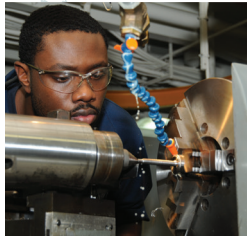


The LaRouche Organization

The Coming U.S. Economic Miracle

on the **New Silk Road**



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contribution **\$20**

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Introduction: Make America Good Again

On January 20, 1961, in his inaugural address *at the height of the Cold War*, John F. Kennedy spoke these words to the nation:

Let both sides [the U.S. and the Soviet Union] seek to invoke the wonders of science instead of its terrors. Together let us explore the stars, conquer the deserts, eradicate disease, tap the ocean depths, and encourage the arts and commerce....

And if a beachhead of cooperation may push back the jungle of suspicion, let both sides join in creating a new endeavor, not a new balance of power, but a new world of law, where the strong are just and the weak secure and the peace preserved....

Now the trumpet summons us again—not as a call to bear arms, though arms we need; not as a call to battle, though embattled we are—but a call to bear the burden of a long twilight struggle, year in and year out, “rejoicing in hope, patient in tribulation”—a struggle against the common enemies of man: tyranny, poverty, disease, and war itself.

Can we forge against these enemies a grand and global alliance, North and South, East and West, that can assure a more fruitful life for all mankind? Will you join in that historic effort?...

And so, my fellow Americans: ask not what your country can do for you—ask what you can do for your country.

My fellow citizens of the world: ask not what America will do for you, but what together we can do for the freedom of man.

With Kennedy’s assassination, has something in us died as well?

We are no longer in a cold war. How do we find ourselves on the brink of a thermonuclear war? Now, after leaving Afghanistan, we must ask ourselves: How have we been misled into one aggressive war after the next, after the next? Why do we “go abroad in search of monsters to destroy”? Why do we spend trillions destroying other nations instead of trillions developing ours? Who has convinced us that the nations of Russia and China are our enemies? Why do we fear that their development is a threat to our “power”? Why do we see the economy as a zero-sum game, where no one may gain without some-



one else losing? Why do we not recognize the Belt and Road Initiative of China as the furtherance of our nations’ mission against the Empire System? Why don’t we join efforts with Russia, China and other nations against the “common enemies of man”? The British Empire has infected the thinking of our policy making “elites,” manipulating the American people into seeing as enemies, those nations who were historically our friends. **They have stolen from us the real American history.**

We have lost our way as a nation. But we can find it again. The LaRouche Organization hopes and intends to reignite in the American people the sense of historic mission our founding fathers had, to be a Temple of Liberty and a Beacon of Hope for the world, against the darkness and barbarism of the British Empire. When we are ourselves, we bring internal improvements in the physical economy and scientific progress not only to *our* nation, but to the *world*. We are *Good!*

Lyndon LaRouche committed his life to the mission of ending “tyranny, poverty, disease, and war itself.” Further, he proved that unlike the cynical British Malthusian view, mankind is not a cancer on the planet, but rather a creative species capable of solving all problems that confront us.

LaRouche’s mission was to reestablish that noble conception of mankind. It is our job to complete it.

The History That Was Stolen From You

We celebrate Independence Day. Independence from what? Through our successful revolution, we achieved independence from the British Empire. But more fundamentally we achieved independence from the Empire System of a hopelessly corrupt Europe going back to the days of Rome. Our revolution dealt a blow to the Anglo-Dutch Empire that was intent not only on enslaving us but on colonizing and enslaving the whole planet. Our nation was founded with the intention of freeing all the nations of the world from the Empire System, not through military intervention, but by serving as a model, as John Winthrop proclaimed in 1630: "We shall be as a city upon a hill."

The assassination of John F. Kennedy in 1963 and the aggressive introduction of the Rock-Drug-Sex counter-culture, in combination with plunging into a series of no-win British-style colonial wars starting with Vietnam, have left our nation bereft of its mooring. There were times in our history that we were the opposite of the British Empire. This report is intended to remind ourselves of those better times, the American System principles employed during those periods, and how we can return to them now, even in this seemingly hopeless situation.

1. Two Systems are Before the World

How is it that Americans don't know the economic system that was created by Washington, Hamilton, Adams, and Lincoln, and which built the nation? We have been robbed of our historical knowledge and told that British free trade is our birthright. This lie must be refuted.

An advisor to President Lincoln, the economist Henry



Henry Charles Carey

C. Carey, wrote his 1851 book *Harmony of Interests* to make clear the difference between the British and American systems. As you read his words carefully, consider how far we have moved

away from the American System, adopting the British System instead. Carey was concerned not only with the development of America but with the whole world. The American *mission* was to make that happen. He wrote:

Two systems are before the world; the one looks to increasing the proportion of persons and of capital engaged in trade and transportation ... with necessarily diminished return to the labour of all; while the other looks to increasing the proportion engaged in the work of production ... giving the labourer good wages, and to the owner of capital good profits. One looks to increasing the quantity of raw materials to be exported ... thus impoverishing both farmer and planter by throwing on them the burden of freight; while the other looks to increasing the import of men, and diminishing the export of raw materials, thereby enriching both planter and farmer by relieving them from the payment of freight. One looks to compelling the farmers and planters of the Union to continue their contributions for the support of the fleets and armies, the paupers, the nobles and the sovereigns of Europe; the other to enabling ourselves to apply the same means to the moral and intellectual improvement of the sovereigns of America. One looks to the continuance of that bastard freedom of trade which denies the principle of protection, yet doles it out as revenue duties; the other to extending the area of legitimate free trade by the establishment of perfect protection... One looks to underworking the Hindoo, and sinking the rest of the world to his level; the other to raising the standard of man throughout the world to our level. One looks to pauperism, ignorance, depopulation, and barbarism; the other to increasing wealth, comfort, intelligence, combination of action, and civilization. One looks towards universal war; the other towards universal peace. One is the English system; the other we may be proud to call the American system, for it is the only one ever devised the tendency of which was that of elevating while equalizing the condition of man throughout the world.

Such is the true mission of the people of these United States.... To raise the value of labor throughout the world, we need only to raise the value of our own.... To substitute true Christianity for the detestable system known as the Malthusian, it is needed that we prove to the world that it is population that makes the food

come from the rich soils, and food tends to increase more rapidly than population, thus vindicating the policy of God to man.

2. Massachusetts Bay Colony

John Winthrop (1588–1649) saw the necessity to escape the “perversity and corruption” of oligarchical Europe and fulfill the vision of Nicholas of Cusa and other republicans of the Renaissance who wished to establish a republic in the New World as a beachhead for mankind.¹ In 1629, Winthrop wrote *Reasons to Be Considered for Justifying the Plantation in New England*, where he lays out the moral necessity of creating a republic in the New World.

This land [of England] grows weary of her inhabitants, so as man who is the most precious of all creatures is here more vile and base than the earth we tread upon, and of less price among us, than a horse or a sheep... we use the authority of the law to hinder the increase of people... and thus it is come to pass that children, servants, and neighbors (especially if they be poor) are counted the greatest burden which if things were right would be the chiefest earthly blessing.

The whole earth is the Lord's Garden and he hath given it to the sons of men, with a general condition, Gen: 1.28. Increase and multiply, replenish the earth and subdue it...

Under the command of Governor John Winthrop, eight hundred passengers on four ships arrived in Salem Massachusetts, where he gave his sermon *A Model of Christian Charity* stating: “For we must consider that we shall be as a city upon a hill. The eyes of all people are upon us.”

By 1647 John Winthrop, Jr. had established the Saugus Iron Works, the first automated, integrated industrial complex in the new world. The colony further established its sovereignty in 1652, when the General Court of Massachusetts Bay authorized the creation of a mint. Until then only kings could mint money! This new currency was called the Pine Tree Shilling, redeemable only in the colony and designed to stop the foreign draining of the colony's hard currency. The currency's *value* was not the silver itself, but the sovereign intention of the Government to deploy currency as *credit* to finance the physical

1. Lyndon H. LaRouche, Jr., *The Prospect for a U.S. Future: Build the Real American Party*; *EIR* April 18, 2014.



John Winthrop, first governor of the Massachusetts Bay Colony



Silver Pine Tree Shilling of Massachusetts

economic development of infrastructure, agriculture, ship building and other industries.

Britain's reigning monarchy, the Stuarts, intent on crushing the potential of this developing colony, preferred to impose an economy based on raw materials exports and slavery, in complete opposition to the sovereignly productive economy that Winthrop was organizing. Under Charles II, with his brother the Duke of York, later James II, The Royal Africa Company was founded. It went on to carry more African slaves to the Americas than any other company in the history of the Atlantic slave trade.²

Shortly after the Massachusetts Bay Colony Charter (granted by the British monarchy in 1629) was revoked in 1684, Massachusetts Bay Colony leader Cotton Mather (1663–1728) issued a paper in 1691 entitled *Some Considerations on Bills of Credit*, where he challenged the people of New England to accept paper money, over silver or gold, based solely on the sovereignty of the *nation!* This was especially bold since there was no nation yet.

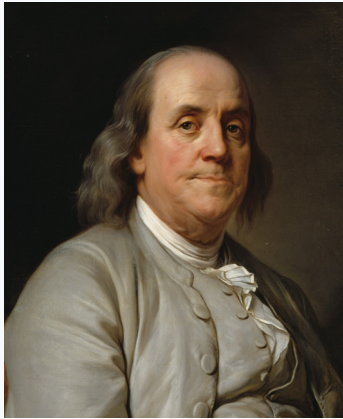
In 1710, Cotton Mather made clear his vision of a nation's mission in his *Essays to Do Good*. He differentiated our *mission* from the looting policy of the British Empire.

It is an invaluable *honor* to do *good*; It is an incomparable pleasure. A man must look upon himself as *dignified* and *gratified* by God, when an *opportunity* to do *good* is put into his hands. He must embrace it with *rapture*, as enabling him to answer the great End of his being. *Government...* should vigorously pursue those noble and blessed *ends* for which it is *ordained: the good of Mankind*.³

Benjamin Franklin (1706–1791) was born four years before this great work was written. He read it when he was 11 years old, and it had a formative effect. Franklin spent

2. William Andrew Pettigrew, *Freedom's Debt: The Royal African Company and the Politics of the Atlantic Slave Trade 1672–1752*; 2013 UNC Press, Chapel Hill.

3. As quoted in H. Graham Lowry, *How the Nation Was Won: America's Untold Story, 1630–1754*; *EIR*, 1988 pp. 112-113.



Benjamin Franklin

the rest of his life doing good! He created the first public fire department and the first public hospital in Philadelphia. Virginia Governor Alexander Spotswood (1676–1740) made Franklin the postmaster for Philadelphia in 1737. Throughout his life Franklin was committed to creating a nationwide postal service. He founded the American Philosophical Society (APS) in 1744 with a call to spread scientific knowledge to improve the conditions of mankind. Franklin was committed to the General Welfare long before the Constitution had concretized the idea!

Shortly after the founding of the APS, a young George Washington (1732–1798) was surveying the mountains of Virginia, carrying out Alexander Spotswood’s dream of expanding the colonies to the west beyond the Appalachians. Going west was of crucial importance to republicans then, and later, intent on creating a continent-wide bulwark against the Empire.

The British Empire, of course, intended to crush this development in its colonies. The Iron Act of 1750 forbade the colonies to produce iron from the raw ore, demanding instead they import it from England! The Currency Act of 1751 forbade the colonies from issuing paper “Bills of Credit” or forming public banks. On top of that, under the 1763 Treaty of Paris, which ended the French and Indian war, the British, under King George III, created a large Indian reserve to the west of the colonies, completely closing them in against the Atlantic and forbidding any development to the west.

3. The American Revolution

Benjamin Franklin set sail for England in 1757 as Pennsylvania’s official colonial representative. This was an attempt to avoid conflict with the Empire, by instead transforming it into a civilized republic. He worked with scientists and industrialists, particularly those centered

in Birmingham and Manchester, not London, and certainly not The City of London, which was the center of the financial oligarchy. Scientists Joseph Priestly and John Gilbert, inventors Matthew Boulton and James Watt, and ironmaker John Wilkinson were among his collaborators. They built steam engines, industrialized Manchester, and began a network of canals that would bring civilization to England.⁴

Franklin did not succeed in civilizing Britain’s reigning House of Hanover, however, and “after a long train of abuses,” he, among other patriots, decided there was no other recourse than revolution.

During the American Revolution (which we will not discuss in detail in these pages), General George Washington was in a constant battle with squabbling states over securing the soldiers and materials necessary for a decisive victory. The 1776 Declaration of Independence was followed only by the weak Articles of Confederation with which to govern. This was infuriating to Washington, and he had this problem firmly in his mind as he would later preside over the Constitutional Convention.

In 1781 the Continental Congress created the position of Superintendent of Finance. Robert Morris (1734–1806) was appointed to that office, where he worked together with his Assistant Superintendent Gouverneur Morris (1752–1816) to provide desperately needed supplies to the army. These funds came from personal monies, loans, and gifts from patriots and from the States, often with much arm twisting. Morris came to understand that only with the power to levy taxes and lay tariffs could a government have the sovereign power to develop the nation.



George Washington, 1776

The first attempt at a national bank was the Bank of North America. Organized in 1781 by Robert Morris and Alexander Hamilton (1757–1804) and capitalized with foreign loans of silver and gold organized by Benjamin Franklin and John Adams (1735–1826), as well as through patriots buying stock, it created a new currency more secure than the depreciating “Continental.” But the lack of union between the thirteen states prevented them developing

4. Anton Chaitkin *Who We Are: America’s Fight for Universal Progress, from Franklin to Kennedy Vol 1: 1700s to 1800s*; 2020. Chapter 1: “The Franklin Circle Starts Modern England” Get this book and read it, and then read it again. Americans don’t know who they are until they read Chaitkin’s *Who We Are*.

a national plan for funding the war debt.

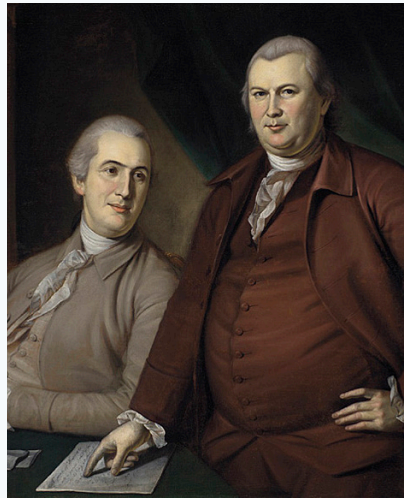
At Yorktown, the British lost the war, but they never gave up trying to destroy us. Washington had understood for years the importance of producing everything we could in the United States. Not just agriculture, as Thomas Jefferson (1743–1826) would insist, but *manufacturing* as well. In fact, now, with the close of the shooting war, the British immediately moved to the next means of attack: flood *and* drown the fledgling America with cheap manufactured goods. Jefferson fell right into the British trap and argued that “while we have land to labor then, let us never wish to see our citizens occupied at a work-bench... for the general operations of manufacture, let our workshops remain in Europe.”



Bank of North America

Washington left his headquarters in Newburgh, New York in the summer of 1783 to tour the Mohawk River Valley, surveying the potential for an East-West canal. The fact that it would be in New York and not in his native Virginia did not concern him in the least! The *nation* was his focus.

In 1785 Washington took up the delicate task of bringing Virginia and Maryland together in building the Potomac canal. States often bickered over who would benefit more over such projects. A national mission was still lacking, and that vulnerability could be exploited by the British



Robert Morris and Gouverneur Morris

In the mid 1780s, George Washington, concerned that the Confederation could splinter, spent much of his time preoccupied with building canals, roads and other infrastructure that could pull together and develop the nation. Even before signing the 1783 Treaty of Paris that officially ended the war with England,

Washington, among other staunch nationalists planned to do at this Convention was not to modify the nonfunctional Articles of Confederation, but to start completely fresh and create a new powerful Constitution, with sufficient powers agreed to by the people themselves, rather than those imposed by a confederation of sovereign states.

In preparation for the Convention, a nationalist group called the Society for Political Inquiries first met at the City Tavern in Philadelphia on Feb. 9, 1787. Members included Robert Morris, Gouverneur Morris, scientist David Rittenhouse (1732–1796), Charles Biddle (father of future National Bank head Nicholas Biddle), and Jonathan Williams, Jr. (Franklin’s great nephew, and future founding Superintendent of West Point Military Academy). Three days before the opening of the Convention, a paper was written by Tench Coxe (1755–1824), entitled *An Enquiry into the Principles on which a Commercial System for the United States Should be Founded*. It was printed and distributed to every member of the Constitutional Convention. It instructed the delegates on a program for the development of the nation contrary to the British Free Trade system, demanding instead the “prohibitive powers... enabling Congress to prevent the importation of such foreign commodities, as are made from our own raw materials.”⁶

The purpose of government, laid out in the Preamble of the Constitution, composed by Gouverneur Morris, was a clear commitment to the people of the nation as a whole, rather than the separate states:

if not remedied. A convention was held in Annapolis in September 1786, entitled “Meeting of Commissioners to Remedy Defects of the Federal Government.” Only five states participated, but Hamilton, Robert Morris, and James Madison (1751–1836), who at that time was a staunch nationalist, laid out the plans for a Constitutional Convention to be held in Philadelphia in May 1787.⁵

4. Constitutional Convention

What George Washington, Benjamin Franklin, Alexander Hamilton, Robert Morris, and Gouverneur Morris,

among other staunch nationalists planned to do at this Convention was not to modify the nonfunctional Articles of Confederation, but to start completely fresh and create a new powerful Constitution, with sufficient powers agreed to by the people themselves, rather than those imposed by a confederation of sovereign states.

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5. Chaitkin, *Who We Are*, pp. 79-81

6. Chaitkin, *Who We Are*, pp. 87-91

We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defense, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.

The other critical clause in this new Constitution was found in Article 1, Section 8, which states:

To make all Laws which shall be **necessary and proper** for carrying into Execution the foregoing Powers, and all other Powers vested by this Constitution in the Government of the United States, or in any Department or Officer thereof.

As Alexander Hamilton (along with John Jay and James Madison, penning the Federalist Papers) led the fight to organize the states to ratify the new Constitution, we find an immediate battle between the nationalists and those who would insist on the power of the states as primary. An argument from the States Rights faction was to be heard again and again. As Patrick Henry (1736–1799) argued at the Virginia ratifying convention:

Among ten thousand implied powers which [Congress] may assume, they may, if we be engaged in war, liberate every one of your slaves if they please. And this must and will be done by men, a majority of whom have not a common interest with you... Have they not the power to provide for the general defense and welfare? May they not think that these call for the abolition of slavery? May they not pronounce all slaves free, and will they not be warranted by that power?

The nationalists prevailed and our Constitution was ratified on June 21, 1788. With sixty-nine electoral votes, George Washington was unanimously elected the first President of the United States. He appointed Alexander Hamilton as Secretary of the Treasury.

Hamilton immediately went to work. The nation building policies that Hamilton pursued would later be named by Henry Clay (1777–1852), “The American System.” It is a tragedy that American System policies were hegemonic in only short periods of our history, but the effect of those periods were amazing spurts of physical economic development. Under the policy of a *credit system*, the financial system was placed at the service of the physical economy.

5. Hamilton’s American System

The Revolutionary War had left the new nation heavily indebted, with Continentals and local currencies nearly worthless. The problem Hamilton faced was that, on the one hand, the debt could not be paid because the only way to collect the necessary revenue would be to tax an impoverished people beyond their means, but on the other hand, if the debts were not serviced, the country would have no credit.

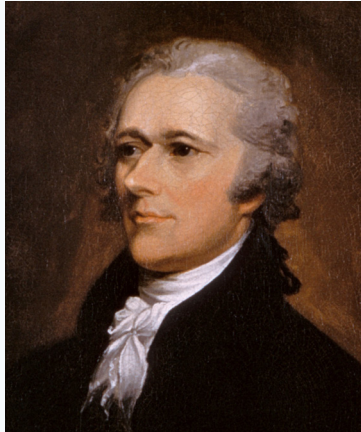
On January 9, 1790, Hamilton presented his *Report on Public Credit*. Essentially, Hamilton proposed that all the debts of the states be incorporated into the debt of the nation. Some states were more heavily indebted because they paid for a larger share of the Revolution, but *all* the states enjoyed the freedom that was won. Under the process of *assumption*, Hamilton national-

ized the state debts, and by securing the means for making payments on it, turned that debt into stable credit for agriculture, manufacturing, and internal improvements in the nation. As the economy grew, the debts would be repaid through taxation including tariffs on imports, which would also promote internal production. Shockingly, Madison, Hamilton’s old nationalist partner, now turned against his plan, under the influence of Secretary of State Jefferson.

In December 1790 Hamilton proposed a Bank of the United States to regulate the currency and as Hamilton stated, “by contributing to enlarge the mass of industrious and commercial enterprise, banks become nurseries of national wealth.” Foreign investment in the Bank was allowed, but foreigners had no voting power. It was our *sovereign* bank.

The bank immediately came under attack from Jefferson’s circles. Such a bank was not specifically mentioned in the Constitution and therefore had no right to exist, they argued. Hamilton argued that the “necessary and proper” clause meant otherwise:

[T]his general principle is inherent in the very definition of government, and essential to every step of progress to be made by that of the United States, namely: That every power vested in a government is in its nature sovereign, and includes, by force of the term, a right to employ all the means requisite and fairly applicable to the attainment of the ends of such power, and



Alexander Hamilton

which are not precluded by restrictions and exceptions specified in the Constitution, or not immoral, or not contrary to the essential ends of political society.⁷

Washington agreed and signed the Bank into law on February 25, 1791.

