country’s wealth. Exploitation of precious metals, a favorable balance of trade through high tariffs, and wars against nations were used to succeed at the expense of other nations. As Bertrand de Jouvenel observes, “Wealth was therefore based on seizure and exploitation.”<sup>2</sup>

That, however, wasn’t working. Progress was painfully slow, and life for most humans was, in

the oft-quoted observation of the English political philosopher Thomas Hobbs, “solitary, poor, nasty, brutish and short.”<sup>3</sup> Adam Smith devised a solution. He contended that wars, tariffs, and regulations were not only mostly counter-productive but actually *decreased* the wealth of nations. He proposed a radical alternative, which he labeled a “system of natural liberty”—that the wealth of nations could increase much faster if everyone was allowed the fullest opportunity to pursue their own self-interest, that is, to have the freedom to trade, chose an occupation and business, and to decide for themselves how best to use their labor and capital without government interference. He believed his policies would reduce tensions between nations and allow everyone to improve their standard of living.

Smith wrote, “Every man, as long as he does not violate the laws of *justice*, is left perfectly *free* to pursue his own interest his own way, and to bring both his industry and capital into *competition* with those of any other man, or order of men” (emphasis added).<sup>4</sup> As Wesley Mitchell concludes, “You see how bold and sweeping that argument is from Adam Smith’s eyes... it is evident, in his own local situation, [that man] is a better judge of where his economic interest lies than any statesman could be. Therefore, the individual will get on best if he is left alone by the government... This is the great argument for *laissez faire*.”<sup>5</sup>



The Scottish philosopher did not use the term “laissez faire” or “free market capitalism” to describe his model, but rather a “system of natural liberty” and occasionally “the invisible hand.” It consisted of five basic themes:

1. Pro-savings, capital investment, and entrepreneurship
2. Limited government (*laissez faire*)
3. Balanced budgets, except in times of war
4. Sound money (gold/silver standard)
5. Free trade.

Smith boldly predicted that if a nation adopted his model of competitive free enterprise, limited government, sound money, and free trade, there would be “universal opulence which extends itself to the lowest ranks of the people.”<sup>6</sup> It would liberate all people and all nations, rich and poor, from the drudgery of never-ending poverty into a new era of prosperity. On another occasion, Smith opined, “Little else is required to carry a state to the highest level of opulence from the lowest barbarism, but peace, easy taxes, and a tolerable administration of justice.”<sup>7</sup>

## Standard of Living

Indeed, it wasn’t long after the publication of *The Wealth of Nations* that the West witnessed the industrial revolution and a dramatic leap in prosperity, as Figure 1 demonstrates: Poverty also declined dramatically over the past 250 years. The percentage of people who earn no more than \$2 a day has fallen from 81 percent in 1800 to less than 10 percent today, as tracked in Figure 2.

## The Decline of Poverty Since 1800, from 81% to Less Than 10%.

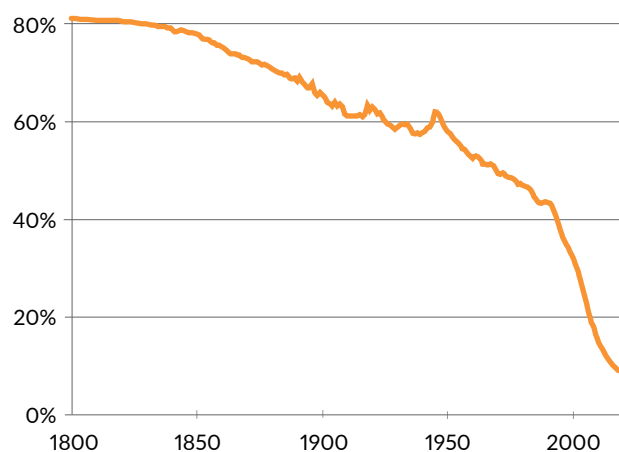


Figure 2. Source: Center for Economic and Policy Research, 2019.

## Economic Terms Used in This Article

**Gross Output (GO):** the market value of all goods and services produced at all stages of production in a year in a country; considered the “top line” in national income accounting.

**Gross Domestic Product (GDP):** the market value of all final goods and services produced in a year in a country; considered the “bottom line” in national income accounting and standard measure of economic growth.

**Consumer Price Index (CPI):** the weighted average of prices of a basket of consumer goods and services; released monthly by the US Bureau of Labor.

**Invisible hand doctrine:** the idea advocated by Scottish economist Adam Smith (1723–1790) that the voluntary actions of individuals will benefit society in general.

**Say’s Law of Markets:** Developed by French economist J.-B. Say (1767–1832), the supply-side theory that economic growth is determined by changes in production and the supply of new goods and services (often said in short hand, “supply creates demand”) and an economic policy that encourages technology, entrepreneurship, savings and capital investment.

**Keynesian Economics:** Developed by British economist John Maynard Keynes (1883–1946), the theory that economic activity is determined by changes in aggregate spending by consumers, business and government (often said in short hand, “demand creates supply”), and an economic policy that advocates big government deficit spending and during economic downturns.

**Marxist Economics:** Developed by German economist Karl Marx (1818–1883), the theory that capitalism is exploitive (capitalists don’t share the profits with workers) and destabilizing, and will eventually collapse and be replaced by socialist central planners who operate the means of production.

**Gold Standard:** a monetary policy where a country’s money (such as the dollar) is backed by gold, and monetary policy is limited by the rise and fall in the supply of gold.

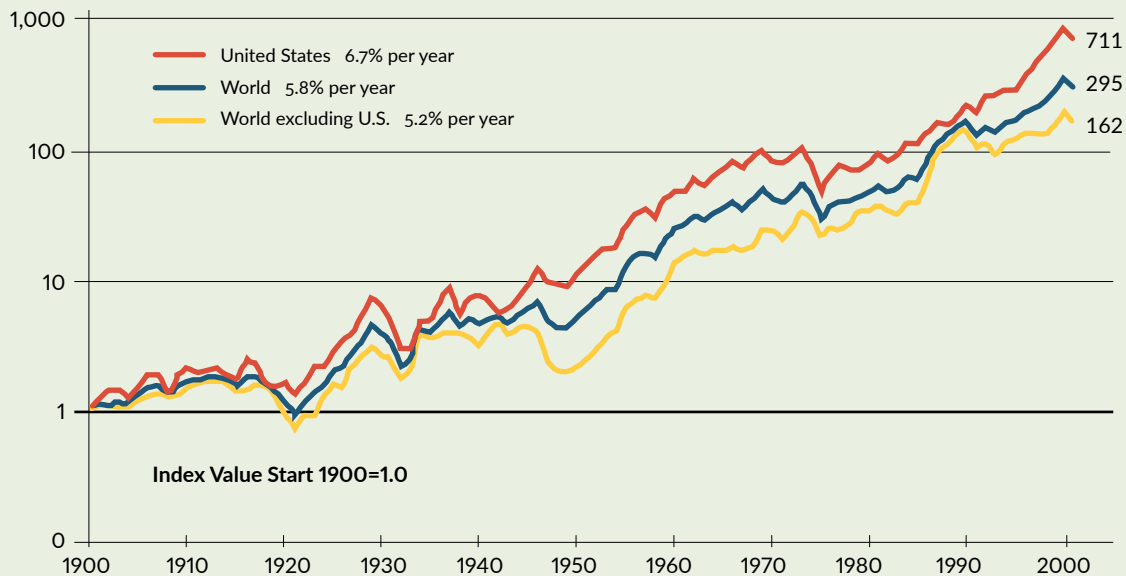
**The Fed:** Short for the Federal Reserve, the central bank of the United States, which determines the supply of money and credit, the price of money (interest rates), and the lender of last resort during a financial or economic crisis.

**Laissez faire:** French for “let us alone,” the philosophy that government should not interfere with the actions of individuals as consumers and business people.

**Democratic Socialism:** the philosophy that government (elected by the people) should provide the basic needs (food, shelter, medical services, education) for the public and be paid for by progressive taxation.

**Democratic Capitalism:** the stakeholder philosophy that successful businesses should fulfill the needs of customers, and share the profits with their employees, suppliers, investors, and the communities they operate in.

## Cumulative Returns (in Real Dollars) on the World Equity Index, 1900–2000



**Figure 3.** A century of stock market performance for the United States, the world (including the U.S.), and the world (not including the U.S.). Credit: Elroy Dimson, Paul Marsh, and Mike Staunton, *Triumph of the Optimists*. Princeton University Press, 2002.

Another metric of higher living standards is stock market performance. Figure 3 demonstrates what economists call “the triumph of the optimists” in the 20<sup>th</sup> century.

Despite two world wars and the Great Depression, stock markets in 34 countries (in North America, Europe, and Japan) have enjoyed an upward trend. The red line represents “American Exceptionalism”—Wall Street having outperformed all other major country stock markets since 1900.

Of course, correlation is not necessarily causation. How much of the leap in output, reduction in poverty, and bull markets was due to the policies recommended by Adam Smith?

We know that his book was an instant bestseller, and was translated over time into all major languages. The classical model of low taxes, free trade, and the gold standard was in fact adopted gradually by Britain and then the United States, followed by other nations. Not all countries adopted the Adam Smith model—the Soviet Union and the Middle Eastern nations being the chief examples—but gradually, most did.

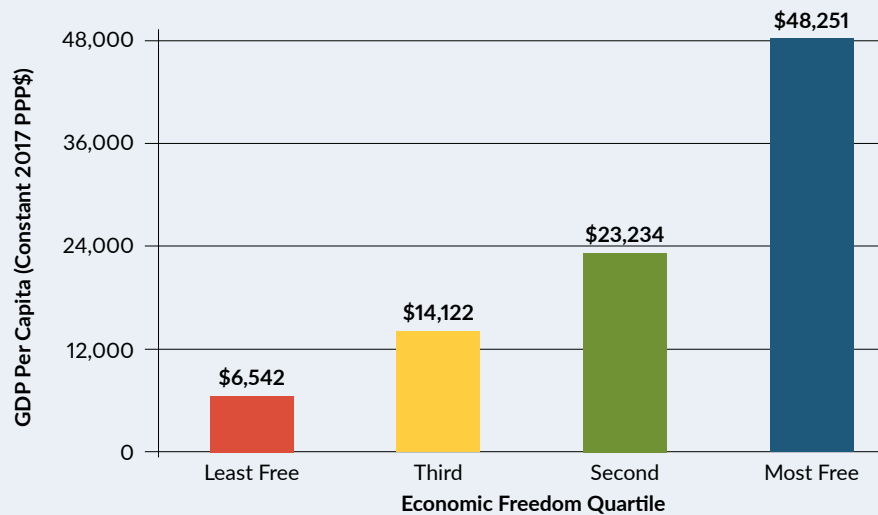
Smith’s *laissez faire* policy—that “government governs best which governs least,” in the words of Henry David Thoreau—became a popular cause in the 19<sup>th</sup> century, when the West imposed constitutional limitations on government power, reduced tariffs, and adopted the gold standard.

To be clear, Adam Smith was no anarchist. He saw a vital role for government to establish a “tolerable administration of justice,” the rule of law, the need for military defense, and public works, including public education. Overall, however, he advocated far less government intervention than nations had practiced in the past.

### Economic Freedom Index Confirms Adam Smith’s Model

Since the early 1990s, the Fraser Institute of Canada has rated most countries on their degree of economic freedom. They have found a direct correlation between the level of economic freedom and a country’s standard of living. The think tank uses five criteria linked to Adam Smith’s classical model to determine each nation’s level of economic freedom:

## Economic Freedom and Income Per Capita



**Figure 4.** Countries with greater economic freedom have substantially higher per capita incomes. Source: Economic Freedom of the World: 2022 Report; World Bank, 2022, World Development Indicators (online database).

1. Size of government
2. Property rights and legal structure
3. Sound money
4. Trade policy
5. Business regulation.

Their studies demonstrate that the freer the countries, the richer they are. Figure 4 shows their results.

### What Drives the Economy

What is it about economic freedom that leads to higher and faster economic growth? The power to choose results in greater specialization, a comparative advantage, and increased productivity. Entrepreneurship and innovation in creating new products, better processes, and business management skills are the catalysts for a higher standard of living.

According to economists, the major factor in advancing an individual and a nation comes from the supply side of the economy—innovation, entrepreneurship, and new technologies, all funded by a generous pool of savings and

investment capital. Countries that encourage high saving rates and creative inventions tend to grow faster. In this regard, America has been the land of opportunity for entrepreneurs from around the world to pursue their dreams.

### Is GDP What It's Made Out to Be?

It is a popular myth that “consumer spending drives the economy,” a statement that comes from a misunderstanding of GDP. Gross domestic product (GDP) is the most common measure of the economy. It accounts for the final purchase of goods and services by consumers, businesses, and governments. Since consumer spending represents the largest sector of GDP—a full two-thirds—many media analysts conclude that it is consumption, rather than investment, that drives the economy.

However, the media and Wall Street analysts forget that GDP is not the same as “total spending in the economy.” GDP measures *final* output only—the finished goods and services that consumers, businesses, and government buy each year. It amounted to nearly \$27 trillion 2022.

## U.S. Business Spending (Skousen B2B Index) vs. Consumer Spending 2005–2022 (Nominal Value in \$ Billions)

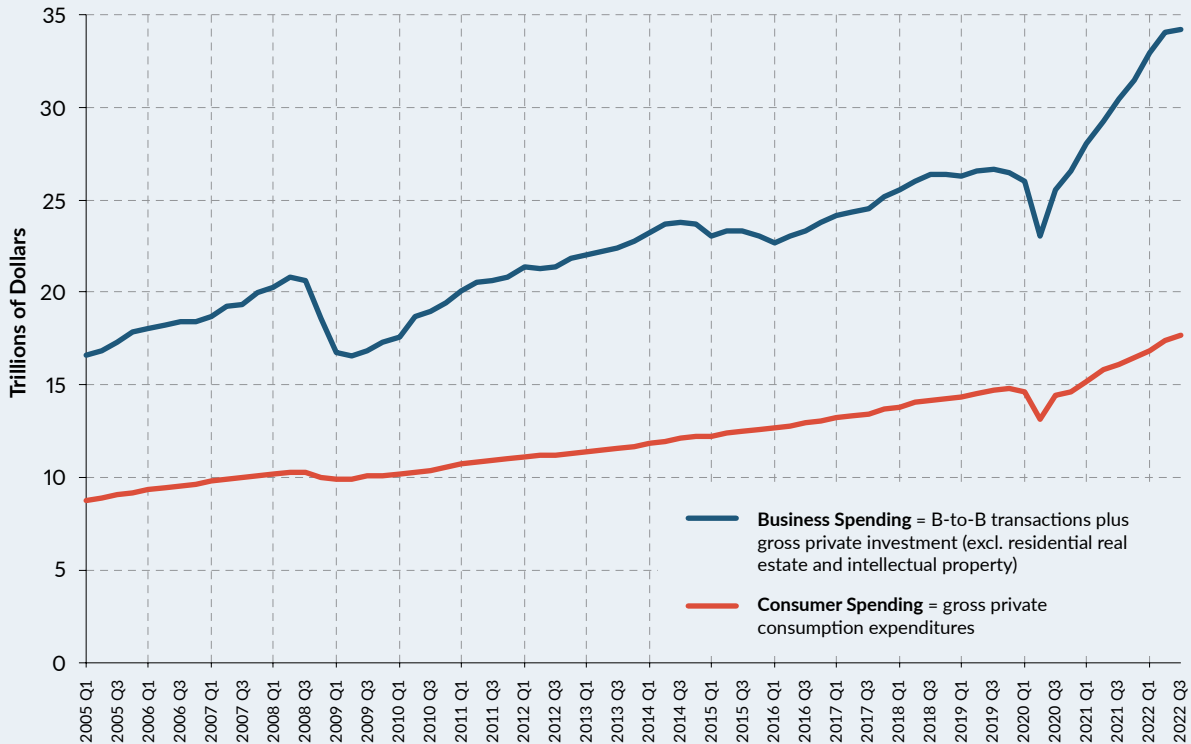


Figure 5. Data Source: Bureau of Economic Analysis, U.S. Census Bureau. Graph by Ned Piplovic.

GDP is an important measure of our standard of living, but it leaves out some important elements of the economy. Most importantly, it omits the value of the supply chain—all the intermediate stages of production that move products and services along the production, wholesale, and retail sectors to the finished product. The value of the supply chain is larger than GDP itself, around \$32 trillion this year!

When you include the supply chain, you get what the government calls gross output (GO). The federal government now publishes GO along with GDP every quarter. GO is a much better, broader definition of total economic activity because it measures spending at all stages of production. GO represents the “top line” of national income accounting, while GDP is the “bottom line.” Both are essential to understanding how the economy works.

Using GO as the complete measure of total economic activity, we learn that consumer spending is only one-third, not two-thirds, of GO. Thus, consumption is

important, but not as important as business spending along the production process.<sup>8</sup> Figure 5 demonstrates how much bigger and more volatile business spending (designated as B2B) is compared to consumer spending.

Thus, we see that business activity is the big elephant in the room and it is it that determines the economic success of a nation. Consumption is the effect, not the cause, of prosperity. As MIT professor Shlomo Maital concludes, “The health and wealth of a large number of individual businesses—small, medium and large—determine the economic health and wealth of a nation. When they succeed, managers create wealth, income, and jobs for large numbers of people. When they fail, working people and their families suffer. It is businesses that create wealth, not countries or governments. It is businesses that decide how well or how poorly off we are.”<sup>9</sup>

In the classroom, I use Seattle as an example. Why is Seattle a booming, prosperous metropolitan city today? Is it because its residents

## Average Tariff Rates on Total Imports, 1830–2010

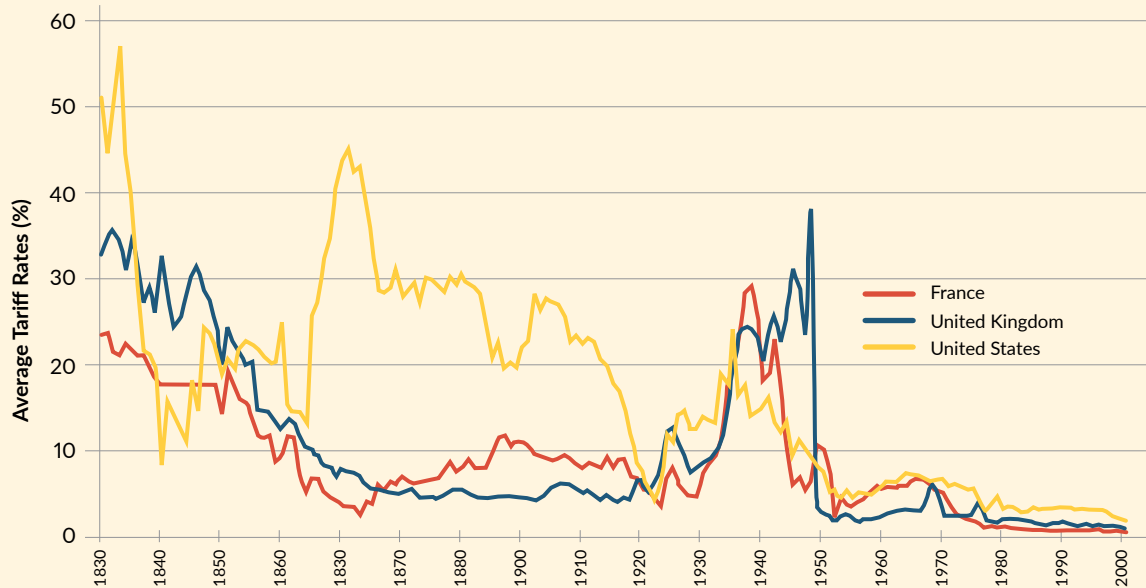


Figure 6. Average tariff rates from 1830 to 2010 comparing France, the UK, and the U.S. Sources: Imlah, *Economic Elements*

suddenly decided to buy more goods and services with their credit cards? No, it was innovative businesses that came up with new products that consumers didn't know they wanted until the business engineers came up with the new ideas. I ask students to name these companies. They include Boeing (the 700 commercial jet series), Microsoft (Windows software), Starbucks (new kinds of coffee), and Amazon (the online everything store), among others. Granted, all of these companies needed customers to be profitable and to expand, but which came first, the consumer wanting these products, or creative entrepreneurs who invented the new product? Clearly the catalyst, the first mover, is on the business side of invention—on the supply side.

In economics, this is known as “Say’s Law of Markets,” named after the French economist Jean-Baptiste Say (1767–1832), known as the “French Adam Smith.” Dynamic change and economic growth come from the supply side.

### Adam Smith Turns 300: Is His Model Still Relevant?

As we celebrate this year the 300<sup>th</sup> anniversary of Adam Smith’s birth (1723), it is appropriate to ask: How much of this classical model of economics is relevant today? In the face of world wars and occasional economic crises (especially the Great Depression of the 1930s), we see that most nations have largely moved away from *laissez faire*. Government has gotten bigger and more intrusive in almost every nation, although the differences between countries are still large (as evidenced by the Economic Freedom Index in Figure 4).

Certainly the Smithian doctrine of free trade has been the most successful policy recommendation. As we can see from Figure 6, most Western nations have gradually recognized the benefits of free trade and reduced and even eliminated the protectionist system of tariffs and quotas. Other countries have followed suit. Few countries depend on tariffs and



## Government Spending as Percentage of GDP, 1880–2021

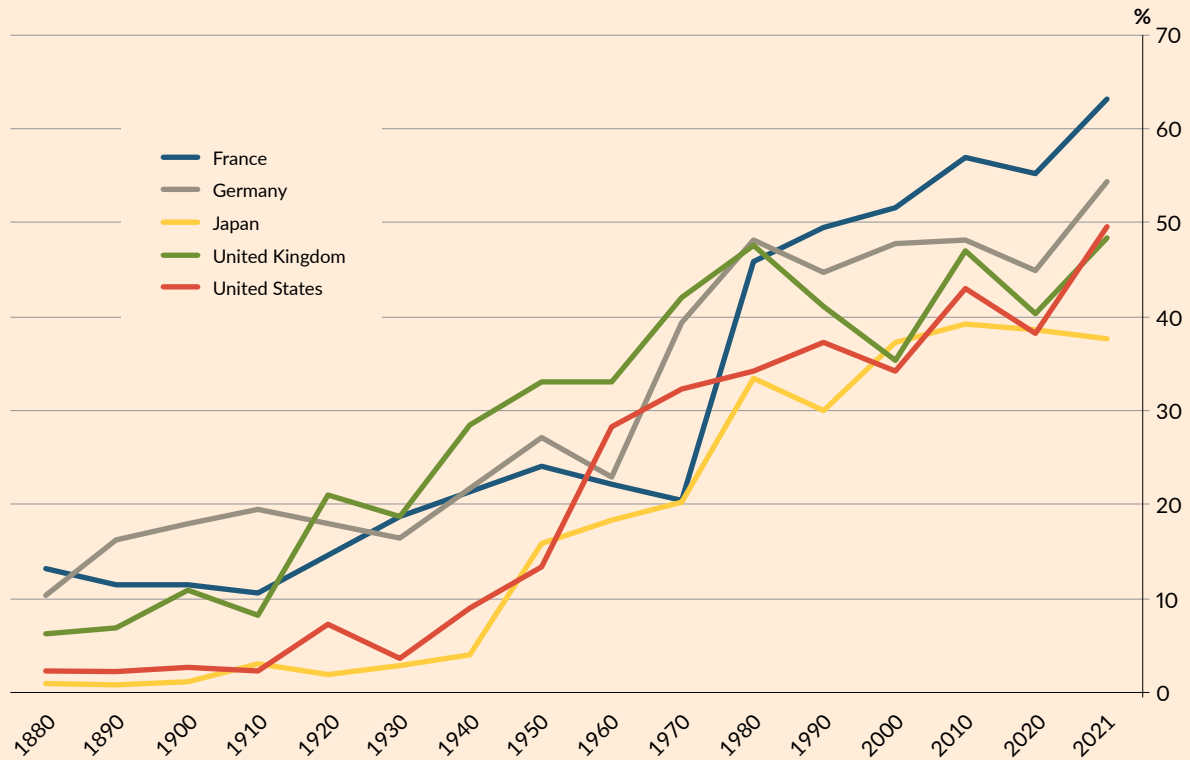


Figure 7. Source: International Monetary Fund (IMF). Graph by Ned Piplovic.

duties as their primary source of revenue anymore. Even the “America First” doctrine has not materially raised tariffs. Globalization is here and it’s here to stay.

What about limited government? Not the case. As Figure 7 shows, governments of the developed world have grown dramatically since the 19<sup>th</sup>-century world of laissez faire was abandoned. In fact, there does not appear to be any evidence that government power has diminished among the major countries. One crisis following another has resulted in an ever-bigger government. Granted, marginal income tax rates on corporations have been declining for some time, but they have been offset by tax increases elsewhere, especially the Value Added Tax (VAT) and sales taxes, and by a dramatic rise in deficits and the national debt.

However, it is worth pointing out that the size of government (in terms of percentage of GDP) has declined sharply in the former Communist nations of Russia and the Eastern Bloc following the collapse

of the Soviet Union and its central planning model. China has adopted “state capitalism” over “market capitalism,” but even there the size of government as a percentage of GDP fell sharply after 1980. Instead of 80 percent government control of the economy, China now controls less than 20 percent (in terms of GDP).

### Why Has Socialism Failed Throughout History?

After the collapse of the Berlin Wall and the Soviet system in 1989–91, most authoritarian regimes liberalized their economies by cutting taxes, reducing regulations, privatizing government-controlled industries, and inviting foreign capital into their countries.

In very recent times, however, the appeal of “democratic socialism” has made a comeback, especially among young people, who are angry about inequality, attracted to the idea of free medical services

(single-payer systems), free college tuition, and even free bus transportation in major cities, and enthusiastic about raising already progressive taxes on the rich to pay of these services. When I discuss the appeal of democratic socialism in lectures at colleges and universities, I begin by writing on the blackboard:

“From each according to his ability, to each according to his need,” and asking the students if this statement reflects their view of an ideal society. Usually two-thirds of the students vote in favor of it.

This is the classic motif of democratic socialism: You work hard, and you get what you need.

I then say, “Okay, students, let’s put our economics hat on and analyze the implications of this idealistic statement.”

First, I ask students, “How much money do you need to live comfortably?” The answer varies depending on the state where they grew up, but let’s assume on average they say around \$50,000. Then I ask, “What happens if you make more than \$50,000? Do you get to keep this money under this system?”

The answer is “no.” Any salary over \$50,000 is put into the community pot to help out those who don’t make \$50,000 and accomplish the goal of giving everyone what they need.

Finally, I ask, “What is the marginal tax rate under this system?”

Eventually, students come to the inevitable conclusion: It amounts to a 100 percent marginal tax rate, a confiscatory rate. Thus, we see there is little incentive for an individual to keep working after they earn \$50,000.

Then I ask, what about somebody who earns only \$30,000 a year? Under this model, they receive an additional \$20,000 from the community fund. What incentive do they have to earn more than \$30,000? None, because they get the additional \$20,000 no matter what.

This exercise is an eye-opener to many students. They realize that no one in this system has an economic incentive to work for more,

other than being a compassionate person. And that’s why socialism has failed time and time again. It doesn’t offer incentives to succeed, as an individual, a business, or a nation.

Only after this exercise do I point out that the statement is from Karl Marx.

## **Democratic Socialism or Democratic Capitalism?**

Is there an alternative to democratic socialism that would appeal to most young people? It is at this point that I introduce what I call “democratic capitalism,” where everyone benefits from the market economy—not just capitalists, but employees, executives, customers, suppliers, investors, and the community. It’s called the “stakeholders philosophy.”

The story of Henry Ford’s \$5-a-day policy is the best example of the stakeholder philosophy. The president of the Ford Motor Company did something revolutionary in 1914—the maker of the Model T shared the profits with his workers by doubling their wages overnight to \$5 a day. This was unprecedented. It not only improved the lives of the average worker, but it gave them enough money to buy the product they were making, the automobile. In one day, Henry Ford destroyed the two biggest arguments by the Marxists against capitalism—exploitation and alienation.

Today there are many examples of businesses that share their success with their workers through profit sharing, stock options, and 401(k) plans. For example, over 12,000 employees at Microsoft have become multi-millionaires because of their stock option plan. The inequality issue could be minimized if more businesses engage in profit sharing.

## **Should Essential Needs be Free?**

The free enterprise system is built on the pricing mechanism, which operates as a rationing system. Since we live in a world with limited resources and unlimited demand, prices develop for all goods and services, and those prices vary according to supply and demand.

One thing almost all economists agree on today is that free-enterprise capitalism is the best model to fulfill our ever-expanding needs and wants.

It has produced an unparalleled increase in the quantity, quality, and variety of goods and services that no socialist government could imitate. In my Chapman University economics class, I ask a student to go to a large grocery store and find out how many types of bread there are; and another student to go to a liquor store and find out how many types of beer there are. (The answers will astonish you.)

As socialist historian Robert Heilbroner declared that after the collapse of the Berlin Wall: “Capitalism has won. Capitalism organized the material affairs of humankind more satisfactorily than socialism: that however inequitably or irresponsibly the marketplace may distribute goods, it does so better than the queues of a planned economy; however mindless the culture of commercialism, it is more attractive than state moralism; and however deceptive the ideology of a business civilization, it is more believable than that of a socialist one.”<sup>10</sup>

However, socialism is not dead by a long shot. Advocates criticize the capitalist model for creating growing inequality of wealth and income, and causing pollution and global warming. Critics of capitalism also complain that the free market cannot provide adequate goods and services to the poor at a reasonable price, and therefore, the best solution is to offer subsidized or free education, transportation, medical services, food, and other essentials to the less fortunate.

In response, I do an exercise with my students on whether the marketplace can fulfill the needs to the rich, the middle class, and the poor. I ask students to examine a variety of needs in society—for example, automobiles, hotels, restaurants, housing, and entertainment—and see how well the marketplace fulfills those needs at each income level.

Students quickly identify markets in these industries for the rich, the middle class, and the poor. For example, there are automobiles for the rich (Mercedes Benz, Lexus, and Tesla), for the middle class (Toyota, Honda, Buick), and for the poor (Chevrolet, Ford, and Kia). There are hotels for the rich (Ritz-Carlton), the middle class (Hilton), and the poor (Motel 6). There are restaurants for the wealthy (Ruth’s Chris Steak House), the middle class (Red Lobster), and the poor (McDonald’s). Conclusion: Capitalism is not just for the rich.