Hamilton moved next to his *Report on the Subject of Manufactures*, delivered to Congress on December 5, 1791. He argued for a division of labor, and the increased use of machinery for labor and timesaving, protective duties on foreign articles, bounties to be paid for industrial innovations, a banking system for national development and safe, convenient transfer of monies, and aiding transport of commodities by government backing of canals and roads. (Internal Improvements!) Hamilton took on the Jeffersonians directly, stating:

It is not uncommon to meet with an opinion that though the promoting of manufactures may be the interest of a part of the Union, it is contrary to that of another part. The Northern & Southern regions are sometimes represented as having adverse interests in this respect. Those are called manufacturing, these agricultural states; and a species of opposition is imagined to subsist between the manufacturing and agricultural interests.⁸

But most importantly, he recognized that to “cherish and stimulate the activity of the human mind, by multiplying the objects of enterprise, is not among the least considerable of the expedients, by which the wealth of a nation may be promoted.”

Alive with the spirit of Benjamin Franklin, and expressing a commitment to “cherishing and stimulating the activity of the human mind,” Pennsylvania became a center of nationalist activity. In 1789 a number of leading citizens of Philadelphia had formed a “Society for Promoting the Improvement of Roads and Inland Navigation.” Robert Morris accepted its presidency, and David Rittenhouse was among its members. In February 1791 the Society sent a report to the Pennsylvania Legislature elaborating a plan to link the rivers of the commonwealth from east to west, conquering the Appalachian Mountains in between. The aptly named Union Canal and Schuylkill Navigation works came directly out of this proposal.⁹

7. Alexander Hamilton, *Opinion on the Constitutionality of a National Bank*, February 23, 1791

8. Alexander Hamilton, *Report on the Subject of Manufactures*, December 5, 1791.

9. J. Lee Hartman, “Pennsylvania’s Grand Plan of Post-Revolutionary Internal Improvement”, *The Pennsylvania Magazine of His-*

In 1794 a young Dewitt Clinton (1769–1828), soon to be the father of the Erie Canal, gave a speech laying out his vision for the future of our nation and implicitly the effect we would have on the world:

Great improvements must also take place which far surpass the momentum of power that a single nation can produce, but will with facility proceed from their united strength. The hand of art will change the face of the universe. Mountains, deserts, and oceans will feel its mighty force. It will not then be debated whether hills shall be prostrated, but whether the Alps and the Andes shall be levelled; nor whether sterile fields shall be fertilized, but whether the deserts of Africa shall feel the power of cultivation; nor whether rivers shall be joined, but whether the Caspian shall see the Mediterranean, and the waves of the Pacific lave the Atlantic.



First National Bank, Philadelphia, Pennsylvania

The future looked bright, but with Aaron Burr’s treasonous assassination of Hamilton in 1804,¹⁰ and President Madison’s dismantling of the National Bank in 1811, Washington and Hamilton’s American System was crippled. Once again the British began military assaults. Kentucky Congressman Henry Clay organized the “War Hawks” who launched what was known as the War of

tory and Biography, Vol. 65, No. 4 (Oct. 1941, The Historical Society of Pennsylvania), pp. 439-457

10. After his term as Vice President ended, Burr then directly requested the help of Anthony Merry, Britain’s ambassador to the U.S., to, as Merry explained to his government “effect a separation of the western part of the United States” from the rest of the country. In return, Burr wanted money and ships to carry out his treason.

1812 against Great Britain. The British burnt down our capitol, but after the Battle of Baltimore, “our flag was still there.” The negotiating skills of John Quincy Adams (1767–1848) in Ghent were critical to getting favorable terms in the peace treaty. Although we won the war, our lack of military, transportation and industrial readiness was made plain. One major effect of the war was to unite Americans, despite party differences, around the need to build the nation. Under tremendous pressure, one of Madison’s last acts in office was to restore the Bank of the

United States: The Second National Bank. Unfortunately, his final act in office was to veto Henry Clay and John Calhoun’s (1782–1850) Bonus Bill, which would have invested surplus

revenues from the Bank directly into internal improvements of the nation. Madison argued a strict constructionist (i.e., Southern Slavocracy) view of the Constitution to defend his veto.¹¹

6. Monroe and John Quincy Adams

President James Monroe was a less tragic figure. In his first inaugural address he stated his support for manufacturing and internal improvements:

Other interests of high importance will claim attention, among which the improvement of our country by roads and canals, proceeding always with a constitutional sanction, holds a distinguished place. By thus facilitating the intercourse between the States we shall add much to the convenience and comfort of our fellow-citizens ... and ... of [great] importance, we shall shorten distances, and, by making each part more accessible to and dependent on the other, we shall bind the Union more closely together.

Our manufacturers will likewise require the system-

11. Chaitkin, *Who We Are*, p. 219. John Calhoun, before turning against everything he stood for, argued in Congress for the bill: We occupy a surface prodigiously great in proportion to our numbers. The common strength is brought to bear with great difficulty on the point that may be menaced by an enemy... Let us... bind the republic together with a perfect system of roads and canals. Let us conquer space.

atic and fostering care of the Government. Possessing as we do all the raw materials, the fruit of our own soil and industry, we ought not to depend in the degree we have done on supplies from other countries... the capital which nourishes our manufacturers should be domestic, as its influence in that case instead of exhausting, as it may do in foreign hands, would be felt advantageously on agriculture and every other branch of industry.

A team of patriots including Mathew Carey, Nicholas Biddle, DeWitt Clinton, and Joseph Gardiner Swift now joined together to revive Hamilton’s System and launch a massive physical economic surge.



Mathew C. Carey

DeWitt Clinton

Nicholas Biddle

Mathew Carey

was a polemical writer who took on the foolish axioms of Adam Smith and British free trade “pregnant with certain ruin to any nation by which they may be carried into operation.” He showed that American citizens must think outside of the mental prison the imperial establishment had constructed for them, that “cheap” was not good if it was destroying our capacity to produce at home, and that agriculture was not superior to manufacturing, as a colonial master would like us to believe, but in fact, there was an “Identity of Interests” between the two. He reprinted large sections of Hamilton’s 1791 *Report on Manufactures*.

Nicholas Biddle was appointed head of the Second National Bank by President Monroe in 1823. Biddle used the bank to funnel cheap credit into manufacturing and infrastructure including railroads.

As governor of New York, Dewitt Clinton launched the “proof of principle” of canals in America. On July 4, 1817 the 363-mile Erie Canal was begun, completely financed by the State of New York. This canal served as a training ground for the American engineers mainly supplied by the Army Corps educated at West Point.

Joseph Gardiner Swift reorganized West Point into a science and engineering center. He hired Claudius Crozet, a military engineer who had studied at France’s Ecole Polytechnique, to be Professor of Civil and Military Engineering. Crozet taught “the construction of build-

ings, the design of arches, canals, and bridges, and the machines used to build them... by 1826, the engineering course included roads, tunneling, inland navigation, railroad construction, and artificial harbors.”¹² Crozet, Stephen H. Long, David B. Douglass and others taught a generation of Army Corps cadets who would go on to build the nation.

The “private” West Point Foundry was organized in 1817 by these same circles just as the Erie Canal began. It produced the first steam engine built for practical use, all the castings for the Erie Canal, the water pipes for the Croton aqueduct and for the cities of New York, Boston and Chicago.¹³

On March 6, 1819, the Supreme Court issued a *unanimous* decision that not only did states have no right to tax the National Bank, but further that it was absolutely constitutional for Congress to create one. In the opinion, Chief Justice John Marshall wrote, “Congress has the power to pass all laws ‘necessary and proper’ to carry out its delegated powers in Article I, Section 8 of the Constitution. The bank provided the means to carry out these powers. Therefore, the act of Congress chartering the bank ‘is a law made in pursuance of the Constitution, and is part of the supreme law of the land.’”

In his seventh Annual Message to congress, December 2, 1823, James Monroe, a Virginian, praised the Military Academy and proposed that congress appropriate funds for the Corp of Engineers to survey the routes to link canals from Lake Erie to the waters of the Ohio. He also recommended a new tariff to protect manufacturing.

On March 2, 1824 Chief Justice John Marshall wrote in the landmark case *Gibbons vs. Ogden*, that the Constitution gives the federal government supremacy over interstate commerce: “This power, like all others vested in Congress, is complete in itself, [and] may be exercised to its utmost extent...” He rejected “that narrow construction [interpretation of the Constitution—ed.] which would cripple the government and render it unequal to the object for which it is declared to be instituted.”

Empowered by this ruling, Congress then passed the Tariff Act of 1824, introduced by Henry Clay, who made the point that there was an unholy trade alliance between England and the slave based economy in the South. The General Survey Act was introduced to lay the foundation for a general system of federally sponsored transport

and to employ officers of the Army’s Corps of Engineers to make surveys for roads and canals. Once again, the British-run Slavocracy responded with rage, denouncing the Act and, warning, through its leading representative, John Randolph of Roanoke, who spoke in Congress to attack the idea that the Constitution came from the “people” and had authority superior to that of the states: “If Congress possess the power to do what is proposed by this bill... they may emancipate every slave in the United States.”¹⁴ Foreshadowing the Confederacy, Randolph even argued that the states themselves could undo the Constitution if they chose. President Monroe rejected the backwardness of the Slavocracy, and on April 30, 1824 signed into law a bill creating a Board of Engineers for Internal Improvements, made up of leading West Pointers such as General Simon Bernard and Colonel Joseph G. Totten.

Mathew Carey and the Biddle circles organized the Pennsylvania Society for the Promotion of Internal Improvements on November 30, 1824, putting out pamphlets, and holding meetings to organize the people to support a large public works program in Pennsylvania. The results were spectacular. Hundreds of miles of canals and later railroads were built.

As James Monroe’s Secretary of State John Quincy Adams said “[America] goes not abroad in search of monsters to destroy.” As President, Adams would put the army to work building our nation.

Dewitt Clinton collaborated with Ethan Allen Brown, Governor of Ohio, to coordinate a unified canal system. On July 4, 1825 Clinton turned the first spadeful of dirt for the Ohio and Erie canal. July 21, 1825 Clinton broke ground for the Miami and Erie Canal. Toledo, Cincinnati, Cleveland and many other cities were born in the process. On November 4, 1825, the Erie Canal was com-



John Marshall, 1832

James Monroe, 1819

12. Pamela Lowry, West Point and the Tradition of the Army Corps of Engineers, *21st Century Science and Technology*, Spring 2011

13. Chaitkin, *Who We Are*, pp. 265-266

14. John Randolph speech to Congress, Jan 31, 1824.

pleted, creating the great industrial centers of Buffalo and Rochester.

The canals were financed with bonds, but also through the U.S. Land Grant Act of 1828, allowing states to sell federal land to sponsor such internal improvements. Under Biddle, the Second National Bank invested directly into canals, railroads, roads and industries.¹⁵

Under John Quincy Adams, a survey of the B&O railroad was overseen by two West Point men: Brevet Lieutenant Stephen H. Long and Captain William Gibbs McNeill. In 1828 the U.S. Army Topographical Engineers surveyed the entire route. The chief engineer was George Washington Whistler, another West Point graduate.

7. Abraham Lincoln and the Greenbacks

A new president was elected in 1828: Andrew Jackson. Despite what our founding fathers conceived of and despite what the Supreme Court under Marshall had ruled again and again, Andrew Jackson vetoed a bill to recharter the Second National Bank in 1832, ushering in what came to be known as the “wildcat” banking system. The U.S. no longer had a sovereign currency of its own, issued either by the U.S. Treasury or any responsible U.S. agency. Instead, currency was issued by 1,496 state banks, which were chartered and regulated, mostly, by the various states.

Despite this, the thrust of progress launched in the 1820s continued. By 1835, under the General Survey act, some 20 U.S. railroads were using active-duty Army personnel in their construction and management.¹⁶ Instead of going to war, we went to build around the world.

George Washington Whistler, for example, died of cholera in Saint Petersburg, Russia, building the railroad to Moscow! In 1836, state representative and American System advocate Abraham Lincoln (1809–1865) guided the state of Illinois to enact a bill to construct the Illinois and Michigan Canal. This canal would link Lake Michigan with the village of Chicago that had been carved out its mud banks by Stephen H. Long in 1816 to the Mississippi River. Major industrial cities like Chicago didn’t “just happen,” they were *organized* by patriots! However, with the destruction of our National Bank, the country

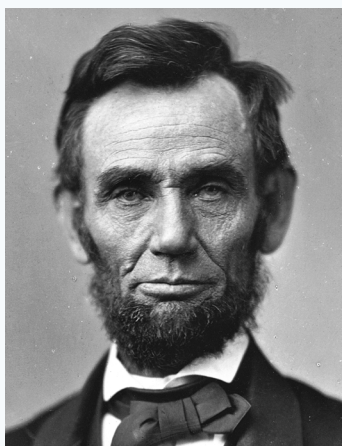
sunk into a deep depression in 1837. The repeal of the General Survey Act in 1838 under president Martin van Buren furthered the attack on the American System. Our nation came to be dominated by British and Wall Street speculation, rather than physical growth.

With Lincoln just coming into office as President, the long-standing British intention to destroy the American republic and balkanize the United States into smaller, warring states that could be reabsorbed into Mother Britain erupted in 1860 as the American Civil War, using the Confederacy as an instrument from within. Amazingly, during his Presidency, Lincoln not only defeated this British-instigated attack, but also created a forty-year-long scientific-technological shock wave that produced, by 1900, the greatest upward transformation of the physical economy and labor power ever recorded in history.

At the start of the Civil War, the United States government faced two problems. First, it did not have sufficient revenue for the expense of war, and second, it did not control a fully sovereign credit and banking system.

With the Confederate congressmen gone from Washington, after the Feb. 8, 1861 establishment of the Confederacy, the lame-duck session of Congress passed the Morrill Tariff, restoring the 1846 tariff rates, and from 1861 to the middle of 1864, new bills, pushing rates upward, were introduced and passed. At the end of the war, the average rate on dutiable goods stood at about 47% compared with the 18.8% at the beginning of the war.

Next, the credit and banking crisis was tackled. The total stock of U.S. currency in circulation was a small \$200 million. In 1861, U.S. Representative Elbridge Gerry



Abraham Lincoln

Spaulding, a Lincoln Republican from Buffalo, New York, a commercial banker, a Hamiltonian, and Chairman of the House Ways and Means Committee, drafted the Legal Tender law, which created the Greenback currency. It was the first currency in American history that was issued directly by the U.S. Treasury—not a bank banknote—and was not redeemable in gold. Spaulding’s Legal Tender Act passed the Congress on February 25, 1862, with the Treasury issuing currency in the amount of \$150 million. Additional acts increased currency to a total of \$450 million in Greenbacks (so called because the color of the bill was green). Starting with the \$200 million in banknotes, the U.S. currency in circulation tripled to \$650 million within 13 months! No

15. Chaitkin, *Who We Are*, pp. 308-312

16. Chaitkin, *Who We Are*, p. 326

longer was the currency base restricted. This was an elixir: it allowed munitions to be purchased, soldiers to be paid (with currency they could spend), and manufacturing and agriculture to grow freely. And the specter of inflation was no threat, since the Greenbacks were directed to physical economic improvement, which would increase the quantity and quality of economic output.

As a Hamiltonian, Spaulding was completely aware that, by his law, Greenbacks would be redeemable into U.S. government bonds, payable at some date in the future, and that those bonds, at least in the current form of his legislation, would be paid for with taxes—actually several times over—by the increased science, output and productivity that the Greenbacks would enable in the present and near future. Scientific and technological progress in the future would shape the present.

Abraham Lincoln then signed into law the first Homestead Act on May 20, 1862, providing applicants with 160 acres of federal land for a nominal filing fee. The applicant would have to maintain continuous residence on the land, and **make physical improvements upon it**, for a five-year period, before receiving the title to the land. The 1866 Homestead Act explicitly included Blacks Americans. In one stroke, Lincoln opened the whole nation to be developed by the growing population, and ended the feudal land-monopoly systems of Europe and the Confederacy.

On July 1, 1862, Lincoln signed the Land-Grant College Act, which granted 30,000 acres of federal land to each state for each Senator and member of the House of Representatives the state had. The state would sell the land, and the income from the investment of the proceeds would be used to build one or more colleges in the state, “where the leading object shall be... to teach such branches of learning as are related to agriculture and the mechanic arts.” This became the spawn for many state public university systems today.

The Act created a labor force of advancing education and skill level that could master industry and agriculture as its technological level increased. The Land-Grant College Act created and

funded fifty-seven colleges and universities, at least one in every state, and the Morrill Act of 1890 created nineteen of the nation’s historically Black colleges.

Next, although a seemingly impractical idea, on the very same day, President Lincoln signed the Pacific Railway Acts into law on July 1, 1862, which authorized the Central Pacific Corporation to start in San Francisco, building rail eastward, and the Union Pacific Corporation to start in Council Bluffs, Iowa and build rail heading westward. (The two rail lines became one, joining at Promontory Summit, Utah on May 10, 1869.) Lincoln took Army Corps engineer Grenville Dodge¹⁷ out of the war and commissioned him to build the railroad financed by U.S. Government bonds and land grants, thus overturning Van Buren’s attack on the General Survey Act. The outcome was unprecedented, reducing the time needed for a trip from Council Bluffs to San Francisco, with young men, in good condition, with horses and supplies, from several months, to 4.25 days! This was critical in pulling the East and West of the nation together.

Between 1862 and 1864, Lincoln also signed the char-



17. Dodge became the chief engineer for construction of the Union Pacific from 1866–70, and an adviser to Russia on the Trans-Siberian Railroad.

ters for construction of two additional transcontinental railroads: the Northern Pacific and the Southern Pacific, and two further transcontinental railroads were chartered and built before 1900, bringing the total to five.

The rail lines acted as spines for development corridors: new towns and cities arose, new farms and factories flourished. Once-barren land, unused for millennia, became fruitful with economic activity. Between 1865 and 1900, the miles of railroad in operation in the U.S. zoomed from 35,100 to 193,300, and caused steel production to rise from less than 250,000 tons, to 11.2 million tons.

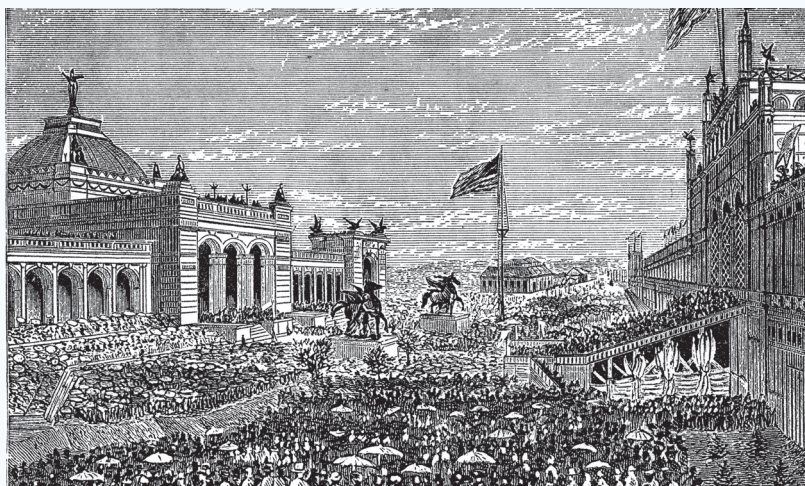
8. Centennial Exposition and the Global Spread of the American System

Faced with the defeat of their Confederate puppets, the British resorted to assassinating Lincoln, but American System policies had been unleashed once again. In 1876, the 100-year anniversary of the Declaration of Independence, the Centennial exhibition, led by Henry C. Carey, the son of Mathew Carey, opened. Nine million visitors, including scientists, engineers, industrialists and economists, saw a vast array of drill presses, saws, printing presses, water pumps and much more, located in more than 200 different buildings,

and all powered by one single steam engine. Baldwin Locomotive Works constructed several exceptionally beautiful locomotives just for the Centennial; and the 29-year-old Thomas Alva Edison put on display his automatic printing and multiplex tele-

graph devices. Never before in history had such a powerful vision been exhibited.

The United States had developed into a mighty industrial powerhouse. The population continually grew, the standard of living increased, and the continent was united via a series of canals and rail lines, with the transcontinental rail connection being completed in 1869, tying the country together from east to west.



Centennial Exhibition

Under Henry Carey's leadership, these patriots, far from promoting an isolationist nationalism, promoted a world community of sovereign nation-states against the system of empire. Much to the dismay of the British imperialists, the American system was spreading internationally, from Germany and France, to Russia, China and Japan.

In Germany, Chancellor Bismarck, having studied the writings of Henry Carey and a German proponent of the American System, Friedrich List, broke with the free trade system and adopted the American system of economics:

The success of the United States in material development is the most illustrious of modern times...Because it is my deliberate judgment that the prosperity of America is mainly due to its system of protective laws, I urge that Germany has now reached that point, where it is necessary to imitate the great tariff system of the United States.¹⁸

In France, high tariffs were introduced, and the French rail network expanded. In secret agreement, French and German industrialists planned a rail connection from Berlin to Baghdad, with the help of the head of Deutsche Bank, Georg von Siemens, in order to create entirely new trade routes throughout the world, independent of the British-controlled sea trade.

In Russia, American railroad engineers worked with Russian transportation minister Count Sergei Witte, the economist and chemist Dmitri Mendeleev, and others, to organize a system of higher tariffs and the construction of the Trans-Siberian rail project, modeled

on Lincoln's American transcontinental railroad.

The very first locomotive on this Trans-Siberian railroad was built in Philadelphia by the Baldwin Locomotive Works. The ultimate intention was to link the European railways with the Anglo-Indian railways, through central Asia, as well as by furthering the Baghdad railway,

18. Bismarck speaking in the German Parliament, May 14, 1882

and linking with future Chinese railways. By 1890, the Russians were already planning a Bering Strait bridge to connect to America.

In Japan, during the Meiji Restoration of 1868, revolutionaries under Prince Tomomi Iwakura overthrew the feudal Tokugawa warlords; they set up a modern central government guided by Japanese students of Henry Carey and Friedrich List. In 1871, Carey's student and political agent E. Peshine Smith (1814–1882) was appointed economic adviser to the Meiji Emperor. Other Carey associates were also then in Japan, working with the new government, identifying mineral resources, planning transport, and outlining protectionist tariff strategies to develop Japan as a modern industrial power and counterweight to British colonial policies. Japan became a leading American ally, and created the first independent national bank in that region of the world.