Moreover, the profit motive and competition results in better, cheaper, and newer products being created all the time by entrepreneurs in what Joseph Schumpeter termed “the creative destruction” of dynamic capitalism. (I prefer the less harsh term “creative disruption” popularized by Harvard’s Clay Christensen). As Andrew Carnegie said, “Capitalism is about turning luxuries into necessities.” Big-screen 4K televisions used to cost upwards of \$5,000, now they are under \$500. One of the fun exercises I do with my students is to create two lists: new products and services that didn’t exist 30 years ago, and old products and services that are now obsolete. Students love discovering how long both lists are.

“Cheaper and better” is the best way to describe the benefits of free enterprise. The exceptions tend to be government-run or government-controlled industries, such as medicine and the post office.

What about inequality? It is true that in recent years during the bull market on Wall Street, there is evidence of growing inequality of wealth and income. However, as I point out to my students, when it comes to the quantity, quality, and variety of goods and services, that inequality gradually disappears. I hold up a smartphone as an example. Almost everyone from rich to poor has a smartphone, which contains an almost unlimited source of knowledge and wisdom. It’s today’s great equalizer.

## **The Danger of Offering Valuable Products and Services for Free**

Despite the benefits of free-market capitalism, there is a growing demand by young people that the government provide free services in education, medicine, and transportation. Surveys show that most college students are worried that the average person can no longer afford a decent higher education or adequate medical care. Note that these two areas are where there are heavy government regulation and subsidies.

“Cheaper and better” applies to almost all goods in the market economy, but not education or medical services. They tend to more expensive and show little improvement recently. Why? Public education is highly subsidized in the United States through federal grants and student loans,

yet SAT scores have not improved, indeed, the U.S. is falling behind other nations on standardized educational average test performance. The budget for the U.S. Department of Education exceeds \$650 billion a year. Where are the results?

One of the grand principles of economics is that “There is no such thing as a free lunch.” Somebody has to pay, and in the case of free medical services and education, it is the taxpayer.

Offering valuable goods for free also violates one of the cardinal principles of economics: the accountability principle, or “user pays.” Those who benefit should pay. Why? Because they are aware of the cost, they shop around for the best deal, and they demand quality for their money.

Should a valuable service like college education be free, as Senator Bernie Sanders and other democratic socialists advocate? Germany has offered free tuition for college students for years, and the results have been mixed, with problems of overcrowding of classrooms, poor selection of majors, and fewer funds for research.<sup>11</sup>

In medicine, the all-important principle of accountability is often violated. Those who benefit do not pay. Instead, a third party pays—your employer, your insurance company, or the government. This is known as the “third party problem.” Patients often don’t know the actual cost of their medical expenses. This is especially true in countries that have socialized (single-payer) medical systems such as Canada and most European countries. There’s a disconnect between those who pay (taxpayers) and those who receive the benefits: long lines, shortages, and poor quality of care are common problems in many of these countries.<sup>12</sup>

The third-party problem is serious in the U.S. As a result, the medical system is expensive, uncompetitive, and often rife with insurance and Medicare/Medicaid fraud.

## **Singapore’s Medisave Success Story**

What is the solution? Not the single-payer systems used in Canada and Europe. One of the best examples of a successful medical system is Medisave in

Singapore. While the U.S. spends 18 percent of GDP on healthcare, Singapore spends only 4.7 percent, while providing universal healthcare to its citizens—and is ranked the number one most healthy country in the world—in terms of life expectancy, infant mortality, and maternal mortality.

And it does so inexpensively. For instance, major surgeries cost 62–92 percent less in Singapore than the U.S. A heart-bypass surgery that would cost \$130,000 in the United States costs just \$18,000 in Singapore.

They achieve this “cheaper and better” approach in medicine by requiring every worker to have a health savings account, with a high deductible and co-pays that workers can afford. Competition and shopping around for low prices are encouraged because employees pay for most routine expenses through their health savings accounts (accountability principle). A similar health-living program can be found at Whole Foods Market in the United States, with their health savings plans and wellness programs.<sup>13</sup>

## **Money, Inflation, and Bitcoin**

Another major issue in society is the value of our currency. Money is the life’s blood of the economy. The dollar (and other currencies such as the euro and the yen) function as our primary medium of exchange and store of value. However, can we lose faith in the dollar if it loses its value, resulting in runaway inflation? A stable dollar is essential for businesses to operate efficiently. When inflation gets out of hand, it can wreak havoc on businesses, wage earners, and consumers. Once price inflation gets started, it’s hard to contain, because workers demand higher wages, consumers go into debt to buy now to avoid paying higher prices later, and businesses raise prices to keep ahead of rising costs, and also famously try to hide price increases by downsizing products (known as “shrinkflation”).

Rising inflation also causes the Federal Reserve and other central banks to raise interest rates to slow down the economy, often resulting in a recession or a monetary crisis. No wonder the stock market often tanks during a rise of inflation.

## CPI Inflation in U.S. Since 1775

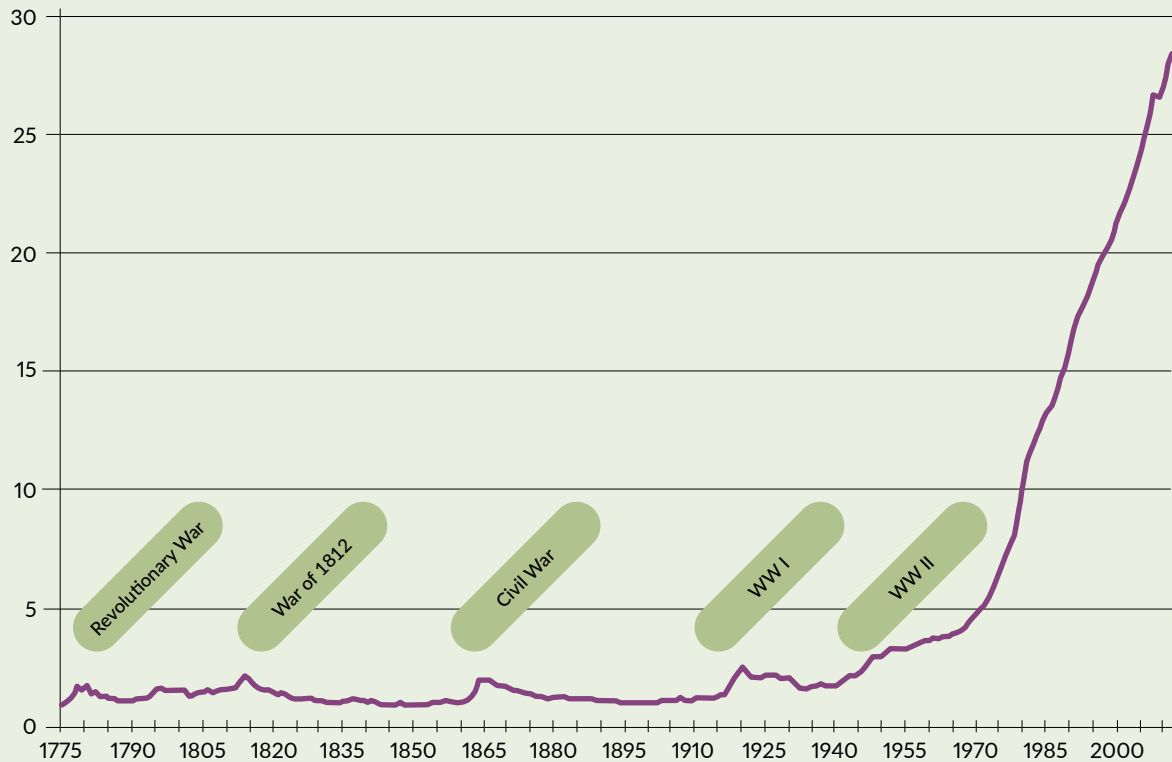


Figure 8. Source: Reinhart, C. & Rogoff, K. (2013) Shifting Mandates: The Federal Reserve's First Centennial. *American Economic Review* 103:3, p. 48.

As Figure 8 demonstrates, price inflation used to raise its ugly head only during times of war, but since World War II, it has become a permanent feature of the U.S. economy.

There are plenty of excuses why inflation has gotten worse since World War II. They could include:

1. Never-ending wars
2. The creation of the Federal Reserve in 1913
3. Going off the gold standard in 1933 and 1971
4. Adoption of Keynesian economics (bigger government and never-ending deficit spending)
5. All of the above.

Harvard economists Carmen Reinhart and Ken Rogoff are convinced that the most critical factor was going off the gold standard by President Franklin Roosevelt in 1933 and completely disbanding gold by President Nixon in 1971, thus eliminating entirely the discipline of the gold standard, and allowing the government to print money (increase the money supply) as much as they wish.

The key to controlling the purchasing power of the dollar and other currencies is closely linked to controlling the supply of money and credit. Unfortunately, in today's world, politicians and central banks are under constant pressure to expand the money supply and engage in easy money.

Bitcoin and other cryptocurrencies have become a private alternative to the dollar as a medium of exchange, speculative asset, and inflation hedge, because of limited supply, like gold. Bitcoin, created in 2008 by a mysterious person named Satoshi Nakamoto, can be "mined" through open-source software and is limited to 21 million coins. Bitcoin transactions are recorded on a public ledger called a blockchain. The price of bitcoin, Ethereum, and other cryptocurrencies have soared as an alternative currency, but have faced serious challenges, including delays in recording transactions on the blockchain, lack of regulation, tax complications, and fraudulent business practices exemplified by the FTX debacle. The blockchain technology clearly has great potential in business, real estate,



## Since 1960, has air pollution gotten better or worse in the LA area?

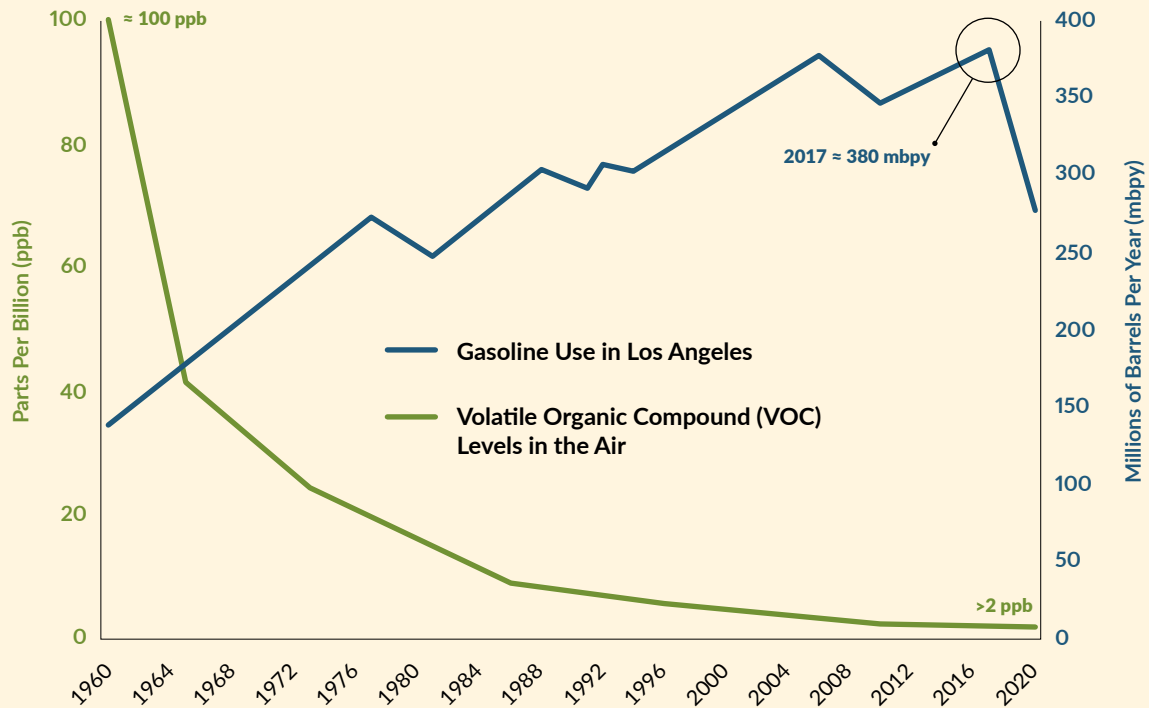


Figure 9. Source: National Oceanic and Atmospheric Administration (NOAA). Graph by Ned Piplovic.

and the financial markets, but the outlook for bitcoin and other digital currencies is still uncertain and speculative, depending on how well governments handle the inflation problem.

The last great Federal Reserve chairman was Paul Volcker, who ran the Fed from 1979 until 1987 during the Carter and Reagan administrations. By raising interest rates to 21 percent and curtailing monetary expansion, Volcker successfully overturned the entrenched inflationary psychology that was built into the American economy since World War II. We entered a period of disinflation—no real deflation—and then, like an old penny, inflation came back with a vengeance after the 2020 pandemic. The Trump and Biden administrations engaged in aggressive fiscal (big spending, tax cuts, and trillion-dollar deficits) and monetary (easy money) policies combined to overstimulate the economy to offset the global pandemic lockdown. We are now paying the price with an inflationary boom-bust cycle.

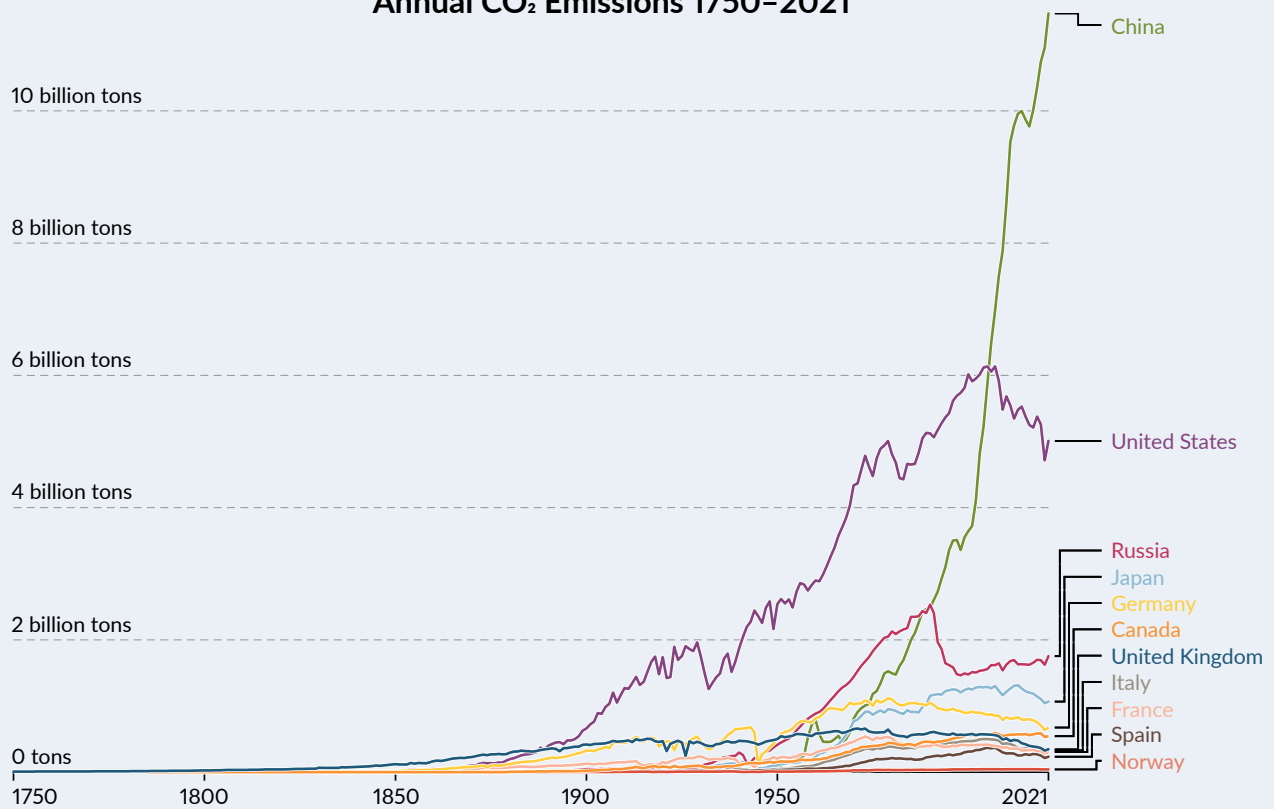
## The Boom-Bust Cycle

That brings us to this question: how do we control the ups and downs of economy, money and credit, and minimize the never-ending cycle of inflationary booms followed by recessions or worse? The key solution is twofold: The Federal Reserve's monetary policy needs to be one of stability rather than a never-ending battle between "fighting recession" and "fighting inflation." The Fed has changed directions between easy money (cutting interest rates) and tight money (raising interest rates) nearly a dozen times since 1980. And fiscal policy (taxes and spending) needs to be dependable and restrained, living within its means during full employment and so minimizing federal deficits. That will make the Fed's job easier.

## Environmentalism and the Global Warming Threat

Economists have made significant contributions to the debates over ecology and climate change.

## Annual CO<sub>2</sub> Emissions 1750–2021



**Figure 10:** Annual total production-based carbon dioxide (CO<sub>2</sub>) emissions from fossil fuels and industry, excluding land-use change, measured in tonnes (based on territorial emissions, which do not account for emissions embedded in traded goods). Source: Our World in Data (2022), <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions> (CC BY 4.0) based on the Global Carbon Project: <https://www.globalcarbonproject.org>

Yale professor William Nordhaus was awarded the Nobel prize in economics in 2018 for his pioneering work on the economic impact of rising global temperatures and the “negative externalities” of air and water pollution.

According to economists, the best way to reduce smog and curtail the emission of greenhouse gases is through a combination of new technologies in the private sector and to impose high carbon taxes on polluters. Instead of the Environmental Protection Agency (EPA) trying to discover a way to reduce automobile emissions, they set strict emission limits and higher fuel mileage standards and let engineers in the car and truck manufacturers come

up with a solution—which they did. Starting in 1975, automobiles, trucks, and buses were equipped with the newly invented catalytic converter.

To demonstrate the results of these government regulations, I do a survey every year with my students in Southern California. I ask them, “Since 1960, has air pollution gotten better or worse in the LA area?” Typically 60–70 percent say “worse.” Then I show them Figure 9 (previous page).

Figure 9 shows two trends—increased use of cars and trucks on Los Angeles freeways, and at the same time a dramatic 97 percent reduction in air pollution, thanks to the catalytic converter

and other government regulations. Students are shocked. I tell them how in the 1960s the smog was so bad that it was almost impossible to see downtown LA or Catalina Island. Now, most days are clear. The near elimination of smog in Southern California is truly an environmental success story.

The United States and Europe have made great strides in reducing greenhouse emissions. The real problem lies with developing countries such as China and India, as Figure 10 shows.

Economists tend to be more skeptical and less alarmist regarding the environmental and global warming threats because they are solution-oriented, see progress, and advocate a cost-benefit analysis to these hot-button issues. William Nordhaus has been criticized by both environmental alarmists and by global warming skeptics. He believes global warming is a real threat, but as an economist, he is also alert to the dangers of going overboard: “If, for example, attaining the 1.5°C goal would require deep reductions in living standards to poor nations, then the policy would be the equivalent of burning down the village to save it.”<sup>14</sup>

## The Future

Ideally, we would like to live in a prosperous society promised by Adam Smith through “peace, easy taxes, a tolerable administration

of justice,” and let’s add stable prices, a clean environment, and maximum liberty for all. Is this ideal society beyond reach?

Perhaps. I see slow growth ahead, punctuating by recessions from time to time, with the world being burdened with a growing military-industrial complex, a bloated bureaucracy, excessive government debt, more debilitating regulations, a permanent welfare state, an incredibly complex tax system, and politicians falling all over each other to throw more money at their respective pet projects. New technologies can mitigate these burdens, but not entirely. Perhaps there is a white knight out there coming to put America back on a sound fiscal and monetary basis, but I fear Humpty Dumpty has fallen and can’t be put together again. I don’t see America becoming another Venezuela, but neither do I see it as another Singapore.

It’s easy to become pessimistic. Perhaps we can learn something from Adam Smith, who was the ultimate optimist. Nearly 250 years ago, he wrote:

The uniform, constant, and uninterrupted effort of every man to better his condition... is frequently powerful enough to maintain the natural progress of things toward improvement, in spite both of the extravagance of government, and of the greatest errors of administration.<sup>15</sup> **S**

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# A Critical Analysis of AMERICA'S HOMELESS CRISIS

BY NED RESNIKOFF

How serious is the homeless situation in America? Nearly everything about homelessness is complicated, beginning with the question of just how many Americans experience homelessness each year. The most commonly used metric comes from what are referred to as “point-in-time” counts: annual headcounts conducted by regional agencies across the country known as continuums of care. These point-in-time counts are so named because they only count the number of people who are homeless in a given jurisdiction on a particular night of the year; for that reason and a few others—including the natural difficulty associated with counting people who, by definition, have no fixed address—they tend to drastically underestimate the size of the homeless population.

That doesn't make them useless, however. While citing a point-in-time count in isolation is usually a mistake, looking at successive counts longitudinally can provide at least an indicator of whether homelessness is rising or falling. Based on that metric, the federal government's analysis of all the most recent counts tells us that nationwide homelessness, which had been climbing steadily

since 2016, appeared to plateau between 2020 and 2022.<sup>1</sup> The point-in-time counts registered only a 0.3 percent increase in homelessness over that period.

That's a bit of good news, but the topline numbers mask a story that is, again, more complicated. While homelessness nationwide stayed surprisingly flat given the societal shock of the COVID-19 pandemic, decreases in many parts of the country were offset by sharp spikes in homelessness elsewhere. California's continuums of care noted a 6.2 percent increase; smaller in relative terms than some other states, but more than enough to swamp modest reductions in the rest of the nation. In a year when the sum of all 2022 point-in-time counts recorded an additional 1,996 un-housed individuals, California alone contributed 9,973 people.

Again, these numbers should not be taken as gospel. Still, they do point to the scale of the crisis that the Golden State and a number of other regions face. California, home to about 12 percent of all Americans, is where nearly one-third of the country's homeless population resides.



Illustration by John Holcroft

Unsurprisingly, the homelessness crisis has come to dominate urban politics in California and the other regions where it is most severe. Polling during the 2022 election cycle found that it was the second most important issue to California voters, behind inflation and the cost of living.<sup>2</sup> Following the election, newly minted Los Angeles Mayor Karen Bass declared a state of emergency over homelessness as one of her first acts in office.<sup>3</sup> On the opposite coast, New York City Mayor Eric Adams has gambled on a plan to involuntarily commit homeless people.<sup>4</sup>

The crisis has also produced a cottage industry of books, op-eds, and even documentaries purporting to explain how homelessness got so bad. Rampant mental illness and addiction are popular explanations. So are liberal decadence and permissiveness, according to conservative commentators: deep blue cities, the argument goes, are being hit particularly hard because the woke progressives who run them have effectively incentivized homelessness through generous welfare benefits and an indulgent attitude toward drug use. Needless to say, these arguments are particularly popular on the right—and receive regular coverage from Rupert Murdoch-owned media ventures—but it is not uncommon to hear them repeated in left-leaning circles as well.

It's easy to see why these arguments have caught on. Those cities that face the biggest homelessness problems—San Francisco, Los Angeles, New York, Portland, and Seattle among them—are run by Democrats, and their electorates tend toward social liberalism on issues such as drug decriminalization. Weather is also a factor, according to this line of reasoning. San Francisco and Los Angeles, in particular, are renowned for their mild climates, so living on the streets in these cities is presumably less miserable. Further, the rise of homelessness in these cities has been accompanied by a commensurate rise in public drug use, along with people publicly experiencing very severe mental health emergencies. All of these are easily observable facts, and it is extremely tempting to craft a neat causal story out of any one of them. Writers such as *San Fransicko* author Michael Shellenberger, journalist Sam Quinones, and various fellows at the Manhattan Institute have done exactly that.

However, we should be wary of any causal reasoning about social crises that emerges out of anecdotes and folk wisdom. To be sure, the *character* of the homelessness crisis has been shaped by all of the above factors: substance abuse disorders, mental illness, public policy in liberal cities, and even nice weather. But a careful look at the evidence reveals that none



of these things, with one exception, can be said to have *caused* the homelessness crisis. The exception is public policy—but even there, the relation is different from what the aforementioned writers have posited.

Let's start with drug use. Quinones has promulgated the argument that drug addiction—in particular the proliferation of a new, especially dangerous strain of meth—is “worsening America’s homelessness problem”<sup>5</sup> (or, as *New York Magazine* put it, has “super-charged homelessness”).<sup>6</sup> He may very well be correct that this new version of meth is worse than others; while this is not my field, I feel very comfortable advising SKEPTIC readers not to do meth. That said, there is absolutely no evidence that meth use is in any way driving homelessness as a large-scale social phenomenon.

Determining causality for this phenomenon is difficult. Drug use, including meth use, for example, can *precipitate* individual bouts of homelessness. To understand homelessness in aggregate, however, it is important to distinguish between the *precipitants* of homelessness and the *drivers* of homelessness.

RESEARCH HAS FOUND THAT  
**HOUSING FIRST** PROGRAMS  
ARE **MORE EFFECTIVE THAN**  
**TREATMENT FIRST** PROGRAMS  
IN **KEEPING** PEOPLE FROM  
**RETURNING TO HOMELESSNESS.**

Precipitants are particular and non-generalizable; they are the set of individual circumstances that cause a particular person to become homeless. Drug addiction is a common precipitant, but so are fleeing domestic violence, becoming unemployed, or getting hit with unexpected medical bills. Think of it like an extreme weather event: an individual spark may precipitate a major forest fire, but only under certain conditions. A key driver in this analogy is the carbon pollution that has made summers in many

heavily forested areas significantly hotter and drier. Without that driver, you would still get forest fires, but they would not be anywhere near as devastating.

The precipitants of homelessness can be some combination of structural factors, personal mistakes, and plain bad luck. While one or a handful of precipitating factors can explain why a particular person became homeless, they can't necessarily tell us much about overall rates of homelessness.

Counterfactual reasoning can be a useful tool for determining causality. You think A causes B. Remove A. If B still happens, then A was not the cause. (The rooster crows and the sun rises, in David Hume’s famous example, but no one thinks the rooster causes the sun to rise, which is easily testable by silencing the rooster and noting that the sun still rises.) Employing counterfactual reasoning here, if drug use were a driver of homelessness in aggregate, we would expect states with higher rates of drug abuse to also have higher rates of homelessness. In fact, no such relation exists between the data on drug addiction

and those on homelessness: West Virginia, which leads the nation in drug overdose deaths,<sup>7</sup> has one of the lowest rates of homelessness in the country.<sup>8</sup> California’s overdose death rate is about one-quarter of West Virginia’s!<sup>9</sup>

Nor can state-level variation in rates of mental illness explain variation in rates of homelessness. Mental illness can be difficult to quantify, but Mental Illness America estimates that California’s rate of adult mental illness is about the same as the national average.<sup>10</sup>

The mild weather hypothesis—that un-housed individuals naturally gravitate toward balmy climes—fails on similar grounds. While it is true that West Coast cities have some of the most severe homelessness problems in the United States, a more systematic look at regional patterns of homelessness doesn't turn up any correlations between average temperature and homelessness. Both New York and the District of Columbia have higher overall rates of homelessness than California, despite notably more inclement weather.<sup>11</sup>



Homeless in downtown Los Angeles. Photo by Russ Allison Loar (CC BY-SA 4.0). Tinted.

To the extent that weather is a factor in homelessness, it matters because of how it affects the *character* of homelessness: cities with more hostile climates tend to have proportionally fewer unsheltered people and more sheltered but un-housed individuals. That is likely because colder cities tend to build more shelters in order to prevent their un-housed residents from freezing to death; and un-housed people, conversely, are more likely to seek out even substandard shelter when the alternative is potentially fatal. Nonetheless, whether sheltered or unsheltered, affected individuals are still experiencing homelessness.

So much for some of the more popular theories purporting to explain the rise of mass homelessness. Note that their failure to explain state-by-state variation in rates of homelessness is not the only failure of these theories. Each of them is also heavily reliant on *individual* characteristics to explain a large-scale *social* phenomenon. This is clearly

true with the substance use and mental illness hypotheses, but it applies to the weather hypothesis as well; if California's moderate weather were to have a significant effect on its rate of homelessness, it presumably would be because large numbers of un-housed people from around the country had *chosen* to relocate somewhere warm and sunny.

Almost no aggregate human behavior can be explained by a single cause. This is where the distinction between drivers and precipitants becomes critical. We should be skeptical of any explanation for a mass phenomenon that depends so heavily on the individual behaviors of hundreds of thousands of people. While personal decisions and bad luck can play a role in individual cases, it strains credulity to blame these individual factors for a decades-long societal trend. We should instead give more credence to theories that rely on systemic forces—forces that can affect hundreds of thousands of people at once, no improbable coincidences required.

If none of the above hypotheses can explain mass homelessness, what can? To my mind, the best and most thorough treatment of this question comes from a recent work of the public affairs scholar Gregg Colburn and the data scientist Clayton Page Aldern. Their answer is right in the title of their 2022 book: *Homelessness is a Housing Problem*.

As in the above summary of differing hypotheses, Colburn and Page Aldern tested different explanations for homelessness by looking at regional variations in homelessness rates. However, they analyzed more finely-grained data, relying on city-by-city comparisons instead of state-by-state ones. After investigating a number of non-housing explanations for large-scale homelessness—including climate, generous welfare benefits, mental illness, and substance use disorder—they concluded there was no evidence that these factors can explain why some U.S. cities have significantly higher rates of homelessness than others.

Instead, they write: “Vulnerable households live in every city of the country; the differences in rates of homelessness can be attributed to structural factors associated with the housing market.” Homelessness is most severe in the metropolitan areas where housing costs are highest, because the pricier that housing becomes, the greater the risk that people with low incomes or other serious challenges will be locked out of whatever homes are available.

This is not a new finding. In fact, it is the consensus among most serious researchers of this problem. In their definitive book on homelessness, *In the Midst of Plenty*, Marybeth Shinn and Jill Khadduri note that “homelessness is essentially a lack of access to affordable housing.” Similarly, an influential 2018 study by Zillow (a leading online housing information and analysis site) found that rates of homelessness increase fastest in cities where, on average, rents exceed one-third of income.<sup>12</sup>

It follows, then, that the cities with the most severe homelessness problems also have sky-high rents. The most recent Consumer Affairs ranking of U.S. cities by housing costs looks a lot like a list of places bearing the brunt of mass homelessness: San Jose, San Francisco, San Diego, Los Angeles, Seattle, New York, and Portland all make it into the top ten.<sup>13</sup>

Why these cities are so expensive is no mystery. Much as researchers generally agree that housing costs drive large-scale homelessness, the overwhelming expert consensus is that these stratospheric costs are the result of a profound housing shortage.

It then becomes predictable why so many of the country’s most expensive cities—and a disproportionate share of the country’s homeless population—are concentrated in California. For more than a century, California was at the forefront of a nationwide movement to restrict homebuilding. Berkeley, where I live, pioneered the use of single-family-only zoning in 1916; they capped residential levels at low levels expressly in order to exclude Black and Chinese people.<sup>14</sup> More recently, beginning in the 1960s, cities like Los Angeles enacted a series of “downzonings”—zoning map changes intended to sharply reduce the number of homes that could be legally built citywide.<sup>15</sup>

Even where it is legal to build, California and its constituent municipalities have made it extraordinarily easy for incumbent landowners to veto proposed housing development—for arbitrary reasons, or for no reason at all.<sup>16</sup> As a result, the state has failed for decades to build sufficient housing to meet growing demand. The state Department of Housing and Community Development estimates California needs to make up a 2.5 million home deficit over the next eight years.<sup>17</sup>

To arrest rising rates of homelessness, expensive cities need to relieve cost pressures by building more housing. While building more subsidized affordable housing is necessary, a growing body of research shows that even building market-rate homes makes rents more affordable for everyone.<sup>18</sup> The relation between housing supply and homelessness is best illustrated by a striking finding from Colburn’s and Aldern’s *Homelessness is a Housing Problem*: rates of homelessness are lowest in the cities with the highest vacancy rates. That is because a high vacancy rate indicates that a city has a lot of housing relative to demand.

Building enough housing for everyone will do a lot to prevent homelessness. What about those who are *already* homeless? Here, again, the answer is housing. Homelessness experts have coalesced around a “Housing First” model that prioritizes moving un-housed people into permanent housing and providing optional “wraparound” services. This model is best understood by contrasting it with

“treatment first” models that prioritize interventions such as mandatory mental health care and addiction counseling over providing permanent housing.

The conventional wisdom that mental illness and substance use caused mass homelessness has fueled support for a treatment-first approach; however, a substantial body of research has found that Housing First programs are more effective than treatment first programs in keeping people from returning to homelessness. A landmark randomized control trial in Santa Clara County, California found that Housing First programs even work for the highest-need clients—those who are chronically homeless and have severe behavioral challenges.<sup>19</sup>

While Housing First works, it can only work at scale under the right housing market conditions. That is the key finding of our recent report at California YIMBY (the acronym for *Yes In My Back Yard* in contrast to the opposing NIMBY, NOT IN MY BACK YARD), “Housing Abundance as a Condition for Ending Homelessness: Lessons from Houston, Texas.”<sup>20</sup> My research for that report sought to answer the following question: How has Houston, Texas managed to reduce homelessness by more than half over the past decade, even as major California cities have seen large increases in their homeless population?

The answer is that Houston implemented an aggressive Housing First strategy *and* built far more housing per capita than any large California city. Houston’s abundant housing prevented people from falling into homelessness faster than the region’s homeless infrastructure could help them; it also made it cheaper and easier for homeless services agencies to locate and acquire housing for its Housing First programs.

To be clear, setting up a robust Housing First infrastructure isn’t cheap under the best of circumstances; by its nature, it requires significant multi-year investments. However, pro-housing land use policies mean that Houston is able to house people at a significantly lower per-person cost than other major cities. For example, we found that the cost of housing and providing services to a single un-housed individual for a year is more than two times more expensive in San Francisco than it is in Houston—between \$40,000 and \$47,000 annually in the former city as opposed to \$17,000 to \$19,000 in the latter. This gulf is largely a function of how much it costs to acquire or develop housing in each city.

Further, Houston’s investment in housing its homeless population may well be offset by savings elsewhere. A number of studies suggest that investing in Housing First programs can drive down the cost of caring for un-housed people through other means, such as visits to the emergency department of hospitals. One study from Canada concluded that \$10 spent on Housing First programs reduced the spending required on other services for high-needs individuals by \$9.60.<sup>21</sup>

The most important thing Houston’s example can show us is that good public policy can, in fact, achieve significant reductions in homelessness. Crises like those faced in Los Angeles and San Francisco are neither inevitable nor insurmountable. However, emulating Houston’s success requires that policymakers in other cities see homelessness clearly and reject simple “solutions” that place blame for a social problem on the individual failings of its victims. Most of all, policymakers need to grapple with the role that decades of failed, regressive housing policies have played in fueling the crisis. The evidence is clear on the problem of homelessness; the only question is whether voters will decide to act upon it. **S**

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## ECONOMIC MATTERS

In this interview with Alan S. Blinder, one of the world's most influential economists and one of the best writers in the field, the former Vice Chair of the Federal Reserve Board draws on his deep firsthand experience to share insights on "economic matters" with readers of *Skeptic*.



# SKEPTIC INTERVIEWS

## Alan S. Blinder

**Skeptic:** Are you one of the insiders that those in power consult?

**Blinder:** I don't think I'm an insider anymore, but I certainly was once. I went to Princeton University, where I majored in economics, and then went to graduate school at the London School of Economics, and then MIT for my PhD. I was one of several economic advisers to candidate Bill Clinton in 1992, and then when he won the election, I joined his administration as a member of the Council of Economic Advisers. Clinton then nominated me for the Federal Reserve Board.

**Skeptic:** What really goes on at the Federal Reserve? As you know, there are a number of conspiracy theories surrounding it, from political favoritism to secretly running the world...

**Blinder:** The Federal Reserve is placid, quiet, well-mannered, and orderly... if anybody said anything that sounded political in a partisan sense, you could see the other faces around sort of scowling. That was unlike working in the Clinton White House, or any White House, Republican or Democrat, which is inherently political. Another difference is that the Fed decides what it's going to do with interest rates, and then it just happens. It doesn't go up to the

chairman of some congressional committee, or the White House, or anybody else. On the other hand, if you make a "decision" in the White House, that's only the first step! Then the decision meets the Congress, and usually gets changed in many, many ways.

**Skeptic:** Yet, you openly state that you are a left-leaning liberal. Why would that matter in economics? Scientists, for example, would not say anything like, "I'm a left-leaning physicist."

**Blinder:** Simple—it's a policy science. It's analyzing historical and current events and making recommendations. If you're involved in the policy side of economics (not everybody is, but I have been for decades), you're making decisions that often involve value judgments. Here's a very simple example: What should we do with the tax code? If we're cutting taxes, who should get the benefits? Rich people, poor people, middle-class people? All those things have political aspects, and if you're involved in the actual policy formulation, you're going to be involved in some way with politicians.

**Skeptic:** You're saying that we know the effects of raising taxes or lowering taxes, or the effects of a flat tax, progressive tax, or regressive tax, and that these concepts have mathematical reasoning behind them. But



how should society decide which is the “right” tax? We might think the poor should be helped more or the rich should get tax breaks. But that’s not a scientific matter. That’s more of a political question.

**Blinder:** Absolutely, but it has scientific aspects because in each case you want to know what the side effects are. If you’re helping the poor or the rich, what might be the negative side effects? There are technical scientific aspects to it, but ultimately these things are decided in Congress, and there politics is ruling the roost.

**Skeptic:** When discussing economics, you often hear terms such as GDP (Gross Domestic Product, that is, the market value of all the final goods and services produced and sold in a specific time period). Is it a reliable measure of an economy’s health?

**Blinder:** The P in GDP stands for product. It’s a measure of production, and as a measure of production, it’s pretty good. But there are other things in societies that matter. How healthy are people? How long are they living? Are they happy? These are not measured in GDP.

**Skeptic:** Other frequently used terms that confuse people are *monetary* and *fiscal* policies. What’s the difference between them?

**Blinder:** *Monetary* policy has to do with interest rates, the money supply, and credit lending—things that the Central Bank of a country (in the case of the US, the Federal Reserve) either has control over (interest rates) or a lot of influence over (the money supply and credit). *Fiscal* policy refers to things that are outside the scope of the Federal Reserve and are controlled, in short, by the duly elected political government, which includes the President and his Administration, the Congress, and the apparatus that works for the Congress. They develop and decide on fiscal policy, which pertains to taxes, transfer payments like unemployment benefits, welfare, and Social Security, but also government purchases of goods

and services. For example, how many soldiers will we have? How many judges will we have? How many FBI agents will we have? How many IRS agents will we have? The Federal Reserve has nothing to do with any of those things.

**Skeptic:** Is there a strong wall separating those two?

**Blinder:** Yes. When it is breached, it creates controversy. One example is Arthur Burns, Chair of the Federal Reserve heavily influenced by Richard Nixon. Another example, going in the other direction, came when Alan Greenspan endorsed the Bush tax cuts in 2001. That got a lot of economists concerned about the Fed poaching over the line and therefore inviting the fiscal authorities to do the same in the other direction, which could result in terrible monetary policy. But it’s important to note that the Federal Reserve has no standing in the Constitution at all. It’s not even mentioned in the Constitution. And the U.S. Congress, if they could pass a bill and get the President to sign it—these are big ifs—could abolish the Fed tomorrow or control the Fed tomorrow. It has that right. That’s not true in all countries. In some other countries, the central bank does have constitutional protection.

**Skeptic:** A lot of people put the Fed up there, just below the Illuminati, thinking there are these guys in a dark room somewhere with their cigars, making decisions. What do you think about these types of conspiracy theories?

**Blinder:** I understand that feeling. First of all, the Federal Reserve does have real power and can set interest rates. It doesn’t have to ask the President or the chairs of the relevant committees in Congress, or anybody else. If you went back decades, the Federal Reserve quite deliberately cloaked itself in mystery. It had the attitude of “we don’t say anything, and if we say it, we say it cryptically.” There’s a famous incident of Alan Greenspan testifying to a committee in Congress, and after one of these Greenspan perorations of

twisted prose and dangling participles, a senator said, “well, I understand what you mean Mr. Chairman.” And Greenspan looked him in the eye and said, “if you understood what I said, I must have misspoken.” That was the attitude of the Federal Reserve back then. It’s not the attitude now. Tune in to one of current Chairman Jay Powell’s press conferences. He speaks plain English. He takes questions from the press. It’s just one example of how much the Fed, and other central banks too, have changed on this dimension over the decades.

**Skeptic:** Let’s talk about current events. Since we’re living through inflation now and the Fed is raising interest rates, what are the causes and effects there? How is raising interest rates going to cause prices to go down? For example, if I own a small retail store and the interest rate on my loan to run my business and pay my rent or mortgage goes up, don’t I have to raise my prices to cover the higher costs of doing business?

**Blinder:** The short-term interest rate influences every other interest rate in the economy—consumer loans, business loans, mortgages, and the government’s borrowing costs. That doesn’t deter the federal government, but if you’re running a state or local government, your borrowing costs go up and you may spend less, e.g., build fewer roads. If you’re a consumer, you may not buy the house that you thought you would buy because the mortgage rate is higher or the car that you thought you might buy, because the auto lending rate is higher. If you’re a business, you may not make the investment that was kind of on the margin. And finally, when the Fed pushes interest rates up, that tends to kick the stock market down.

**Skeptic:** That doesn’t sound good. In the example you just gave, don’t we want the business owner to take the loan and expand their business?

**Blinder:** We do in good times, including in noninflationary times. But if you read The Federal Reserve Act, it gives the Federal Reserve the responsibility to keep inflation low. And when inflation is up 6–8 percent, it’s not low, and so the Fed’s legal responsibility is to bring inflation down. How far down? Well, about 10 years ago when Ben Bernanke was chairman, the Fed enunciated a numerical target, two percent for a particular measure of inflation, called the deflator for personal consumer expenditures. The current inflation is way too high, and the Fed has no magic wand to bring it down. What they have is control over interest rates,

which slows down the economy. If you’re asking, isn’t it generally good for businesses to invest? Yes, it is. But if you’re trying to slow down the economy, you need to have less of that. And that’s what they’re doing.

**Skeptic:** And about inflation itself, why are prices going up, most notably for essential goods like gasoline and food?

**Blinder:** Crude oil prices are a significant factor, and it costs more for two main reasons. One was the whole world started recovering rapidly from the pandemic recession—all the countries at once. And that raised the demand and, consequently, the price of oil. Then Russia invaded Ukraine—both major sources of oil—which constricted supply, shooting the price up even further. When oil is so much more expensive, that quickly expands to energy in general, because a lot of energy is generated directly or indirectly by oil or other fossil fuels related to oil. Another thing that’s aggravating people these days is the higher prices they see in the grocery store. A lot of that can be traced to the war in Ukraine as well. Ukraine and Russia were major sources of wheat, corn, and fertilizer, and the war meant that the supplies were constricted. And then the third thing is slightly more subtle, which is the apparent difficulty of (and greater than most U.S. economists thought it would be) setting the supply side of the economy straight again after the dislocations from the pandemic.

Many economists like myself, and I admit this error, overestimated how fast capitalism would do its usual work. When capitalists see opportunities for profit, e.g., when the price of something is high, they come in and supply it and make a lot of money. That’s happening, but it’s happening slowly. We are also having difficulties with the supplies of many industrial inputs. The one that’s gotten the most attention, but it’s just an example, is computer chips. It’s hard to find a new car these days because a car is a bunch of computer chips with wheels. And the automakers can’t get enough computer chips to make enough cars. The final reason is we probably had what economists call an overshoot of production beyond full employment. A boom that went too far. You’ll have noticed that the unemployment rate, which peaked at the worst month of the pandemic at almost 15 percent, is now down to 3.7 percent—one of the lowest numbers we’ve had in the entire post-war period. When you get an overshoot, you get peak demand for things, and that drives prices up.

**Skeptic:** Right, but why are *American* farmers raising their prices? Why does that have anything to do with Ukraine?

**Blinder:** It does because a lot of agricultural products, such as crops, are sold in world markets, just like oil. So, the price of wheat, to an American in America, is not going to be very different from the price of wheat in France or in Indonesia. When the crop from Ukraine is not available for sale, that raises the price of wheat, including what American farmers get for their wheat.

**Skeptic:** Sometimes you hear that one of the drivers of inflation is that the government just “prints too much money,” for example, for all the different programs such as the American Reinvestment and Recovery Act, the Economic Stimulus Act of 2008, the Emergency Economic Stabilization Act of 2008, the Paycheck Protection Program, and so forth. How can the government just print money or borrow money without it driving up inflation?

**Blinder:** Fiscal policies that are not tax-financed—some are, but many are not—add to the budget deficit. They have to be financed either by printing money or floating debt instruments, which we call government bonds. The federal government debt has been exploding in recent years because of the very large budget deficits. When the pandemic struck, the government started writing checks to a great number of people, and they were not financed by printing money by the Fed. They were financed by government debt. That kind of activity tends to push up interest rates.

**Skeptic:** Let’s look at some history. Kennedy was really a fiscal conservative, not so different from Eisenhower or Nixon. Where did things start to change?

**Blinder:** Eisenhower thought deficits were harmful and immoral. In the Eisenhower years, we actually ran a surplus. I think the Reagan years were, in many ways, a turning point in terms of the attitudes of both political parties toward budget deficits. Reagan came in with the pledge to cut income taxes, which would be balanced by serious cuts in spending and faster economic growth. The spending cuts never really happened to any large extent. The boom never happened either. But the tax cuts did happen. And at the end of the Reagan years, we were stuck with—by American standards—very large budget deficits as a share of GDP. The deficits lingered

through several attempts by both Republicans and Democrats to bring them under control. There was some success in that regard under Bush Sr., but the big step came from Bill Clinton, which was both tax increases and spending cuts.

**Skeptic:** Would you describe Clinton as a fiscal conservative?

**Blinder:** I think that’s right. By the end of the Clinton administration, we were running sizable surpluses in the federal government. And there was actually talk about what might happen if we paid off the whole national debt. It sounds so silly now.

**Skeptic:** Let’s end by addressing the stock market elephant in the room. Are we witnessing the end of the Bull Market that began after the 2008/2009 recession? Are stocks no longer a good investment?

**Blinder:** Whenever I hear that the stock market has hit yet another record high, I think “yes, they should hit a record high every day, a little bit higher than the previous day...on average.” Of course, the stock market doesn’t behave that way at all! It goes through extremes—up, down, up, down... But over the long run there’s a clear pronounced upward trend. Yet over short periods of time, it’s not unusual for the stock market to go up 20 percent or down 20 percent. Every time it goes down—like now—people cringe because it doesn’t feel very good... But these declines have happened many times in the past, and the stock market always makes up the lost ground. The wise thing to do is not watch the market every day. Be in it for the long haul. **S**

**Alan S. Blinder** is a Professor of Economics and Public Affairs at Princeton University, a former Vice Chair of the Federal Reserve Board, and a former member of the President’s Council of Economic Advisers. A regular columnist for the *Wall Street Journal*, he is the author of many books, including the *New York Times* bestseller *After the Music Stopped: The Financial Crisis, the Response, and the Work Ahead*. His new book is *A Monetary and Fiscal History of the United States*.

*This print interview has been edited from a longer conversation with Blinder on The Michael Shermer Show, which you can watch here: <https://bit.ly/3lmZdWN>*

# ALTERNATIVE CIVILIZATION AND ITS DISCONTENTS

*An Analysis of the Alternative  
Archaeologist Graham Hancock's  
Claim That an Ancient Apocalypse  
Erased the Lost Civilization of Atlantis*

BY MICHAEL SHERMER

In the Fall of 2022, *Netflix* released *Ancient Apocalypse*, an eight-part documentary series written and presented by Graham Hancock, the author of numerous bestselling books about ancient human prehistory with whose work I have engaged many times over the years, both in

the pages of *SKEPTIC* and on Joe Rogan's popular podcast. The quality of the editing, graphics, music, and voiceover of the series is superb, the cinematography gorgeous, the aerial photography stunning, and the overall presentation so compelling that I binge-watched the series—twice!

Briefly, Hancock contends that tens of thousands of years before ancient Mesopotamia, Babylonia, and Egypt (that is, deep in the last ice age), there existed an even more glorious civilization—Plato called it Atlantis—that was so thoroughly wiped out by a series of comet strikes around 12,000 years ago that nearly all evidence of its existence vanished, leaving only the faintest of traces that he thinks include a cryptic warning that such a celestial catastrophe could happen to us.

The eight named 30-minute episodes in the series, each with a catchy title, include:

1. **Once There Was a Flood:** the Indonesian archaeological site of Gunung Padang is explored by Hancock, as he believes it was once inhabited by a lost civilization when the site was part of a larger landmass known as Sundaland, wiped out in a cataclysm.
2. **Stranger in a Time of Chaos:** the Mexican pyramid of Cholula, the largest such structure in the world that Hancock claims shows signs of a forgotten past, is also the source of the mythic hero Quetzalcoatl, who arrived by ship after the cataclysmic flood to bring ancient wisdom to the survivors.
3. **Sirius Rising:** the megalithic temples of Malta show patterns of once having been connected and much older than archaeologists believe, and also demonstrate astronomical knowledge that Westerners only discovered in recent centuries.
4. **Ghosts of a Drowned World:** the Bimini “road” off the coast of the Bahamas, believed by geologists to be a natural rock formation, is argued by Hancock to have been an ancient megalithic platform and possibly an outpost of the fabled lost continent of Atlantis, now underwater but well above ground during the last ice age. Evidence is presented in the form of a map purporting to show that the ancients knew about the Americas long before Columbus.



Cholula Pyramid, Mexico (Photo by Michael Shermer)

5. **Legacy of the Sages:** the mysterious site in Turkey called Göbekli Tepe, agreed upon by mainstream archaeologists to be thousands of years older than any other megalithic structure in the world, is claimed by Hancock to have been constructed under the skilled direction of an advanced ancient ice-age civilization, and not the mere work of hunter-gatherers, who otherwise would have been unable to construct such a monument. Animals carved in bas-relief on the sides of the giant stone pillars are claimed to represent astronomical constellations as they would have appeared over ten thousand years ago.
6. **America's Lost Civilization:** several structures of North America, most notably Serpent Mound in Ohio and Poverty Point in Louisiana, are claimed by Hancock to have much older origins than mainstream archaeologists believe and incorporate a legacy of knowledge from an ancient civilization with advanced understanding of astronomy.
7. **A Fatal Winter:** another site in Turkey called Derinkuyu, an underground city with a vast network of tunnels, represents what Hancock believes to be survival bunkers for the people living under assault from strikes by cometary debris 12,800 years ago.





Graham Hancock with colleague Randall Carlson in the Channeled Scablands, Washington State, USA, during the filming of Hancock's *Netflix* series *Ancient Apocalypse*. The series launched November 2022. (Photo courtesy of Santha Faiia)

8. ***Cataclysm and Rebirth***: numerous geological features of the Channeled Scablands of the western United States show what Hancock, along with his colleague Randall Carlson, believe to be direct evidence of the cosmic cometary event that erased nearly all evidence of the advanced civilization they believe thrived during the last ice age.

The series ends in dramatic fashion with Hancock delivering a take-home message for us moderns: that comet stream will one day return to do to us what it did to the Atlanteans, so we should prepare ourselves now. "Perhaps our own 'advanced' civilization should heed their warning," Hancock pronounces in prophetic fashion in the final line of the series, "lest our own story end the same way."

Graham Hancock is an engaging figure, drawing in his viewers and readers like one of the sage ancient wisemen he believes once flourished

on Earth (and to an American audience, his soft British accent peppered with punctuated emphasis, confers apparent intelligence and gravitas to his presentation). He is a warm, thoughtful, caring, generous, and intelligent man whose life's work I find compelling even while rejecting its central premise. He's a stand-up guy who truly believes he has made an important discovery about the human past that has implications for our future. He is not the deluded wackadoodle pseudoscientist his critics portray him as, and most of the reviews of the *Netflix* series have been unduly harsh. The Guardian reviewer, for example, described the series as "the most dangerous show on *Netflix*." Dangerous?! Two other articles in this issue of *SKEPTIC* review Hancock's archaeological and geological claims in detail, so let me here offer an overview of why I am skeptical of his alternative theory of history, but also why I think there is a place in science for alternative voices to challenge the status quo.



## Why I Am Skeptical of Hancock's Alternative Theory of History

The *Netflix* series is based on a number of Hancock's well-written and wildly popular books (again, note the catchy titles), including *Fingerprints of the Gods: The Evidence of Earth's Lost Civilization* (1995), *The Message of the Sphinx: A Quest for the Hidden Legacy of Mankind* (1997), *Underworld: The Mysterious Origins of Civilization* (2002), *Magicians of the Gods: The Forgotten Wisdom of Earth's Lost Civilization* (2015), and *America Before: The Key to Earth's Lost Civilization* (2019). As with the *Netflix* series, I carefully consumed *Magicians of the Gods* and *America Before*, and like the television presentations, I find the claims made within strangely compelling, at least initially. But are they true? Here are a dozen reasons why I'm skeptical.

### 1. **There isn't just one "alternative" to mainstream archaeology, there are dozens of alternative theories. To name a few that have not fared well in the marketplace of ideas:**

- The theory that lost tribes of Israel colonized the Americas (and other places).
- The Mormon archaeological theory that Native Americans are descended from one of these lost tribes of Israel.
- The claim that the Kensington Runestones of Minnesota prove the theory of the Nordic Viking peopling of the Americas centuries before Columbus.
- The Black Egyptian theory that ancient Egyptians were predominantly Black because Egypt is in Africa.
- Thor Heyerdahl's theory that the peoples of Polynesia came from South America, not Southeast Asia.
- The archaeological theory that South American Olmec statues look African in their features, suggesting therefore that the peopling of the Americas also included voyages from Africa to South America.

- The theories of Erich von Däniken, Zecharia Sitchin, Giorgio Tsoukalos, and other ancient alien theorists, proposing that ancient monumental architecture is best explained as the products of superior, extra-terrestrial intelligences visiting Earth in the distant past.

In response to this litany, Hancock reasonably responds "what does this have to do with me and my theory?" The answer is "nothing" and "everything." *Nothing*, because to his credit he is just as skeptical as I am of these alternative archaeologies. *Everything*, because Hancock portrays himself as a lone rogue scholar being unfairly ignored by mainstream archaeologists, whereas in fact there is a parcel of such rogues, all equally convinced of the veracity of their claims. Most mainstream professional archaeologists do not have the time to engage everyone who has an alternative theory about the ancient past. Even if they did, most are specialists in one narrow area of research, so the time to fact-check every claim made in a broad series like *Ancient Apocalypse* would be overly demanding, with little professional reward.

### 2. **Negative evidence and anomaly hunting.**

No matter how devastating an extraterrestrial impact might be, are we to believe that, after centuries of flourishing, every last tool, potshard, article of clothing, and, presumably from an advanced civilization, the writing, metallurgy, and other technologies—not to mention their trash, homes, and bones—were erased? Not likely.

The larger problem with such alternative theories, however, is that they lack convincing *positive evidence* in their favor and upon which they can be tested, but instead are based almost entirely on a handful of anomalies allegedly not explicable by mainstream archaeologists (along with gobs of conjectures about what "might" have happened to explain this or that archaeological feature). In skeptical circles this method is termed *anomaly hunting*, and it's easy to do because no scientific theory explains every last bit of data. Anomalies may one day be explained by the accepted theory, or they may lead to a complementary or alternative theory, or they may remain unexplained forever.

3. **Cherry-picking data, confirmation bias, and starting with a conclusion and working backward through the evidence to make it fit.**

Examples abound:

- Christian fundamentalists start with the assumption of a flood and go in search of Noah's Ark and evidence of floods.
- Creationists begin with a belief in a young Earth and instant creation in seven days, so they reject the theory of evolution and look for any anomaly in science that seems to go against the findings that support a 4.6 billion-year-old Earth.
- Hindu creationists believe in an exceptionally ancient human lineage that dates back tens of millions of years and therefore accuse the scientific establishment of suppressing the fossil evidence of extreme human antiquity. For example, the self-identified "Vedic archaeologist" Michael Cremona, in his book *Forbidden Archaeology*, believes his findings support the story of humanity described in the Hindu Vedas.

That these challengers to mainstream science are wrong, however, doesn't mean Hancock is also wrong. We must assess each claim individually. However, this does strongly suggest that if your alternative explanation is based primarily on the *cherry picking* of data to fit only your preconceived hypothesis, and if it begins with a conclusion and then works selectively backward through the evidence to make it fit what you'd like to be true, it very likely means that you're subject to the *confirmation bias*, or the tendency to look for and find confirming evidence for our beliefs while ignoring or rationalizing away any disconfirming evidence.

To be sure, Hancock is correct when he points out the many theories in the history of science that have been subject to confirmation bias and where entire communities of mainstream scientists have prevented alternative challenges from getting a fair hearing. The system is not perfect. However, that doesn't mean every alternative theory to the mainstream is correct. It only means we must be vigilant.

4. **Patternicity: the tendency to find meaningful patterns in both meaningful and meaningless noise.**

Examples from Hancock's work include:

- Matching the alignment of buildings on the ground with stars in the sky, which Hancock, following Robert Bauval, does in comparing the layout of the Great Pyramid complex in Egypt to the constellation of Orion in the winter sky (primarily the three stars in Orion that make up the figure's "belt"), is an example of patternicity. There is no independent evidence that the ancient Egyptians intended the layout of their buildings to match that constellation.
- The comparison between disparate cultures of artifacts and monuments from one society and then highlighting similarities with those of another to conclude a common source, when in fact they are more likely explained by independent invention, especially given common circumstances. In many instances, Hancock rejects cultural diffusion, parallel invention, and "coincidence" as explanations, and instead strongly suggests that cultural features between civilizations that appear to match are the result of a common ancient source—his sought-after lost civilization. In fact, we should conceive of such similarities as *cognitive commonalities* in thinking about the world: there are only so many variations on a handful of themes in human life, so we shouldn't be surprised when people come up with ideas similar to one another across time and space. The similarity of rituals and symbols, for example, does not automatically prove either cultural diffusion or ancient origin but instead could be the result of cognitive commonalities.
- John Taylor provides a splendid example of patternicity in his 1859 book *The Great Pyramid*, when he computed that if you divide the height of the pyramid into twice the side of its base, you get a number close to pi; he also thought he had discovered the length of the ancient cubit as the division of the Earth's axis by 400,000—both of which Taylor found to be too incredible to be coincidental. Other alternative archaeologists "discovered" that the base of the Great Pyramid divided by the width of a casing stone equals the number of days in the year, and that the height of the Great Pyramid multiplied by 109 approximately equals the distance from the Earth to the Sun. And so on.

In his classic 1952 book *Fads and Fallacies in the Name of Science*, in his discussion of the many alternative theories about the Great Pyramid of Egypt, Martin Gardner revealed the poignant problem with patternicity when “just for fun” he analyzed the Washington Monument and “discovered” it possessed the property of “fiveness”:

Its height is 555 feet and 5 inches. The base is 55 feet square, and the windows are set at 500 feet from the base. If the base is multiplied by 60 (or 5 times the number of months in a year) it gives 3,300, which is the exact weight of the capstone in pounds. Also, the word “Washington” has exactly 10 letters (2 times 5). And if the weight of the capstone is multiplied by the base, the result is 181,500—a fairly close approximation of the speed of light in miles per second.

After musing that “it should take an average mathematician about 55 minutes to discover the above ‘truths,’” Gardner concludes “how easy it is to work over an undigested mass of data and emerge with a pattern, which at first glance, is so intricately put together that it is difficult to believe it is nothing more than the product of a man’s brain.”

In my opinion, the many patterns Hancock has found in the archaeological record lie not in the soil, but in his mind.