In China, Count Witte, together with French Foreign Minister Hanotaux, set up the Russo-Chinese Bank, largely with French capital, which was allowed to lease the necessary territory for building the last leg of the Trans-Siberian line through Manchuria, creating a new company, the Chinese Eastern Railroad, for that purpose. Where the British had unloaded crates of opium, American Civil War engineers unloaded crates of Baldwin locomotives. Carey ally Wharton Barker—an outspoken proponent of the dismemberment of the British Empire—worked with the circles around the Chinese emperor for the creation of a joint Chinese-American bank, and his “China modernization project” included a system of Chinese-run national railways and telegraphs.

This was the American System's 19th Century “World Land-Bridge”—a “win-win” policy between sovereign nations. Instead of British cheap goods, drugs and slave labor, reciprocity treaties were negotiated to organize a “community of principle,” whereby nations could trade on the basis of bolstering the economies of each other. That is, working to strengthen each other, to modernize the world and eliminate poverty and conflict once and for all.

This was in keeping with the outlook of Henry C. Carey, who wrote in his 1851 *Harmony of Interests*: “Such is the true mission of the people of these United States. ‘Do unto others as ye would that others should do unto you.’”

But with this perspective on the horizon, the British Empire's very existence was now under mortal threat. They orchestrated World War I, and true to their methods, turned nations that would be friends with each other into enemies of each other. Furthermore, their puppet,

President Woodrow Wilson, handed the reins of our banking system back to the British through the creation of the Federal Reserve in 1913. This ended with the crash of the banking system in 1929, and a deepening economic depression.

9. Franklin Roosevelt's Explosive Economic Revival of the United States

As FDR came into office in 1933, industrial production was down 54% from its 1929 levels; steel production operated at only 24% of its capacity; millions of farmers were bankrupt; the banking and financial system was shattered, with tens of millions of Americans having lost all of their savings, and many millions having lost their homes. Roosevelt realized he had to take decisive action and could only accomplish this through the inherent powers of the U.S. Constitution, especially those granted to the executive. Roosevelt took decisive action, and in his March 4, 1933 inaugural address stated:

I am prepared under my constitutional duty to recommend the measures a stricken nation in the midst of a stricken world may require. These measures, or such other measures as the Congress may build out of its experience and wisdom, I shall seek, within my constitutional authority, to bring to speedy adoption.

But in the event that the Congress shall fail to take one of these two courses, and in the event that the national emergency is still critical, I shall not evade the clear course of duty that will confront me. I shall ask the Congress for the one remaining instrument to meet the crisis—broad executive power to wage a war against the emergency, as great as the power that would be given to me if we were in fact invaded by a foreign foe.

In the same speech, he indicated how he would tackle his first task: “Our greatest primary task is to put people to work.”

To do this, Roosevelt needed tremendous quantities of inexpensive Hamiltonian-directed credit for productive purposes, which he obtained, first from wise deployment of the federal budget, but even more so from the Reconstruction Finance Corporation (RFC), which was created in 1932 by President Hoover to bail out the banking system, but which Roosevelt redirected, as if it were a National Bank, for productive purposes. Between 1933 and 1945, the RFC issued loans and credit totalling \$33 billion, immense in that day, and more than all the private banks

in the U.S. combined. The RFC financed machine tools, steel and aluminum plants, power plants, flood control systems, and other infrastructure.

To protect the RFC from the rot of the banking system, Roosevelt signed the Emergency Banking Act on March 9, 1933, effectively putting the U.S. banking system through bankruptcy reorganization, and stopped, what had been up to this time, the accelerated disintegration of the banking system. Then he signed the Glass-Steagall Act on June 16, 1933, which forbade commercial banks from engaging in speculative activity, in a bid to drive a stake through the heart of the City of London-Wall Street banking cartel.¹⁹

Then Roosevelt created public works: the Works Progress Administration (WPA), and the Public Works Administration (PWA). He also created the Civilian Conservation Corps (CCC) for youth, to deal with the crisis of massive youth unemployment. The CWA (predecessor to the WPA) began operation on Nov. 9, 1933. Ten days later, under its administrator Harry Hopkins, the CWA had employed 800,000 workers. By the week ending January 18, 1934, only nine weeks later, it reached its peak employment of 4,263,644 men and women. They built roads, town halls, small bridges, embankments and other public facilities. Between the years 1933–38, the three major U.S. public works programs had employed 3.1 million workers per year.

Roosevelt also launched nationally transformative infrastructure projects that consciously altered the topology of the U.S., and permanently increased the productivity of the nation.

The Tennessee Valley Authority, launched in 1933 and encompassing a 42,000-mile river basin comprising portions of seven states, became known internationally as an example of transforming an entire region from backwardness and poverty, through incredible leaps of development.

The Tennessee Valley of the 1930s had high levels of disease, low literacy rates, and poor infrastructure. In some regions, 30–40% of the population had malaria, illiteracy rates were as high as 50%, and many areas had little or no electricity or infrastructure. The region was at the mercy of nature, and often faced floods that would destroy topsoil and farming, railroads and factories, schools and houses, and even entire cities.

Starting in the 1930s, the TVA built a magnificent system of dams, eventually twenty-nine of them hydroelec-

tric, which provided flood control, and cheap, abundant electricity, which powered households, farms and newly built manufacturing facilities.

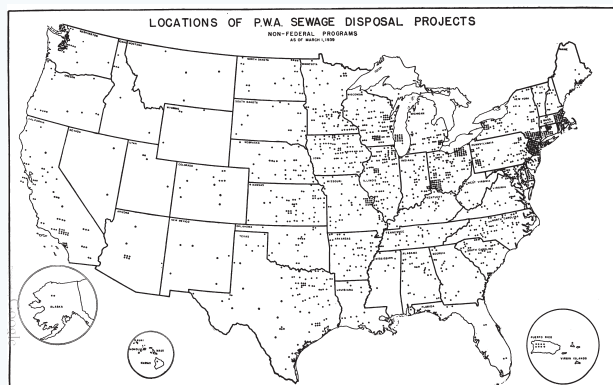
Tennessee Valley residents, who in 1933 had only 60% as much electricity as the average resident of the United States, had 125% by 1939. The TVA set up river diversion, and made the Tennessee River and some of its tributaries navigable. It established its own Health and Safety Department and its own libraries. It set up 15,000 “demonstration farms,” which used scientific methods, including increased fertilizer use and electricity. In fact, electricity-intensive aluminum production, impractical before TVA, became central for military aircraft production during World War II. In addition, the U.S. government constructed the Oak Ridge National Laboratory, a nuclear energy development center, which was part of the wartime Manhattan Project, ushering in the nuclear age. The Tennessee Valley became a thriving center.

In the Columbia River Basin, in the northwest of the United States, Roosevelt built the Grand Coulee and Bonneville Dams. Both were technological wonders. The Grand Coulee Dam in Washington state is 530 feet high and 4,173 feet long, and contains 105 million cubic feet of concrete, making it, at the time, the world’s largest concrete structure. Due to its huge generators, it was the world’s largest hydroelectric plant up until the 1980s, when Brazil’s Itaipu generating facility was built. Massive supplies of electricity and water became available to irrigate the northwest’s fertile, but underdeveloped soil and increase the food supply. That brought the Northwest quadrant of America to life.

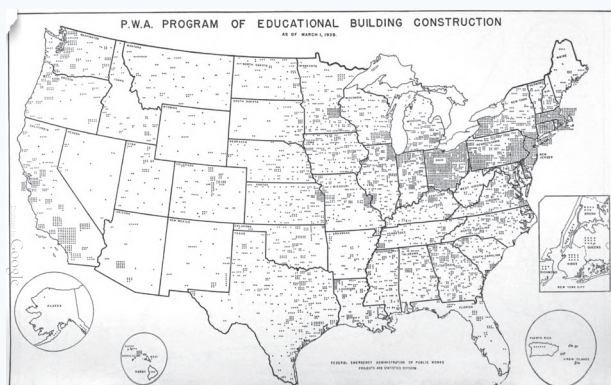
The Rural Electrification Administration (REA), which built more than 2 million miles of electricity transmission lines—half of the nation’s total—brought electricity to the homesteads of tens of millions of rural Americans who up to that time lived by candle-light.

Over 1,000 new sewage treatment plants were built across the country. Of the unparalleled 45,000 infrastructure projects that Roosevelt’s government built on its own or in collaboration with local governments, a few can be named: the construction of hundreds of schools containing 60,000 school classrooms with seats for approximately 2.5 million students; the erection of scores of new hospitals housing 121,670 hospital beds to improve national health; the creation of more than 1,000 new waterworks projects that enabled fresh water provision. This was a complete high-technology infrastructure revolution.

19. Richard Freeman, “Why Roosevelt’s Explosive 1933–45 Recovery Worked,” Part 1, *EIR*, April 26, 2002



Above: A map of 1,000 wastewater infrastructure projects built by the PWA, which also constructed 1,000 freshwater projects. Below: 60,000 classrooms were built by the PWA, in which 2.5 million students could be educated.



Now, confronted with the threat of Nazism, the U.S. launched the economic mobilization for World War II. Had it not been for the physical transformation of the economy prior to the war mobilization, the mobilization would not have been possible. And although war production itself adds nothing to the productive economy directly, the mobilization created technological and scientific innovations that were generalized and spread throughout the economy as a whole.

Industries would have to retool, reconvert, and reach accelerated levels of production. The key bottleneck was the machine tool design sector—the machines that build other machines—by taking new scientific ideas and imprinting them physically into those machines. Roosevelt had the Reconstruction Finance Corporation funnel \$2 billion (a significant sum in those days) into the machine tool sector. The dramatic result was that whereas in 1938 the United States had produced only 34,000 machine tools, by 1942 the United States was producing 307,000, nearly ten times the 1938 level and fifty times the 1933 level.

Further, Roosevelt had the RFC allocate \$4.5 billion to aviation, including the airframe industry, and even more importantly, those sections of the auto industry that converted to aircraft production. Though people ridiculed Roosevelt's 1941 call for producing 50,000 planes over three years, the U.S. soon exceeded that level, and by 1944, the U.S. produced 96,000 planes in one year. Under Roosevelt's urging, the RFC extended \$1.2 billion to build and upgrade 183 steel and pig iron plants, adding 11 million tons of new capacity.

There were non-linear effects. Aluminum and magnesium, which were known to chemists in the early 1800s, and which were produced in limited quantities in the twentieth century, were now brought into commercial production on a greatly enlarged scale. The mass production of synthetic rubber, resins, plastics, and fibers, were all fundamentally developed during the mobilization. The atom was split and its energy process rudimentarily mastered under Roosevelt's Manhattan Project.

By 1944, the U.S. physical economy, which was devastated in 1933, now produced an astounding 46% of all the world's manufactured goods. U.S. unemployment, which had officially reached an understated 12.83 million in 1933 (24.9% of the workforce), was now officially 0.67 million in 1944. The U.S. was the greatest agro-industrial economy on earth!

The U.S. population, which had been pessimistic in 1933, was now optimistic, and inspired by Roosevelt's mission at the 1944 Bretton Woods conference: to bring American System methods, capital goods, and agricultural implements, to every nation, no matter how small or undeveloped, on earth.

10. Postscript: JFK

This optimism continued into the John F. Kennedy administration. Great projects such as NAWAPA (discussed elsewhere in this pamphlet) were on the agenda. Kennedy challenged the country to land a man on the moon "in this decade." But while Kennedy resisted being pulled into useless wars abroad, the British had nevertheless thrust us into an unnecessary Cold War. With Kennedy's assassination, the nation was derailed from its mission. The Cold War became a hot war in Vietnam. We went into a deep depression. Can we find it in ourselves to re-discover and fulfill the nation's original intention? In the late 1960s Lyndon LaRouche picked up the torch to get us back on track. Now we must complete his mission.

About Lyndon LaRouche

Lyndon LaRouche (1922–2019) was America’s foremost statesman and thinker. If there is one person who embodies that revolutionary spark needed to break the chains from the bleak downward spiral of the recent decades, it is Lyndon LaRouche. He founded and led a political movement starting in the latter half of the 1960s, up until his death in 2019, making so many accomplishments it is impossible to list them all in one place. He ran for president eight times, successfully forecasted many crucial economic and political shifts, wrote hundreds of articles fundamentally advancing a number of fields, worked with and befriended dozens of world leaders, founded a political-intelligence magazine, *Executive Intelligence Review*, which remains today a paramount source for truthful analysis, and laid the groundwork for a completely new system of international and economic relations free from the grip of oligarchism.

After serving in Burma during World War II, LaRouche spent some time in India where he was forever impacted by his experiences there. The level of brutality against the Indian people during those final days of British occupation so disturbed him, that he was determined to rid from this earth that form of inhumanity which he saw. Later in his life, LaRouche noted how this experience would shape what became his life-long commitment: “that the United States should take post-war world leadership in establishing a world order dedicated to promoting the economic development of what we today call ‘developing nations.’”

Returning home, LaRouche familiarized himself with all types of political groupings at the time so as to measure who was up to the task. After being unimpressed generally, he resolved that he would have to take up that responsibility personally. This decision was only strengthened after the string of assassinations, from John F. Kennedy, Malcolm X, Martin Luther King Jr, and Bobby Kennedy, and ensuing escalation of the disastrous war in Vietnam—the United States was losing its mission.

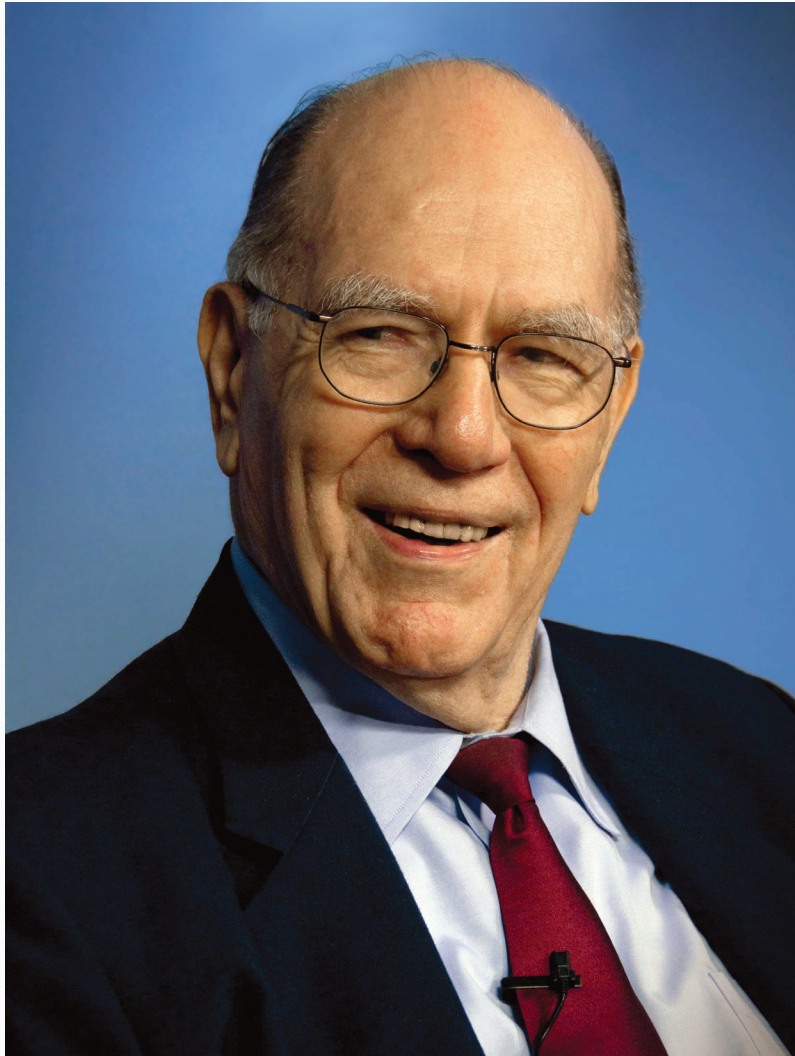
Then, in August 1971, Richard Nixon made the fateful decision to pull out of the Bretton Woods system. Bretton Woods had been set up by Franklin Roosevelt’s Administration to aid in the industrial development of the

world by using the stability of the U.S. dollar. Though it never lived up to Roosevelt’s original intention, Nixon’s abandonment of it by “floating” the exchange rates turned the dollar, and by default the world economy, into a speculative paradise. Thus, rather than Roosevelt’s intention to prioritize industrial and infrastructure investment to build up the U.S. and the world, we instead prioritized monetary profits at the expense of industry and infrastructure worldwide. LaRouche warned at the time that this decision, if not reversed, would lead to (and was intended to achieve) austerity and looting, first in the developing sector, and then in the U.S. and Europe, eventually leading to the imposition of fascist governments to quell unruly populations—all the while trying to hold off a hyperinflationary collapse.

Being the only economist who saw this coming, LaRouche began recruiting a movement armed with the only weapon that is absolutely required to win this war: a self-reflective method of thinking. In 1975, LaRouche proposed the International Development Bank, a plan to strengthen every currency in the world through long-term, low-interest credit for development projects and capital-goods exports to the underdeveloped sector. Within a year, this plan was implicitly adopted by the Non-Aligned Movement, a group of 86 nations largely in the underdeveloped sector, with LaRouche’s friend, India’s Prime Minister Indira Gandhi, as one of their leading voices. LaRouche would go on to propose a plan for a New Bretton Woods, as well as in-depth reports for the industrial development of Africa, of Mexico, of South America, of Southwest Asia, of India and the Indian Ocean Basin, not to mention the United States and others. LaRouche knew that if credit was taken away from financial profiteering and instead vectored towards productive activity, this would not only be the basis for solving every problem in the world—from geopolitical conflicts to poverty and backwardness—but also that mankind would naturally mature culturally as science and technological mastery become more and more widespread.

This process grew, as did LaRouche’s movement. Key leaders from the Civil Rights Movement joined him, as did leading scientists, academics, political leaders, and others from around the world. Part of the degradation of

our political and economic system has been due to the increasingly depraved popular culture and educational system, which is why LaRouche insisted on reviving true Classical culture and creating a New Renaissance. Leading artists, musicians, and actors, such as Norbert Brainin of the famous Amadeus Quartet and singer Piero Cappuccilli, joined with LaRouche to insist that art and culture must serve to ennoble mankind rather than to merely excite his senses, as a necessary step to educate and “tune” our citizens.



Lyndon LaRouche, 1922-2019

By the mid 1980s, LaRouche had seriously shocked the political establishment. He had thousands of candidates running for every level of public office, was publishing the second largest subscription science magazine, *Fusion*, and had many world leaders working personally with him to push for a new international financial system based on physical economic development. These included notably India's Indira Gandhi and Mexico's President José López Portillo. LaRouche served as a back-channel negotiator to the Soviet Union for the Reagan Administration, in a position of influence that set the stage for Reagan's 1983 offer to the Soviet Union of a policy based on LaRouche's proposal, the Strategic Defense Initiative—over the howls of most of his cabinet and the political establishment. The SDI

cease. Robert Mueller (sound familiar?), one of the lead attorneys in the case against LaRouche, had to abandon the initial case in Boston when it began to fall apart; a new case was quickly moved through trial in Alexandria, Virginia, where the whole process could be made much more “friendly.” LaRouche was railroaded into prison on fraudulent charges, where he would spend 5 years, and brown-nosing journalists were brought out to slander him with every nonsensical attack imaginable. Similarly, financial warfare was declared on Mexico, creating massive capital flight and neutralizing López Portillo, followed by Indira Gandhi's assassination in 1984.

Not only did LaRouche continue fighting from prison, but he even ran for president in 1992 while in-

announcement, although never accepted by the Soviets, would have fundamentally eliminated the threat of thermonuclear war by jointly developing defensive systems with the Soviets. If passed, it would have provided an exit from the geopolitical wet dreams of the British Empire.

LaRouche's enemies never forgave him for this. A 400-agent federal raid was conducted on LaRouche's house and political offices in 1986, in an attempt to kill LaRouche in the process. His publications were bankrupted and political operations ordered to

carcerated. When the Berlin Wall fell and the Soviet Union collapsed, LaRouche and his wife, Helga Zepp-LaRouche, proposed taking the “productive triangle” of Paris-Berlin-Vienna, at the time the most concentrated area of machine-tool and productive capability in the world, as a model for the development of the former Soviet economies of Eastern Europe. This proposal grew into the “Eurasian Land-Bridge” and “New Silk Road,” and later the “World Land-Bridge.” The central idea was that of “development corridors” consisting of rail and other infrastructure stretching like arteries into every corner of the world. A project of this scale would create “enough work to put this whole planet into an economic revival,” LaRouche remarked. Helga Zepp-LaRouche took this proposal around the world, hosting conferences on every continent during the 1990s, with leaders from countless countries. One such event in Beijing, China in 1996, earned her the nickname the “Silk Road Lady,” still used to this day.

Despite this, the United States and Europe continued to fester. Further financial speculation became the norm during the 1990s and early 2000s, leading into the financial crisis of 2007–2008—another event LaRouche forecast. Rather than addressing the bankruptcy of the financial system and reorganizing it along the lines LaRouche had proposed, treasonous networks forced through trillions in bailouts to the same financial parasites who caused the crisis, further looting our nation and people. In addition, the tragic events of 9/11 became

the excuse to expand more failed wars abroad and police-state tactics at home.

However, not everyone was fooled. Beginning in 2013, Chinese President Xi Jinping announced a “New Silk Road,” in response to a clearly failing neoliberal paradigm—exactly as proposed by Lyndon and Helga LaRouche during the previous 20 years. Today, over 140 countries have joined this rapidly-growing project. Not surprisingly, China and their New Silk Road/Belt and Road Initiative are being slandered and attacked, just as LaRouche was. Nonetheless, a U.S.-China-Russia-India alliance today, around a common commitment to end poverty and industrialize every nation—in stark opposition to pushing would-be-genocidal “green investments”—would be sufficient to free the planet from the flailing grip of today’s British Empire.