**5. *Alternative archaeologists disparage mainstream archaeologists and accuse them of being closed-minded dogmatists engaged in a conspiracy to silence the truth.***

This calumny is gainsaid by a paper published in the prestigious journal *Nature* just weeks before Graham and I collided in Joe Rogan’s studio, in which scientists put forth evidence that they believe indicates humans (or possibly Neanderthals) inhabited the San Diego area of Southern California some 130,000 years ago, an order of magnitude earlier than mainstream archaeologists’ timeline for the peopling of the Americas. The evidence for this conjecture, however, is not as strong as the popular media made it out to be in the considerable press coverage this paper received. The “butchered” mammoth bones may, in fact, have been broken in the excavation of a road recently constructed at the site, and the “stone tools” were nothing at all like the finely crafted Clovis points found all over North America, and instead might be just broken rocks. That was, in fact, the conclusion in

another paper published in the journal *PaleoAmerica* after our debate and as Hancock’s *America Before* was going to press, and is what most mainstream archaeologists now believe the truth about the find.

Here again we see the problematic practice of *anomaly hunting*. The vast majority of evidence indicates the peopling of the Americas happened some time between 23,000 and 13,000 years ago, depending on the accuracy of the dating of these earlier artifacts and the margins of error around the calibrated date. However, if people were in the Americas 130,000 years ago, where is all the evidence for their existence between 23,000 years ago and that much older date? Where are their stone tools, their homes, their trash? Hancock responds to this plaint that the spiral of silence around challenging the Clovis-first dogma has prevented archaeologists from searching for such chronologically intermittent artifacts. In fact, many archaeologists reject Clovis-first and have embraced the earlier dates for human migration into the Americas, so apparently mainstream scientists are not as dogmatic as Hancock would have his readers and viewers believe. Further, as Jason Colavito pointed out in his extensive and detailed review of *America Before* in *SKEPTIC* 24.2 (2019):

Even accepting the most extreme pre-Clovis arguments, the presence of humans implies nothing about the existence of a lost Atlantis-like civilization. For example, Aboriginal Australians have been present Down Under for 65,000 years or more, but their traditional way of life did not include Atlantis-style cities.

**6. *Falsifiability, conjectures and refutations, and the burden of proof.***

In his 1959 book, *The Logic of Scientific Discovery*, the philosopher of science Karl Popper proposed a solution to “the demarcation problem” of distinguishing science from pseudoscience: “the criterion of the scientific status of a theory is its falsifiability, or refutability, or testability.” In his 1963 book *Conjectures and Refutations*, Popper outlined how scientists operate by conjecturing ideas to their colleagues and considering the refutations in response. There’s nothing wrong with making conjectures—it is the lifeblood of science—but most ideas that scientists (like all the rest of us) propose turn out to be wrong. So constant dialogue and interaction with one’s fellow experts in a field through correspondence, phone calls, published papers

and books, conferences, and the like, are crucial for gauging if one is running off the rails. That is why it is dangerous to work in isolation, which is an inherent limitation of being an outsider to a field. It's not that outsiders can't or don't make contributions—occasionally, they do. However, they usually don't because most of us most of the time are wrong about our conjectures, so refutations from colleagues are vital.

During our debate on Joe Rogan's show, I asked Hancock several times, "What would it take to refute your hypothesis?" I never received a reply, so I subsequently wrote him:

You still have no evidence whatsoever for the lost civilization. Not a single tool. No writing. Not even any pottery. Even after nearly four hours in Joe's studio I still have no idea what you mean by "advanced", despite my asking you repeatedly. Your comments were filled with many modifiers like "perhaps," "maybe," "possibly," etc. It's fine to speculate, and you may even be right. But to overturn the mainstream theory in any field you need to do more than that.

Tellingly, on the matter of whether the absence of evidence is the evidence of absence, in *America Before* Hancock writes:

When, I wonder, will archaeologists take to heart the old dictum that absence of evidence is not the same thing as evidence of absence, and learn the lessons that their own profession has repeatedly taught—namely that the next turn of the excavator's spade can change everything? So little of the surface area of our planet has been subjected to any kind of archaeological investigation at all that it would be more logical to regard every major conclusion reached by this discipline as provisional—particularly when we are dealing with a period as remote, as tumultuous, and as little understood as the Ice Age.

Agreed, but the burden of proof is on claimants to provide positive evidence in favor of their hypotheses, not on skeptics to provide negative evidence, whatever that would be in the absence of evidence. And most scientists are disinclined to play "burden tennis" with claimants of alternative theories—"whack, the burden is on you; no, whack, the burden is on you!" and so on. In the end, all archaeologists and

skeptics will change their mind about Hancock's lost civilization when that spade upturns unequivocal evidence. Until then, it is reasonable to be skeptical.

### 7. *The dangers of reading the past from the present.*

In researching Hancock's many claims I consulted the professional archaeologist and skeptic of alternative archaeology, Ken Feder, about the symbolism found on the monumental stone structures at Göbekli Tepe. Hancock thinks these symbols represent stellar constellations or carry some deeper meaning about nature at the time they were carved. Feder replied:

There appears to be a conceit on the part of modern people that all ancient art must in some way be representational, depicting things the artists actually saw and experienced. But we don't insist on that for modern artists. Their art requires no concrete explanation. We allow them to be creative, imaginative, and to just make stuff up because it's cool or represents things they hallucinated in trance and then interpreted through the prism of religion.

Feder added that the paintings of Magritte, if we took them literally, would represent the "period when gravity was abolished, at least for men in suits and apples." The point is that we must be extremely cautious about reading into the past our own ideas, and the further back in time we go, the more problematic it is to do so.

To that end I also queried the archaeo-astronomer Ed Krupp, Director of the Griffith Park Observatory in Los Angeles and the author of several books, on when it is appropriate (or not) to interpret archaeological sites as astronomical in nature.

The broad account of the interpretation makes me very skeptical. We have no dictionary for the symbolic vocabulary of Göbekli Tepe imagery. This appears to start with the assumption the figures are recognized constellations (several problems right there) and then goes back in time with planetarium software in search of a fit. Starry Night and Stellarium [computer programs that show the night sky any time in the past] have a lot to answer for. They are dangerous weapons in the hands of amateurs.

Regarding the carving of a scorpion on one of the T-shaped pillars at Göbekli Tepe, Krupp noted of Hancock's interpretation:

It all seems to rest on the Scorpion, which he argues must be Scorpio (sic. He means "Scorpius"). Then he turns the other images, which have no known relationship to any known constellation imagery into constellations in the same territory. This gives him the Milky Way in Sagittarius, although it is not depicted. Then he takes the disk, calls it a sun symbol, and says it is in the center of the Milky Way in Sagittarius, à la the 2012 Maya Calendar End Times Follies. Because the Maya calendar allegedly marked the start of a New Age, he implies the Göbekli Tepe carving also marks the start of a New Age (and the end of the earlier era). That, in turn, is linked to the alleged Dryas impact. It all appears to be contrived data of high order.

#### 8. **The Impact Hypothesis as the Ancient Apocalypse.**

Hancock's proposed cataclysm that wiped clean the historical record is what is known as the Younger Dryas Impact Hypothesis (YDIH), which scientists first proposed in 2007 as an explanation for the North American mega-faunal extinction around 12,000 years ago. It has been the subject of vigorous scientific debate ever since, and while there is some evidence for it—growing stronger every year—it may not have done what Hancock needs it to in order to account for his alternative history. The YDIH is discussed in more detail in the other two articles in this issue.

In addition to the lack of any impact craters dated to around that time anywhere in the world, the radiocarbon dates of the layer of carbon, soot, charcoal, nanodiamonds, microspherules, and iridium, asserted to have been the result of this catastrophic event, vary widely before and after the mega-faunal extinction, anywhere from 14,000 to 10,000 years ago. Further, although 37 mammal species went extinct in North America (while most other species survived and flourished), at the same time 52 mammal genera went extinct in South America, presumably not caused by the impact. These extinctions, in fact, were timed with human arrival, thereby supporting the more-widely accepted overhunting hypothesis.

#### 9. **The argument from ignorance and personal incredulity.**

This is the argument that if scientists cannot explain X, then Y is a legitimate theory. It is sometimes rendered as the *argument from personal incredulity*—because *I* cannot explain X, then my theory Y is valid. This is similar to the "God of the Gaps" argument that creationists use (if evolutionists cannot explain the gap X, then God did it). In Hancock's case, the gods are the "Magicians" who brought us civilization. The problem here is twofold: (1) scientists *do* have good explanations for Hancock's Xs (e.g., the pyramids, the Sphinx), even if they are not in total agreement, and (2) ultimately, one's theory must rest on *positive* evidence in favor of it, not just *negative* evidence against accepted theories.

#### 10. **The Bigotry of Low Expectations.**

Hancock's biggest X is Göbekli Tepe in Turkey, with its megalithic T-shaped 7- to 10-ton stone pillars cut and hauled from limestone quarries and dated to around 11,000 years ago when humans lived as hunter-gatherers without, presumably, the know-how, skills, and labor to produce them. Ergo, Hancock concludes, "At the very least it would mean that some as yet unknown and unidentified people somewhere in the world had already mastered all the arts and attributes of a high civilization more than twelve thousand years ago in the depths of the last Ice Age and sent out emissaries around the world to spread the benefits of their knowledge." This sounds romantic, but who is to say what hunter-gatherers are or are not capable of doing? To be fair, however, as Hancock told me in a requested response to this article:

Until the discovery of Göbekli Tepe archaeologists did *not* believe that hunter-gatherers were capable of large-scale megalithic construction; that supposedly came later when established agricultural communities allowed surpluses to be generated, thus freeing up people to become architects, engineers, site managers, etc. Since the discovery of Göbekli Tepe the old model of agriculture first, megaliths second, has largely been abandoned, but it was held as something of a "sacred truth" for many years.



*The Course of Empire: Destruction*, representing the ruin of Atlantis, painted in 1836 by Thomas Cole.

Finally, it should be noted, Göbekli Tepe was a ceremonial religious site, not a city, as there is no evidence that anyone lived there, and there are no domesticated animal bones, no metal tools, no inscriptions or writing, and not even pottery—all products that much later “high civilizations” produced.

#### 11. **Catastrophism and Uniformitarianism.**

Hancock has spent decades in his vision quest to find the sages who brought us civilization. Yet, decades of searching have failed to produce enough evidence to convince archaeologists that the standard timeline of human history needs major revision. Hancock’s plaint is that Mainstream Science is stuck in a uniformitarianism model of slow gradual change and so cannot accept a catastrophic explanation. Not true. From the origin of the universe (big bang), the origin of the moon (big collision), the origin of lunar craters (meteor strikes), and the demise of the dinosaurs (asteroid impact), to the numerous

sudden downfalls of civilizations documented by Jared Diamond in his book *Collapse*, catastrophism is alive and well in mainstream science.

#### 12. **Atlantis.**

The centerpiece of Graham Hancock’s theory is Atlantis, a mythic utopian society that has been projected to have been located in the Mediterranean, the Atlantic (the Canaries or the Azores being remnants), Iceland or Sweden, the Caribbean (linked to the Bermuda Triangle), or the Pacific (between South America and Antarctica, or somewhere between Australia, New Guinea, and the Solomon and Fiji Islands). As the myth has it, the evidence for the lost continent was washed away when it vanished beneath the waves, but that hasn’t quelled the imagination of Atlantean hunters. In 1954 the science fiction author and skeptic L. Sprague de Camp counted 216 different “Atlantists,” only 37 of which concluded that Atlantis was imaginary or allegorical, with the rest convinced



the real lost continent could be found. In 1989 the French underwater treasure hunter Pierre Jarnac tallied over 5,000 book titles about Atlantis, but this was pre-Internet. In his 2012 book *Atlantis: In the Textual Sea*, Andrea Albin reported that over 23 million web pages were devoted to the imagined lost civilization.

There is, in fact, no point in searching for Atlantis because, in my opinion (and that of most historians and scholars), Plato made up the story as a social commentary on Athens and a warning to his fellow Athenians to pull back from the precipice that war and wealth were pushing them over. In the *Timaeus*, Plato's dialogist, Critias, explains that Egyptian priests told the Greek wise man Solon that his ancestors once defeated a mighty empire located just beyond the "Pillars of Hercules" (usually identified by Atlantologists as the straits of Gibraltar). "This vast power gathered into one, endeavored to subdue at a blow our country and yours and the whole of the region within the straits; and then, Solon, your country shone forth, in the excellence of her virtue and strength, among all mankind." Afterward, however, "there were violent earthquakes and floods; and in a single day and night of misfortune all your warlike men in a body sank into the earth, and the island of Atlantis in like manner disappeared in the depths of the sea."

The fodder for Plato's imagination came from his experiences growing up at the terminus of Athens' Golden Age, brought about, in part, by the costly wars against the Spartans and Carthaginians. He visited cities such as Syracuse, featuring numerous Atlantean-like temples, and Carthage, whose circular harbor was controlled from a central island, as in the Atlantis myth. Earthquakes were common: when Plato was 55, one leveled the city of Helice, only 40 miles from Athens, and, most tellingly, the year before he was born, an earthquake flattened a military outpost on the small island of Atalantë.

Plato wove historical fact into literary myth, as he did for his more famous work, *The Republic*, in this case to warn how a utopia can become corrupted into a dystopia. As he explained: "We may liken the false to the true for the purpose of moral instruction." The myth is the message.

## Out on a Limb

I believe that science needs outsiders and mavericks who poke and prod and push accepted theories until they either collapse or are reinforced and made even stronger. Of all the alternative archaeology theories I've read, I find Hancock's to be the most intriguing, even compelling, in the romantic sense of Golden Age myths and what they may mean for us. Yet I do not think he has convinced professional archaeologists of the factual nature of this particular story, and that's how it usually goes in science.

Extraordinary claims require extraordinary evidence. Hancock's alternative theory of history is extraordinary, but his evidence isn't even ordinary. And Hancock doesn't help his cause when he reveals what he really believes about this lost civilization, which he outlined to Joe Rogan on the eve of the *Netflix* series, and at the end of *America Before*:

I suppose the time has come to say in print what I have already said many times in public Q&A sessions at my lectures, and that in my view the science of the lost civilization was primarily focused upon what we now call *psi* capacities that deployed the enhanced and focused power of human consciousness to channel energies and to manipulate matter. ...

My speculation, which I will not attempt to prove here or to support with evidence but merely present for consideration, is that the advanced civilization I see evolving in North America during the last Ice Age had transcended leverage and mechanical advantage and learned to manipulate matter and energy by deploying powers of consciousness that we have not yet begun to tap. In action such power would look something like magic even today and must have seemed supernatural and godlike to the hunter-gatherers who shared the Ice Age world with these mysterious adepts.

It is already a big ask of professional scientists to go down one alternative path with you to the lost civilization of Atlantis, but when you then ask them to do so by means of the paranormal or supernatural, you shouldn't be surprised to encounter substantial hesitant skepticism. ■

# ALTERNATIVE HISTORIES that REALLY AREN'T

## *A review of Graham Hancock's Netflix series Ancient Apocalypse*

BY MARC DEFANT

The 2022 *Netflix* series entitled *Ancient Apocalypse* is a tour de force in presenting the core ideas of Graham Hancock. The photography, the detailed art of reconstructed ancient monuments and sites, and the integration of concepts and ideas are truly sublime. And Hancock not only presents himself as a wise and knowledgeable person, but as also an excellent and eloquent documentarian and writer. After my review of his book *Magicians of the Gods* in *SKEPTIC*<sup>1</sup> and the debate Michael Shermer and I had with Hancock on the *Joe Rogan Experience*, I have come to respect his sincerity and gentle demeanor through our subsequent correspondence. I think of him as a friend, and I hope he feels the same way toward me.

Unfortunately, as a practicing scientist and spokesperson for applying critical thinking not only to purely scientific, but historical and literary research as well, I feel obligated to identify what I see as his erroneous

conclusions in both this series and in his many books, which have been highly influential in presenting an alternative theory of history to those less prepared to evaluate the evidence (or lack thereof). In brief, according to Hancock's alternative theory of history, indigenous peoples were incapable of building the early sophisticated archaeological structures and monuments across the globe, and so he asserts that these hunter-gatherers have "a shared legacy from a lost global civilization that provided the seeds and the spark of inspiration from which many later civilizations grew." Who are these "magicians of the gods," as Hancock describes them, and where did they come from?

In a word, Atlantis. Hancock effervesces over this lost society, telling us they were "a precocious civilization boasting beautiful architecture, advanced technology, and city planning on a monumental scale. It also commanded a vast fleet capable of navigating the

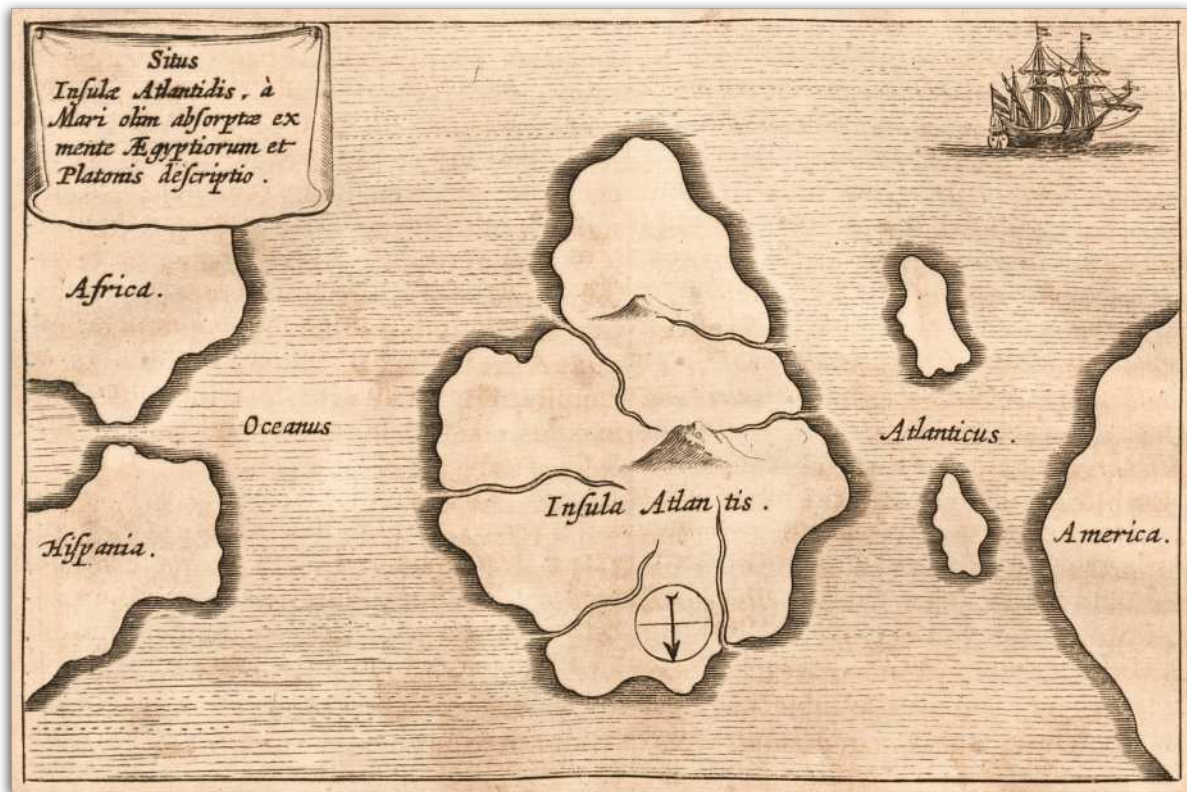


Figure 1. Athanasius Kircher's 1664 map of Atlantis with north at the bottom of the map. The map is based on Plato's dialogues.

world, projecting its power near and far across oceans until the city was struck by a series of massive earthquakes and floods—a truly cataclysmic event—and sank beneath the waves.” Before they perished, however, Hancock conjectures that some survived the cataclysm and shared their knowledge with peoples around the world, giving rise to the great civilizations of history.

There is one major problem with Hancock’s story—there is no patent evidence for this lost civilization. Instead, he invokes myths, fanciful and often incorrect interpretations of archaeological sites, anomalies from said sites that archaeologists allegedly cannot explain, and Plato’s story about Atlantis, which Hancock reads as nonfiction instead of myth. Finally, at the end of the series, we learn that Graham’s lost advanced civilization was destroyed by a series of comet strikes, thereby wiping from the historical record (save those archaeological anomalies) any trace of it.

In a final communication from the ancients to us moderns, Hancock also believes that there are hidden messages at an archaeological site in Turkey called Göbekli Tepe, warning us that another series of

comet strikes is on the way to destroy us if we don’t change our ways. Let’s examine his claims in detail.

## Atlantis

Since Plato’s Atlantis looms large in Hancock’s story, let me briefly delve into the fictional origins of the lost continent. In Plato’s *Timaeus*, the ancient Greek philosopher has his dialogist Critias explain that Egyptian priests told the Greek wise man Solon, who was visiting Neith’s temple in Egypt, that his ancestors once defeated a mighty empire located just beyond the “Pillars of Hercules” (what we refer to today as the Straits of Gibraltar; see Figure 1). The relevant passage reads: “This vast power gathered into one, endeavored to subdue at a blow our country and yours and the whole of the region within the straits; and then, Solon, your country shone forth, in the excellence of her virtue and strength, among all mankind.” Afterwards, however, “there were violent earthquakes and floods; and in a single day and night of misfortune all your warlike men in a body sank into the earth, and the island of Atlantis in like manner disappeared in the depths of the sea.”

Kenneth Feder, an archaeologist at Central Connecticut University, states: “in his [Plato] tale, ancient Athens, even in detail, matches precisely the hypothetical perfect society of Socrates.”<sup>2</sup> Plato, a student of Socrates, has the temple priest tell Solon that ancient Athens defeated the great power from the Atlantic Ocean near the Pillars of Heracles—the island nation of Atlantis. We know Atlantis was a literary device employed by Plato because there is never any mention of the battle

I believe what he really objects to is not so much a perceived hostility toward him but the way the scientific community ignores his work. Google Scholar keeps track of the number of times research papers and books are cited in journals and by whom. The number and quality of the citations are important metrics for promotions and tenure within the academy. When I search for citations of Hancock’s work, however, I find nothing from scientific journals. One of the major

reasons no one in the scientific community takes him seriously is because he circumvents the peer-review process and publishes his ideas in popular books and articles only (and now on *Netflix*).

It’s not just outsiders such as Hancock who get the cold shoulder from the scientific community. Consider what happened in 1989 when Martin Fleischmann and Stanley Pons announced that

they had discovered fusion at room temperature—cold fusion—to the press before their papers were peer-reviewed. As Gary Taubes documents in his aptly titled book *Bad Science: The Short Life and Weird Times of Cold Fusion*, they not only turned out to be wrong, but their careers were effectively destroyed. This happened not because they were wrong but because they announced what, if true, would be one of the greatest discoveries in science history before other scientists had a chance to scrutinize their evidence and test their claims. The scientific method requires peer review to assure cutting-edge research is substantially documented by empirical evidence before publication.

If Graham Hancock truly wanted to “overthrow the paradigm of history” he would submit his work to the scientific community in peer-reviewed journals and at professional meetings, in addition to presenting them directly to the public. I have published many scientific research papers during my career, and I know firsthand that it is a difficult and often frustrating process. You need a thick skin because the review process can sometimes include harsh criticism. Many papers

THE PUBLIC APPEARS TO SEE **GRAHAM AS FIGHTING AN INTRANSIGENT SCIENTIFIC COMMUNITY OUT TO DESTROY HIM. NOT SO! IF HE WANTS THE RESPECT OF THE SCIENTIFIC COMMUNITY, HE SHOULD SUBMIT HIS WORK TO PEER REVIEW AND STOP CRYING “PERSECUTED GENIUS.”**

by Greek historians of the day. Nor is there any mention of Atlantis in Egyptian history where supposedly Solon learned of it. Feder continues: “It is inconceivable that there would be no mention of a great military victory by ancient Athens over Atlantis—or any place even vaguely like it—in the works of Greek historians who followed Plato.” It is clear from such glaring omissions that the Atlantis story was contrived by Plato to serve as a warning, juxtaposing a morally corrupt society (Atlantis) with a perfect society of Athens.

### Persecuted or Ignored?

In the *Netflix* series, Hancock continually complains about the condescending attitude displayed toward him by the scientific community. He tells us he is “enemy number one” among archaeologists, adding: “Perhaps there has been a forgotten episode in human history. But perhaps the extreme defensive, arrogant, and patronizing attitude of mainstream academia is stopping us from considering that possibility. I am trying to overthrow the paradigm of history.”

are rejected for many reasons. Most papers that are eventually accepted go through multiple rewrites based on editorial and peer comments. Hancock's characterization of the scientific community as "defensive, arrogant, and patronizing" is unfair and inaccurate. If you want to be taken seriously by scientists, this is the process you must go through. Unfortunately, the public appears to see Graham as fighting an intransigent scientific community out to destroy him. Not so! If he wants the respect of the scientific community, he should submit his work to peer review and stop crying "persecuted genius."

## The Bigotry of Low Expectations

A central theme in the *Netflix* series is that various archaeological sites around the world are too complex and monumental for earlier cultures to have built, most notably:

- Gunung Padang in Indonesia,
- the Great Pyramid of Giza,
- Cholula, Teotihuacan, and Xochicalco in Mexico,
- Ggantija, Mnajdra, and Ghar Dalam in Malta,
- Bimini Road in the Bahamas (which is natural and not manmade<sup>3</sup>),
- Göbekli Tepe, Karahan Tepe, and Derinkuyu in Turkey,
- Poverty Point in Louisiana,
- and Serpent Mound in Ohio.

At Derinkuyu, for example, Hancock notes that the visitor "notice boards" state that the tunnels were carved out by Christians in 650 AD while trying to hide from Arab raiding parties, then adds that the story "appeals to western tourists... but it is totally wrong." From there he upbraids archaeologists and curators of archaeological sites:

We encounter this again and again on archaeological sites around the world. There is a notice based on the received wisdom of archaeologists. Again and again that notice is wrong. Factually wrong. Proved to be wrong by later excavations and yet not changed. Don't trust the notice boards. Do the leg work yourself. Don't rely on the so-called experts.

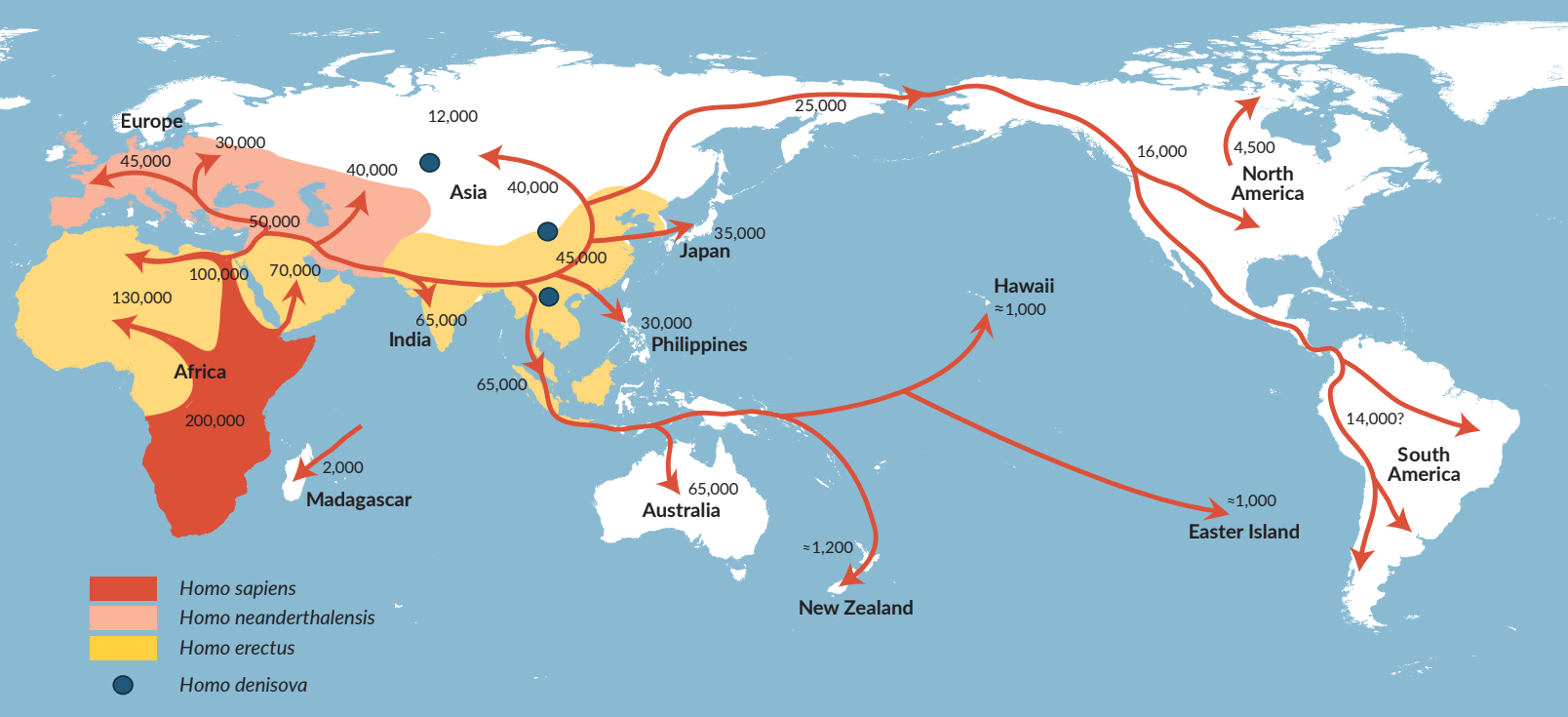
Two things stand out here. First, later work by archaeologists can often update the age of various sites. The notice boards at sites do not always get

updated as quickly. The important point is that science is ever changing, challenging the main paradigms with further work. This is precisely how the scientific method should work. I have no doubt that the tunnels at Derinkuyu were used by Christians to hide from the Arabs. But why is Hancock so upset that later research suggests they may have been excavated earlier, in 750 BC? I suggest he has a not-so-subtle agenda, captured in his oft-quoted slogan (even emblazoned on a t-shirt) "stuff just keeps getting older." Hancock believes that archaeologists are frequently mistaken about the ages of archaeological sites, all in the direction of dating them to be too young. In this case, his aim is to suggest that the people at Derinkuyu were trying to hide from another cataclysm, like the one 12,800 years ago that supposedly destroyed his advanced lost civilization. If archaeologists were wrong about the 650 AD date, it invites the reader to believe that they might be wrong about the 750 BC date too. He states: Derinkuyu was "built much longer ago than archaeologists are willing to consider...back as far as the last ice age." However, nothing at Derinkuyu has ever been found to suggest it is anywhere near that old. This is pure conjecture, partly based on his reading of myths, and is typical of Hancock's approach to many such archaeological sites.

Second, Graham urges: "Do the leg work yourself." I have never once seen Graham Hancock doing any of the hard work archaeology demands. You will never find him on his knees with trowel and brush painstakingly excavating a site for months and years. He is an armchair pseudo-archaeologist, flying into a site for a couple of days as the cameras roll showing him wandering around making observations and speculations. Yet he feels qualified to challenge what he calls the "received wisdom" of professional archaeologists and geologists. In fact, the "received wisdom" is the result of long hours and hard work and an equal or longer time of careful comparative analysis done over many years in order to ascertain true scientific knowledge about these sites.

## Testing the Hypothesis

Is there any way to test Graham Hancock's hypothesis about the remnants of a lost advanced civilization having been the purveyors of advanced technology, architecture, and wisdom? It is a tough ask, considering he claims his lost advanced civilization left no

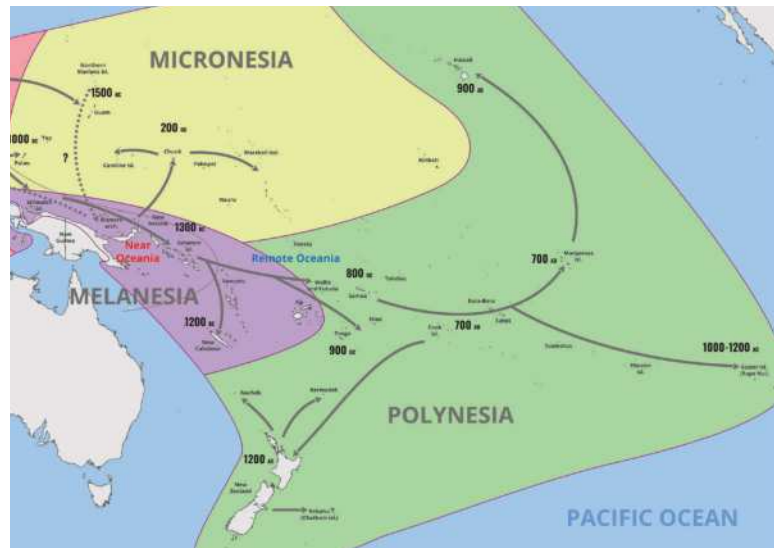


**Figure 2.** Estimations of the times at which *Homo sapiens* reached various areas of the world. Easter Island sits far off the coast of South America. The extent of ancestor populations such as *Homo erectus* and Neanderthals are also shown on the map (<http://bit.ly/3GhOnjq>).

traces when it was destroyed by a comet 12,800 years ago. So bear with me as we work our way through some human migrations in the context of this claim.

Anthropologists, archaeologists, and geneticists have separately and together worked out a great deal about the peopling of the world. The first major wave of *Homo sapiens* out of Africa was about 70,000 years ago, probably driven by drying conditions (Figure 2). In general, the further humans roamed away from their starting point in Africa, the later their earliest arrival dates. As one might expect, the last places to be populated are the remote islands in the Pacific Ocean, in particular Easter Island/Rapa Nui (Figure 3). Polynesians did not reach relatively isolated Rapa Nui until around 1,000 to 1,200 AD. There may have been arrivals as early as 400 to 800 AD, but no archaeologist has even hinted at dates earlier than the first millennium. And for good reason—Polynesians had to row their wooden craft for more than 1,100 miles from the nearest Pacific island to reach the remote island, which lies yet more than 2,300 miles in the opposite direction from South America.

When the first Polynesians landed on Rapa Nui's shores they found a paradise of nearly 62 square miles of forested land, including over 20 species of trees. The rich volcanic soils also proved excellent



**Figure 3.** In the image, you can see when the Polynesians populated various islands in the Pacific Ocean (<https://bit.ly/3GlgNIM>). Most archaeologists believe Easter Island was the last island in the Pacific to be populated by humans.

for farming. UCLA archaeologist Jo Anne Van Tilburg, who worked on the archaeology of the island for more than 30 years, documents<sup>4</sup> that the island may have supported as many as 20,000 inhabitants. However, as the population grew into the thousands and those trees were cut away to make room for farming, the soil eroded and the ecosystem began





**Figure 4.** Moai on Easter Island (2018). Note the lack of palm trees and other vegetation. (Photo courtesy Marc Defant)

to collapse.<sup>5</sup> By the time the first Europeans arrived on Rapa Nui on Easter of 1722, the land was almost completely denuded of vegetation and the human population had been reduced to a few thousand.

Most notable about Easter Island are the spectacular huge stone carvings termed moai (Figure 4). Based on radiocarbon dates, we know they were constructed between 1100 and 1650 AD. All the moai were carved at Rano Raraku crater where the source-rock tuff is exposed. It is estimated that a team of five or six men could carve a moai in about a year. The largest moai weigh about 75 tons and stand over 30 feet high, not including the rock foundations on which they stand. The moai were moved from Rano Raraku crater to sites usually along the coast. The latest research suggests they were moved by means of a rocking motion using ropes made from hau tree rough bark. A team of 15 people could manage the movement.<sup>6</sup> There are over 887 of the monolithic moai and 125 of them were placed on stone foundations called ahu.

Based on the comprehensive work of Van Tilburg and her colleagues we know that the moai were made from stone tools by a stone-age culture. Excavations in the crater produced numerous stone tools from the quarry, including stone picks, hand stone chisels, and stone hammers. Rapa Nui is proof that mixed agriculture-hunting societies *can* produce spectacular and massive stone monoliths with the simplest of

tools. We also know that these same people were able to move the huge and heavy moai over distances approaching ten miles (some partial statues now lay broken where they fell during transportation). In addition, there are over 4,000 petroglyphs that not only adorn some of the moai but are carved on rock throughout the island. And the moai occur no place else in the world. They are not the inspiration of some ancient, advanced civilization. They are the creation of an indigenous people with a proud culture. Before the ecocide, there was enough bountiful food on the island to support a large enough population with a large enough agricultural surplus to have enough time on their hands and enough food available to produce these exceptional works of art.

According to Hancock, however, the accepted earliest dating on the south Pacific islands is all wrong. His alternative history would require human settlements on Easter Island to have taken place more than 10,000 years earlier than *any* island in the South Pacific is accepted to have been populated. It would also require that the survivors of an advanced civilization made their way more than 10,000 years ago from Atlantis—purportedly located in the Atlantic Ocean outside the Straits of Gibraltar—to a tiny island in the middle of the south seas (a trip of over 10,000 miles), to teach the indigenous people living there how to build the moai. Are we to believe that the survivors of an advanced civilization influenced

Polynesians more than 10,000 years before they arrived on Easter Island? That Polynesians were taught advanced statue-making techniques by the magicians of the gods and then 10,000 years later put those methods to use and only on Easter Island? If the Polynesians were taught supposedly advanced knowledge, why don't we see the moai in other places in the Pacific? And why just on Easter Island, the last place on Earth to be inhabited by humans? In fact, there is no advanced knowledge at play here. While the statues are a remarkable achievement, there is nothing "advanced" about the way they were created.

Although I hope I have raised some serious questions about Hancock's logic with the Easter Island example, the burden of proof is on Hancock to convince the scientific community of the validity of his alternative theory of history, and not on scientists to chase down every anomaly he has identified. By Karl Popper's Falsification Principle, for a hypothesis to be scientific (rather than literary) it must be testable and falsifiable (that is, be able to be proven false). When Hancock declares that his lost advanced civilization was destroyed by a comet that left no trace of its existence, his claim is, by definition, non-testable and so non-scientific. It is pure supposition that a few survivors of the lost civilization (why they were not destroyed by the comet is never addressed by Graham) conveyed their advanced technology and wisdom to much simpler societies scattered around the world.

This is the same strategy that Erich von Däniken employed when he first proposed in the 1960s that ancient alien astronauts instructed "primitive peoples" how to build their temples and monoliths. Von Däniken even argued that ancient aliens landed on Easter Island.<sup>7</sup> In fact, in many ways, Hancock's stories are parallel to those of von Däniken, only he switches from ancient alien astronauts to a lost advanced earthly civilization to resurrect the same tales.

## What Is an "Advanced Civilization" Anyway?

A focal point of Hancock's theory is the exceptional archaeological site of Göbekli Tepe in southeast Turkey along the border with Syria. The earliest sections of the site have been dated to 11,600 years ago.<sup>8</sup> The site was excavated by the German archaeologist Klaus Schmidt, who spent his career studying it,

along with his students who continued the work after his death.<sup>9</sup> There they discovered that sections of Göbekli Tepe were backfilled to make room for later structures. The research involved an arduous amount of work over decades, carefully uncovering the site. Radiocarbon dating indicates the site was used between 10,000 and 11,600 years ago. Nothing has changed since I described the site<sup>10</sup> in 2017:

The fill is refuse containing sediment, hundreds of thousands of broken animal bones, flint tools for carving the structures within the site and for hunting game, and the remains of cereals and other plant material, and even a few human bones. There is no evidence that the site was ever used as a residence, and the megaliths found there (Schmidt called them "monumental religious architecture") along with carvings and totems, imply ritual and feasting.

Where is the evidence for an advanced civilization here? There is no indication of agriculture, domestication of animals (the fill refuse contains bones of wild animals and grains from indigenous species that fed the workers), trade, storage of food, social economic classes, science or technology, or metalworking or metallurgy. And although there are beautifully carved animals on the megaliths, there is no evidence of meaning in these petroglyphs, such as is evident in hieroglyphics many millennia later in the earliest known civilizations. Not a single inscription exists at Göbekli Tepe. Yet, Hancock contravenes the decades-long work of the archaeologists in stating:

At the very least it [Göbekli Tepe] would mean that some as yet unknown and unidentified people somewhere in the world had already mastered all the arts and attributes of a high civilization more than twelve thousand years ago in the depths of the last Ice Age and sent out emissaries around the world to spread the benefits of their knowledge.<sup>11</sup>

One of the reasons archaeologists call the period the *stone age* is because metallurgy and metalworking were not a mainstay of cultures until the first civilizations in 4000 BC in Mesopotamia, some 4,000 years after Göbekli Tepe ceased to be used. Göbekli Tepe is a pre-pottery neolithic site: missing from the artifacts are pottery sherds emblematic of some cultures dating back 20,000 years.<sup>12</sup> Mainstream archaeologists believe there were about 300 hunter gatherers (although the number may range as high as 1,000) working on the

site off and on over the centuries from the surrounding isolated small communities they know existed.<sup>13</sup> Hancock is trying to change the meaning of “stone age” to fit his claim that hunter-gatherers could not have built Göbekli Tepe without advanced knowledge. He even suggests that “our ancestors are being initiated into the secrets of metals, and how to make swords and knives,”<sup>14</sup> yet not only do we not find swords or knives (or any other metal artifacts), we don’t even find pottery. The same is true for Easter Island and most of the other sites Hancock visits in the *Netflix* series.

## Astrology or Astronomy at Göbekli Tepe?

In the last episode of the *Netflix* series, Hancock introduces engineering professor Martin Sweatman to conjecture about the asterisms on one of the stone pillars at Göbekli Tepe (Pillar 43—many of the pillars have carvings of animals but he never explains why 43 is so important). Sweatman, along with Hancock, argues that the carvings on the stone are in a clockwise progression that represents the constellations in the night sky. “It is our ‘Rosetta Stone,’” Sweatman proclaims. Astoundingly, he then asserts that the pattern of asterisms could only have occurred on the day a comet struck Earth 12,800 years ago. If true, it would be one of the most remarkable archaeological discoveries ever made. Stone age people documenting a comet strike that may have occurred 12,800 years ago deserves a full spread in a top scientific journal, such as *Nature* or *Science*.

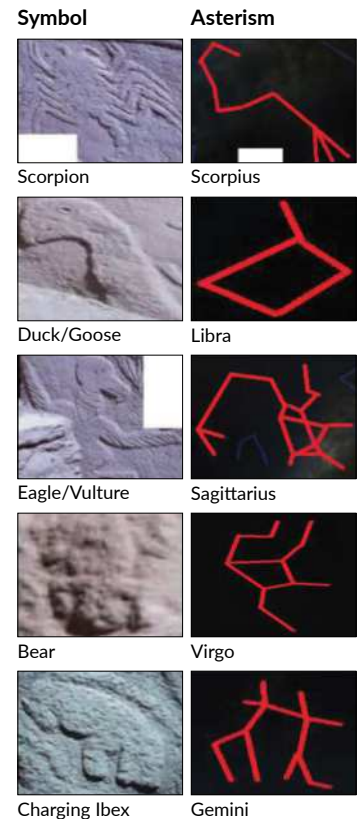
(**Note:** I now believe there is very good evidence for a comet strike 12,800 years ago, even though it is still a contentious subject—see the article by Mark Boslough in this issue. However, there is absolutely no evidence the strike had anything to do with Göbekli Tepe or any other ancient archaeological site.)

Sweatman’s papers have ended up in two obscure journals called *Mediterranean Archaeology and Archaeometry*<sup>15</sup> and *Athens Journal of History*.<sup>16</sup> I do have to give Sweatman credit for going through peer review, but why those journals? I would suggest their standards for empirical evidence are substantially lower. You be the judge. Figure 5 is taken from Sweatman’s most recent paper.<sup>17</sup> He has taken each carving and matched it with a star asterism in the night sky of 12,800 years ago. I suggest that just about any object you can think of could be matched to the asterisms. I don’t see even the least resemblance between carving and asterism.

If those asterisms are wrong, then everything else he concludes, particularly the 12,800-year date stamp, is wrong. An interesting test would be to have naïve subjects attempt to match scrambled asterisms to carvings. I predict that there would be very low rater reliability between subjects.

In my last *SKEPTIC* article on this subject, I spent a great deal of time lambasting the pseudoscience behind the astrological claims, so I won’t repeat them in detail here. Sweatman and his coauthor<sup>18</sup> state: “we verify our scientific hypotheses to an extraordinary level of statistical confidence, far surpassing the usual demands for publication of scientific results. Therefore, in a scientific sense, we prove our hypothesis is correct.” Balderdash! As Mark Twain liked to say, there are “lies, damned lies, and statistics.” And I have yet to find a better place to use the phrase than with this paper. The two authors ask: “What is the probability that the animal symbols on Pillar 43 could appear in their respective places, matching constellations in the night sky so well, if they were chosen and placed at random.” I hope you see the faulty logic here. They assume they have matched the asterisms correctly in a clockwise motion on Pillar 43 to the sky and then ask what the chances are they would be in this order on Pillar 43 randomly.

Well, of course, it is statistically improbable by a whopping amount if the animals were chosen at random on the Pillar 43 but match asterisms. However, that does not mean they were not chosen at random by the carvers. It presumes that the carvers chose them to match the sky. What Sweatman et al. *should* be trying to access statistically is the likelihood that they have matched the asterisms correctly. I would judge that the matches are fictitious at best (Figure 5). I pointed this



**Figure 5.** Several examples of supposed correlation between the animals carved on Pillar 43 at Göbekli Tepe compared to the asterisms in the sky 12,800 years ago<sup>17</sup>

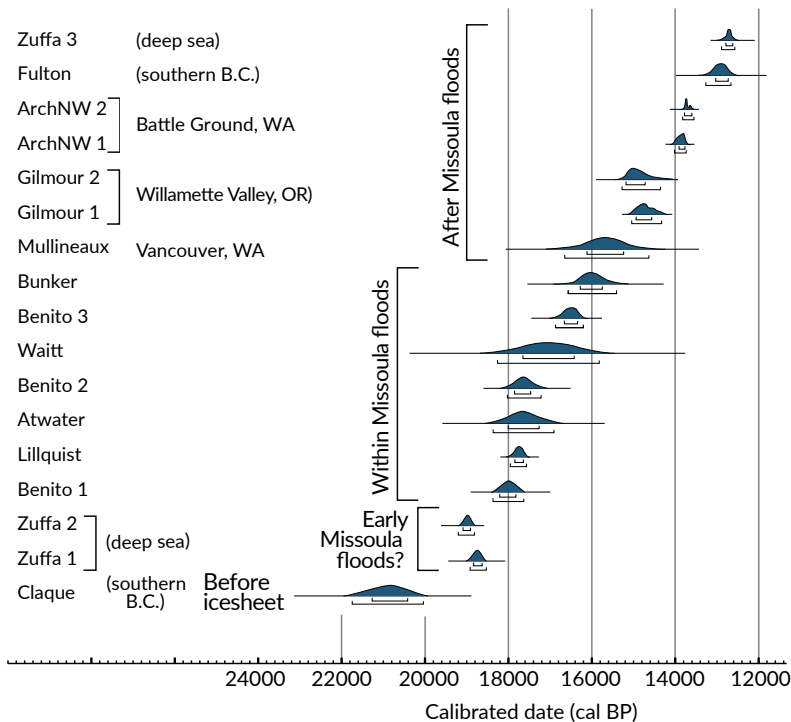


Figure 6. The range in dates of the timing of the periodic flooding from Lake Missoula.<sup>23</sup>

out in my critique of their first paper, but Sweatman has ignored my assessment and merely repeats himself in the latest paper, in which he finds that ancient cave art also matches asterisms. I am not the only one to question those claims. Eight of the top researchers at Göbekli Tepe, led by Jens Notroff, wrote a blistering critique of Sweatman's first paper,<sup>19</sup> but the criticism apparently had little impact on his contentions.

It does appear a comet or comets struck about 12,800 years ago based on detailed dating and other evidence found in the layer deposited worldwide from the impact. Sweatman claims on Pillar 43: "the famous 'Vulture Stone' [Pillar 43] is a date stamp for 10,950 BC  $\pm$  250 yrs [i.e., 12,950 years ago]." How would it be possible for the stone age hunter gathers there to know what the sky looked like in 12,950? The oldest dates for Göbekli Tepe are from 11,600 years ago. It would be impossible for them to document an impact that occurred 1,350 years before the site was built.<sup>20</sup> Sweatman responded thusly to the obvious problem in a retort to Notroff et al.: "given the undoubted major impact the YD event would have had on people at the time, we are not at all surprised that an event of this importance is remembered

even several millennia later."<sup>21</sup> They remembered for 1,350 years what the sky looked like when a comet struck?

Finally, Hancock contends the carvings are also telling us we are in for another comet strike soon, based on faulty interpretations of the precession (the change in the tilt) of the Earth's axis. Once again, the prediction is made based on the correlation he claims exists between the carvings and the sky:

However improbable it may seem, therefore, we are obliged to consider the possibility that in 9600 BC [1,350 years after the comet strike] the builders of Göbekli Tepe were already so advanced in their knowledge of the recondite phenomenon of precession that they were able to calculate its effects for thousands of years backward and forward in time in order to produce an accurate symbolic picture...if I understand the message correctly, we're in the danger zone now.<sup>22</sup>

Time to build bunkers, I guess.

## The Scabland Floods

Randall Carlson appears briefly in the last episode of the *Netflix* series under the title of amateur geologist and author. He is a smart fellow and a very likable guy. However, he claims to refute the detailed work by professional geologists that demonstrates the cause and extent of the flooding that formed the Scablands found across Montana, Idaho, Washington, and parts of Oregon. The army of scientists that have studied the region note that huge floods over about 8,000 years scaped the Scablands. Geologists have carefully mapped the various deposits. Each individual flood left organic debris enabling radiocarbon dating (Figure 6). I have been involved in detailed stratigraphic mapping in several places in the world, and I can tell you that it is arduous work determining how and when the various deposits were formed. Fine stratigraphic mapping like this is the only way to start to determine the history of the past. Yet as far as I can tell, Carlson has not done any geologic mapping of the region.



During the last ice age, tongues of the Cordilleran ice sheet periodically dammed the Clark Fork River, creating massive Lake Missoula. During some periods, the lake exceeded depths of 2,000 feet with as much as 600 cubic miles of water behind the dams (Figure 7). Each time the dam ruptured, cataclysmic floods rushed across the western plains, scouring out the Scablands. There were at least 17 of these cataclysmic floods associated with the ice dam rupture. Randall Carlson has no published peer-reviewed papers on these floods, yet based on his conversations with Carlson, Hancock asserts that the conclusion of professional geologists is a “curiously contrived explanation.” Carlson and Hancock attribute the multiple flooding theory to just another form of uniformitarianism—the contention that the Earth’s geology was formed through continuous and uniform processes. What an insult to working geologists!

Uniformitarianism was popular in the late 19<sup>th</sup> century, but today all geologists know there have been multiple catastrophes in geologic history. In fact, the multiple massive floods documented in the Scablands are cataclysms of epic proportions. Few, if any, geologists deny a meteorite hit the Earth and annihilated the dinosaurs. And now there is evidence that a comet struck Earth 12,800 years ago. Hancock is trying to undermine the results of geologists that have been working for decades in the area by pretending they claim there were no cataclysms. There was nothing gradual about the floods geologists have documented.

As well, Carlson insists that there was only one huge flood that lasted only weeks, and that it came from the north instead of the west where Lake Missoula was (Figure 8, next page). He then opines that if you took the water from “every single river on earth on every continent, add that together, you still would have to times that by ten to get the volume of water flowing through here.” And where did that water come from? A comet that struck the Cordilleran Ice



**Figure 7.** The author is standing at the high-water mark of Lake Missoula at 4200 feet above sea level looking across at wave-cut strandlines representing various levels of the lake above the city of Missoula, MT (2021). We know each of those strandlines represents the level of the lake before a flood occurred. Yet neither Hancock or Carlson address the evidence of multiple huge floods.<sup>23</sup> (Photo courtesy of Marc Defant)

Sheet. The comet struck about 12,800 years ago, but the dating of the floods shows that the flooding occurred primarily over 7,000 years prior to the comet strike (Figure 6). Carlson, flummoxed by the dates and his scientific predicament, concludes that we need to take another hard look at the dates as if geologists have not already done so multiple times. There has never been any evidence found to suggest a comet or multiple comets struck in Canada 12,800 years ago, with or without the glacier there.

## Conclusion

In 1890 noted geologist T.C. Chamberlin proposed “the method of a multiple working hypothesis,” which advocated for developing several hypotheses, testing them, and then rejecting all that do not fit the data. In my assessment, Graham Hancock’s alternative theory of history has no data to support it and is based almost entirely on “anomaly hunting” through archaeological sites, selective presentation of such anomalies as being commonplace, rather than rare, which is what they are, ignoring the massive evidence in favor of the mainstream theory of history, misreading myths like Atlantis to be accurate descriptions of real, historical events, and grand storytelling that obscures the complexities of history. If the *Netflix* special demonstrates anything, it is that skeptics have a lot of work to do. **S**

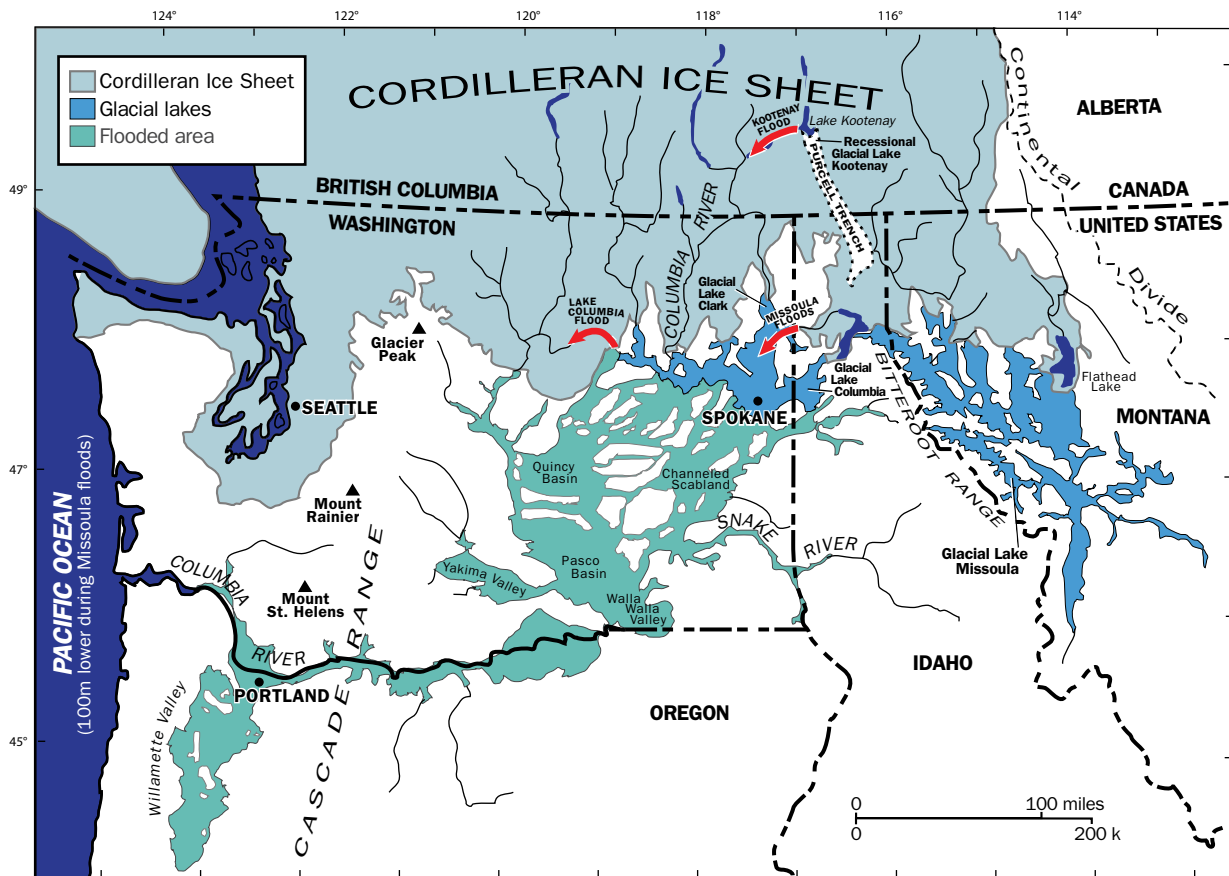


Figure 8. The distribution of Lake Missoula and the flooded areas.<sup>23</sup>

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# APOCALYPSE!

## *Why Graham Hancock's Use of the Younger Dryas Impact Hypothesis in His Netflix Series Ancient Apocalypse Is All Wet*

BY MARK BOSLOUGH

The “apocalypse” in Graham Hancock’s *Ancient Apocalypse* is a hypothetical global catastrophe of biblical floods and continent-wide conflagrations. It was supposedly triggered by the impact of tens of thousands of fragments of a broken comet that burst in the air like bombs or exploded when they slammed into the ground. No spoiler alert is necessary. Hancock serves up a not-so-subtle animated shower of descending comets that graces the opening title sequence of every episode. The story’s narrative arc puts it on a trajectory that makes an impact hypothesis inevitable, even though Hancock avoids the word “comet” until the final episode teaser.

The supposed cataclysm’s timing coincides with the beginning of the Younger Dryas, an interval of cold climate at the end of the last ice age in much of the northern hemisphere that lasted about 1,200 years. Its year of onset is not the same everywhere, but its beginning is best discerned from an abrupt drop in temperature recorded in isotope data from Greenland ice cores in an

annual layer that fell as snow about 12,920 years ago. The Younger Dryas is the latest in a series of 26 similar cold periods that took place over the last 120,000 years, called “Dansgaard-Oeschger events” (named after Willi Dansgaard and Hans Oeschger) that paleoclimatologists attribute to changes in ocean circulation caused by the influx of fresh water from melting ice sheets.<sup>1</sup>

In Episode 1, “Once There Was a Flood,” Hancock claims that there is evidence to support his notion that “the worldwide tradition of a global flood stops being just a myth and starts being a memory—an account of real events.” Puzzling over the ruins of Gunung Padang in Indonesia, for example, he concludes that such megalithic structures were built when sea levels were lower, during the last ice age:

I believe it has something to do with what happened around 12,800 years ago, when the Ice Age suddenly and quite dramatically shifted gears. Things had gradually been getting warmer for quite a long period

of time. And then suddenly, two things happen at once. First, global temperatures plunge to the level that they were at the peak of the Ice Age, and they do so almost literally overnight. And secondly, there's a sudden and inexplicable rise in sea level.

Throughout the series, Hancock incorrectly states that the Younger Dryas began 12,800 years ago, which is off by about 120 years. This is probably due to his confusion with geochronological terminology and inappropriate rounding. Ice core data reveal that the Younger Dryas began in Greenland at about 12,846 years BP, with the "Before Present" fixed at 1950 CE, or 73 years ago.<sup>2</sup> Thus, the Younger Dryas began about 12,920 years ago, rounding to the nearest decade.

## Global Flood Myths or Memories?

Hancock believes that the story of Noah in the Bible is based on fact, corroborated by other flood myths from around the world, and caused by the climate change that occurred at the onset of the Younger Dryas:

Now, normally, in an Ice Age, when you enter an episode of freezing, you do not expect to see a large amount of water dumped in the world ocean because that water has been turned into ice. What happened was a literal great flood. Between 12,800 and 11,600 years ago, the oceans of the world rose dramatically in a series of immense deluges one after another... This epoch of immense floods would have traumatized all of humanity. And indeed, there's testimony that it did. Nearly every ancient culture preserved traditions of a great flood that swallowed up the Earth... From the Sumerians to the Babylonians, the ancient Greeks to the Chinese, all have similar versions of the same tale. The notion that all of this is just a coincidence, just invented independently by individual cultures doesn't make sense...

Hancock makes a valid point here. Humans everywhere and at all times throughout our history tell stories of disasters they've experienced. Some are inspired to record them in their art or write poetry and music. The spiritual "Wasn't That a Mighty Storm" appeared in Black churches shortly after the Great Galveston Hurricane of 1900, the deadliest natural disaster in U.S. history. "Broken Levee Blues" was written and recorded by Lonnie Johnson after the Great Mississippi Flood of 1927, the most destructive river flood in

the U.S. "Five Feet High and Rising" was written and recorded by Johnny Cash about the Ohio-Mississippi Flood of 1937, another of America's worst disasters that left a deep impression on him as a child.

These catastrophic floods all took place within one small region of the world—the south-central U.S.—within a span of 40 years (much smaller than Hancock's century-long timing error). These folk songs represent oral history of the time and are actual accounts of real events that were traumatizing. The floods were a significant factor in the Great Northward Migration of African Americans during the first half of the 20<sup>th</sup> century, and their social impact endures.