As much as Lyndon LaRouche’s person was and is feared by today’s neoliberal establishment, what remains even more feared are his ideas. As poet Percy Shelley said: Poets are the unacknowledged legislators of the world. The true crime against LaRouche was not his unjust imprisonment (though it is a crime that urgently must be admitted) but it was against you, the American citizen, of depriving you of access to his ideas, and of instead causing you to think that the sewer that is today’s “left-right paradigm” is somehow an acceptable choice on the menu. Instead, LaRouche’s ideas must be freed from their shackles, and his legacy unmasked as the true soul of America—before it is too late.

LaRouche’s Four Laws

In 2014, Lyndon LaRouche issued a statement demanding the U.S. government “institute four specific, cardinal measures: measures which must be fully consistent with the specific intent of the original U.S. Federal Constitution, as had been specified by U.S. Treasury Secretary Alexander Hamilton while he remained in office.” Those measures, in brief, are:

1. “The immediate re-enactment of the Glass-Steagall law instituted by U.S. President Franklin D. Roosevelt,”
2. “A return to a system of top-down, and thoroughly defined, National Banking,”
3. A recognition that “the purpose of the use of a Federal Credit-system, is to generate high-pro-

ductivity trends in improvements of employment, with the accompanying intention, to increase the physical-economic productivity, and the standard of living,” and

4. The adoption of “a Fusion-Driver ‘Crash Program,’” reflecting an understanding of “the essential distinction of man from all lower forms of life.”

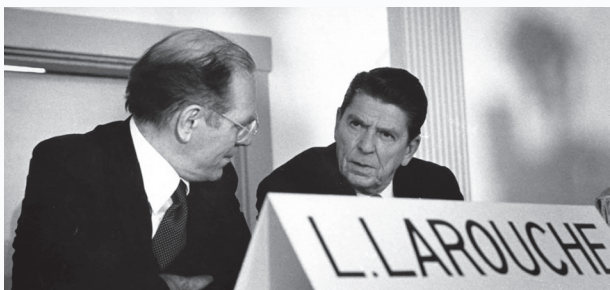
He concluded his statement: “A fusion economy is the presently urgent next step, and standard, for man’s gains of power within the Solar system, and, later, beyond.”



Read LaRouche’s statement
at thelarouche.org/4laws



Above: During a debate with Keynesian economist Abba Lerner at Queens College in New York City, Dec. 1971.



Lyndon LaRouche speaks with future President Ronald Reagan at a candidates' forum in Concord, New Hampshire during the 1980 presidential election campaign.



Lyndon LaRouche with his good friend Norbert Brainin, first violinist of the Amadeus Quartet, Dec. 4, 1987.



At a Food for Peace conference in Chicago, Illinois, Dec. 20, 1988, just weeks before his imprisonment. Second from left is Rev. Wade Watts, Oklahoma State President of the NAACP.

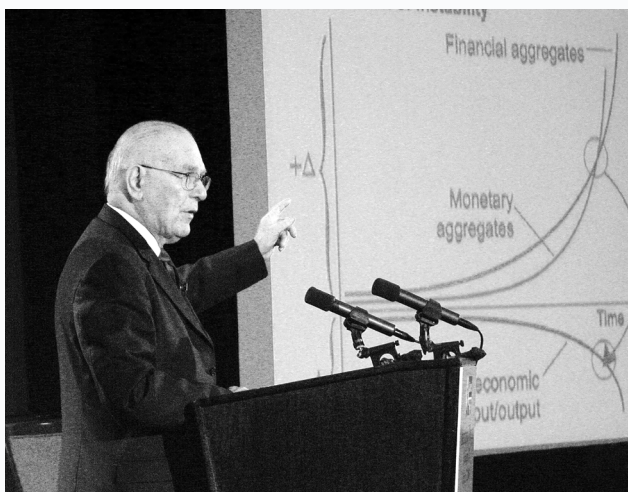
Below: LaRouche is greeted by civil rights leader Amelia Boynton Robinson at a Feb. 2014 Washington, D.C. conference, the first LaRouche attended after his parole was achieved through an international effort led by his wife, Helga Zepp-LaRouche (center).



Below: LaRouche in discussion with young attendees at a Schiller Institute conference in the early 2000s.



Below: LaRouche presents his typical collapse function, the "triple curve," at a Washington, D.C., webcast event on Jan. 17, 2008.




More about Lyndon LaRouche
 at thelarouche.org/larouche

Build a Global Anti-Malthusian Alliance To End the British Monarchy's Great Reset

The architects of modern day “environmentalism” couldn’t care less about the climate, let alone rainforests, whales, or whatever other popular momentary crusade they wage. Environmentalism was actually engineered as a tool for population control and geopolitical aims, and is in fact a seamless continuation of the eugenics movement made infamous by Adolf Hitler and the Nazis. Nazism, eugenics and environmentalism were all made in London—by the House of Windsor, its financial houses in the City of London, and its global intelligence network—the modern British Empire. So when the rallying cry of “Climate!” resounds from the halls of the World Economic Forum in Davos by billionaires taking their cue from London, it is essential to understand that their cry is actually one for genocide and war. Today, their war is directed at China, Russia and other nations collaborating on a new paradigm of economic development, rather than accepting the British imperial diktat known as the “Great Reset” and its associated “Green New Deal,” which intends to collapse production globally to kill off the useless eaters by the billions.

The British Empire’s specific target is China’s Belt and Road Initiative (BRI), the greatest infrastructure and development plan the world has ever seen, with participating nations that make up over 65% of global population and 40% of the world’s GDP. While China may have formally launched the BRI in 2013, with Xi Jinping’s announcement of the Silk Road Economic Belt and the 21st Century Maritime Silk Road, the seed crystal of the idea had been planted decades earlier by Lyndon LaRouche and his wife Helga Zepp-LaRouche as the Berlin Wall began to crumble. The LaRouches knew that the only way to bring down the British Empire and its Malthusian agenda, was to bring the world together—east and west—around a vision of economic development that

would spark a worldwide renaissance. Rather than accepting China’s offer of collaboration on the BRI in the wake of the financial crisis of 2007–2008, the British Empire launched their quantitative easing (QE) policy and the geopolitical containment of China and Russia—a replay of the hyperinflation and geopolitical operations that led to World War II.

At the same time, the silent pumping of billions of dollars into their climate hoax agenda over decades accelerated with the 2015 COP21 Paris Agreement, where London would issue their demand that nations slit their

throats by collapsing energy and raw material production. The climate agenda was so crucial for British geopolitical designs, that when President Donald Trump announced his decision to pull the United States out of the Paris Agreement, the UK House of Lords Select Committee on International Relations issued their report, “UK Foreign Policy in a Shifting World Order,” citing that action as jeopardizing the US-UK “special relationship” of intelligence and strategic collaboration. It should then come as no surprise that one of the Biden Administration’s first acts was to rejoin the Paris climate agreement, as part of its attempt to restore that special relationship. The use of the climate hoax for the geopolitical aims of crushing the new para-

digm exemplified by the BRI has now culminated in the “Great Reset,” the name of the 50th annual meeting of the World Economic Forum (WEF), held in June 2020. The Great Reset was a further iteration of the “regime change” program that London’s BlackRock pronounced on behalf of the City of London at the August 2019 Jackson Hole meeting of central bankers, which demanded that central banks impose a dictatorship by controlling credit policy and using electronic currency to impose the Malthusian green agenda of global population reduction.



To understand Malthusianism, get TLO’s pamphlet: thelarouche.org/reset

To combat this insane drive towards a new dark age and geopolitical confrontation that could lead to potential nuclear annihilation, Helga Zepp-LaRouche initiated the report, “The Great Leap Backward—LaRouche Crushes the Green New Deal,” published by The LaRouche Organization (TLO). The TLO report covered the truth about the British monarchy’s role in creating modern day environmentalism, especially the role of Prince Charles. As heir to the same House of Windsor that supported the fascism and eugenics of the 1930s, Charles continues the mission of his father, the recently deceased Prince Philip, who founded the World Wildlife Fund (World Wide Fund for Nature, the WWF) in the early 1960s along with Prince Bernhard of the Netherlands, who was a card carrying member of the Nazi party from 1933–1937. The report goes on to detail Charles’s role in organizing the anthropogenic climate change hoax, which is at the core of the World Economic Forum’s “Great Reset.”

As part of the Great Reset agenda, the London centered banking cartel issued their “Principles for Responsible Banking” at the September 2019 UN meeting, where the top 130 banks collectively holding \$47 trillion in assets (one third of the global banking sector) would withhold credit to carbon-based economic activity. The TLO report highlights the City of London’s role in preventing this type of “carbon-intensive” development, especially in Africa and Asia, as well as their targeting of food production and consumption. To enforce the agenda of the Great Reset, the British directed Military Industrial Complex is aligning military policy at NATO and the Pentagon to force nations into compliance at the end of a nuclear tipped bayonet—especially China and Russia, who may be giving lip-service to climate change, but are pursuing a global development program through the BRI, as well as clean coal and nuclear power plants, both domestically and in other nations. Since the publication of the TLO report, NATO has now published their “NATO Climate Change and Security Action Plan” for 2030, which cites the “opening up of new shipping lanes” and “desertification” as geopolitical concerns—an obvious reference to the BRI’s expansion into the Arctic, and the development policies in Africa.

The year 2030 referenced in the NATO Climate Change and Security Action Plan is the next major target year for the British green agenda and is also the year chosen by the United Nations “Agenda for Sustainable Development.” It is also the year represented in the Biden Administration’s “30x30” policy—30% of all federal land and water taken out of use for agriculture, grazing, forestry and fishing by 2030. Lawsuits have been filed in over a

dozen states by their attorneys general challenging the Biden Administration executive orders on the Keystone Pipeline, drilling in the Arctic and other elements of the 30x30 agenda. Citizens’ groups are also activated— as of early June, nearly 50 counties in 11 states, from Montana to Texas, have passed resolutions against 30x30, with still more pending a vote. In May, bills titled the “30x30 Termination Act” were filed in both the U.S. House of Representatives and Senate. The TLO report has been crucial in catalyzing this fight in the United States, as part of building a global anti-Malthusian resistance movement.

In the days ahead, leading into the “2021 United Nations Climate Change Conference” (COP26) in Glasgow, the British are intensifying the psychological warfare around anthropogenic climate change, using their claims about droughts, floods and blackouts to make their case. The TLO report has been essential for combatting this psy-war from the standpoint of “know thy enemy,” but also combatting the “climate” lies by showing that a full understanding of climate requires taking into account solar activity, embedded in larger galactic cycles driven by cosmic radiation. However, the cataclysmic effects of droughts and floods have little to do with an ever-fluctuating climate, and almost everything to do with a lack of development. Had the Kennedy era North American Water and Power Alliance been built in the 1960s, and its associated nuclear powered desalination projects constructed, then droughts, floods and blackouts would not be occurring in the western United States. If it were not for the European Union’s zero-growth economic policies, symbolized by Germany’s “Black-Zero” austerity program and the implementation of green policies such as removing dams for the sake of fish, then the recent heavy rains would not have brought devastating flooding.

The report you now hold is the required antidote to this insanity. What is needed for humanity now are the policies, and more importantly, the way of thinking that Lyndon LaRouche developed in his science of physical economy—an approach resonant with the ideas of Vladimir Vernadsky, who identified the relationship between the noosphere of human creativity and the biosphere. LaRouche identified in his “Earth’s Next Fifty Years” that the ideas of Vernadsky would be essential for a new dialogue of cultures to replace the failed “clash of civilizations” of British geopolitics over the last half century. This approach is also resonant with what Helga Zepp-LaRouche has identified as the “Coincidence of Opposites.” This is the basis for pulling together a global anti-Malthusian resistance movement where economic development is the path to peace.

Conquering Inflation and Depression with Glass–Steagall and Development

The American System of economy began with Alexander Hamilton’s bold statement to the first Congress, that the source of economic value is, not landed property, not “free trade” as British economics teaches, but *human invention*, the unique creativity of the individual human mind.

Human creativity enters the economy most often through engineering new infrastructure platforms. That is where most true technological advances are first applied and show up as new kinds of capital goods. LaRouche frequently explained this; Franklin Roosevelt’s presidency and the following period through John F. Kennedy’s presidency demonstrated it in action. A prime example is the rapid advances of science and technology within missions for space exploration—which is itself the development of new infrastructure: transportation infrastructure for space travel, communications infrastructure in space, navigation infrastructure in and from space, power infrastructure for space exploration and colonization, etc.

Therefore it is important to understand that there was a fundamental change in the worldwide economy, for the worse, in 1971. Until 1971, Roosevelt’s Bretton Woods monetary system created constant demand in the United States and European economies for more *investment* in capital goods and new infrastructure, skilled labor, and family farm production; it blocked international capital from speculating across borders. After the 1971 fatal decision by Nixon to break the U.S. dollar from the Bretton Woods gold reserve, the floating-currencies system that replaced it incentivized and drove *speculation*, and investment in speculation, above all.

And with the abandonment of FDR’s Bretton Woods gold-reserve credit and monetary system, starting with the “Great Inflation” of the 1970s, every measure of the *productive* American economy—real wages, labor productivity, investment in infrastructure, the employment share in industry and manufacturing, and many others—began a decline which has not let up to the present day.

From the mid-1980s, the stagnant economy, losing industry and productive jobs, was hit by the deregula-

tion of banking and finance, modeled on the British “Big Bang” deregulation of 1986. The banking regulations of the 1933 Glass–Steagall Act, which kept commercial banks honest lenders for 60 years, were eliminated one-by-one by the Federal Reserve until Glass–Steagall itself was repealed in 1999. From the mid-1980s on, America lived with financial bubbles followed by financial crashes, followed quickly by even bigger financial bubbles and bigger financial crashes, until the U.S. real estate mortgage securities bubble triggered the *global* financial blowout of 2007–08.

Since 2008, the Federal Reserve’s perpetual money-printing to bail out Wall Street has produced the biggest debt bubble in economic history, often called the “everything bubble” as every area of economic life has been piled high with debt securities and derivatives. Now at last this has led the United States to the threshold of *hyperinflation*.



President Franklin Roosevelt speaking on a radio show, 1936.

Roosevelt’s swift and bold action three years earlier to stabilize the American banking system and to secure the passage of the Glass–Steagall Act made possible the large-scale infrastructure and works programs that he used to develop the nation’s economy and its workforce.

In March 1933, Roosevelt had closed his first Fireside Chat: “We have provided the machinery to restore our financial system; it is up to you to support and make it work. It is your problem no less than it is mine. Together we cannot fail.”

Will we “make Glass–Steagall work” today?

The German ‘Weimar’ Hyperinflation

The period of hyperinflationary pressure we are now experiencing has been created, not by a so-called “pandemic recovery”, but by decisions and actions of the major central banks under what they started calling their “regime change” in the Fall of 2019, before the COVID pandemic.

Figure 1 is the infamous inflation in Germany in 1922–23, known as the “Weimar hyperinflation.” This is the German reichsmark against the U.S. dollar, in the right hand column: from a few hundred reichsmarks to a dollar, to many trillions to one, in that 18-month period. Households’ wealth, workers’ earnings were wiped out. The German central bank did this unintentionally, but deliberately, by printing money to try to hyperinflate away Germany’s debts from World War I and reparations payments.

Figure 1: Hyperinflation in Weimar Germany

German Marks to the U.S. Dollar, 1920–1923	
1920 Q1	22
1920 Q2	12
1920 Q3	12
1920 Q4	17
1921 Q1	15
1921 Q2	15
1921 Q3	21
1921 Q4	48
1922 Q1	54
1922 Q2	71
1922 Q3	246
1922 Q4	1,426
1923 January	4,281
1923 February	6,650
1923 March	5,048
1923 April	5,826
1923 May	11,355
1923 June	26,202
1923 July	84,186
1923 August	1,100,632
1923 September	23,500,000
1923 October	6,000,000,000
1923 November	52,200,000,000
1923 December	100,000,000,000
1924 January	4.2

At the end of 1923 a man named Hjalmar Schacht took over the central bank, the Reichsbank. Schacht used a large international loan organized by the House of Morgan to remove the foreign payments pressure. He used the introduction of a new currency, which Schacht made extremely scarce, to suddenly kill the inflation—for the next ten years. Schacht and the government used extreme shortage of currency to impose brutal economic austerity, defeating all proposals to add any productive credit to the economy. Germany’s unemployment rate was 12% *before* the 1929 collapse.

So hyperinflation is, indeed, “transitory”, as our current central bankers insist—they may wind up ending it abruptly with its opposite, deflation, with murderous results.

In the United States and over most of Europe, after World War I, the regulation of commercial banks was dropped. Big commercial banks were allowed to take over investment banks and form stock-speculation trusts, and bank holding companies were allowed to own investment banks as well as what we call today “shadow banks” of all kinds. They became what are called “universal banks.”

The Federal Reserve made liquidity loans to these “universal banks,” and even bought securities from them—quantitative easing!—in 1923–24 and in 1927.

These banks brought on the stock crashes and bank bankruptcies of 1929–33.

The Solution Starts with Glass–Steagall

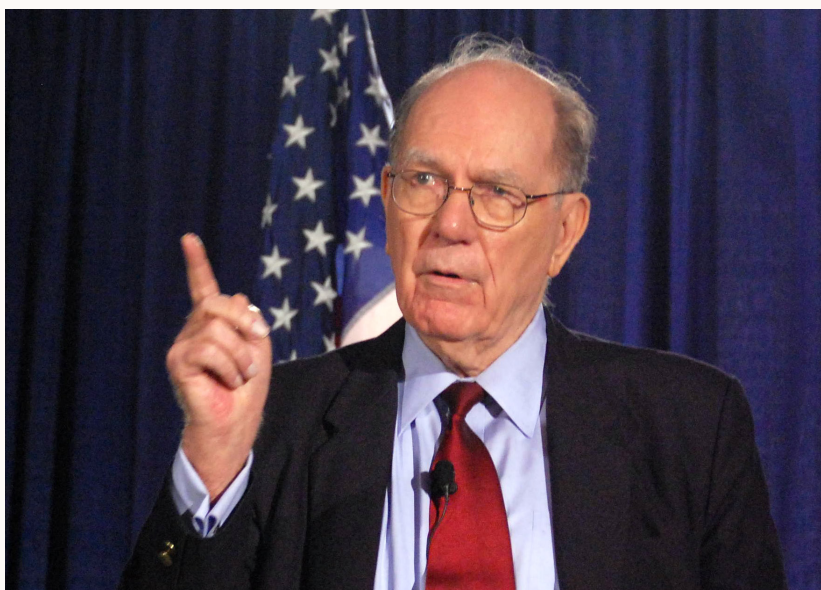
Franklin Roosevelt’s Glass–Steagall Act of 1933 was the solution to those four years of bank bankruptcies. In the United States, the commercial banks were reorganized with their speculative securities washed out and written off, in Roosevelt’s Bank Holiday of March 1933. That reorganization was made permanent by the Glass–Steagall act three months later.

Lyndon LaRouche said in 2010, after the crash which he had tried to prevent by promoting the restored Glass–Steagall Act in Congress:

If we put through a Glass–Steagall reform, this will wipe out trillions of dollars of worthless paper. But wiping out trillions of dollars of worthless paper and discontinuing the authority of certain kinds of banks, the speculative banks, would mean that we will be able to save the U.S. economy, at least within the United States....

Then, we have to create a new system of credit, and in creating a new system of credit, we have to go to a fixed-exchange-rate system among the nations which participate in the reform. By going to a fixed-exchange-rate system, we can maintain basic borrowing costs in regular loans, of 1.5% or something like that at a base rate.

We can then, and must, adopt a perspective of about two generations, about 50 years, of rebuilding the world economy. The emphasis in the beginning, because we've destroyed so many industries and so much agriculture—the tendency will be to go to infrastructure programs. Like mass transportation, for example rail, maglev systems; improvements of water systems, as well as mass transportation; to a much expanded emphasis on nuclear power as a source of power; to improvements in municipal systems.



In 2013, LaRouche explained: “Just take Glass–Steagall, as it was originally installed under President Franklin Roosevelt, and that itself would simply call into question every amount of this speculative investment, by the speculators of Europe and the United States. And if we held our ground, they would go bankrupt.... These guys have incurred debts in the quadrillions, that they can never pay. Therefore, they should be foreclosed, as swindlers and bankrupts, and relieved of their debts, by eliminating their possession of those debts as assets. That would enable us to restart a recovery of the economy...”

Glass–Steagall was the solution in 1933, and it’s the solution now.

The “universal banks” that caused the 1929–33 crash, banned by Glass–Steagall for half a century in the United States and much of Europe, came back with a vengeance from the late 1980s. After London’s “big bang bank deregulation” of 1986, the regulators allowed universal banking everywhere. Today it is banned only in China.

Even after the 2007–08 financial crash, the solution was rejected: LaRouche’s Glass–Steagall solution, breaking up the universal bank holding companies and writing off their worthless securities—as well as banning home foreclosures while this was done. Instead the central banks began coordinated, massive money-printing to keep these universal banks liquid as their bets went bad, and supposedly give them enough reserves to survive their next crash.

Figure 2 shows the claimed assets of the four biggest Wall Street universal banks combined—a big expansion during and after the 2008 crash they caused, then continuing growth, to monstrous size, while being fed by the “quantitative easing” money-printing of the Federal Reserve.

Figure 2: Wall Street Big Four Combined Assets, from Crash to 2018

2007	\$4.05 Trillion
2010	\$7.45 Trillion
2015	\$8.20 Trillion
2017	\$8.40 Trillion

This is all only the *prelude* to what started in Autumn of 2019, what the central bankers themselves called the “regime change”, and which is about to blow out now.