If three epic floods had taken place within 40 years of one another about 13 millennia ago, we could not possibly know from analyzing oral histories if they were simultaneous or if the storytellers got the facts right. Even if we had physical evidence, radiocarbon dates are only accurate to within a couple hundred years, so we cannot prove that Hancock is wrong. His logic amounts to this: Since the various myths (or memories) have uncertain timing, then they *could* be about the same event, so they *must* be the same event. Further, since stories come from all around the world, then they *could* be about a global event, so they *must* be about a global event.

Of course, the ancient inhabitants of flood-prone places 12,920 years ago had no written language. They had no ability to communicate accurate information over long distances or pass it down through time. Because of their relative linguistic and technological isolation, their view of the world was inherently myopic compared to that of relatively recent times. Their horizons were very close, and they had no way of knowing whether or not the events they could observe were also taking place everywhere else simultaneously. Major flooding events, like those that took place in 1900, 1927, and 1937, would have disrupted their entire known world and affected people they encountered from beyond it. Their descendants also had temporal myopia. Verbal history is a form of copying. Since such copies are noisy (i.e., prone to variation and thereby error), they eventually become unreliable. In contrast, the 20<sup>th</sup> century had newspapers and even faster telegraph and radio, so everyone knew that these were not global events. Even today, we can go to the internet to read first-hand accounts of long-dead individuals who experienced these events as adults.

## Post-Glacial Sea Level Rise

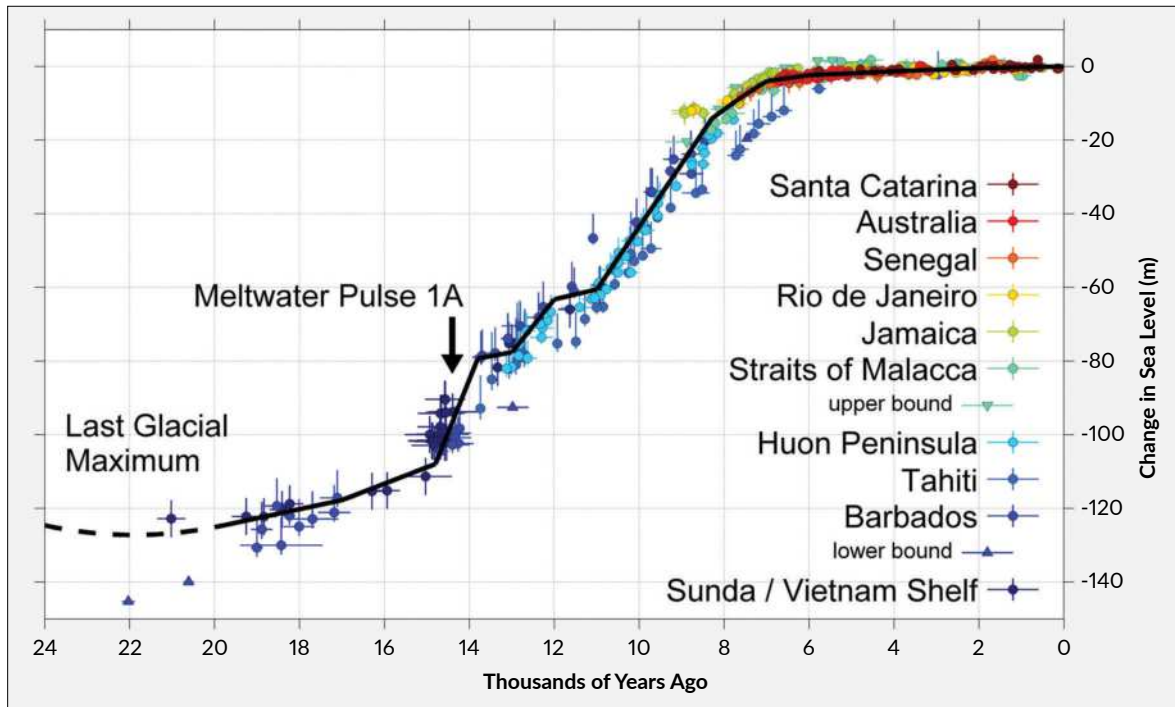


Figure 1. Sea level rise for the last 24,000 years, based on published compilations of data. Credit: Robert A. Rohde: <http://bit.ly/3WXq2Va>

### Graham Hancock's Global Apocalyptic Flood

In addition to timing, Hancock's facts about sea level rise during the late Pleistocene are also wrong. There is no evidence that the world's oceans rose dramatically in a series of deluges during the Younger Dryas. Hancock's claim contradicts the sea level data collected around the world (Figure 1). For example, corals in Barbados recorded rates decreasing from 20 mm/year at 13,900 years BP (before 1950) to 4 mm/year 11,550 years BP.<sup>3</sup>

In 1937, Johnny Cash's family was warned that they had to "head for the hills" as his papa watched the water come up five feet (1.5 meters) and keep on rising, before he abandoned their house that day.<sup>4</sup> Even at 20 mm/year, that would take 75 years, much longer than the average lifetime of a coastal inhabitant 12,800 years ago. The storm surge associated with the 1900 Galveston flood was up to 3.7 meters, corresponding to 185 years of sea level rise during Hancock's proposed flood catastrophe.

In round numbers, the current rate of sea level rise is 4 mm/year (and rising), about the same as at the end of the Younger Dryas, a rate that many global warming

deniers dismiss as too low to be concerned about or even to measure. It's this day-to-day imperceptible sea-level rise that Hancock thinks concerned the ancients most, as they seem to have ignored the catastrophic floods that take place multiple times every generation in many parts of the world.

In subsequent episodes, Hancock repeats the false claim that there was a major and unique sea level rise event 12,800 years ago as he attempts to tie it in with flood mythology.

Episode 2, "Stranger in a Time of Chaos":

A period of great cataclysms and floods that had as big an impact here as it did nearly everywhere else in the world...sometime at the end of the last Ice Age, around 12,800 years ago. Could the story of Quetzalcoatl's arrival date back as far as that?

Episode 3, "Ghosts of a Drowned World":

So we have a date for the destruction of Atlantis, 9600 BC. That's exactly the same time as an episode of global cataclysm and catastrophic sea level rise that occurred at the end of the Ice Age. Coincidence? Maybe.

Episode 5, “Legacy of the Sages”:

We’ve been referring to this as the Ancient Apocalypse, but scientists call it the Younger Dryas. It began 12,800 years ago with a cataclysm, and it ended 11,600 years ago, the exact date of the construction of Göbekli Tepe. The world suffered through some kind of tremendous geological upheaval, including immense floods, followed by more than 1,000 years of freezing temperatures. Life on Earth fundamentally changed. The saber-toothed tigers and mammoths went extinct. But humanity survived. And around 11,600 years ago, the freeze ended with another final immense flood that raised sea levels around the world. It was then, only after the Earth was calm again, that the work on Göbekli Tepe began. And I believe the timing was no coincidence.

Unfortunately for Hancock the rate of sea level rise during the Younger Dryas was lower than it was just before the Younger Dryas. During more than ten thousand years of relentless but probably unnoticed sea level rise, local and regional catastrophes like the 1900 Galveston hurricane and the 1927 Mississippi flood undoubtedly happened somewhere on Earth every year, wiping out settlements, destroying livelihoods, killing people, and displacing survivors. Stories about such events are going to be passed to future generations as oral histories or other forms of non-written communication and recorded petroglyphs, monuments, and chants.

## The Younger Dryas Impact Hypothesis

Hancock begins building the case for a comet impact in the last several episodes. In Episode 6, “America’s Lost Civilization,” he associates Ohio’s Serpent Mound Valley with the end of the last ice age when “something huge was happening all over the planet” (again getting the timing wrong):

Something apocalyptic called the Younger Dryas. It was a period of radical climate change and rising sea levels. Humanity survived, but barely. I find it intriguing, by means of its alignment to the summer solstice sunset, that Serpent Mound serves as a signpost, a date stamp, drawing our attention to the skies

of 12,800 years ago, a time when we know there was a global cataclysm big enough to have destroyed an advanced civilization.

Eventually, Hancock drops his first hint about the Younger Dryas Impact Hypothesis (YDIH):

Perhaps the stars, or something resembling stars, did fall to Earth. Perhaps there was great flooding afterwards, part of those earthshaking cataclysms of the Younger Dryas. If the original version of Serpent Mound was designed sometime around the end of the last Ice Age, as I believe, then perhaps it was intended to carry a message to the future, a warning even, as to what caused that apocalyptic series of events around 12,800 years ago, a warning to look to the heavens for stars falling from the sky.

In Episode 7, “A Fatal Winter,” Hancock visits other archaeological sites around the world that point him in one direction—the YDIH in which he introduces his grand finale:

For a long time, it remained a mystery as to what triggered the floods, fires and plunging temperatures of the Younger Dryas, but new geological evidence has suggested a terrible possibility. Evidence still visible today in the scarred landscape of prehistoric America, where I’m headed next. I’m quite persuaded that the origin of serpent symbolism has to do precisely with those serpents in the sky that we call comets.

## Uniformitarianism vs Catastrophism

As a subject matter expert in impact physics and planetary defense, it is my professional opinion that Graham Hancock misrepresents science in claiming that there is a strong “what’s called ‘uniformitarian trend’” in geology. Ironically, he makes that assertion while discussing the Channeled Scablands, for which the widely accepted geological explanation is a series of catastrophic floods from ice dam collapses that released water from the enormous prehistoric Lake Missoula. Regarding this event, at least, geologists are catastrophists. Nevertheless, Hancock goes on to say that “modern geologists” don’t like cataclysms very much. Not so. It was a modern geoscientist named Gene Shoemaker who proved that Meteor Crater in Arizona and Ries Crater in Bavaria were

created by asteroid impacts. And another named Walter Alvarez was one of the leaders of the team that discovered the impact event that wiped out the dinosaurs. Modern geologists embrace cataclysms fully...when there is evidence for them.

Unfortunately, in his Netflix series, Hancock doesn't interview any scientists or subject matter experts about impact physics or geology. Instead, he asks amateur geologist and author Randall Carlson to weigh in on his unorthodox speculations that the professionals don't know what they are talking about, haven't properly identified the source of floodwaters, and that the water actually came from the Arctic ice cap. Carlson also thinks that the floods are not as old as geological dating demonstrates, and are really a single event that happened at the onset of the Younger Dryas.

## It's Comets!

Hancock did interview Allen West, the mastermind of the YDIH and leader of the so-called Comet Research Group. West's unconventional career path toward avocational science parallels that of Hancock (a journalist who became interested in archaeology) and Carlson (an author and podcaster interested in geology). Like Hancock and Carlson, West (a consultant and self-taught geologist) began his foray into unorthodox science by writing a book for a publisher that specializes in new age beliefs (Inner Traditions). His 2006 book, *The Cycle of Cosmic Catastrophes*, introduced the YDIH. It was updated the following year in the first paper in the peer-reviewed *Proceedings of the National Academy of Sciences*,<sup>5</sup> by a group of authors that incorporated themselves as the Comet Research Group (CRG) in 2016.

Plagued by self contradictions, logical fallacies, basic misunderstandings, misidentified impact evidence, abandoned claims, irreproducible results, questionable protocols, lack of disclosure, secretiveness, failed predictions, contaminated samples, pseudoscientific arguments, physically impossible mechanisms, and misrepresentations, the YDIH has never been accepted by experts in any related field.<sup>6</sup> Authors of these skeptical papers include Vance Haynes<sup>7, 8, 9, 10</sup> (who discovered and characterized the black mat, central to YDIH claims) and Michail Petaev<sup>11, 12, 13</sup> (lead author of the paper describing a platinum anomaly in Greenland, falsely cited

by proponents as evidence for the YDIH). These problems are summarized in many peer-reviewed and popular articles, most recently in an exhaustively researched review article, now in review.<sup>14</sup>

The skepticism has increased following instances of questionable conduct by the Comet Research Group leaders that included a pattern of personal attacks on skeptics<sup>15, 16</sup> inappropriate data manipulation<sup>17, 18, 19</sup> and a conviction for a crime of dishonesty involving misrepresentation of scientific credentials.<sup>20, 21</sup>

Speaking only for myself, the persistent lack of transparency by the CRG suggests that information contradicting their hypothesis is being withheld, which raises a serious red flag. Several of the supposed "impact markers" cited in their original paper seem to have failed to pan out. For example, no data was ever provided to support the claim of "fullerenes with extraterrestrial helium." (Fullerenes are a form of carbon having a large spheroidal molecule consisting of a hollow cage of atoms, of which buckminsterfullerene was the first known example). The three coauthors responsible for that work have never published anything about it again and are either unreachable by email or unresponsive to questions. Most proponents have stopped citing extraterrestrial fullerenes as evidence, but the claim has never been officially withdrawn. One must ask, "Why?"

Another line of evidence that seems to have fallen out of favor, but has not been formally withdrawn, is the putative discovery of hexagonal nanodiamonds [diamond particles with dimensions of only a few nanometers] at the Younger Dryas Boundary in Greenland in 2008 for an episode of the true science series *NOVA* that was removed from streaming after producers discovered irregularities in the story they were told. An expedition by other CRG members back to Greenland in 2009 failed to confirm the 2008 discovery, but this negative result was never published. Why?

None of the other supposed impact markers listed in the original 2007 paper are unique to impact. The graphs of abundance data for those indicators exhibit puzzling anomalies that suggest improper plotting. After 15 years, however, the authors of that paper have never made their raw data available. Again, one must ask "Why?"

In an effort to give the YDIH proponents an opportunity to publicly answer these questions and make their data available to everyone, I recently created several PubPeer pages. I would encourage other skeptics to use PubPeer to ask their own questions and request release of the raw data that is required to make an informed judgment about the hypothesis.<sup>22</sup>

These ongoing issues aside, West's and Hancock's claims about the YDIH, such as West's assertion that the Earth was hit by tens of thousands of comet fragments, and Hancock's estimate that there are probably 200 objects bigger than a kilometer in diameter in the Taurid meteor stream, still go far beyond what anyone has been able to get through peer review.

West's extraordinary claim lacks evidence. Several scientists, including myself, suggested a test for this idea several years ago. If there were a Taurid-resonant swarm containing large objects in sufficient numbers to affect the impact risk, it would have been observable in the summer of 2019. We urged an observational campaign that had the potential to confirm YDIH speculations about its existence.<sup>23, 24</sup> Lack of confirming observations suggest that this is yet another failed prediction of the YDIH.

## Consideration of Relevant Information Is Not a Fallacy

Science is a field that is built on trust, and researchers must always consider the reliability of the sources of information on which they base their professional opinions. It is common for scientists to reject data that is produced by a scientific instrument that they know to be untrustworthy, and the same is true when assessing information from any source they judge to be unreliable.

West's fraud conviction and other misdeeds put YDIH skeptics into a Catch-22 situation. When we learned that West had pretended to be a trained geophysicist to bilk California taxpayers, many of us stopped believing any data for which he was solely responsible regarding the impact hypothesis—which is most of it. Our discovery of modern-aged carbon spherules in supposed Younger Dryas Boundary (YDB)-aged samples prepared by West (with the spherules being the source of supposed YDB impact diamonds) made us all the more suspicious. The "discovery" of hexagonal

diamonds for a TV show, in samples prepared solely by West a couple months after they were collected in 2008, could not be reproduced in the subsequent 14 years following another expedition for that purpose; this added to our mistrust. West's ongoing refusal to share samples—or even reveal his raw data—gives the appearance of his having something to hide. Of course, we cannot prove misconduct in cases other than the image manipulation or the fraud in California, both of which he admitted—one under penalty of perjury—when he applied for and was granted an expungement.

Thus, in addition to the problems with West's data discussed above, I believe scientists have a perfectly valid reason to be extra skeptical of his claims about the YDIH. This is not an *argumentum ad hominem* fallacy. Assessing the reliability, competence, honesty, and professionalism of a practitioner of science in their relevant field is no different than examining the *bona fides* of an accountant, lawyer, housekeeper, or child-care provider before hiring them. This is why job applications often require letters of recommendation and background checks. The *ad hominem* fallacy only applies to criticism of someone because of personal characteristics that are irrelevant to the claim they are making. To be clear, I am not making any accusations of fraud or misconduct other than for the cases that have already been admitted. Since raw data have not been made available, and samples have been withheld, I cannot make a judgment one way or another about the veracity of that evidence.

In the final episode of *Ancient Apocalypse*, West told Hancock that, "Scientists unfortunately are taught to be cynical about things." No, they are not. Rather, they are taught to be skeptical, that is, curious, logical, rigorous, open, and honest. These are mindsets that both West and Hancock would do well to put in practice.

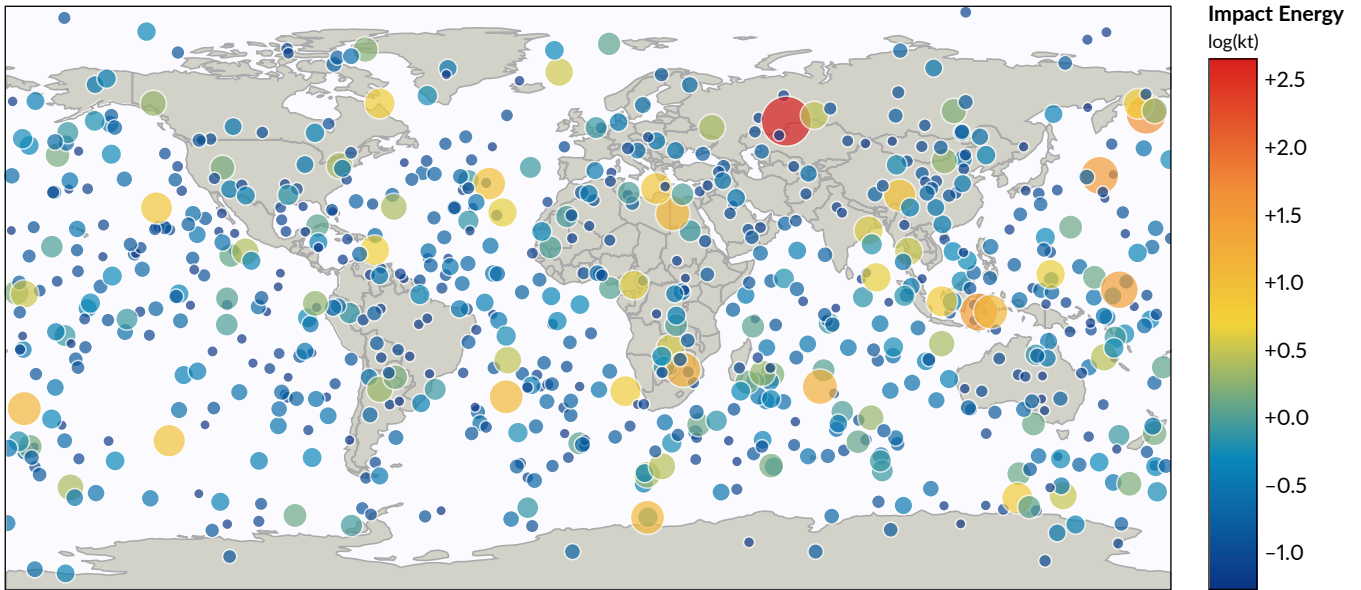
## It's Not Comets!

There are other fatal scientific flaws with the YDIH, some of which require detailed technical explanations that have already been published. There is also at least one fatal logical flaw that is easy to explain to non-specialists. It employs exactly the same circular logic that Hancock applies when he claims that ubiquitous flood myths refer to a single global event, as opposed to many different undated and unspecified local and regional floods that were catastrophic to the observers but went unnoticed to everyone else in the world.



## Fireballs Reported by U.S. Government Sensors

April 15, 1988 – December 13, 2022



**Figure 2.** Reported bolide events with geographic location data from U.S. government sensors, released by NASA Jet Propulsion Laboratory's Center for Near Earth Object Studies. Credit: Alan B. Chamberlin (JPL/Caltech). Source: <https://cneos.jpl.nasa.gov/fireballs/>

Near Earth Objects (NEOs) are asteroids and comets that visit the vicinity of Earth's orbit. Astronomical surveys, populations of craters on the moon, and observations of meteors entering the Earth's atmosphere have allowed us to quantify the number of objects of a given size that can be expected to collide with the Earth over a given period of time. Meteorologists and insurance actuaries talk about "hundred-year floods," the sizes of which are location-dependent. By analogy, planetary defenders can talk about "hundred-year impacts" for the entire planet.

For example, we estimate that an object the size of the one that exploded over Siberia, known as the Tunguska event, on average and over the long run, happens somewhere once every 500 years. We estimate that the asteroid that exploded over Chelyabinsk, Russia in 2013, injuring 1500 people, in terms of mass and energy was about a tenth as big as the Tunguska asteroid. There are about ten times as many Chelyabinsk-sized NEOs as there are Tunguska objects, so they happen 10 times as frequently—with a long-term average occurrence somewhere on the planet of every 50 years.<sup>25</sup> Figure 2 shows the history of incoming asteroids that burn up as fireballs, as recorded by U.S. sensors around the world.

When one of these objects explodes in the atmosphere its mass does not magically disappear. Most of it vaporizes and then re-condenses in the form of spherules that fall out nearby. If it's rich in platinum-group elements, the condensed vapor contributes to their abundance at the surface. In cases where diamond-bearing meteorites fall, the nanodiamonds are the last component to weather away because of their hardness and chemical inertness. Every location on Earth is likely to have peak abundances in meteoritic material associated with the long-term flux of local or regional airburst events in its sedimentary column.

The circular logic of the Comet Research Group is similar to Hancock's circular flood logic:

### **Hancock Flood Logic**

- Hypothesis: There was a global flood.
- Fact: There are flood stories from every culture.
- Fact: There is uncertainty in the time and extent of the floods in the stories.
- Inference: If the Hypothesis is true, then the stories are all about the same flood.
- Conclusion: If the stories are all about the same flood at the same time, then the Hypothesis is true.

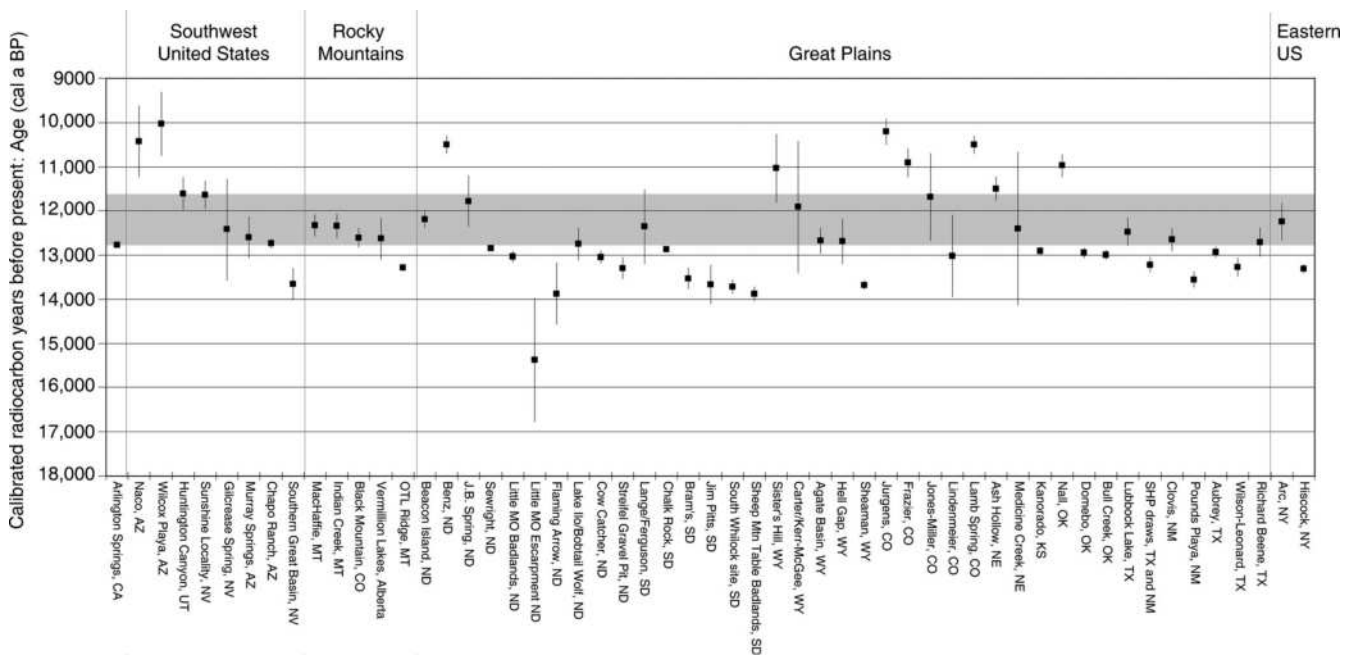


Figure 3. 14C dates of samples purported to be from the Younger Dryas boundary (error bars indicate  $\pm 1$  standard deviation). The shaded band is the Younger Dryas. Source: Holliday et al. (2014).<sup>26</sup>

However, the actual CRG impact logic is even worse, because not all spherules, platinum-group elements, or nanodiamonds are impact markers. Some can have terrestrial origins, and can even be anthropogenic or introduced contaminants. To wit:

#### CRG Impact Logic

- Hypothesis: There was a global comet catastrophe.
- Fact: There are indicators that might be impact markers in sediments of roughly the right age.
- Fact: There is uncertainty in the age and extent of the indicators.
- Inference: If the Hypothesis is true, then the indicators are impact markers that are from the same impact at the same time.
- Conclusion: If the indicators are impact markers that are from the same impact at the same time, then the Hypothesis is true.

CRG impact logic is illustrated by Figure 3. Only a fraction of the dated samples is within a standard deviation of the Younger Dryas boundary (lower edge of the shaded band). None of these locations have been shown to lack concentrations of indicators at other stratigraphic depths. The indicators are presumed to be

impact markers and therefore provide a valid cosmic stratigraphic index of the YD onset. Most radiocarbon dates must therefore be rejected. This confirmation bias and circular logic exactly parallels Graham Hancock's reasoning that undated or poorly dated oral histories are evidence for a global flood.

## Conclusion

In my opinion, Graham Hancock's Ancient Apocalypse has many of the attributes of pseudoscience: rejection of the scientific method, extraordinary claims without extraordinary (or even ordinary) evidence, dismissal of contrary evidence, contempt for recognized subject-matter experts, unfalsifiable claims, confirmation bias, and lack of peer review. Nevertheless, some skeptics might conclude that the one scientifically viable element of Ancient Apocalypse is the hypothesis that a swarm of comet fragments triggered a global catastrophe at just the right time by colliding with the Earth.

As well, and given the fact that peer review is fallible, it is my professional opinion that the YDIH should also be viewed by skeptics with suspicion.

Virtually all experts, working independently in the relevant fields, who have stated their opinions about the YDIH, have expressed skepticism. The negative scientific consensus that emerged very quickly after the first peer-reviewed publication introduced the YDIH 15 years ago has not changed.

Graham Hancock's series has not swayed scientists from maintaining their skeptical opinion (indeed, it has amplified with increased data and analyses) despite the popular interest it has garnered. If YDIH researchers want to convince scientists that their hypothesis is *scientifically* viable, they must become more transparent

about their evidence by making their raw data available and by admitting and publishing their failures. In short, they must become scientists, not storytellers. **S**

In memory of Ken Frazier, my friend and skeptical mentor. He was dedicated to the promotion of science and reason as the longtime editor of the *Skeptical Inquirer*, and to the love of natural beauty, wildlife, mountain vistas, sunsets, night skies, and his family and friends. In the farewell column he penned when he knew he only had a few weeks left, he expressed confidence that new generations will continue to carry the torch of the scientific skepticism and wonder that were so important to him. Let's honor his memory by ensuring that his faith in us was well placed.

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- 14 Holliday, V.T., et al. (2023). op cit.
- 15 Howard, G. in the "Cosmic Tusk" blog. Howard is CRG director, co-founder, and YDIH coauthor. He frequently posts personal attacks and engages in smear campaigns against critics of the CRG, YDIH, and Graham Hancock. In addition to me, his targets have included, Elizabeth Bik, Alexandra Witze, Christian Koeberl, John Hoopes, Marc Defant, Vance Holliday, Todd Surovell, David Meltzer, Alan Harris, Faye Flam, Nicholas Pinter, Tyrone Dalton, Jaqueline Gill, Phil Plait, Andrew Scott, Dick Kerr, Rex Dalton, and David Morrison. He often refers to his targets by nicknames he has created. Mine is "The Bos" and he created an entire category dedicated to me, called "The Bos Files" which was archived shortly after the CRG was incorporated. <https://bit.ly/3WStpge>
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# THE RISE OF LIES & THE DEMISE OF SHAME

BY CAROL TAVRIS

As Mary McCarthy famously wrote of Lillian Hellman, “Every word she writes is a lie, including ‘and’ and ‘the.’” This observation now has particular applicability to Republican congressman George Santos. He’s biracial. He’s a Jew; no, he later explained, he’s Jew-ish. His mother died on 9/11. He went to two universities. He’s wealthy. He is a Ukrainian descendant of Holocaust survivors. “I’ve never seen anything like this,” Gerard Kassar, chair of the Conservative Party of New York State, told *Washington Post* reporters on December 31. “His entire life seems to be made up. Everything about him is fraudulent.” When a politician is shocked about lies and deceptions, you know we have hit the nadir. Nowadays, for your lie to get attention, you really have to think big. One lie isn’t enough; you must pile them on.

Time to think critically about lying.

Everybody lies. Toddlers start lying as soon as they start speaking, suggesting that deception evolved right along with language as an adaptive strategy. My friend and longtime colleague Carole Wade told me of searching the house early one morning for her three-year-old son, finally finding him in the pantry with cookie crumbs all over his face. “I told you not to eat those cookies,” she said sternly. “Me no eating cookies, Mommy,” he said.

Young Jason lied for the clearest and most universal of reasons: to avoid punishment and loss of (cookie-crumbed) face. At first, children’s lies are impulsive, caught-in-the-act defenses, and only with age do children develop the

cognitive abilities to understand the likely consequences of a lie (and also to lie more efficiently).