Figure 3: Global Quantitative Easing, Cumulative (\$trillions)

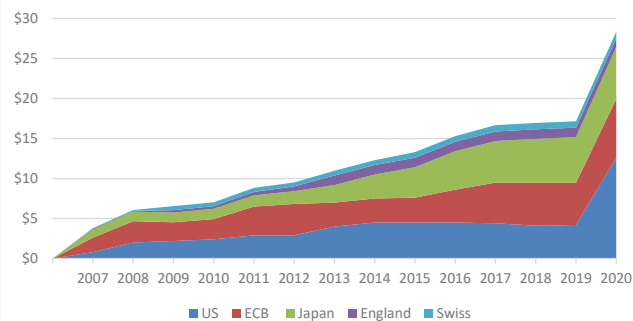


Figure 4: JPMorgan Assets and Deposits Skyrocket in 2020 — Loans?

Assets	\$2.60 Trillion	\$2.60 Trillion	\$2.70 Trillion	\$2.65 Trillion	\$3.15 Trillion
Deposits	\$1.50 Trillion	\$1.50 Trillion	\$1.50 Trillion	\$1.55 Trillion	\$1.80 Trillion
Loans	\$0.90 Trillion	\$0.95 Trillion	\$0.90 Trillion	\$0.95 Trillion	\$0.96 Trillion
	2018 Q1	2018 Q4	2019 Q1	2019 Q4	2020 Q1

Money-Printing Has Made Zombie Banks

In August of 2019 central bankers met at the Federal Reserve’s annual Jackson Hole, Wyoming conference, and discussed a proposal by former central bank leaders from four countries, now all executives at BlackRock, Inc., the world’s biggest financial firm. They called it “regime change”: It was time, they said, for central banks to take control of spending powers from governments. The conference also discussed a presentation by Bank of England head Mark Carney, “Mr. Zero Carbon” of central bankers, who said the central banks would have to create a synthetic world reserve currency to replace the U.S. dollar. The reason for both proposals: The central banks must finally succeed in their ten-year mission impossible, after the 2008 crash, to set off inflation. They must create huge amounts of *consumer demand*, by printing money and directly getting it out, as if by dropping it from helicopters.

In fact, whatever volume they printed was doomed to be largely absorbed into new financial speculations of the biggest Wall Street and London firms.

But the regime change went ahead, beginning with the Federal Reserve’s resumption of quantitative easing in early October 2019, followed by the European Central Bank.

There was no pandemic yet in sight.

Figure 3 describes the scale of that late 2019 acceleration in trans-Atlantic central bank money printing through the universal banks.

Consider the effect on JPMorgan Chase, the biggest Wall Street bank. Look in Figure 4 at the increase in its size, just from the fourth quarter of 2019 to the first quarter of 2020: an approximately \$250 billion increase in deposits,

and approximately \$450 billion increase in assets. And this has continued: JPMorgan’s assets have now exploded by 30% in one year.

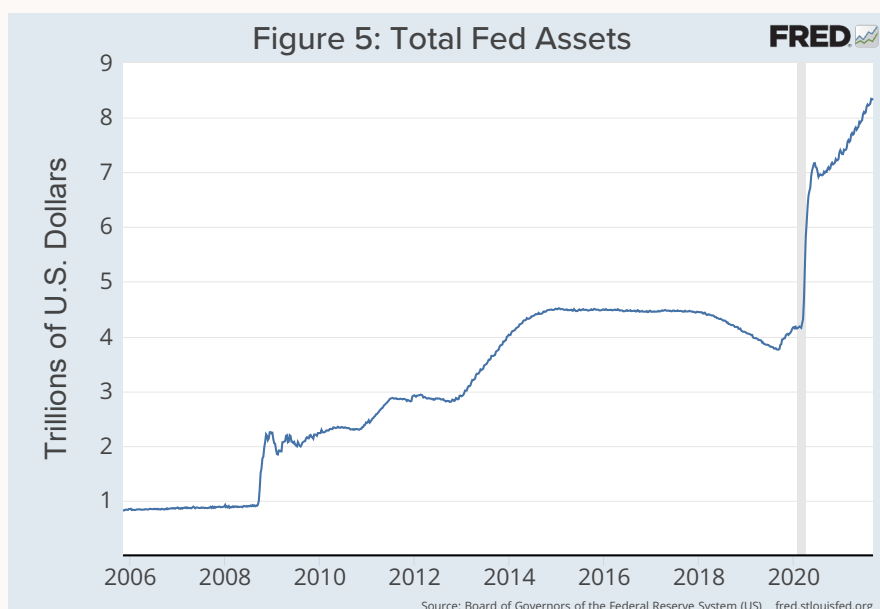
But look at loans and leases—no change! Just like the 1920s, the megabanks are getting monstrously bigger in deposits and assets, but not lending.

The central banks have created huge “undead” universal banks, which essentially cannot fail—because the central banks will not allow them to fail no matter how much of their assets blow out—but also *cannot lend*.

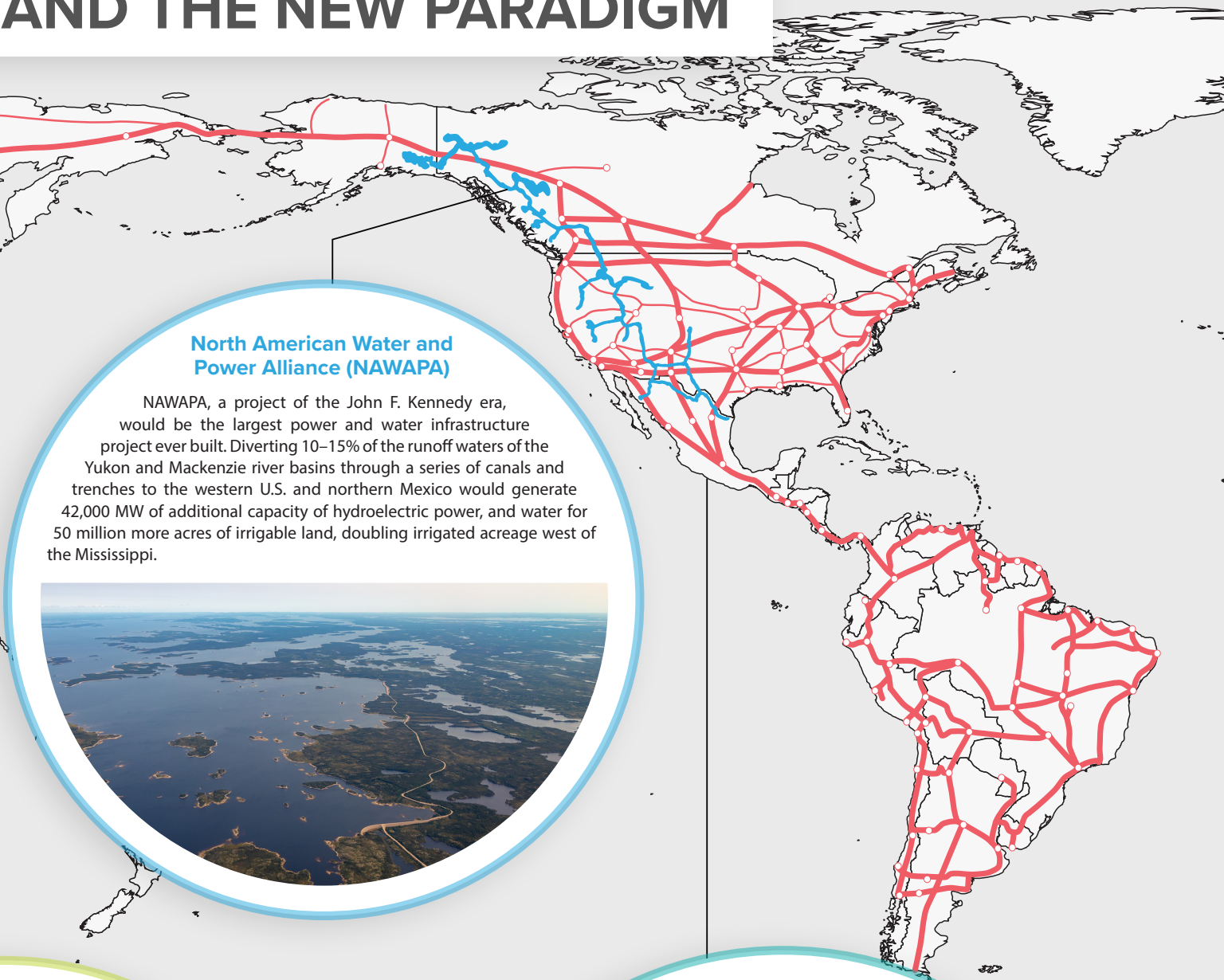
This must be stopped and reversed. Glass–Steagall reform, as Lyndon LaRouche understood, is the weapon to stop it: a Glass–Steagall break-up of these banks in Wall Street, the City of London, and in every nation.

Figure 5 shows assets of the Federal Reserve itself. This graph, although recent, can’t keep up; the Fed’s asset book was over \$8.3 trillion in September 2021—10 times its size in 2008. Again, look at the sudden shift and acceleration in late 2019—the start of the “regime change.”

This, too, must be stopped—unwound. Nationalization of the Federal Reserve to create a national credit institution for productivity and productive employment, is the way to do that.



AND THE NEW PARADIGM



North American Water and Power Alliance (NAWAPA)

NAWAPA, a project of the John F. Kennedy era, would be the largest power and water infrastructure project ever built. Diverting 10–15% of the runoff waters of the Yukon and Mackenzie river basins through a series of canals and trenches to the western U.S. and northern Mexico would generate 42,000 MW of additional capacity of hydroelectric power, and water for 50 million more acres of irrigable land, doubling irrigated acreage west of the Mississippi.



Renewable Power: Wind and Fusion

will be essential during the
successful crash program to develop
factors have improved in efficiency
could be mass produced on an
the world to speedily overcome the



BRI and NABRI: Create the World Landbridge

Xi Jinping launched the Belt and Road Initiative (BRI) in 2013, and it has now engaged over 140 countries around the world in large-scale development corridors that include transportation, energy, water management, and expansion of trade in general. At a cost of \$4 to 8 trillion, it is estimated to involve 65% of the global population and represents around one-third of global GDP. The proposed North American Belt and Road Initiative (NABRI) coupled with the BRI would be the end of the era of British geopolitics and bring a new peace among nations based on economic development.



A Mission for the World: Create Productive Jobs and Productivity

Pursued under the guise of Covid relief (although the shift in policy had already begun in 2019) the American economy and its workforce have been subordinated over 2020–2021 to the Federal Reserve’s policy of bailing out trillions of dollars of worthless speculative debt. And Federal Treasury stimulus money has reached \$5.5 trillion without creating a single new productive project or job.

The failure of the monetarist policies that gave us five decades of deindustrialization and the deterioration of the American economy into a globalized service economy must now be reversed.

When the United States was fighting a great war against fascism 80 years ago—and what are we in now, if not an international war against disease, hunger and unemployment?—more than half of America’s entire labor force was productively employed—involved in building, operating, or maintaining the physical economy of the United States which produces all the goods and services we live on. In the 1960s, as we went to the Moon, the workforce was still 35% productively employed, with 400,000 Americans working on the Apollo project itself. Over the period 1935–75 the U.S. econo-

my transformed itself, rising from the Great Depression to become a world powerhouse.

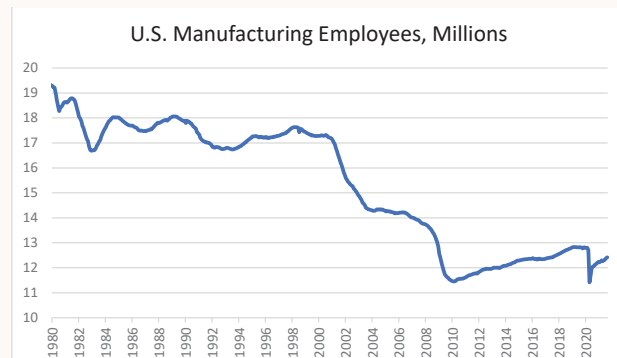
All of that was reversed with Nixon pulling the plug on the Bretton Woods system on Aug 15, 1971, beginning the transformation of the United States into a post-industrial junk heap. By 2020, with just 15% of the U.S. workforce productively employed, America was unprepared to be an arsenal of healthcare and nutrition for the world.

Now, the United States can transform its economy quickly into that arsenal, while keeping its sights on its missions to the Moon and Mars.

America now has a labor force of about 170 million people; 164 million are currently working or have worked recently enough to be officially counted in the labor force by the Labor Department. Less than 30 million are productively employed; another 19 million work in such essential services as healthcare and education.

At least 100 million Americans in the labor force are neither productively employed, nor involved in the creative invention of new physical and biological processes, which is the real source of any nation’s wealth.

With 50 million new productive jobs, the United States would be equaling the level it reached in 1944 when the Arsenal of Democracy was going full bore: Half of the entire workforce would have *productive* jobs.



The decline of America’s manufacturing workforce has unfolded over decades, with a particularly rapid collapse during the presidency of George W. Bush. He ushered in a new era of endless war, focused, during his administration, on Afghanistan and Iraq. Meanwhile, fully one third of American manufacturing jobs disappeared.

A New World System of Public Health

New hospitals and public health centers: If the United States joins with the other leading technology powers in mobilizing new hospitals, equipment, staffing, and specialists across the developing nations of South America, Africa, and Asia, that process will create *6 million new productive, skilled jobs in America and well more than 100 million such jobs worldwide.*

The Hospital Survey and Construction Act (Hill-Burton Act) of 1946 mandated a minimum number of hospital beds per capita at the county and municipal level. The era of for-profit hospital chains has abandoned this

physical standard, effectively cutting in half (or worse, depending on the county) the number of beds per capita. The coronavirus pandemic has given us an order: Restore a physical standard of hospital bed construction and availability. We should work with other major economic powers to build it worldwide.

In the United States, we'll add about 600,000 new hospital beds in nearly 1,800 hospitals of varying sizes. **Across the world, we need to add 10 million beds, in about 30,000 new hospitals.**

In the United States this will create 5-6 million new long-term jobs based on the current staffing of our hospitals and hospital wards. These would include about 300,000 physicians and surgeons, 1.4 million registered nurses, 170,000 diagnostic technicians and technologists, and more than 117,000 clinical lab technicians, not to mention pharmacists, dietitians, maintenance workers, and so on. Moreover, at least 500,000 construction workers and engineers will be directly employed for a decade in building these new hospitals, and hundreds of thousands more producing the materials for them.

Building the new *world* public health system can't take a decade—it must be done as rapidly as possible to prevent a massive number of human beings dying of COVID-19 or of lack of necessary treatment for other diseases. This will mean more than 90 million construction workers and new professionals to build and staff the hospitals, with isolation and intensive care capacity, clinics, and new “CDCs” and research centers.



Across the world, 30,000 new hospitals are needed to provide 10 million new beds. In the United States alone, 6 million new jobs will be created in healthcare—physicians, nurses, radiology and lab technicians, maintenance, and construction. Across the world, developing a world health system will mean some 90 million construction workers and new health professionals. *Image credit: flickr/Tony Webster*

Electric Power: The United States and cooperating powers will need much more electric power for this mobilization. Powering these new hospitals alone, in countries across the world, many of which generate and use 100 kWh/person/year or less (compared to 10,000 in the United States and 7–8,000 in Europe) will mean producing and siting 1,000 or more reliable power plants (including nuclear, gas, and clean coal, but not “interruptible” plants marketed as “renewable”) of 50–100 megawatts each, and fast.

Worldwide, more than a billion people have no access to electricity at all. About 10 million jobs will be created internationally just building barely reasonable levels of electric power; more than 1 million in the United States including construction workers, power engineers, and line workers.



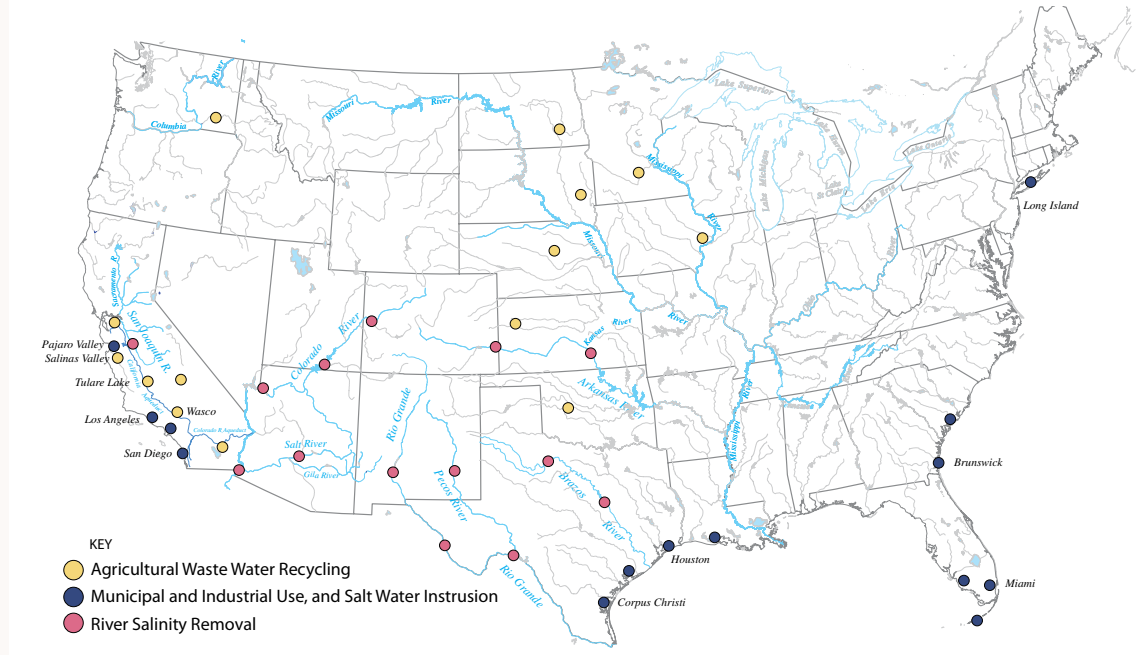
An electric train passes in front of a coal-fired power plant near Pretoria, South Africa. Discriminatory “green” policies that would deny the benefits of cheap and reliable power to the developing world must be defeated. *Image credit: flickr/Tambako The Jaguar*

Water infrastructure: Providing fresh water for all the hospitals, clinics, and research centers to be built throughout the developing countries against the COVID-19 pandemic is only one aspect of the huge need for water infrastructure that we need to get to work on. We must also develop municipal water, irrigation, navigation, drainage, and flood control.

President Franklin Roosevelt, with his Bretton Woods system, wanted to help build “Tennessee Valley Authorities”—the most successful and famous development project in history—in other continents. He also wanted to create a Missouri River Authority, an Arkansas River Authority, and a Columbia River Authority.

Twenty years after his death these ideas became a plan for a truly great project of infrastructure, supported by President John Kennedy and by Robert Kennedy

FIGURE 1
Proposed Locations for 42 Nuclear Desalination Plants



The NAWAPA project, first developed during the Kennedy presidential administration, sought to bring excess water in the northwestern part of the North American continent to the parched areas of the U.S. Southwest and to northern Mexico. This image shows proposed locations for additional desalination facilities to create freshwater from marginal sources or the ocean itself.

as a Senator. This was the North American Water and Power Alliance (NAWAPA) plan. After their assassinations, this great project was abandoned by America’s political leadership in the maelstrom of the Vietnam War.

The NAWAPA plan has been described as the equivalent of “a dozen TVAs.” Our study showed it will create 6–7 million new productive American jobs over a decade—construction workers, tunnel drillers, heavy equipment makers, civil and heavy construction engineers, and on and on. Irrigated agriculture in the Southwest could expand from 22 million to 41 million acres through the NAWAPA infrastructure project.

Our study also located 42 coastal and Great Lakes sites ideal for electric-powered desalination of salt water. This would require further development of nuclear power.

The Transaqua project in Africa’s Sahel may be the most crucial “new TVA” today; but there are many other candidates. They are the key to spreading modern high-technology farming. Worldwide, this kind of project—new TVAs—will create a very large number of new productive jobs, at least 20 million over the next generation.

New Transport Corridors: Lyndon and Helga La-Rouche and the Schiller Institute have promoted the Eurasian Land-Bridge / “New Silk Road” projects since the 1980s, expanding their idea into the World Land-Bridge by the late 1990s.

The lines built from China to Europe have been adding to the freight transported by air or ship, especially during 2020. The manpower requirements to build these as double-tracked rail main corridors and connectors include 80,000 new skilled and productive jobs for each 5,000 miles of such high-speed or mag-lev rail. That’s 650,000 people employed to build the U.S. “lower 48” electrified rail network; 60,000 more for an Alaska-Canada corridor to the Bering Strait; and about 5 million to build out the rest of the World Land-Bridge. This would be the work of up to a full generation.

Producing the all-electric locomotives and rail cars is a job for the auto industry, along with tasks such as producing medical equipment and devices demanded by the coronavirus crisis and our new health care system. This will require the 6,000 megawatts of new electric power capacity as part of the build-up we described above, as well as many millions of tons of steel from a geared up steel industry.

The Moon-Mars mission and space colonization: Nearly half a million American scientists, engineers, and skilled craftsmen worked on the Apollo project which took human beings to the Moon. That NASA-centered workforce is down to far less than 100,000 now.

As we gear up the Moon and Mars mission that NASA calls Artemis, doubling NASA's budget to start with, and cooperate with all the other space-faring nations that want to send human beings into the Solar System, then that project will employ, directly and indirectly, at least a million scientists, engineers, and skilled workers.

The Coming Transformation of the Economy

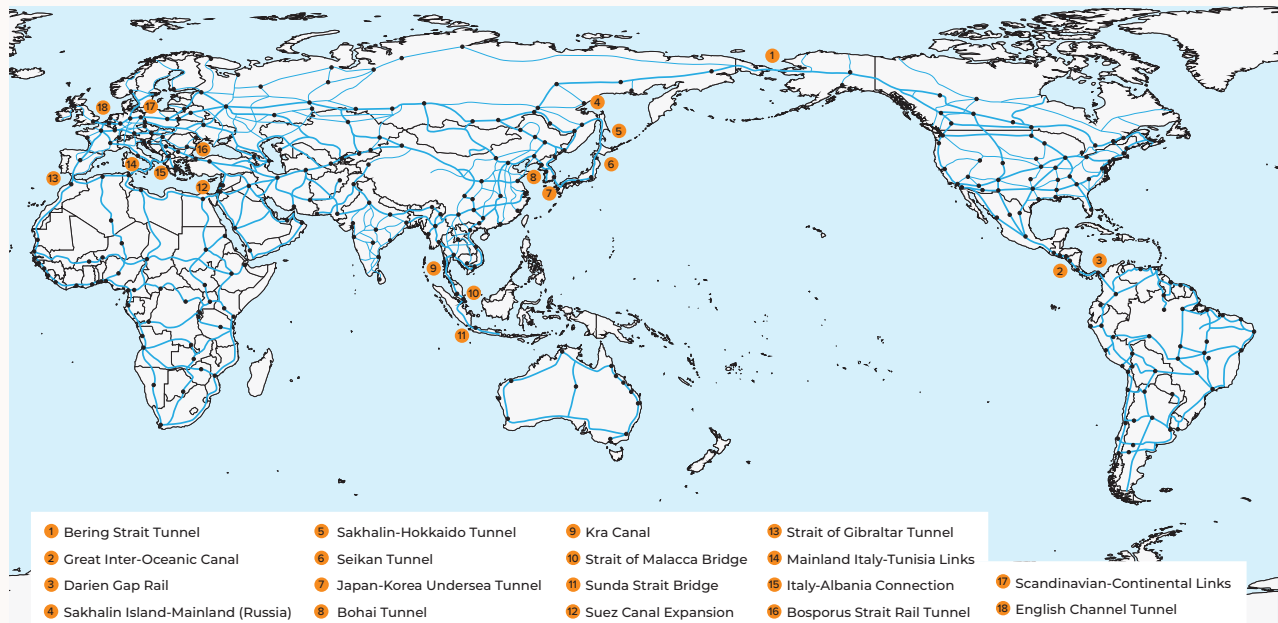
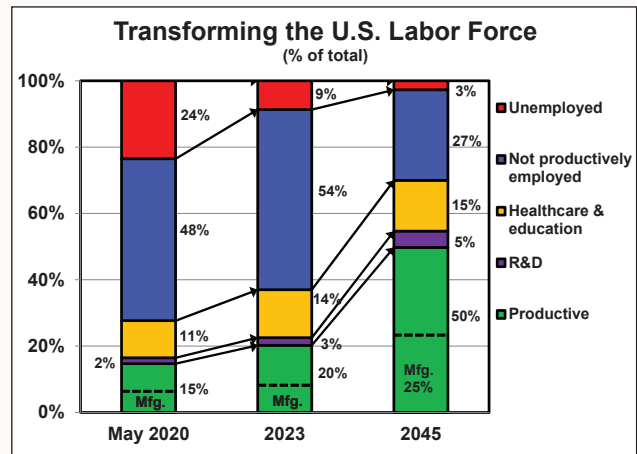
Just the direct employment on the international infrastructure projects most urgently needed to meet this crisis and transform the world economy in the process, will create at least 135 million new, productive and skilled jobs and professions worldwide, and 15 million of those in the United States. This will take place over a generation but its largest component is the mobilization for new world healthcare and public health systems which must be built immediately.

In the process, we will again reach the level of more than half the American labor force working in *productive jobs*—at higher technology and productivity than the mid-20th Century decades.

Above: The vertical bars represent the composition of the U.S. workforce over time. As our economic development picks up steam, not only will unemployment decrease: so will masses of unproductive, often low-paying jobs, to be replaced with productive employment in physical goods production and infrastructure development.
(Note: "not productively employed" does not necessarily mean "uselessly employed." Although they do not directly contribute to the productive process, we will still need groceries, haircuts, banking services, and retail stores.)

In the American economy we can immediately start a strong increase in productivity of employment by starting a crash mobilization of hospital construction and public health production worldwide. This draws people now unemployed, non-productively employed, and simply those wanting to help create this critical economic infrastructure.

Lyndon LaRouche's economic teams, already 40 years ago, showed that infrastructure and productivity are directly related. Technological leaps are put into new infrastructure, and shift the whole economy upwards.



Double World Food Production; Establish Independent Family Farming

July 18—Independent family farming in the U.S., Europe and other high productivity farm belts is under assault, at the same time that 40 million people face starvation this year worldwide—the largest famine threat in history. These emergencies have the same root cause: a failed monetarist/cartel system—a neo-British Empire, dominating trade, agriculture, and food. Reasserting sovereign national responsibility and power over fundamentals of production and the means to life, will not only end the crises, but guarantee future food in abundance for billions more people to come. With space age science, infrastructure, knowledge, steady income and support to independent family farms of all types and sizes, there is no such thing as limited resources, and no excuse for scarcity and hunger.

The immediate task is for the major powers to collaborate on food relief to the 270 million people worldwide who are totally dependent on aid, with emergency rations for those in extreme want. Farm leaders and experts on commodity processing and logistics can figure how to make the best use of available stocks (taking into account what that means for production priorities in the coming planting, harvesting, and livestock cycles) and how to ensure that farmers are fully supported to stay in operation. While carrying out this relief mission, we can set in motion the fundamental changes to restore independent family farming.

Bust Up ‘Big Food’

Break up the “Big Food” cartels. This year is the 100th anniversary of the U.S. Packers and Stockyards Act, whose principle was regulation and trust-busting of the monopolies then dominating meat, to protect the interests of farmers and eaters. That principle was abandoned over the past half century of casino economics, but now needs to be reasserted to break up today’s monopolies that have consolidated control in all areas of food, from retail, to processing and trade in meat, dairy, grain, fruits, vegetables, oils, etc. Hedge funds and Wall Street Big Money dominate food chains from start to finish. A special priority is to nullify the Jeff Bezos–Bill

Gates sweetheart deal with NASA for the billionaires to use space food technology to corner the market for lab-produced protein against livestock producers.



There are plenty of precedents and parallels for anti-trust action, including the necessity to break up Big Tech. What is essential to make anti-trust action work in agriculture and all forms of production, is to reestablish the Glass-Steagall Act to end the mega-banking consolidation, as described earlier in this report.

To stabilize farm incomes, we must **re-establish the principle of parity pricing** of food commodities for farmers, and stop the free-for-all speculation in farm and food goods. “Parity” refers to the policy of guaranteeing that the farmer receives prices for his output that cover the costs of production, plus a decent profit, which serves the purpose of securing the current and future food supply for the nation, as well as giving farm producers an income on a par with skilled workers in other sectors. This was first made U.S. law under the Franklin D. Roosevelt Administration. The U.S. Department of Agriculture (USDA) and other Federal authorities have many mechanisms to implement parity pricing—whose 1943 calculation is still done according to the 1930s law, still on the books. These mechanisms include floor prices, government purchases, national reserves and similar production management. We must roll back the 2001 Commodity Futures Modernization Act and other laws which legalized gambling in farm inputs and food.

Finally, re-assert sovereign national interest over private claims to ownership of the means to life. Beginning in the 1970s, when biotechnology gave breakthroughs in

yields from excellent advances in crop traits, e.g. tolerance for herbicides, drought, freeze, etc., agro-chemical cartels, especially from Britain, succeeded in warping U.S. Patent Law. For the first time ever, industrial patents were granted to life-form innovations (human, as well as plantlife). This led to decades of cartel price gouging, domination of seed markets, trait-licensing control over research, and harassment and ruination of farmers. It is time to re-open the policy question of how to compensate innovation, without allowing domination of the means to life and research. This is made more urgent by the unfortunate instances of U.S. courts and juries now making technical decisions on agro-chemicals and biotechnology, outside their competence.

Assert Sovereignty

As fast as possible, **phase out the current patterns of cartel-dictated agriculture production, food processing, and trade.** Large areas of the United States serve as monoculture sources for crops for export by the mega-transnationals. The U.S. alone accounts for over one-third of the world's corn harvest. Brazil is a cartel source for beef exports. At the same time, other areas—like most of Africa, have been forcibly kept undeveloped and food-short by the IMF, World Bank and related neo-colonialist institutions, so that the African continent as a whole is 40 percent import-dependent for basic grain staples.

These politely-termed “global sourcing” patterns are enforced by the World Trade Organization, which must be disbanded, in favor of sovereign nations working bilaterally or otherwise, to determine their own mix of

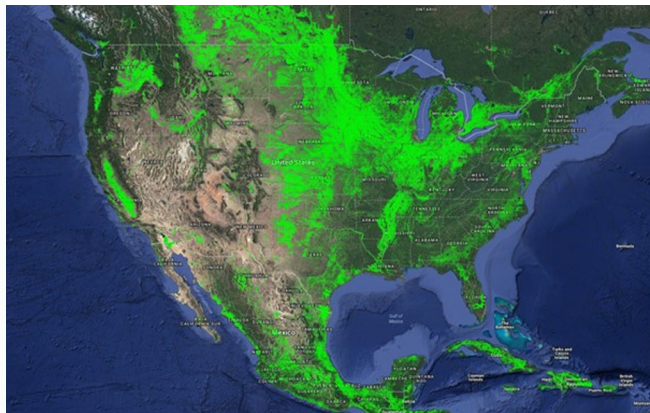
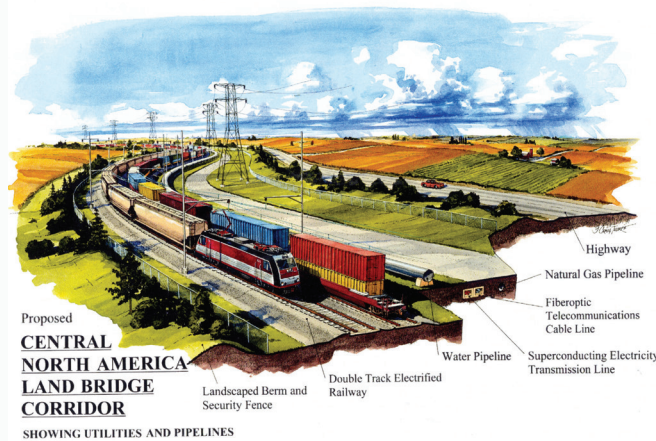
crops, livestock, processing, and trade and land use patterns. The U.S., for example, can “bring back home” the food production outsourced to South America, Asia and Africa, to the benefit of these locations shifting to supplying their own needs, and markets of their neighbors. The scale of the shift to global sourcing is seen in just a few examples: The U.S. imports 25% of its fresh fruits consumed; 23% of fresh vegetables; 55% of fruit juices; 80%

of processed mushrooms; 65% of seafood, (85% if we include U.S. seafood sent abroad for processing, then shipped back) and so on.

Double World Food Production

Even before the pandemic, the world already had over 800 million people chronically short of food. The rough goal is to **double world food production.** This will provide for sufficiency for all, carryover and stocks. A useful metric is per capita yearly grain (of any kind) production. For example, a good target is 60 percent of a metric ton produced per person per year (visualize 56 bushels of corn). This covers both direct human consumption and indirect consumption (through the livestock chain), plus processing, spoilage, reserves, etc. By this measure, today's 7.8

billion people require 4.7 billion metric tons of grain harvest (rice, wheat, corn, barley, oats, rye, teff, etc.). But actual present-day harvests are running in the range of 2.7 billion tons. There are obvious prerequisites to increasing production. To begin with, upping agriculture output relies on constantly improving conditions of basic infrastructure and farm inputs. This means building the priority projects for such hard infrastructure as



The artist depicts utilities and rail along a High Plains stretch of the Land-Bridge, running from the Bering Strait Tunnel, southward across Canada and the U.S. into Mexico, opening up new farmlands and cities. The map is from Landsat imagery, November, 2017, showing existing croplands. Large parts of North America can be opened to expanded agricultural use, with new connectivity and water infrastructure, in the western and northerly regions.

Top source: Cooper Consulting/J. Craig Thorpe; Below: USGS

electricity, water management, and transportation, as well as needed soft infrastructure, such as public health, hospitals, education, culture. For farming, besides the long overdue NAWAPA (North American Water and Power Alliance), other improvement projects need completion and upgrades, including the Missouri Basin “Pick-Sloan” water, power and flood protection plan, and the Upper Mississippi water management program. The entire Ohio-Missouri-Mississippi navigation system needs to be fully upgraded. Flood defenses are lacking in thousands of farm counties.

On inputs, agricultural productivity requires modern technology of all kinds: mechanization, GPS, drones, chemicals—both synthetic and “natural,” high-yield seeds, livestock and fish genetics, and so on.

Land area is likewise in the same category of being an expandable input, not a limited resource. For example, with large scale water projects like NAWAPA, land area for agriculture in North America would increase by more than 15 percent. Under the current estimate of the world’s unused arable land, half of it is in Africa. What potential could be unlocked with great infrastructure projects?

A Million New Family Farms

The ingenuity and mission-orientation of family farm members—with the living standard, independence, infrastructure, and science to go along—are the best guarantee of a nation’s food security. Our job is to re-establish the paradigm of traditional “American System” agriculture.



Source: www.kansasbeef.org

The crisis at present, is that the speculative financialization of agriculture has reached the point of extreme consolidation, and forced indifference to millions starving abroad. Of the 2.1 million farms in the U.S. (counting those 3 hectares in size and above), 10% of them

produce 77% of the value of commodity output. The big operations are manned by labor pools, rather than stable extended family units with skin in the game. Ghost



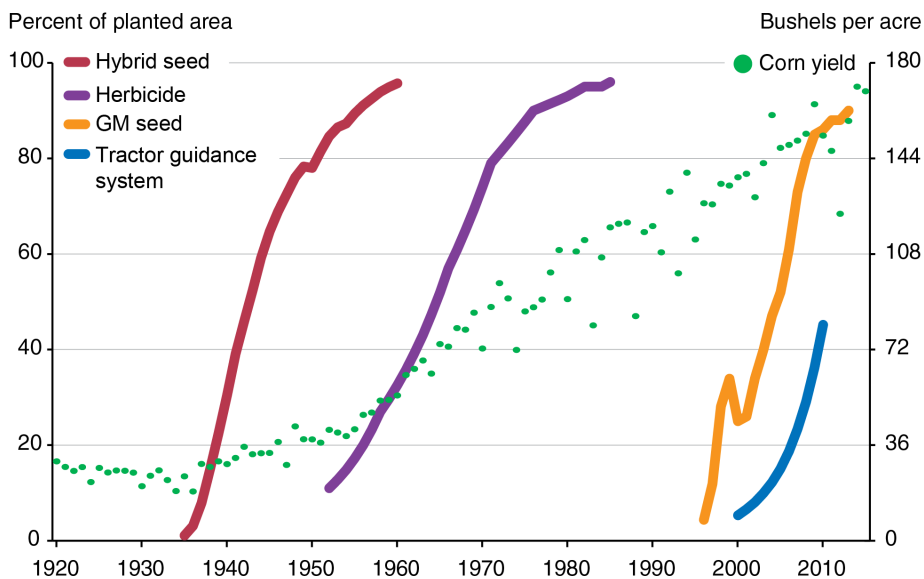
Source: National Corn Growers Association

towns are now found throughout farm communities. One third of U.S. counties lost population between 1980 and 2010, mostly in farm states. And two thirds of rural counties lost population over 2010 to 2020. It’s a paradox that the U.S. has some of the highest level farm technology in the world, while social conditions are in sharp decline. It’s an irony that farmers rank the highest in polls of respected occupations, but they now suffer the highest rate of suicide of any occupation.

It gets worse. The very same evil networks which monopolized agriculture are now pushing the “green transition” to a new green deal and food system “reform,” where farmers forgo food production altogether, and switch to “nature-based” agriculture. They are to “enhance the environment” with trails, wilderness, “carbon farming,” wind power, etc. CO₂, which is plant food, is now the enemy. It is all green bunk, for the purpose of a financial bubble for Wall Street/City of London, and depopulation. This must be stopped.

Through the many farm-supporting measures identified—antitrust bust-up of food trade and processing conglomerates, improvements in infrastructure, and Glass-Steagall banking reorganization, a million new family farms is a realistic proposition. Favorable inheritance tax laws are required as well, including such innovations as authorizing senior farmers to designate non-relatives to take over their farms, with tax and credit supports. More than one-third of all U.S. farmers are

Effect on corn yields as different innovations become adopted, 1920-2014



Technological innovations have increased corn yields. This chart shows how the amount of corn produced per acre (green) has increased over time, thanks to the introduction of new technologies. The red line, for example, shows the use of hybrid seeds, which made up 0% of U.S. planting in the mid-1930s and quickly achieved nearly 100% use by the mid-1950s. The wide adoption of herbicides and GM (genetically modified) seeds have played a role in driving increased yields.

Source: USDA Economic Research Service analysis using data from the National Agricultural Statistical Service, Agricultural Statistics yearbook and the Agriculture Resource Management Survey.

over the age of 65. The national average age for a farmer is nearly 58.

Along with new farms comes the prospect of new cities in rural areas, and rehabilitating abandoned towns and institutions—schools, churches, museums, cultural and science centers. The new rail corridors of development mean new hubs for rural industry, as well as expanded agriculture.

Space Age Breakthroughs

The history of agriculture is a record of successions of scientific discoveries and applications, from early domestication of plants and animals, to fertilizers, to the 20th century crop hybridization breakthroughs seen in the original Green Revolution, centered at CIMMYT, the International Maize and Wheat Improvement Center in Mexico, where Dr. Norman Borlaug, Dr. Sanjaya Rajaram and others produced high-yield results.

With plentiful energy and water, vast increases in food production are possible, through hydroponics and aeroponics, and also through controlled environment conditions, in extreme climates, such as in Alaska or deserts.

The process of increasing productivity is dramatically shown in U.S. corn yields over the last century, which rose sharply from the quick spread of innovations. Average annual yield soared from 20 bushels per acre (1,255 kg per hectare) in 1920 up to 180 bu/acre today (11,295 kg

per ha.) That's a 900% increase in yield!

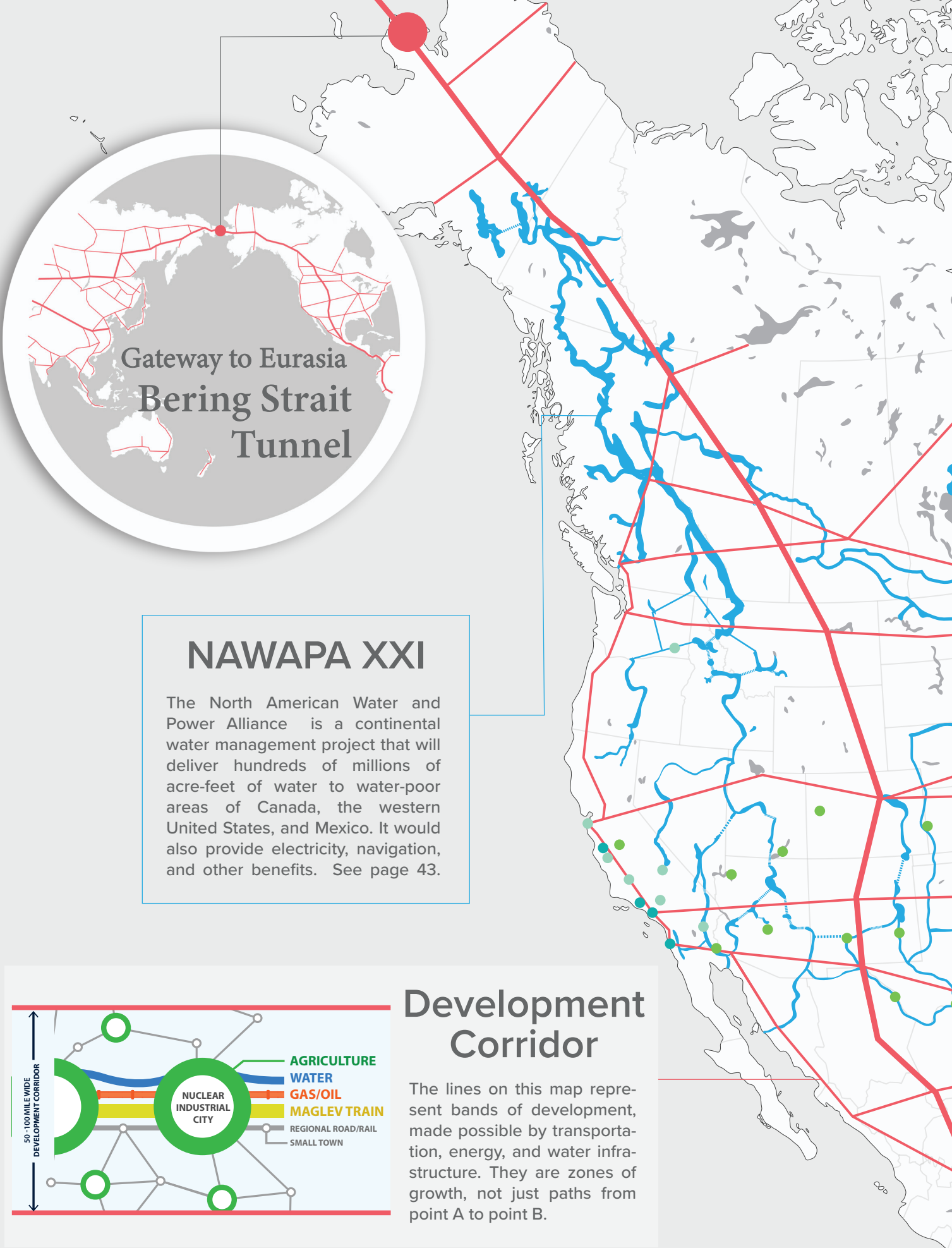
Vast new increases in yields and food output will continue to come from successes in genetic mapping and engineering, as well as synthetic animal proteins.