I was an expert witness for the defense at a military trial in which a man was accused of sexually abusing an 8-year-old child. The girl, in the midst of being beaten by her father (“disciplining her,” as he called it), had suddenly shouted, “He touched me!” The father stopped immediately and took her to a doctor, who demanded details. Who touched you? Where? How often? When? This poor little girl, who only wanted her father to stop hitting her, was now forced into more lies to support the original one, ending with a false allegation against the one name she could come up with quickly: her father’s best friend and neighbor, who was immediately arrested. I was struck

by a question posed to me by a juror: “Why would she lie?” he asked. She was not lying, I explained, in the sense that adults use the word: saying what one knows to be an untruth with the intention to deceive. She simply wanted her father to stop beating her, and her first lie succeeded. Yet she, a child, would have no understanding of the likely long-term consequences of her impulsive remark—that the friend would be arrested, that there would be a trial, that her lie would feed on itself, that she could not ever renege and tell the truth because her father would be even angrier to learn that she “lied” about his friend. She was ensnared.

As this story shows, lies live in the space between truth and consequences. Humans have only about a 50-50 chance of accurately detecting someone else’s lie. As psychologist Paul Ekman, famous for his early research on facial expressions of emotion, once speculated, evidence suggests that human societies muddle along best when we are able to lie but get away with it only sometimes—and also when we can’t be 100 percent certain we can discern anyone else’s lies. This faculty allows lies to serve as truth’s handmaiden, a close ally if not quite an honorable one, creating a fuzzy line that permits the social niceties that keep relationships humming along (“that outfit is stunning on you”; “I’m sorry I missed your wedding, but my goldfish died and I was grieving”). We sometimes call those kinds of lies “good manners.” Of course, sometimes our lies explicitly shield the truth in the name of self-preservation—to avoid getting divorced, fired, punished, or beaten up.

That military juror’s question to me revealed the individualist bias inherent in thinking about lies: It’s all in the person. Is he or she *telling a lie*, or is that person *a liar*? There

are those who are *liars*: they lie as often as they breathe; having no core self or moral compass, they simply morph into whatever they want to be or say that day. Fortunately, they are not the norm, which is why such individuals are called “pathological” liars. At the other end of the spectrum are those who strive to live by their core values of honesty and kindness, which is why they are often called “whistle-blowers,” or “moralists,” or “naïve idiots.”

The rest of us fall somewhere along a continuum, lying consciously to others for self-protection or self-enhancement, as the occasion arises. For the majority, therefore, lying is more of a social phenomenon than a psychological or irrational one. Social psychologist Mark Frank, who has been studying deception for many years, observes that “There is a particular structure to every situation in which a lie is told”: the person who lies, their target, their motive, the form of the lie, and, crucially, the stakes associated with telling the lie—what is to be gained, what lost. Lying to avoid punishment is among the first motives to emerge in young children, especially lying to parents, who have the power to punish them, and it remains the number one motive in adulthood, where “punishment” takes more varied and subtle forms. Other leading motives are lying to protect a loved one, to be “loyal” to peers, to avoid embarrassment, and to gain a reward in attention, praise, self-esteem, or promotion.

Thus, to fully understand when and why a person is likely to lie, we need to know what the stakes are for telling the truth versus making something up to deliberately deceive. What does a lie stand to bring them, and what are the consequences if they are caught out?

And that brings us back to George Santos. The real tragedy of this story is not that he is a pathetic fool, but rather that there were no serious consequences to his lies: his fellow citizens nonetheless entrusted him to hold office, he got away with his outrageous claims for years, and the guardrails of the social norms that might once have protected us from pathological liars, con men, and shameless wooers of votes are disintegrating. In the Trump era, much has been said about the line between a truth and a lie, but the greater social danger is the obliteration of the line between a lie and its consequences. Once upon a time, anyone bullshitting as blatantly as Santos would have been shamed or laughed out of office. Today, however, anyone’s lie, no matter how outrageous or delusionally conspiratorial or batshit crazy, will find thousands, even millions, of supporters.

How did we get to this point? Not because there’s something in the drinking water that’s making people lie more. It’s because, one step at a time, our society’s moral and social standards have been changing, to the point where, for many, telling the truth is for suckers. I recently reread the ethicist Daniel Callahan’s book *The Cheating Culture*, which delineates those steps. Titles of eight of his chapters tell the story:

- “Everybody Does It”
- Cheating in a Bottom-line Economy
- Whatever It Takes
- A Question of Character
- Temptation Nation
- Trickle-Down Corruption
- Cheating from the Starting Line
- Crime and No Punishment.

Callahan wrote this in 2004. Talk about being prescient. **S**

# SKEPDOC

## Psychotherapy Reconsidered

BY HARRIET HALL, M.D.

Is psychotherapy effective? Which of the many types is best? Are certain therapies better suited to treat certain problems? How can you rationally choose a therapist? Is it better to pick a psychiatrist, a psychologist, or some other type of counselor? There is a veritable cornucopia of individuals offering advice about mental health issues, from celebrities to life coaches to pastors to concerned friends, some with formal training and some with no credentials at all. Does psychotherapy ever make patients worse? What is the risk-benefit ratio?

We are handicapped by a lack of information. In his recent book *Fads, Fakes and Frauds*, the Polish psychologist Tomasz Witkowski likens the current situation to the old Indian fable of the blind men trying to describe an elephant. One feels the trunk and says an elephant is like a snake, another feels the knee and says an elephant is like a tree, a third feels the tail and says an elephant is like a rope, and so on. They only knew about the part they had touched, and they couldn't accept the conflicting reports of the other blind men, so they remained ignorant of the full picture of the animal.

Similarly, proponents of each modality of psychotherapy give us their subjective impressions about the success of their chosen method. No one has the whole picture; no one can provide an objective report about the whole field. There aren't even any basic numbers. No one knows how many therapists there are, or how many patients consult them, or what the actual outcomes are, or what happens to the patients who leave therapy for one reason or another, or how many are harmed by therapy. No therapist knows whether their method is more (or less) effective than the methods of others.

By the most recent account, there were over 600 types of psychotherapy. There may be more. Some are no longer used and some have changed their names, but new ones are constantly appearing. Most of them have never been tested for efficacy, and only a few have been demonstrated to be effective and then only for certain problems. Wikipedia has an alphabetical list of psychotherapies.<sup>1</sup> To give just one example, each from the first half of the ABCs: attachment therapy, biofeedback, cognitive behavioral therapy, dreamwork, emotional freedom

technique, Freudian psychoanalysis, Gestalt therapy, hypnotherapy, interpersonal reconstructive therapy, journal therapy, logotherapy, Morita therapy. Where would you begin to choose? Life isn't long enough to try them all or even to understand them all, much less put them to the test.

What if there were a similar situation for other treatments? What if there were 600 different ways of treating a hip fracture? What if 600 different antibiotics were being used to treat strep throat? How could doctors rationally choose? They would look for the scientific evidence. There would be clinical studies that used control groups. Outcomes would be meticulously tracked. We would have objective data. Why should psychotherapy be exempt from the usual methods of scientific investigation?

When conflicting data emerge from different studies, meta-analyses and systematic reviews of all the published data can help resolve the conflict. A 2017 review found that while most of the studies favored psychotherapy, effectiveness was confirmed in only seven percent.<sup>2</sup>



A 2021 review of over 400 studies<sup>3</sup> found that mindfulness-based and multi-component interventions showed some efficacy and singular positive psychological interventions, cognitive and behavioral therapy-based, acceptance and commitment therapy-based, and reminiscence interventions “made an impact.” However, effect sizes were moderate at best, and the quality of the evidence was low-to-moderate.

Not very impressive after a century of research.

In his book, Tomasz Witkowski revealed that some therapists who are aware of the efficacy studies say they are following evidence-based methods; but in practice, they fail to do so, thinking the methods are not appropriate for their patients. And he says some of them consciously discard crucial information.

## When Psychotherapy is Harmful

Anything that has effects can have side effects, and yet 79 percent of effectiveness studies failed to mention negative effects. It’s hard to determine how many patients are harmed. Only about two percent of psychologists are sued for malpractice and it has been estimated that up to 80 percent of liability cases are won by the therapists. If they lose, the punishment is usually trivial: from reprimands to expulsion from an organization they belong to. Afterwards, they are usually free to continue practicing.

Disproportionate power exists in the provider/patient relationship. Patients tend to feel helpless and have poor self-esteem. They trust the therapist as a knowledgeable expert who will know

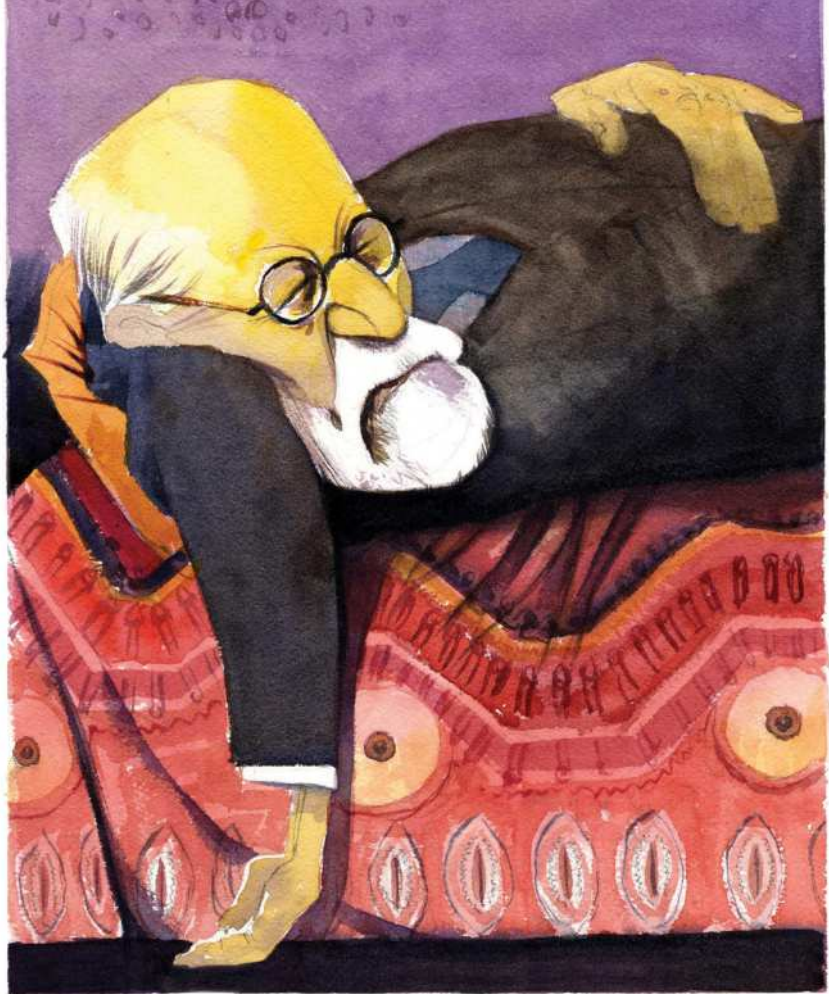


Illustration by Siegfried Woldhek

how to solve their problems. However, that may not be true. Jeffrey Masson, an experienced psychotherapist, wrote a book titled *Against Therapy: Emotional Tyranny and the Myth of Psychological Healing*. In it, he confessed that many times he was acutely and painfully aware of his inability to help, felt bored, uninterested, irritated, helpless, confused, ignorant, and lost. When he could offer no genuine assistance, he never acknowledged this to a patient. And he believed that everything he experienced was felt by other therapists as well.

Adverse effects of psychotherapy can be anything from crying during a session to attempted suicide. Harms may be caused by the therapist or by the therapy. According to psychologist Noam Shpancer, estimates for the incidence of negative outcomes from psychotherapy have varied from three

percent to 20 percent.<sup>4</sup> Accurate numbers are hard to come by, for several reasons that he explains.

Unscrupulous therapists may prioritize their own needs (exploitative, voyeuristic, narcissistic) over those of the patient. Some may indulge in inappropriate sexual behavior. And even well-meaning ethical therapists who adhere to standard practices can do harm. For example, therapy may lead to excessive self-absorption, adopting a victim role, and reduced capacity to make independent judgments. Becoming dependent on a therapist may impair the development of coping skills.

One example of well-documented harm from psychotherapy is that of recovered memory therapy, once controversial and now scientifically discredited. Its practice is no longer

recommended by any mainstream organization. Practitioners believed that memories of childhood traumas such as sexual abuse could be repressed and forgotten but were retained in the subconscious and could still affect adult behavior. This claim is not supported by any evidence. Therapists offered to help patients remember the forgotten trauma, using treatments that included psychoanalysis, hypnosis, journaling, past life regression, guided imagery, and even the use of sodium amytal for interviews.

What these procedures were really doing was creating false memories. Research by Elizabeth Loftus and others has shown that it is easy to create false memories which can sometimes seem more real than true memories. The False Memory Syndrome Foundation was created to assist those falsely accused of abusing children. Some individuals were jailed and families were destroyed because of “memories” of abuse that never happened. The only way to determine that a “recovered” memory is true is to find external confirmation.

Studies have found other harms to patients.<sup>5</sup> The Drug Abuse Resistance Education (DARE) program was counterproductive: it *increased* drug use. At-risk adolescents in the Scared Straight program were more likely to offend. Critical Incident Stress Debriefing (CISD) has been shown to worsen symptoms of post-traumatic stress disorder (PTSD) and anxiety scores. In a small study of trauma-focused cognitive behavioral therapy for PTSD in young children, 10 percent of patients experienced a negative event such as fear of the dark, even enuresis or encopresis (urinary or fecal incontinence, respectively). Some experienced cognitive therapists suggest that Cognitive Behavioral

Therapy (CBT) can be toxic<sup>6</sup> to some individuals, particularly those with obsessive personalities, by increasing worry and introspection, fueling rather than relieving anxiety and depression.

Some psychotherapies are brief; others, like Freud’s psychoanalysis, go on interminably. Freud behaved more like a witch doctor than a scientist. He has been discredited for fabrication and making claims that can’t be tested. Psychoanalysis is controversial and its effectiveness has been contested, but it continues to be widely taught and practiced. Albert Ellis has documented the many ways that psychotherapy is frequently harmful to patients.<sup>7</sup>

The FDA requires that the side effects of drugs be listed along with the benefits. Unfortunately, there are no such warnings required for psychotherapy. Isn’t this a double standard? Robyn Dawes, in his book *House of Cards*,<sup>8</sup> writes a scathing critique of psychology and psychotherapy as a being such a precarious structure built on myth rather than science:

the rapid growth and professionalization of my field, psychology, has led it to abandon a commitment it made at the inception of that growth. That commitment was to establish a mental health profession that would be based on research findings, employing insofar as possible well-validated techniques and principles... Instead of relying on research-based knowledge in their practice, too many mental health professionals rely on “trained clinical intuition.”

Dawes is particularly incensed by professionals who make assertions in commitment hearings and sexual abuse cases based on psychological techniques that have proven to be invalid. He says there is a real

science of psychology; however, it is being ignored, derogated, and contradicted by the very people who should know better.

Some psychotherapeutic interventions have been shown to be no better than talking with a friend. Pilot programs in underserved areas are showing that brief training can enable laymen and non-specialist health workers to provide effective psychotherapy.

In Goa, Wellcome-funded MANASHANTI Sudhar Shodh (MANAS),<sup>9</sup> led by Professor Vikram Patel, trained non-specialist health workers to deliver psychosocial interventions, including psychoeducation, yoga, and interpersonal therapy. They ran a trial of 2,796 people having common mental disorders and found 65.9 percent of those who were treated with a collaborative care approach, including psychosocial interventions, recovered after six months, compared to just 42.5 percent in the control group.

The bottom line: psychotherapy works to help some patients, but we have no idea why. It is not based on solid science and there is, at present, no rational basis for choosing a therapy or a therapist. **S**

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Aristotle (384–322 BCE). Roman copy in marble after a Greek bronze original by Lysippos from 330 BCE. Aristotle has been called “the father of the scientific method.”

# HOW SCIENCE REALLY WORKS

BY CHARLES S. REICHARDT

If you search the web or look in introductory science textbooks, you will find the hypothetico-deductive (H-D) method often depicted as *the* scientific method. However, the H-D method is inadequate as a description of the scientific method, especially when it comes to assessing pseudoscientific or other dubious claims. An alternative to the H-D method more effectively discards the pseudoscientific bathwater while preserving the scientific baby.

Carl Sagan succinctly described the alternative method, which I term the multiple hypotheses (MH) method, when he wrote: “If there’s something to be explained, think of all the different ways in which it *could* be explained. Then think of tests by which you might systematically disprove each of the alternatives.”<sup>1</sup> Rather than the H-D method, the MH method is the way science is best conducted.<sup>2</sup>

## The Most Common Method

The H-D method is usually described as involving a series of steps. Different descriptions of the H-D method list different numbers of steps with somewhat different descriptions of the steps, but in its basic form the H-D method consists of the following four steps.

**Step 1:** Observe a phenomenon to be explained and propose a hypothesis to explain it.

**Step 2:** Deduce one or more consequences of the proposed hypothesis assuming the hypothesis to be correct.

**Step 3:** Collect empirical data to see if the deduced consequences hold true.

**Step 4:** Draw conclusions based on the results of the empirical investigations. If the consequences of the proposed hypothesis do not hold true, the hypothesis is either rejected or modified. If the consequences or implications do hold true, the hypothesis is said to be supported by the data.

Christiaan Huygens provided a description of the H-D method as far back as the 17<sup>th</sup> century, and in the 20<sup>th</sup> century Bertrand Russell noted that the H-D method has been taught to generations of students since then.<sup>3</sup> More recently, Peter Lipton supports the assertion that the H-D method undergirds descriptions and applications in science stating that “the

hypothetico-deductive model seems genuinely to reflect scientific practice, which is perhaps why it has become the scientists’ philosophy of science.”<sup>4</sup> The H-D method certainly seems reasonable enough, which is why it is so widely endorsed and accepted.

## The Method Which Should Be Used

It is my contention that science operates best according to the multiple hypotheses (MH) method rather than according to the H-D method. The MH method explains a phenomenon using the following steps.<sup>5</sup>

**Step 1:** Observe a phenomenon to be explained and diligently identify alternative hypotheses as explanations.

**Step 2:** Diligently identify a full range of empirical consequences of the hypotheses, including consequences that distinguish among the alternative hypotheses.

**Step 3:** Diligently obtain empirical data to see which consequences of the hypotheses hold true.

**Step 4:** To the extent the data are in agreement with the consequences of one hypothesis substantially more than with the consequences of any of the other hypotheses, a person is justified in tentatively accepting that one hypothesis as an explanation for the phenomenon. Conclusions can change when additional alternative hypotheses and data are identified.

## A Powerful Tool to Combat Pseudoscience

According to the H-D method, researchers investigate one or more consequences of a single hypothesis, without regard for any other hypotheses. If the H-D method is taken to be the proper depiction of the scientific method, researchers can conclude the scientific method supports their favored hypothesis whenever evidence is found that is predicted by that hypothesis. The H-D researcher’s conclusion is not burdened by a concern that other hypotheses might better explain the given data or that the data at hand are but a small proportion of all relevant data.

In contrast, if the MH method is taken to be the proper depiction of the scientific method, a researcher cannot say the scientific method supports a favored hypothesis just because it correctly predicts a given set of data. According to the MH method, a researcher can say their hypothesis is supported by the scientific method only if all the data are explained by their hypothesis better than by other available hypotheses. Such differences between the methods are important, especially when it comes to investigations of pseudoscientific and other dubious beliefs.

The H-D method allows pseudoscientists and purveyors of other dubious beliefs to all too easily claim that their theories are supported by the results of the scientific method. Consider the theory of intelligent design (ID), which predicts that the fossil record will have substantial gaps between species. Such gaps are found in the fossil record. Using the H-D method, the existence of gaps can be said to support the theory of ID. In fact, the more fossils paleontologists find, the more gaps there are between them. Therefore, using the H-D method as the scientific method, intelligent design theorists can claim the scientific method supports the theory of intelligent design. And according to the H-D method ID theorists need go no further than testing this single prediction before they can say their theory is supported by the application of the scientific method. As a result, intelligent design theorists can argue their theory is scientific, rather than pseudoscientific.

Use of the MH method would reach a different conclusion. The theory of intelligent design does indeed predict substantial gaps between species in the fossil record. So does the theory of evolution through natural selection, in which the transition from species to species should be relatively smooth without substantial gaps. However, fossils are not a complete record of the existence of all species, and not all fossils have been uncovered. As a result, substantial gaps in the fossil record are to be expected and indeed are predicted by the theory of evolution through natural selection. Since both the theory of intelligent design and the theory of evolution through natural selection make the same predictions about gaps in the fossil record, such data alone do not provide the means to choose between the two theories, according to the MH method.

Therefore, if they were to use the MH method, intelligent design proponents could not claim their theory is acceptable according to the scientific method.

Given leeway in choosing whatever data best suit your purpose (i.e., “cherry picking”), some empirical support can be found to agree with just about any dubious claim. As a result, the H-D method allows pseudoscientists to claim the scientific method supports just about any theory. In contrast, the MH method makes clear that a theory cannot be accepted by the scientific method unless the theory is shown to be superior to other available theories in accounting for data.

A myriad of theories have been proposed to explain the evolution of species, including the theories of natural selection, creationism, intelligent design, Lamarckianism, and De Vries mutation.<sup>6</sup> The myriad of data that has been collected is in far better agreement with the theory of evolution through natural selection than with any other of the theories. That is why we are justified in accepting the theory of evolution through natural selection, even if that acceptance must always remain tentative.

Skeptics well understand that the theory of intelligent design is discredited when the entire wealth of available data is considered. This means skeptics are using the MH method, rather than the H-D method, when they argue that belief in the theory of intelligent design is not supported by the scientific method. Pseudoscientific and other dubious beliefs would be less likely to flourish if the public understood that science requires the use of the MH, rather than the H-D, method. Rather than teaching the H-D method, we should be teaching the MH method.

I interpret Carl Sagan’s well-known skeptical credo that “extraordinary claims require extraordinary evidence” (the ECREE principle as it is now called) as implying that accepting an extraordinary claim requires that evidence be sufficient to make alternative explanations implausible, as specified by the MH method.<sup>7</sup> In this regard, note how skeptics regularly investigate and raise doubts about paranormal beliefs in the pages of *SKEPTIC*. Such investigations are informative precisely because they provide one or more plausible alternative explanations for phenomenon that are purported to be paranormal. In other words, skeptics debunk paranormal beliefs by using the MH method to compare alternative explanations.

The MH method is not only the best representation of the scientific method; it is also the best way to think critically in any endeavor. Whether making philosophical arguments, legal prosecutions, medical diagnoses, or repairing motor vehicles, the best procedure is to consider (and rule out) alternative explanations. For example, a criminal prosecutor rarely succeeds in obtaining a guilty verdict if alternative theories of a crime proposed by the defense are not shown to be implausible. The same holds for making other arguments or reaching other decisions whether in or outside of science.

## Why It Matters

According to the H-D method, any pseudoscientific belief can be said to be supported by the application of the scientific method as long as even a single empirical consequence of the belief holds true. According to the MH method, once a skeptic presents an alternative hypothesis that explains the available data as well as the pseudoscientific explanation, pseudoscientists are not permitted to claim their beliefs are supported by the scientific method. Under these conditions, pseudoscientists must withhold judgment according to the MH method. That is an important difference between the two methods. The H-D method allows pseudoscientists to all too easily claim their beliefs are supported by the scientific method, while the MH method does not.

The MH method is neither new nor revolutionary. The method was described at least as far back as 1890.<sup>8</sup> And building on such prior descriptions, the MH method was championed by John Platt in his widely cited article in *Science* entitled “strong inference.”<sup>9</sup> As I already noted, Carl Sagan also championed the MH method. In addition, the MH method is the backbone of the logic of causal inference, such as in the widely influential work of W.R. Shadish, T.D. Cook, and D.T. Campbell in their 2002 book *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*.<sup>10</sup> Nonetheless, the H-D method, rather than the MH method, is still propagated as the scientific method.

It is a mistake—with substantial consequences—to describe the scientific method without explicitly noting that alternative hypotheses must be considered before a theory can be accepted. We should not be teaching an incorrect description of how science operates. When we describe the scientific method, we should explicitly teach the MH method and not the H-D method.

Best practices in science use the MH method. If everyone (including scientists, journalists, politicians, jurists, and educators) internalized the MH method rather than the H-D method, fewer people would likely reach dubious conclusions about the world. And the public would be less likely to misunderstand what it means to be scientific. **S**

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# FROM SEX to GENDER

## *The Modern Dismissal of Biology*

BY ROBERT LYNCH

In my first year of graduate school at Rutgers, I attended a colloquium designed to forge connections between the cultural and biological wings of the anthropology department. It was the early 2000s, and anthropology departments across the country were splitting across disciplinary lines. These lectures would be a last, and ultimately futile, attempt to build interdisciplinary links between these increasingly hostile factions at Rutgers; it was like trying to establish common research goals for the math and art departments.

This time, it was the turn of the biological anthropologists, and the primatologist Ryne Palombit was giving a lecture for which he was uniquely qualified—infanticide in Chacma baboons. Much of the talk was devoted to sex differences in baboon behavior and when it was time for questions the hand of the chair of the department, a cultural anthropologist, shot up and demanded to know “What exactly do you mean by these so-called males and females?” I didn’t know it at the time but looking back I see that this was the beginning of a broad anti-science movement that has enveloped nearly all the social sciences and distorted public understanding of basic biology. The assumption that sex is an arbitrary category is no longer confined to

the backwaters of cultural anthropology departments, and the willful ignorance of what sex is has permeated both academia and public discussion of the topic.

Male and female are not capricious categories imposed by scientists on the natural world, but rather refer to fundamental distinctions deeply rooted in evolution. The biological definition<sup>1</sup> of males and females rests on the size of the sex cells, termed gametes, that they produce. Males produce large numbers of small gametes, while females produce fewer, larger ones. In animals, this means that males produce lots of tiny sperm (between 200 and 500 million sperm in humans) while females produce far fewer, but much larger, eggs called ova (women have a lifetime supply of around 400). Whenever scientists discover a new sexually reproducing species, gamete size is what they use to distinguish between the males and the females.

Although this asymmetry in gamete size may not seem that significant, it is. And it leads to a cascade of evolutionary effects that often results in fundamentally different developmental (and even behavioral) trajectories for the two respective sexes. Whether you call the two groups *A* and *B*, *Big* and *Little*, or *Male* and *Female*,



Illustration by Izhar Cohen

this foundational cell-sized difference in gamete size has profound effects on evolution, morphology, and behavior. Sexual reproduction that involves the union of gametes of different sizes is termed anisogamy, and it sets the stage for characteristic, and frequently stereotypical, differences between males and females.

My PhD advisor, the evolutionary biologist Robert Trivers, was at that doomed colloquium at Rutgers. It was Trivers, who four decades earlier as a graduate student at Harvard, laid down the basic evolutionary argument in one of the most cited papers in biology.<sup>2</sup> Throwing down the gauntlet and explaining something that had puzzled biologists since Darwin, he wrote, “What governs the operation of sexual selection is the relative parental investment of the sexes in their offspring.” In a single legendary stroke of insight, which he later described in biblical terms (“the scales fell from my eyes”), he revolutionized the field and provided a broad framework for understanding the emergence of sex differences across all sexually reproducing species.

Because males produce millions of sperm cells quickly and cheaply, the main factor limiting their evolutionary success lies in their ability to attract females. Meanwhile, the primary bottleneck for

females, who, in humans, spend an additional nine months carrying the baby, is access to resources. The most successful males, such as Genghis Khan who is likely to have had more than 16 million direct male descendants,<sup>3</sup> can invest relatively little and let the chips fall where they may, while the most successful women are restricted by the length of their pregnancy. Trivers’ genius, however, was in extracting the more general argument from these observations.

By replacing “female” with “the sex that invests more in its offspring,” he made one of the most falsifiable predictions in evolution—the sex that invests more in its offspring will be more selective when choosing a mate while the sex that invests less will compete over access to mates.<sup>4</sup> That insight not only explains the rule, but it also explains the exceptions to it. Because of the initial disparity in investment (i.e., gamete size) females will usually be more selective in choosing mates. However, that trajectory can be reversed under certain conditions, and sometimes the male of a species will invest more in offspring and so be choosier.

When these so-called sex role reversals<sup>5</sup> occur, such as in seahorses where the males “get pregnant” by having the female transfer her fertilized eggs into a structure termed the male’s brood pouch and

hence becoming more invested in their offspring, it is the females who are larger and compete over mates, while the males are more selective. Find a species where the sex that invests less in offspring is choosier, and the theory will be disproven.

The assertion that male and female are arbitrary classifications is false on every level. Not only does it confuse primary sexual characteristics<sup>6</sup> (i.e., the reproductive organs) which are unambiguously male or female at birth 99.8 percent of the time with secondary sexual characteristics<sup>7</sup> (e.g., more hair on the faces of men or larger breasts in women), it ignores the very definition of biological sex—men produce many small sex cells termed sperm while women produce fewer large sex cells termed eggs. Although much is sometimes made of the fact that sex differences in body size, hormonal profiles, behavior, and lots of other traits vary across species, that these differences are minimal or non-existent in some species, or that a small percentage of individuals, due to disorders of development, possess an anomalous mix of female and male traits,<sup>8</sup> that does not undermine this basic distinction. There is no third sex. Sex is, by definition, binary.

In the 50 years since Trivers' epiphany, much has tried to obscure his crucial insight. As biology enters a golden age, with daily advances in genotyping transforming our understanding of evolution and medicine, the social sciences have taken a vastly different direction. Many are now openly hostile to findings outside their narrow field, walling off their respective disciplines from biological knowledge. Why bother learning about new findings in genetics or incorporating discoveries from other fields, if you can assert that all such findings are, by definition, sexist?

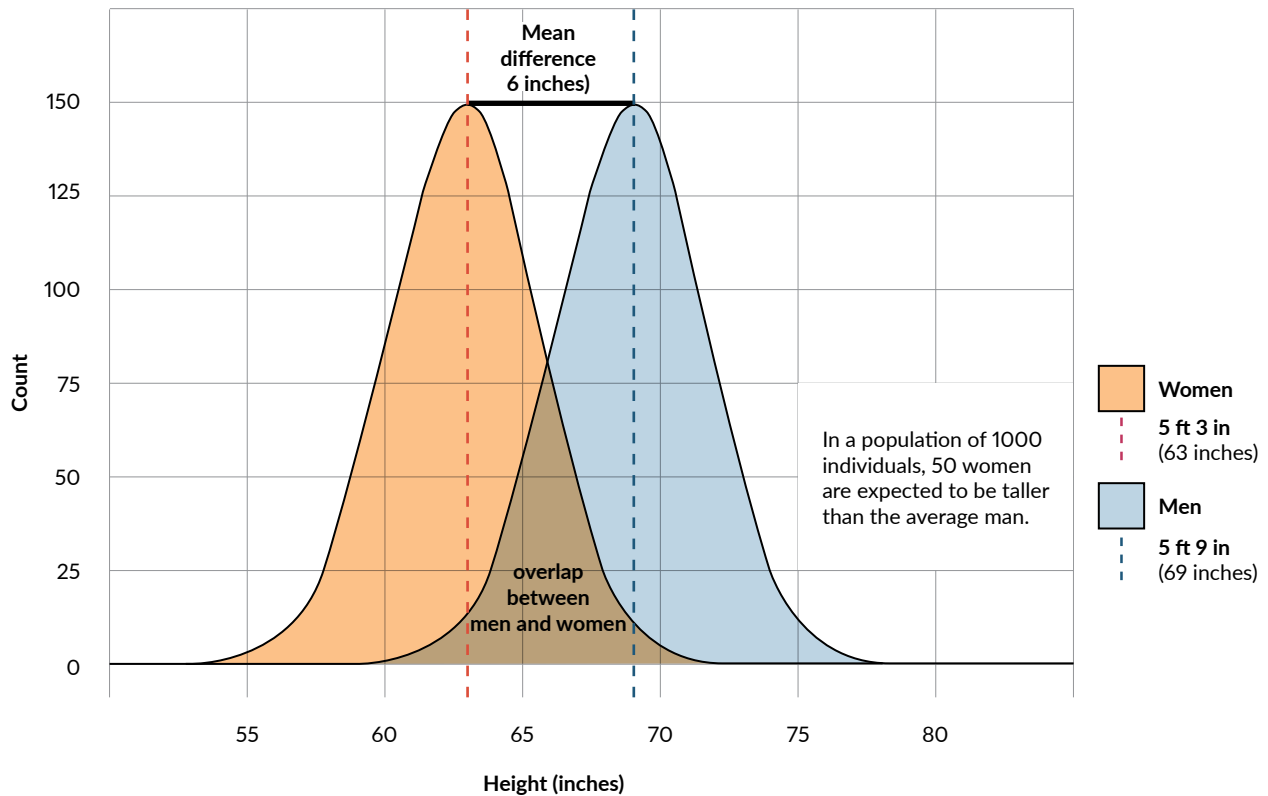
Prior to 1955, gender was almost exclusively used to refer to grammatical categories (e.g., masculine and feminine nouns in French). A major shift occurred in the 1960s when the word gender has been applied to distinguish social/cultural differences from biological differences (sex). Harvard Biologist, David Haig documented<sup>9</sup> that from 1988 to 1999 the ratio of the use of "sex" versus "gender" in scientific journals shrank from 10 to 1 to less than 2 to 1, and that after 1988 gender outnumbered sex in all social science journals. The last twenty years have seen a rapid acceleration in this trend,<sup>10</sup> and today this distinction is rarely observed.<sup>11</sup> Indeed, the biological concept of sex in reference to humans has become largely taboo

outside of journals that focus on evolution. Many, however, are not content with limiting the gender concept to humans and a new policy instituted by all *Nature* journals requires that manuscripts include a discussion of how gender was considered in all studies with human participants, on other vertebrates, or on cell lines.<sup>12</sup> When would including gender be appropriate in a genetic study of fruit flies?

This change is not merely stylistic. Rather, it is part of a much larger cultural and political movement that denies or attempts to explain away the effects of biology and evolution in humans altogether. The prevailing dominant view in the social sciences is that human sex differences are entirely socially constructed. In that interpretation, all differential outcomes between men and women are the result of unequal social, economic, and political conditions, and so we do all we can to eliminate them, particularly by changing our expectations and encouraging gender-neutral play in children. This received wisdom and policies based upon it, however, are unlikely to produce the results proponents long for. Why is that?

Because sex differences in behavior are among the strongest effect sizes in social, and what might be better termed, behavioral sciences. Humans are notoriously inept at understanding differences between continuous variables, so it is first useful to define precisely what "statistical differences between men and women" does and does not mean. Although gamete size and the reproductive organs in humans are either male or female at birth in over 99 percent of cases, many secondary sexual characteristics such as differences in upper body strength and differences in behavior are not so differentially distributed. Rather, there is considerable overlap between men and women. Life scientists often use something called the *effect size* as a way to determine if any observed differences are large (and therefore consequential) or so small as to be ignored for almost all practical purposes.

Conceptually, the effect size is a statistical method for comparing any two groups to see how substantially different they are. Graphically, it can be thought of as the distance between the peaks of the two distributions divided by the width of those distributions. For example, men are on average about 6 inches taller than women in the United States<sup>13</sup> (mean height for American women is 5 feet 3 inches and the mean height for American men is approximately 5 feet 9 inches). The spread of



the height distributions for men and women, also known as the standard deviations, are also somewhat different, and this is slightly higher for men at 2.9 inches vs 2.8 inches for women. For traits such as height that are normally distributed (that is, they fit the familiar bell curve shape), one standard deviation on either side of the mean encompasses about 68 percent of the distribution, while two standard deviations on either side of the mean encompass 95 percent of the total distribution. In other words, 68 percent of women will be between 60.2 inches and 65.8 inches tall, and 95 percent will be between 57.5 to 68.6 inches. So, in a random sample of 1000 adult women in the U.S., approximately 50 of them will be taller than the average man (see figure above).

A large effect size, or the standardized mean difference,<sup>14</sup> is anything over 0.8 and is usually seen as an effect that most people would notice without using a calculator. The effect size for sex differences in height is approximately 1.9. This is considered to be a pretty big effect size. But it is certainly not binary, and there are lots of taller-than-average women who are taller than lots of shorter-than-average men (see overlap area in figure). Therefore, when determining whether an

effect is small or large, it is important to remember that the cutoffs are always to some degree arbitrary and that what might seem like small differences between the means can become magnified when comparing the number of cases that fall in the extremes of (the tails of their respective distributions) of each group.

In other words, men and women may, on average, be quite similar on a given trait but will be quite different in the number who fall at the extreme (low and high) ends of their respective distributions. This is particularly true of sex differences because natural selection acts more strongly on men, and males have had higher reproductive variance than females over our evolutionary history. That is to say that a greater number of men than women have left no descendants, while a very few men have left far more. Both the maximum number of eggs that a woman produces over the course of her reproductive life versus the number of sperm a man produces and the length of pregnancy, during which another reproduction cannot occur, place an upper limit on the number of offspring women can have. What this means is that males often have wider distributions for a trait (i.e., more at the low end and more at the high end) so that sex differences can be magnified

at the tail ends of the distribution. In practical terms, this means that when comparing men and women, it is also important to look at the tails of their respective distributions (e.g., the extremes in mental ability).

The strongest effect sizes where men tend to have the advantage are in physical abilities such as throwing distance or speed, spatial relations tasks, and some social behaviors such as assertiveness.<sup>15</sup> Women, meanwhile, tend to have an edge in verbal ability, social cognition, and in being more extroverted, trusting, and nurturing. Some of the largest sex differences, however, are in human mate choice and behaviors that emerge out of the evolutionary logic of Trivers' parental investment theory. In study after study,<sup>16</sup> women are found to give more weight to traits in partners that signal an ability to acquire resources, such as socioeconomic status and ambition, while men tend to give more weight to traits that signal fertility, such as youth and attractiveness.

Indeed these attitudes are also revealed in behavior such as age at marriage (men are on average older than women in every country on earth<sup>17</sup>), frequency of masturbation, indulging in pornography, and paying for sex. Although these results are often dismissed, largely on ideological grounds, the science is rarely challenged, and the data suggest *some* biological difference (which may be amplified, indeed enshrined, by social practices).

The evidence that many sex differences in behavior have a biological origin is powerful. There are three primary ways that scientists use to determine whether a trait is rooted in biology or not. The first is if the same pattern is seen across cultures. This is because the likelihood that a particular characteristic, such as husbands being older than their wives, is culturally determined declines every time the same pattern<sup>18</sup> is seen in another society—somewhat like the odds of getting heads 200 times in a row. The second indication that a trait has a biological origin is if it is seen in young children who have not yet been fully exposed to a given culture. For example, if boy babies are more aggressive than girl babies, which they generally are,<sup>19</sup> it suggests that the behavior may have a biological basis. Finally, if the same pattern, such as males being more aggressive than females, is observed in closely related species, it also suggests an evolutionary basis. While some gender role “theories” can attempt to account for culturally universal sex differences, they cannot explain sex differences that are found in infants who haven't yet learned to speak, as well as in the young of other related species.

Many human sex differences satisfy all three conditions—they are culturally universal, are observable in newborns, and a similar pattern is seen in apes and other mammals. The largest sex differences<sup>20</sup> found with striking cross-cultural similarity are in mate preferences, but other differences arise across societies and among young children before the age of three as boys and girls tend to self-segregate into different groups with distinct and stereotypical styles.<sup>21</sup> These patterns, which include more play fighting in males, are observable in other apes and mammal species,<sup>22</sup> which, like humans, follow the logic of Trivers' theory of parental investment and have higher variance in male reproduction, and therefore more intense competition among males as compared to females.

If so, why then has the opposite message—that these differences are either non-existent or *solely* the result of social construction—been so vehemently argued? The reason, I submit, is essentially political. The idea that any consequential differences between men and women have no foundation in biology has wide appeal because it fosters the illusion of control. If gender role “theories” are correct, then all we need to do to eliminate them is to modify the social environment (e.g., give kids gender-neutral toys, and the problem is solved). If, however, sex differences are hardwired into human nature, they will be more difficult to change.

Acknowledging the role of biology also opens the door to conceding the possibility that the existence of statistically unequal outcomes for men and women are not just something to be expected but may even be...desirable. Consider the so-called gender equality paradox<sup>23</sup> whereby sex differences in personality and occupation are higher in countries with greater opportunities for women. Countries with the highest gender equality,<sup>24</sup> such as Finland, have the lowest proportion of women who graduate college with degrees in stereotypically masculine STEM fields, while the least gender equal countries such as Saudi Arabia, have the highest. Similarly, the female-to-male sex ratio in stereotypically female occupations such nursing is 40 to 1 in Scandinavia, but only 2 to 1 in countries like Morocco.

The above numbers are consistent with cross-cultural research that indicates that women are, on average, more attracted to professions focused on people such as medicine and biology, while men are, again, on average, more attracted to professions focused on things such as mathematics and engineering.<sup>25</sup>



These findings are not a matter of dispute, but they are inconvenient for gender role theorists because they suggest that women and men have different preferences upon which they act when given the choice. Indeed, it is only a “paradox” if one assumes that sex is *entirely* socially constructed. As opportunities for women opened up in Europe and the United States

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in the sixties and seventies, employment outcomes changed rapidly. However, the proportions of men and women in various fields stabilized sometime around the early 1990s and have barely moved in the last thirty years. These findings imply that there is a limited capacity for outside interventions imposed from the top down to alter these behaviors.

It is understandable, however, for some to fear that any concession to nature will be used to justify and perpetuate bias and discrimination. Although arguments for why women should be prohibited from certain types of employment or why they should not be allowed to vote were ideological, sex differences have been used to justify a number of historical injustices. Still, is the fear of abuse so great that denying *any* biological sex differences is the only alternative?

The rhetorical contortions and inscrutable jargon required to assert that gender and sex are nothing more than chosen identities and deny what every parent knows require increasingly complex and incoherent arguments. This not only subverts the public’s rapidly waning confidence in science, but it also leads to

extreme exaggerations designed to silence those who don’t agree, such as the claim that discussing biological differences is violence. The lengths to which many previously trusted institutions, such as the American Medical Association, go to deny the impact that hormones have on development are extraordinary. These efforts are also likely to backfire politically when gender-neutral terms are mandated by elites, such as the term “Latinx,” which is opposed by 98 percent of Hispanic Americans.<sup>26</sup>

Acknowledging the existence of a biological basis for sex differences does not mean that we should accept unequal opportunities for men and women. Indeed, the crux of the problem lies in conflating equality with statistical identity and in our failure to respect and value difference. These differences should not be ranked in terms of inferior or superior, nor do they have any bearing on the worth or dignity of men and women as a group. They cannot be categorized as being either good or bad because it depends on

which traits you want to optimize. This is real diversity that we should acknowledge and even celebrate.

Ever since the origin of sexual reproduction approximately two billion years ago,<sup>27</sup> sexual selection, governed by an initial disparity in the size of the sex cells, has driven a cascade of differences, a few absolute, many more statistical, between males and females. As a result, men and women have been experiencing distinct evolutionary pressures. At the same time, however, this process has ruthlessly enforced an equality between the sexes, ensured by the fact that it takes one male and one female to reproduce, which guarantees the equal average reproduction of men and women.<sup>28</sup> The production of sons and daughters, who inherit a near equal split of their parents’ genetic material, also demands that mothers and fathers contribute equally to their same- and their opposite-sex children. In the cold logic of evolution, neither sex is, or can be, better or worse. Although this may not be the kind of equality some might want, we need to move beyond simplistic ideas of hierarchy, naively confusing difference with claims of inferiority/superiority,

or confusing dominance with power.<sup>29</sup> In the currency of evolution, better just means more copies, dominance only matters if it leads to more offspring, and there are many paths to power.

The assertion that children are born without sex and are molded into gender roles by their parents is wildly implausible. It undermines what little public trust in science remains and delegitimizes other scientific claims. If we can't be honest about something every parent knows, what else might we be lying about? Confusion about this issue leads to inane propositions, such as a pro-choice doctor testifying to Congress asserting that men can give birth.<sup>30</sup> When people are shamed into silence about the obvious male advantages in almost all sports<sup>31</sup> (but note women do as well or better in small bore rifle competition, and no man can match the flexibility of female gymnasts) and when transgender women compete in women's sports, it endangers the vulnerable. When children are taught that all sex differences are entirely grounded in mere identity (whether self-chosen or culturally-imposed) and are in no way the result of biology, more "masculine" girls and more "feminine" boys may become confused about their sex, or sexual orientation, and harmful stereotypes can take over. The sudden rapid rise in the number of young girls diagnosed with gender dysphoria<sup>32</sup> is a warning sign of how dangerously disoriented our culture can become.

Pathologizing gender nonconforming behavior often does the opposite of what proponents intend by creating stereotypes where none existed. Boys are told that if they like dolls, they are really girls trapped with male organs, while girls who display interests in sports or science are told they are boys trapped with female organs and born in the wrong body. Feminine boys, who might end up being homosexual, are encouraged to start down the road towards irreversible medical interventions, hormone blockers, and infertility. Like gay conversion therapy before, such practices can shame individuals for feeling misaligned with their birth sex and encourage them to resort to hormone "therapy" and/or surgery to change their bodies to reflect this new identity. Can that be truly seen as progressive and liberating?

The push for a biologically sexless society is an arrogant utopian vision that cuts us off from our evolutionary history, promotes the delusion that humans are not animals, and undercuts respecting each *individual for their unique individuality*. Sex is neither simply a matter of socialization, nor a personal choice. Making such assertions without understanding the profound role that an initial biological asymmetry in gamete size plays in sexual selection is neither scientific nor sensible. **S**

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# SECOND SIGHT

*A review of* **A First Look at Second Sight** *by Bob Loomis (2022) and* **Cues: Variations on the Second Sight Act** *by Leo Behnke (2005)*

BY MICHELLE AINSWORTH

How can people appear telepathic, and what is the history of duos demonstrating this type of mindreading as entertainment?

Two-person theatrical mindreading acts have been popular in the U.S. and Europe since the mid-1800s, with even earlier roots. In the most common form of this telepathy act, small objects shown to one partner roaming in the audience are correctly identified by the second performer, who is blindfolded and on stage, with no *apparent* communication between them.

The history of these acts is discussed most thoroughly in the groundbreaking book *A First Look at Second Sight* by Bob Loomis, in which he also scatters advice

to would-be performers throughout. *Cues: Variations on the Second Sight Act* by Leo Behnke sketches some leading performers' careers (including more recent ones), but most of the book is about how to perform such an act. The words in these titles reflect their respective subjects: "Second Sight" was an earlier common name for the two-person telepathy performance (also known as "clairvoyance"), while the use of secret "cues" from one performer to the other has been the most frequently (and clandestinely) employed method to accomplish this illusion.

A crude variant of the telepathy trick was revealed in the earliest book to substantively discuss magic tricks in English, *The Discoverie of Witchcraft* in 1584.



Illustration by Corah Louise

Two-person mindreading was occasionally performed by magicians over the next two and a half centuries but only became common among stage magicians with the successful 1840s show of the highly influential magician Jean Eugene Robert-Houdin (from whom Houdini took his stage name), and specialists are mostly a somewhat later development. In the early 20<sup>th</sup> century, the most famous performers of such an act were the husband-and-wife duo, The Zancigs. Both Behnke and Loomis agree that the Zancigs presentation of the act was superior to all others. The Sharrocks and Mercedes both had repeat bookings at the prestigious Palace Theater in New York, Eddie Fields and his partner had a long and successful career (mostly in department stores), while The Roberts were booked regularly and for high fees for decades in theaters and nightclubs.

In total, more than a hundred successful teams are profiled in detail, and a few dozen more are listed in Loomis's *A First Look at Second Sight*, while Behnke's *Cues* provides much shorter entries on half as many. Most acts consisted of a man and a woman, but a man and a boy were common in the

earlier years, and other variations have appeared. Even some mind-reading animal acts are profiled by Loomis, with many more listed in an appendix.

These acts were most commonly called "second sight" in the 19<sup>th</sup> century and "telepathy" or "clairvoyance" more recently. The fundamental technique utilized is the secret communication of information from the performer in the audience to their partner on stage. Although Behnke and Loomis both give examples of electronics being secretly used to accomplish this, the authors agree that (even at its peak) electronics were usually only a supplement to other techniques. By far, the most common clandestine method was the use of elaborate spoken codes or a similarly vast array of subtle visual cues.

For example, if the performer in the audience borrows keys from an audience member, "keys" could be coded to his blindfolded onstage partner by saying "What object am I holding?" while the phrase "Which object am I holding?" could indicate that, say, a dollar bill has been loaned. How many variants of the question



can be used in a way that won't arouse suspicion? This becomes even more challenging when we learn that dates and even serial numbers were commonly transmitted. My favorite example of an uncommon object successfully coded was a model of a gas stove from someone's pocket! Both books caution that some people who tried the act gave it up because of the vast amount of memorization and relentless practice required to perform the act effectively.

Some of the best acts confirm the skeptic's dictum that the unexplained is not the same as the unexplainable. As such, despite mostly appearing as entertainers, two-person mindreading acts have often been perceived as exemplifying real psychic powers. The Zancigs were studied by The Society for Psychical Research (SPR), and even a century later, a leading reference book<sup>1</sup> on them says in part that "Mrs. Zancig had well-developed clairvoyant faculties," though the author acknowledges that other authorities deduced that they used trickery in the form of an elaborate code to create this illusion. The team of Blackburn and Smith had been tested by the same SPR in the 1880s and were determined to be genuine, though one of them later confessed that they indeed employed trickery. The Piddingtons were heard by 20

million London radio listeners in 1949. They initially denied that their work was genuine telepathy, but their manager stated otherwise, and a prominent newspaper called for the SPR to test them as well.

There are other ethical challenges faced by performing mind readers. Worst of all, at least a few of these performers went so far as to provide lucrative private counseling based on the strength of their mind-reading ability, a tragic dilemma dramatized in both the original 1947 film as well as the recent 2021 remake of William Lindsay Gresham's novel, *Nightmare Alley*. Some skeptics may also be disappointed at learning of the number of performers who supplemented their income by selling horoscopes, which Behnke encourages.

My criticism of the groundbreaking Loomis book is mostly stylistic: it reads like a rough draft; a manuscript in need of a content editor and a style rewrite. Repetition can be a teaching tool, but here it reads more like sloppiness. For example, discussion of the book's origin confusingly overlaps between the foreword and the first chapter, while the much later discussion of the variant act using animals explains how pigs were trained for this *before* stating that pigs were the most used animal because they were easily



tainable. Worse, there are several instances in which a profile of a performer ends with Loomis writing about a newly discovered book or article, adding to or even changing what is written on the preceding pages!

As a “how-to” text, Loomis’s book is equally disorganized. Integrating remarks on technique into a history text is not inherently bad, but it is difficult to do well, especially when that history is presented as a series of biographies. This can lead to both confusion and repetition. The primary tactic Loomis uses is pointing out what can be learned from a particular act’s experience in the form of uniform “Observations.” Some of these are useful for anyone (“Observation 27: Don’t believe everything you read.”), any entertainer (“Observation 8: Have an applause-pulling ending.”), or stage psychics only: (“Observation 9: Do not claim genuine ESP.”). One blunder in applying this format is that although he uses these 39 “Observations” throughout the text, they are not listed until an appendix. As a teaching technique, I might have found these “Observations” more effective if summed up, in addition to, or instead of, being scattered throughout the text.

Similarly, although non-academic conversational tone and tangential comments can make a text livelier, Loomis overdoes this to the point of tedium, for example, “No pun intended—Okay, we admit it. It was!” The book is also burdened by frequent paragraph-long discussions of “Trivia” (such as the number of magicians—not only telepathy performers—who flew airplanes). Meanwhile, his core subject of performer profiles is also uneven, ranging from half a page to several pages, with length not always proportionate to their influence, fame, or success with the act.

Some problems with Loomis book might have been easily avoided. Parts of the backmatter, especially Appendix B, could have been either rearranged or integrated into the main text. With so much discussion of the influence of one performer on another, or comparison of techniques between acts, the book’s reverse chronological format can be awkward, and the lack of a useful index is a major hindrance. The book’s “Index” mostly repeats the Table of Contents, and Appendix C does little more than paraphrase it. A little more editorial work would have made *A First Look at Second Sight* a more coherent and convenient reference.

The sourcing of *A First Look* is sadly uneven. Although *Cues* is older, it is the closest there was to an existing history. As such, I was very surprised that Loomis did not at least mention it. Also strange, although the copyright is 2021 (though listed as 2022 on Amazon.com), Loomis’s “Books Cited” lists only one title published later than 2005. Its sourcing is otherwise exemplary, such as his examining two copies of a scarce antiquarian text (owned in different places) or using multiple sources to document a performing duo that was covered in an otherwise excellent earlier book with just one source.

Leo Behnke’s *Cues* is more clearly arranged and well edited, and is a well-produced hardcover. Unfortunately, it is seven times as expensive though only one-third the length of the Loomis text. Skeptics may especially appreciate Behnke’s brief discussion of the ancillary but fascinating ancient roots of mindreading performances. His selections of whom to profile are generally well chosen, and he does include more recent performers than does Loomis. It is not always clear why some acts in *Cues* are profiled in the history section and others in the “Types of Presentation” section. In his chapter on promotion, the assumption that marketing is done on paper rather than digitally is not up to date. Behnke has a few useful remarks preceding his list of recommended how-to books, while his separate end-of-book bibliography is only a short title checklist and includes such far afield (though interesting) books as *The Golden Bough* by James Frazer and a seminal book on the history of cryptography and cryptology, David Kahn’s *The Code Breakers*.

Both books are recommended for the serious investigator because Loomis doesn’t detail a how-to system as Behnke does, and Behnke’s insights as a veteran performer of the act are very valuable. Loomis discusses many more performers than the casually interested reader probably wants to know. For understanding the history of stage psychics, *A First Look At Second Sight* is a major contribution, especially in combination with John Buescher’s *Radio Psychics*, which I reviewed in *SKEPTIC* 27:3 (2002). **S**

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## AUTHORS & CONTRIBUTORS

**Michelle Ainsworth** holds an MA in History and she is currently researching the cultural history of stage magic in the United States. She is a humanist and lives in New York City.

**Mark Boslough** received his PhD (Caltech, 1983) in applied physics, with studies in geophysics. He joined Sandia National Laboratories, where he was an experimental and computational physicist. He departed Sandia in 2017 and joined Los Alamos National Laboratory. His research is focused on computational modeling of airbursts, their physical effects, and their contribution to the NEO risk. He participated in documentary field expeditions to airburst sites, including the Libyan Desert of Egypt, Tunguska, and Chelyabinsk. He served on the asteroid mitigation panel for the National Research Council and coauthored the report “Defending Planet Earth” delivered to Congress.

**Izhar Cohen** studied at the Bezalel Academy of Art in Jerusalem, the École Nationale Supérieure des Arts Décoratifs in Paris, and the Central Saint Martins College of Art and Design in London. His work has been published in the *Sunday Times*, *Times*, *New York Times*, *Financial Times*, *Washington Post*, *Guardian*, *Reader's Digest*, *Prospects*, and the *Wall Street Journal*. He lives in Tel Aviv, Israel. Find him on Instagram @izhar\_cohen.

**Marc J. Defant** is a professor of geology at the University of South Florida specializing in the study of volcanoes—more specifically, the geochemistry of volcanic rocks. He has been funded by the NSF, *National Geographic*, the American Chemical Society, and the National Academy of Sciences and has published in many international journals including *Nature*. His book *Voyage of Discovery: From the Big Bang to the Ice Age* is in the 2nd edition.

**Harriet Hall, MD**, the SkepDoc, was a retired family physician, former flight surgeon, and retired Air Force Colonel who wrote about medicine, pseudoscience, alternative medicine, quackery, and critical thinking. She was a regular columnist for both *Skeptical* and *Skeptical Inquirer* as well as a columnist for the Committee for

Skeptical Inquiry online and an editor at ScienceBasedMedicine.org, where she has written weekly since 2008. She wrote the book *Women Aren't Supposed to Fly: The Memoirs of a Female Flight Surgeon*. Her articles can be read at [www.skeptdoc.info](http://www.skeptdoc.info).

**John Holcroft** has been an editorial illustrator since the 90s. His screen print style is inspired by 1950's poster ads. His clients worldwide include: BBC, *Reader's Digest*, *Financial Times*, Walker books, *The Guardian*, *The Economist*, Haymarket, Condé Nast, *TES*, *Radio Times*, Cathay Pacific, Experian, Informa PLC, *New York Times*, Honda, the *Wall Street Journal*, and many more.

**Robert Lynch** is an evolutionary anthropologist at Penn State who specializes in how biology, the environment, and culture transact to shape life outcomes. His scientific research includes the effect of religious beliefs on social mobility, sex differences in social relationships, the impact of immigration on social capital, how social isolation can promote populism, and the evolutionary function of laughter.

**Charles S. Reichardt** is a professor of psychology at the University of Denver. He is the author of *Quasi-Experimentation: A Guide to Design and Analysis*, and *The Method of Multiple Hypotheses: A Guide for Professional and Academic Researchers*.

**Ned Resnikoff** is the policy director at California YIMBY, a nonprofit that advocates for state laws to end the housing shortage. He was previously a journalist and has written for the *New York Times*, *The Atlantic*, *The Nation*, and *The San Francisco Chronicle*. He has also worked as an analyst for the nonpartisan Legislative Analyst's Office, which advises the California legislature on policy and budget matters. He holds a master's degree in public policy from UC Berkeley's Goldman School of Public Policy.

**Michael Shermer** is a *New York Times* bestselling author and Presidential Fellow at Chapman University where he teaches Skepticism 101. He is the host of the popular podcast “The Michael Shermer Show.” His latest book is *Conspiracy*.

**Mark Skousen** is a Presidential Fellow and the Doti-Spogli Endowed Chair of Free Enterprise at Chapman University. He has a BA, MA, and PhD in economics (George Washington University, 1977). In 2018, Steve Forbes awarded him the Triple Crown in Economics for his work in theory, history, and education. He has taught economics, business and finance at Columbia Business School and Columbia University. He has worked for the government (CIA), non-profits (president of FEE), and been a consultant to IBM and other Fortune 500 companies. He is the author of over 25 books, including *The Making of Modern Economics* and *The Maxims of Wall Street*. He has been editor-in-chief of an award-winning investment newsletter, *Forecasts & Strategies*, since 1980. He produces “FreedomFest, the world's largest gathering of free minds,” every July in Las Vegas and other cities. His website is [skousenbooks.com](http://skousenbooks.com).

**Carol Tavris**, PhD, is a social psychologist who has written hundreds of articles, book reviews, and op-eds on many topics in psychological science. Her books include *Mistakes Were Made (But Not by Me)*, with Elliot Aronson; *Estrogen Matters*; and *The Mismeasure of Woman*. A Fellow of the Association for Psychological Science, she has received numerous awards for her efforts to promote science and skepticism, including an award from the Center for Inquiry's Independent Investigations Group; and an honorary doctorate from Simmons College for her work in promoting critical thinking and gender equity.

**Siegfried Woldhek** has made literary and political portraits for leading Dutch newspapers since 1976 and for the *New York Review of Books*. His work is often exhibited and has been featured in dozens of books, including seven books dedicated to his portraits. Several Dutch museums have acquired his work, as did the Metropolitan Museum in New York which has exhibited these in the exhibition *Infinite Jest: Caricature and Satire from Leonardo to Levine*. Woldhek's TEDtalk, about the search for the true face of Leonardo da Vinci, has been viewed over a million times.



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Beginning in Amsterdam, we sail southward to discover a remarkable array of sites that serve as testaments to the legacy of European civilization, spanning centuries from the American Cemetery and Memorial overlooking the beaches of Normandy to the medieval castles and cathedrals of Portugal and Spain. Among the places we visit are three UNESCO World Heritage Sites—the storied abbey/fortress of Mont-St.-Michel; the great Christian pilgrimage site of Santiago de Compostela; and Coimbra University in Portugal, one of the oldest in Europe. To these justly famous monuments, we add extraordinary collections of art in Amsterdam and Bruges, the picturesque fishing towns of Honfleur and Concarneau, and Frank Gehry's Guggenheim Museum in Bilbao, almost certainly destined to become another UNESCO site.

Accompanying us throughout the voyage will be retired Ambassador Elisabeth Millard, who will share her experience and insights gained through 26 years in the Foreign Service. During excursions ashore, we will be accompanied by expert local guides and by members of our onboard team, who will also enrich our understanding through lectures and discussions aboard.



Honfleur Harbor, Normandy, France



Jerónimos Monastery, Lisbon, Portugal

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ship description, please download the brochure at:  
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