Most urgent is to conduct basic research against plant and animal diseases, especially zoonoses—diseases which jump from animal to man. COVID-19 is in this category.

Bioengineered traits to improve corn, soybeans, and many vegetables are well known. CRISPR and related techniques enable engineering even the basic profile of crops. For example, there is the C₄ Rice Project, intended to boost yields by half through more efficient photosynthesis. Chinese scientists recently succeeded in fully mapping the potato, and producing a variety that can be grown by seed, instead of the traditional cloning method, which will boost yields enormously.

These biological achievements, along with space age technologies for precision farming using satellite data and guidance capacity, drones, robotics and many more advances mean that the modern farmer is an “astronaut farmer.”

All the more, the re-establishment of the American System of independent, family-scale agricultural operations will be the guarantee of plentiful food for the future, and the million new family farms will be the training ground for brigades of “astronaut farmers” to come.



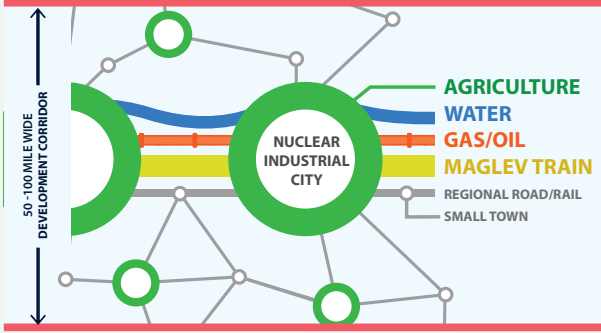
Gateway to Eurasia Bering Strait Tunnel

NAWAPA XXI

The North American Water and Power Alliance is a continental water management project that will deliver hundreds of millions of acre-feet of water to water-poor areas of Canada, the western United States, and Mexico. It would also provide electricity, navigation, and other benefits. See page 43.

Development Corridor

The lines on this map represent bands of development, made possible by transportation, energy, and water infrastructure. They are zones of growth, not just paths from point A to point B.



Economic Miracle

on the New Silk Road

Reindustrialize!

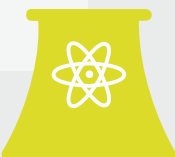
Detroit and other formerly booming industrial centers will be put to work with retooled manufacturing facilities, producing components for high speed rail, nuclear power plants, and everything needed for the construction of new cities. Programs similar to FDR's Civilian Conservation Corps could serve as the entry-point training programs for youth, turning them into valuable members of the skilled labor force.



The Nuclear Economy

Even before the completion of a full NAWAPA XXI system, we can drastically increase the productivity of our lands and cities through the mass production of dual-purpose fission reactors which will both produce electricity and desalinate seawater, groundwater, wastewater, and rivers. The map shows proposed locations for 42 nuclear desalination plants.

- Agricultural Waste Water Recycling
- River Salinity Removal
- Municipal/Industrial use, and Salt Water Intrusion



What is an Infrastructure Platform?

The current U.S. infrastructure grid is a disaster. Nearly half of the nation’s road miles are in poor or mediocre condition. Over 178 million trips are taken across structurally deficient bridges every day. Dependable power plants are decommissioned, in favor of windmills that produce power whenever they feel like it, increasing the risk of blackouts. Drainage and flood control systems are in desperate need of maintenance. Outside of the Northeast Corridor, passenger rail sees little use.

But a physical investment amounting to over ten trillion dollars could bring our infrastructure platform to a higher *physical* level and unlock dramatically more efficient means of industrial and agricultural production, transportation, and water management.

The coming pages will detail many of the urgently needed projects. Here we will talk about what infra-

structure actually *is*, and of Lyndon LaRouche’s concept of the infrastructure “platform.”

Infrastructure is Life

These charts (each dot is a country) show how lifespan and infant mortality correlate with electricity use.

There is no such thing as a rich country that uses little electricity. And there is no such thing as a poor country that uses a lot. The availability of energy—specifically electrical energy—is a *sine qua non* for advanced industrial development. It simply is not possible to achieve long average lifespans and high levels of productivity without electricity.

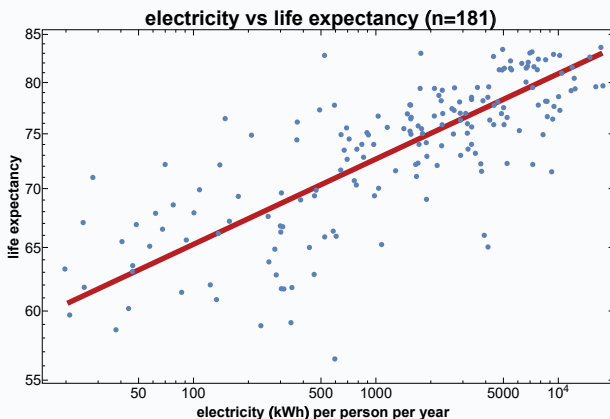
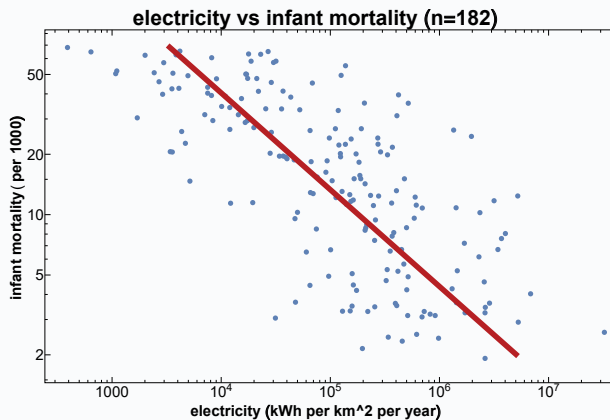
The steam engine made possible the industrial revolution that allowed the same number of workers to produce significantly more output. Thanks to the steam engine, coal could lend a helpful hand to production processes, reducing the reliance on tiring manual effort.

How is electricity made available efficiently and on a wide scale? A full network of power plants and transmission lines is required—an enormous investment, but one that pays back *far* more than its physical cost.

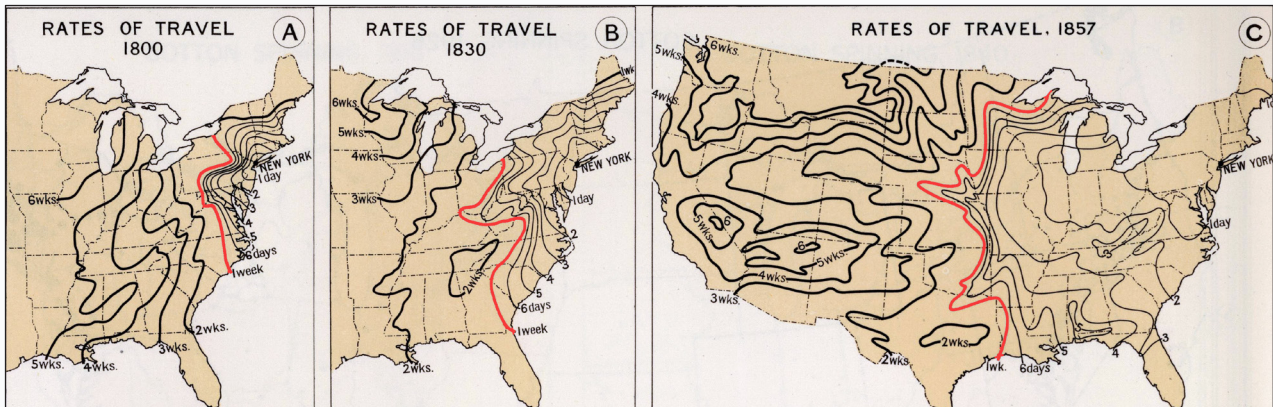
It is impossible to gauge the value of a functional network of roadways, rail lines, or electricity by adding up the value provided to each factory or town. Instead, Lyndon LaRouche drew upon insights made possible by Bernhard Riemann’s approach to higher transcendental functions to directly address a fundamental change of an economic space *as a whole* through the introduction of a higher *platform* of infrastructure—a *topological*-like change, creating a new quality of infrastructure *field*.

In 2005, LaRouche addressed the problem of outsourcing, which often created financial profits but physical losses:

The transfer of production from a nation with advanced development of its infrastructure, to a nation of relatively poor people with a poor development of general infrastructure, tends to produce a collapse of the physical economy of the planet as a whole. The role of the field represented by basic economic infrastructure, has been ignored, with what tend to become ultimately fatal economic results for all concerned.



Data: CIA World Factbook



Consider the development of the United States transportation network. The **figures above** show how far one could travel from New York City within a certain period of time. Between 1800 and 1830, the area of the U.S. that could be reached from New York within a week (shown in red) had greatly expanded. Why? Then look at the situation in 1857—you can practically see the extent of the rail network stretching to the Midwest, and the lack of rail in the west.

The national rail network—exemplified by the 1869 completion of the Transcontinental Railroad, launched through the efforts of Abraham Lincoln—connected the nation, making it possible to have more refined production processes that shipped components to each other. Agricultural and industrial goods could reach new areas, and the *physical* value of the land was transformed, by virtue of its greater degree of connection with the rest of the country. (And, via ports, the world.) People, too, could travel much more easily, forming a stronger cultural connection across the vast expanse.

These factors, combined, created an economic space capable of more *than* what was possible before the rail network (rather than more *of* what was already possible).

Environmental Risks

It is because we as a human species interact increasingly with the synthetic environment we have created, that we are less subject to the vagaries of nature. Per capita deaths due to extreme weather are an order of magnitude lower than they were a century ago. Is this because the weather improved? No, it's because we built increased protection against flooding, structures able to withstand earthquakes, scientific infrastructure able to forecast extreme weather events, and transportation networks supporting safe evacuation when necessary.

Consider an example from biological evolution—

warm-blooded animals are able to regulate their temperature, rather than limiting their habitat or activity to what the weather dictates. The technology of endothermy (being warm-blooded) allowed mammals to expand their potential habitat, by changing their relationship to their surroundings.

The economic, scientific (and cultural) platform unlocked by the upcoming development of controlled nuclear fusion, will bring about another step in our development of an improved human environment—in which water desalination at agricultural levels of output will make droughts a distant memory of early humanity, in which petroleum will be saved for use as a basic material, for plastics, for example.

The current use of petroleum as a fuel for combustion (rather than a material resource) will seem as quaint—and wasteful—to future generations, as burning wood for heating and cooking seems today.



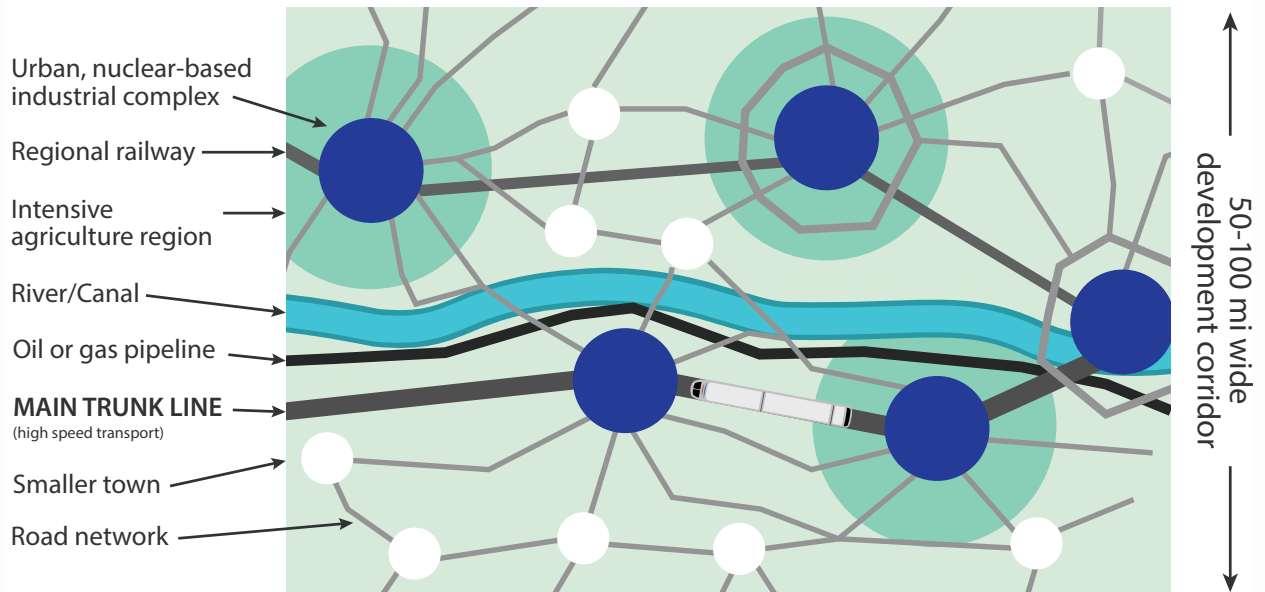
"Cold snap? No worries, I can create my own warmth, without sunshine!"

The Unique Role of Infrastructure

Infrastructure plays a unique role in economics, and demands special consideration by governments. The fact that the benefits of infrastructure are indirect and often not monetizable means that there is no hope of salvation by the private sector (as through PPPs).

A long-term infrastructure capital investment program—like that achieved through Franklin Roosevelt's use of the Reconstruction Finance Corporation, or Alexander Hamilton's creation of the National Bank—must replace the looting of privatization and the inefficient piecemeal approach saddling us at present.

What is a Development Corridor?



Rather than individual pieces of infrastructure, The LaRouche Organization promotes the development of what Lyndon LaRouche has called “development corridors.” These are bands of development, roughly 50–100 miles across, centered around transportation, energy, water, and communication infrastructure. Such infrastructure is not only a way of connecting Point A with Point B; it is akin to the body’s blood vessels, capable of nourishing the surrounding tissue.

A transportation corridor increases the physical productivity of land along the way, by bringing it closer (temporally and financially) to other markets, bringing down the physical cost of accessing them.

When a ship transports goods from one port to another, the goods are the same on arrival as they were on departure (although perhaps a bit less fresh).

But land-borne transportation opens the opportunity for raw materials and intermediate goods to be upgraded as they reach their final destinations, creating oppor-

tunities for wealth creation along the way. New towns and cities will spring up along these lines, providing fresh opportunities for a growing population.

Electrical infrastructure is a platform that unlocks economic processes that are absolutely impossible without it. The value of a power grid is emphatically not in the profits it can derive from selling power—it lies in the massively increased productivity and living conditions that electricity affords.

Water infrastructure prevents flood damage, irrigates crops, and provides security against the vagaries of nature. And water brought into an arid region produces a multiplier effect. Water supplied to crops enters the atmosphere through respiration, to fall again and multiply its impact.

The World Land-Bridge is not a program to connect already-existing population centers; it is an approach towards upgrading productivity and expanding economic, scientific, and cultural horizons.

Nuclear NAWAPA XXI

Devastating floods in Germany! Hurricanes drowning New Yorkers in their basements! Historic drought and fires in the West! What do all of these events have in common? If you agree with politicians blaming “climate change,” you’ve been had. In fact, these all are instances of insufficient human intervention into the environment—instances where foreseeable events of nature occurred and caught us unprepared. The difference between a natural disaster that wreaks havoc and one that is merely routine, lies in mankind’s degree of mastery over the forces of nature around us, and our preparedness for them.

Civilizations have always been defined by their ability to control and defend against variations in nature. Whether it be extreme flooding, catastrophic volcanic eruptions, droughts, fires, plagues or ice ages, the universe is testing mankind as to its fitness to survive. Those civilizations which haven’t advanced to a sufficient level, perish, while those that have achieved a sufficient degree of mastery over the variations of nature, survive.

Today, the Western United States is gripped by drought and in desperate need of water. More than 50 years ago, JFK wanted to build the North American Water and Power Alliance, NAWAPA, the largest

water management system ever envisioned. Here we begin by summarizing this shovel-ready proposal.

NAWAPA and Continental Water Management

Since the beginning of the 20th Century, comprehensive water management for the West has been an obvious necessity. During the Franklin Roosevelt Administration, California’s Central Valley Project was built, bringing water into what is now one of the most productive farmlands in the country. Later, during the 1950s and 1960s, the State Water Project was built, transforming California and the Southwest into an exemplary case of modern biospheric engineering. It’s population growth reflected this, as did its agriculture, soon making California the nation’s biggest food producer.

With the success of these projects, and even more growth expected for the region, plans were made to continue the task of further water management for the Western states. The Kennedy Administration was perhaps the biggest proponent of this, implementing many projects of this sort. In a speech at the dedication of South Dakota’s Oahe Dam in



The largest water reclamation project ever conceived: NAWAPA. Designed in the 1960s by the Parsons Company, NAWAPA would have fundamentally addressed drought in the Western States. The arrows indicate approximate river runoff by region.

1962, Kennedy said: “When we are inclined to take these wonders for granted, let us remember that only a generation or two ago all the great rivers of America—the Missouri, the Columbia, the Mississippi, the Tennessee—ran into the sea unharnessed and unchecked. Their power potential was wasted. Their economic benefits were sparse. And their flooding caused an appalling destruction of life and of property... This nation began to develop its rivers systematically, to conserve its soil and its water, and to channel the destructive force of these great rivers into light and peace. And today, as a result of this, the face of this nation has been changed. Forests are growing where there was once dirt and waste. Now there is prosperity where our poorest citizens once lived.”

The next step was obvious: water-management on a national and continental scale. In 1964, a proposal was brought to the U.S. Senate to put in place the most far-sighted project ever imagined. The North American Water and Power Alliance (NAWAPA) proposed to redirect 20% of the runoff from a number of major rivers in Alaska and Canada’s Yukon Territory southward, to fulfill the needs of the rest of the continent. This included the Southwest, the plains states, refilling the Great Lakes, and even northern Mexico. Unused water in the northwest part of North America—water that fell as precipitation on the mountainous coastline and then ran “unharnessed and unchecked” right back to the ocean—would instead be utilized where it was actually needed, to green the continent and benefit mankind.

Enjoying enormous support, both bipartisan support in the United States as well as substantial support in Canada, NAWAPA was introduced as a U.S. Senate resolution in 1965, with an accompanying resolution in the House.



President John F. Kennedy initiated the largest number of water infrastructure projects since FDR, a direction that was rapidly extinguished after his assassination in 1963.

Then-Senator Robert F. Kennedy was one of the co-sponsors. However, with the commencement of American involvement in Vietnam, NAWAPA was soon pushed to the back-burner and never revisited. Subsequently, NAWAPA became the subject of increasing attacks from the environmentalist lobby to “protect nature.”

Since that time, the population of California has more than doubled, and its agricultural industry has soared. But no significant water-management project has been implemented in the West—only insane policies of “water conservation” and “wilderness preservation.” Now the water scarcity is being blamed on “climate change” instead of the obvious culprit—an anti-development economic policy. Are we surprised, then, that the West today is having water problems?

What an impotent fraud! And an un-American one at that. In reality, the idea that we are “running out of water” is a farce and shows precisely the problem in thinking that is our greatest impediment.

The North American continent’s water cycle is not equally distributed. A hugely disproportionate amount falls in the upper Northwest, as weather from the Pacific Ocean gets funneled up the coast by the steep mountains from Oregon all the way up through British Columbia to Alaska, dumping inordinate amounts of precipitation there. This region’s water runoff makes up fully one-half of the runoff of the entire continent. At the same time, the Southwest, with its exceptionally fertile land and large population, is water-starved, with 40 times less runoff as the similarly-sized Northwest region. After having been evaporated from the ocean through tremendous solar energy, then travelling thousands of miles to make landfall on the continent, this water in the northern basins runs immediately back to the ocean without having been used by any living processes at all. What a waste! Redirecting the water in the way NAWAPA proposes will radically increase the productivity of that water and its relationship with the continent.

Take another consideration. It is estimated that 60% of water that falls as precipitation on land is incorporated in some way before it runs off to the ocean, either by filling aquifers and water tables, or by being consumed by living processes. This means that most of the water which is added in this way will be absorbed, evaporated, and then precipitated back at least once before it makes its way back to the ocean to start the process over. Further, as it is consumed by plant life, it actually becomes a living part of the biosphere, increasing the transpiration (solar

evaporation given off by plants) overall in that region, thereby putting more moisture in the atmosphere, and in turn cooling the surrounding temperature. This water will later fall again as rain, further cycling into more life-giving processes. Through NAWAPA, we will actually increase the productivity of the water cycle. Thus, mankind will have mastered a natural process, and improved it.

Nuclear NAWAPA

The construction of NAWAPA itself will be a tremendous step in rebuilding the U.S. economy. In total, it will require the construction of 1,200 miles of tunnels, 8 large pumping stations, 5,400 miles of canals, dozens of locks, and 45 dams in a massive series of reservoirs and distribution systems. If it is upgraded to a nuclear-powered NAWAPA, as proposed by the LaRouche movement in 2013, an additional 52 GW of nuclear power plants will need to be built. All told, the construction of NAWAPA would create 7-10 million productive jobs over the course of 25–30 years, and another 10 million building the power plants to run it, **making it the largest project ever undertaken by man.**

By using nuclear power to run the pumps, primarily at the base of the Sawtooth Mountains in Idaho, raising the water to a sufficient elevation to flow to the rest of the continent, we save all the water which would have been needed merely to run the hydropower plants. The original plan would have collected 200 million acre-feet of water per year (MAFY), and used 130 MAFY to produce hydroelectricity for pumping, leaving 70 MAFY for use (still double the amount of currently existing runoff in the Southwest at 23 trillion gallons/year). However, by using nuclear energy to power the system, all of the water can flow to its destination, allowing more water for each route, and

opening up more routes such as to the high plains and Ogallala extension, the California/Oregon extension, and the PLHINO and PLHIGON in Mexico.

The introduction of nuclear energy raises another obvious opportunity: the efficient and affordable desalination of ocean water. As a supplement to the NAWAPA system, desalination plants could be built anywhere they are needed, especially in Western coastal states gripped by water emergencies. The recently completed Carlsbad desalination plant in San Diego, though only a fraction the size of what a nuclear-powered one would be, was built in only three years (we could likely increase that speed dramatically as part of a genuine economic mobilization). Doing this in parallel with the larger continental system of water management will allow further increases and fine-tuning of mankind's capabilities to control and improve the surrounding environment. Smaller desalination plants will also be needed throughout the interior of the country to clean up existing freshwater sources from decades of neglect, removing the destructive salt intrusion from many rivers, agricultural water sources, and source waters for cities and industry.



This is how to build a nation. Throughout this process, raw material mining and processing will create enormous amounts of work, as will the construction and operation of NAWAPA and related systems. New infrastructure will also need to be built, from railroads for transporting material, to new power lines. New cities will begin to pop up around the major zones of work, with new steel mills, cement factories, manufacturing facilities, and specialized institutions for nuclear energy and other high-tech areas required in the process, leading into new research centers at the frontiers of science. As this happens, states will be redefined in their economic and trade relationships. New agricultural lands will open up with the newly available water sources, further increasing the relationship between what will become thriving agro-industrial-scientific cities and regions of growth. In turn, this will feed discoveries in new applications of materials and technologies to all these fields. Multiple generations of Americans will gain skilled and meaningful employment, transforming their relationship to the future, to each other, and to themselves. All this taken together, will return the United States to its proper identity as a beacon of hope for the world, and with a commitment to the common aims of mankind.

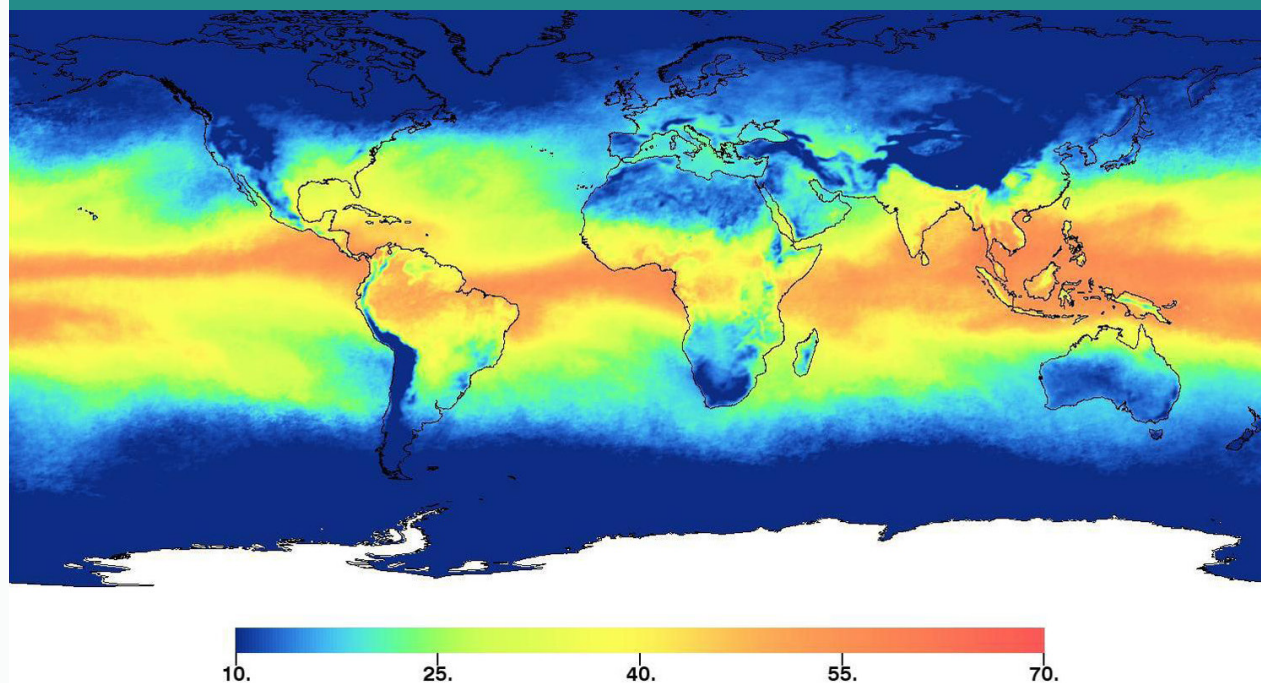
Weather Ionization and Atmospheric Water Management

We must go further, however. NAWAPA fills a void up to a certain level—utilizing and managing the available water resources of the continent. But where does this water come from? What causes this cycle, and can we improve?

At any given moment, there are 1000 Mississippi Rivers flowing upward into the atmosphere driven by the Sun's evaporation, in a grand engine that is the global water cycle. Of this, approximately 10% falls back as precipitation onto land, while the rest falls onto the oceans and is concentrated around the tropics. That 10% is what fuels all of our water systems—our precipitation, snowpack, lakes, and rivers. Even slight changes in this process would have enormous impacts for potentially increasing precipitation in arid regions, or, conversely, decreasing it for saturated regions.

As we learn more about the Earth's climate and weather systems, it increasingly becomes evident that there are substantial electromagnetic characteristics involved. Cloud formation, and specifically the formation of water droplets that eventually fall as rain, have a close rela-

AIRS Total Precipitable Water Vapor (mm), May 2009



Source: <https://sealevel.jpl.nasa.gov/ocean-observation/understanding-climate/air-and-water/>

This figure shows the estimated concentration of water vapor worldwide, a consequence of evaporation by the Sun. A forward-looking mankind would consider how to influence this vastly unequal distribution, bringing future precipitation from water-rich to water-starved parts of the globe. The unit of measurement in this figure is millimeters of pressure from a column of water (mm).

tionship with the electrical properties of the atmosphere around it, as well as larger electromagnetic and charged particle phenomena such as cosmic radiation. Can mankind understand these processes? Could we begin to influence and control them?

Starting in the mid-1990s, a number of countries have installed sets of electrical towers in arid regions to ionize the air around them. The thought was to catalyze the electrical properties of cloud systems to form water droplets and fall as rain, clouds which otherwise were not in the proper context to precipitate. While the technology is still not well understood, the results have been amazing. In Mexico, where these “ELAT” systems were installed in drought-stricken Sonora, average rainfall was increased from 10.6 inches to 51 inches in the first year, and then 47 inches the next year it was used.¹ Similar success has been shown with this technology in the United Arab Emirates and Australia, to differing degrees.

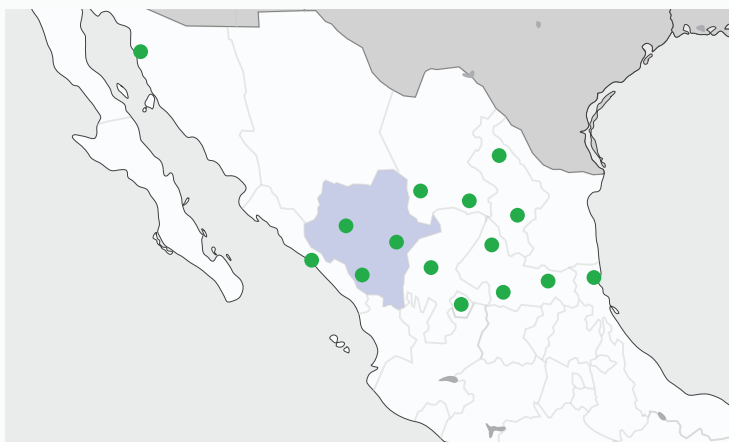
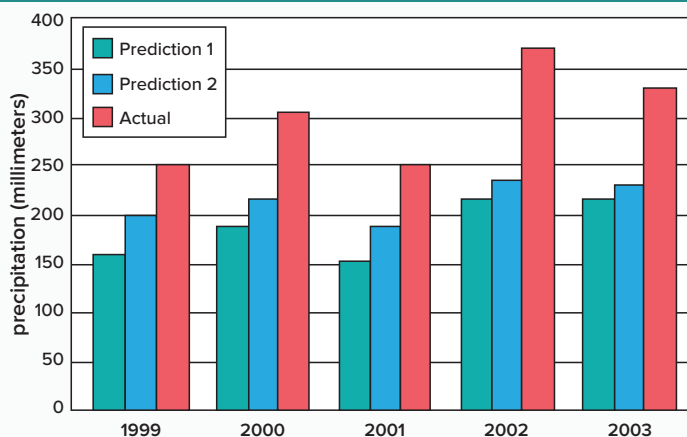
These phenomena are promising, and point toward the direction which a sane society should go. Whether or not ionization technology is the answer we are searching for, it opens the door to investigating the real-life laboratory of the electromagnetic environment in which our weather operates. There is still much to be learned about our weather and water cycles, and the influence that electromagnetic radiation has on them, but ionization technology and others like it should urgently be implemented and studied for a multi-pronged approach to water management.

The history of mankind shows a history of increasing mastery and control of this type over our “environment” (even if our environment extends outward to the solar system and the galaxy). Beyond having a simple pairwise relationship to our so-called “scarce resources” which we consume, mankind’s power is a conceptual one, in which we discover those processes which create and transform resources. This is what we act upon, not the resource itself, or even simply the Earth, but the process which creates the resource, much like the farmer who first cares for his land then plants and waters a seed, in order to later harvest the desired product at the end of the season. When

there is actual “climate change”—not scare-stories about human carbon emissions causing catastrophic warming, but climate change as has annihilated countless civilizations before us—this is how we must approach it. A society which does not do this, and gets trapped into thinking they must conserve a limited quantity of fixed resources, is doomed to fail.

Therefore as Senator Frank Moss, sponsor of the 1965 Senate NAWAPA resolution, said at the time: “Many efforts have been and are continuing to be made to solve the problem of limited water supply, and although great strides have been achieved, so great is the problem and so important its solution that it now has become imperative that consideration be given to what at one time seemed unachievable proposals. The time has passed during which this problem can be solved through traditionally local or piecemeal approaches. The solution must be equal in magnitude to the problem.”

ELAT Stations and Precipitation in Durango



Adapted from Phillip Kauffman and Arquimedes Ruiz-Columbié

1. *Nuclear NAWAPA XXI: Gateway to the Fusion Economy*, 21st Century Science & Technology, 2013. p. 39

High-Speed Rail—Connectivity, Productivity

Providing a modern surface transportation in the U.S. requires a two-phase, sweeping upgrade to the existing, inadequate rail system: First, modernize 26,000 miles of the current core network; secondly, upgrade another 16,000 miles, for a total of 42,000 miles of high-speed, electrified, double-track rail.

This will result in a national grid, including selected magnetically levitated lines, providing passenger and freight transit, which can be integrated with development corridors throughout the Western Hemisphere, and even across to Eurasia, via a long-overdue Bering Strait crossing.

An impossible, tall task? This only seems so, if it's taken outside the realm of history and reality. In the U.S., nationwide, transcontinental rail began under President Abraham Lincoln, and by 1890 there were five rail corridors crossing from the Atlantic to the Pacific. Today, all the technologies exist to accomplish equivalent feats of engineering. Achieving this mobilization today, requires retooling and vastly expanding the manufacturing sector, creating millions of new high-skilled jobs and the training to go with it, and similar transformations, especially in construction and supply lines.

The geographic concept (see map) is to start with the 90 major existing cities, and upgrade the network of rail that interconnects them. At the same time, map out some 20 new cities, hubs that will arise from rail service that will criss-cross parts of the “empty” zones for the first time.

U.S. rail connectivity peaked in the 1920s, as measured by the extent of route miles actively in use. Since then, there

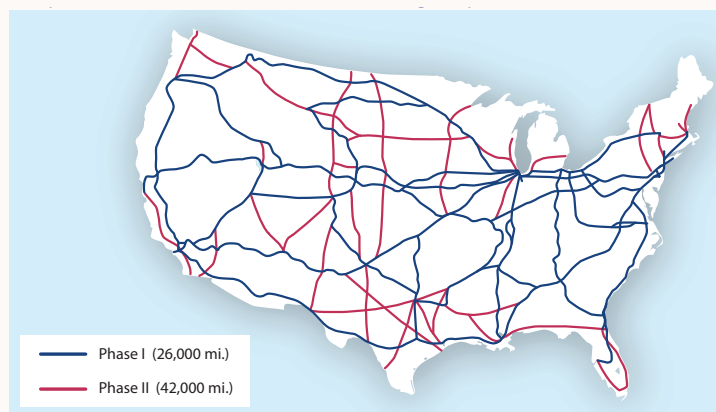
has been a steady decline, to the point of today's near dysfunction. Barely one percent of the system is electrified. The locomotives are 99% diesel-electric, which means they have to drag along their own fuel. Freight trains move, on average, slower than 25 miles per hour. No wonder trucks haul over 75% of U.S. freight. Besides the Northeast Corridor, passenger rail travel is almost non-existent.

Exciting Technologies, New Skills

True high-speed rail corridors—at travelling speeds for passengers of 150 mph (250 kph) or greater, and for freight at 90–110 mph (145–175 kph)—and, as soon as possible, magnetically levitated train systems, will transform the entire economy, both from their performance, and in advance, from their construction inputs in terms of demand for bills of materials. The gross volumes of the necessary materials for 42,000 route miles of high-speed, electrified, double-track railway include 15.5 million tons of high-tensile steel and 22 million tons of cement. For electrification, 1,000 sub-stations are needed, and 50 gigawatts of power. Plus, there are inputs needed for 10,000 locomotives. All told, this project will create some 800,000 jobs.

Staggering numbers, but look at what China has done. In 2007, China did not have one single mile of high-speed rail. Today, China has 23,500 miles, and is building still more.

The United States has 34 miles of high speed rail at present. This reflects the industrial devolution over the past 30 years, in which some 90,000 factories of



In blue, the first 26,000-mile phase of a new electrified high-speed rail grid. In red, the 42,000-mile second stage. This proposal includes the most obvious missing element of current U.S. transportation, the addition of three north-south high-speed corridors in the Great Plains, from the Mexican to Canadian borders. The Alaska Railroad corridors would connect these continental rail lines to the Bering Strait Tunnel to Russia and on into Eurasia.

all sizes have shut down. Intervening to reverse this picture, we can look forward to waves of new manufacturing plants, producing everything from steel to nuclear reactors.

The benefits of this rail mobilization extend to spin-off technologies in new areas. For example, consider magnetic levitation trains—appropriate for portions of the U.S. grid and already in service in China—travel in the range of 370 mph (600 kph), without wheels.

Maglev train experience contributes towards R&D for propulsion for near-Earth space launch, in a program called StarTram.

Another area of progress is superconducting magnets, which would improve efficiency. Research is underway towards making room-temperature superconductors.

Hubs, Corridors, New Cities

Many local and regional projects stand out in the overall rail mobilization. New York City, for example, is a world metropolis of 22 million people, but its surface transportation system is decayed and inadequate. In 1904, its subway system was a world pacesetter—and still the world’s largest (by number of stations); but now the system is dangerously outmoded. The challenge of a new system is to combine upgrading interstate freight and passenger service, with modern regional rapid transit.

The continental-scale priority project is the Bering Strait/Alaska-Canada Rail Connector to the Lower 48 States. There is no rail connection between Alaska, Canada’s northern territories, and the rest of the continent, even though a surface route was laid out in 1942 during World War II under President Franklin Roosevelt. (The route became the Al-Can Highway.)

In addition to building this rail connector, there is the Bering Strait to cross, to connect to Eurasia. The 53 mile (85 km) gap between Alaska and Russia can be closed by a tunnel system under the Strait. Then on



the U.S. side, the full connector line will involve 3,000 miles (4,800 km) of railway—double that for double-tracking, and on the Russian side, some 1,865 miles (3,000 km) to connect to the main grid, which Russia is already expanding. (See “Infrastructure Corridors Will Transform Economy,” by R. Freeman and H.B.H. Cooper, *EIR*, 2007.)

Picture this new, international connector as a development corridor, extending out 50 miles (80 km) on either side of the railway, and including power lines, water, communications and any utilities for all or part of the length, and a new frontier opens up. Picture new cities, industry, research and culture centers, and far north agriculture, with controlled environment production.

Thus, launching a rail Renaissance, means a whole new vision of the United States and North America. This hemisphere becomes part of the World Land-Bridge. At present, the continent is dramatically underpopulated. North America has only 20 people per square kilometer, compared to the 110 in the European Union.

Mobilizing for a fully built-out, high-tech rail system is mobilizing for a future of growth and prosperity for billions of people to come.



Top: Connecting Alaska and northern Canada to the rest of the continent.
 Above: An artist’s conceptual view of the North American entrance to the Bering Strait Rail Tunnel. (Cooper Consulting / J. Craig Thorpe)

Measuring Power Sources: Energy Flux Density

“Green” energy is a recipe for mass death: high prices, blackouts, and lost productivity in the United States, and enforced poverty in the developing world, costing hundreds of millions of lives.

Achieving reliable, inexpensive power to supply the needs of a prosperous future requires rejecting the low-density, unreliable energy sources so highly praised by climate crusaders, and instead adopting power sources of high energy and power densities—such as nuclear, coal, and natural gas in the present, and moving forward to more advanced types of nuclear power, including nuclear fusion, in the future.

It is a telling contradiction that many of the leading advocates of dramatic reductions in CO₂ emissions oppose nuclear power—which uses two orders of magnitude less land than solar panels, one order of magnitude less material inputs than windmills, and a million times less fuel than biomass—on the laughable grounds that it is unsafe. Invoking horrifying images of nuclear plants exploding like nuclear bombs (an absolute impossibility), nuclear fear-mongers mock your intelligence.

So why is nuclear power so, well, powerful?

First, let’s consider the energy density of the different fuels human beings have used, from wood to coal to oil to natural gas, to uranium. And let’s look at how these fuels have supported the growing energy needs of the United States.

Coal has twice the energy density of wood. Coal mining is also more efficient, from a transportation standpoint, than harvesting lumber. So, for many uses, consuming coal made much more sense than burning wood.

Coal saved America’s forests and trees for other uses, like construction and furniture, as well as simply being pleasant to look at. Although it is *possible* to operate a steam engine (such as a steam locomotive) with wood, it is coal that made the railroads and industry possible. Harvesting, storing and transporting the necessary volume of wood would be impractical.

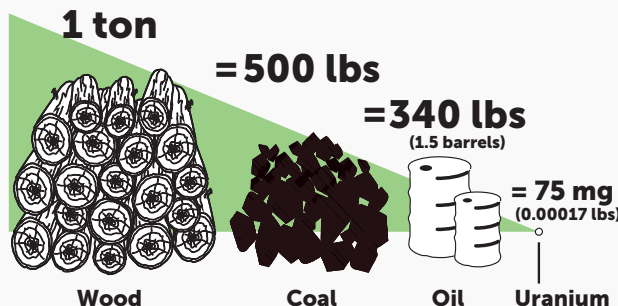
Oil has an even higher energy density than coal. And since it is a liquid, it can be used in internal combustion engines, which are far more efficient—in terms of power output per engine size—than external combustion (coal) engines. Can you imagine a coal-powered airplane? How much coal and water would you need to bring with you in your coal-powered car for an out-of-town trip?

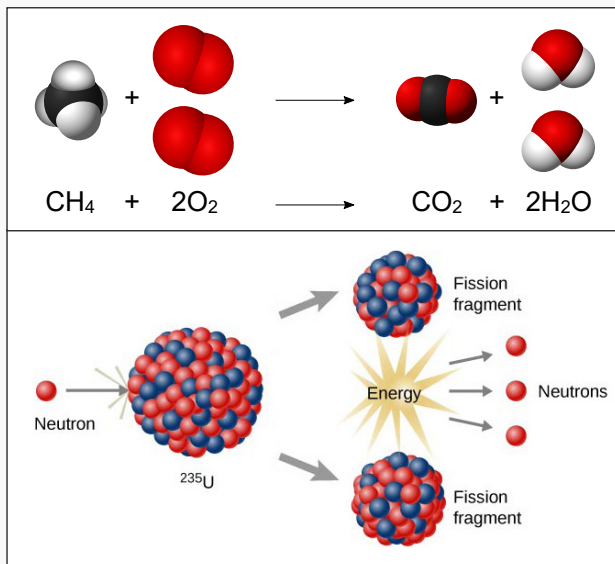
Natural gas is also more energy-dense than coal for electricity production. Since it can be transported through pipes, it is much easier to get to businesses and homes than deliveries of coal or wood.

The Power of the Atomic Nucleus

Nuclear power is an entirely different domain. While combustion of wood, coal, oil, or gas is a chemical process, involving the rearrangement of chemical bonds among atoms, nuclear power comes from the rearrangement of the nucleus itself.

You may remember from physics class that opposites attract and like charges repel. But a nucleus of uranium contains 92 protons—all positively charged—in close proximity. There is an *enormous* amount of energy inherent in that configuration, which can be released by transforming the nucleus. The fission (breaking apart) of the nucleus of the uranium-235 isotope releases *tens*





Above: Combustion of one molecule of methane (natural gas) releases around 9 electron volts (eV) of energy per molecule. Below: The fission of one uranium-235 nucleus releases approximately 200,000,000 eV, over *twenty million times more* than burning natural gas. That's the power of the nucleus!

On a per-mass basis, uranium-235 is over one million times more energy dense than fossil fuels.

of millions of times more energy, per reaction, than burning a molecule of methane (natural gas).

This almost unimaginable energy density is the reason that **a tiny pellet of nuclear fuel (the size of the joint of one of your fingers) carries as much energy as a ton of coal.**

Including the uranium ore mined for fuel, the total material requirements for nuclear power are less than 10% of what is required for windmills. Although windmills don't require any fuel to operate, they *do* require a great deal to manufacture in the first place. It would take one thousand "modern" windmills (an oxymoron?) to produce the same total output as a nuclear plant. And that wind farm would cover an area of around 300 square miles, compared to the approximately one square mile for the nuclear plant. And that output would come when the wind blows, not when people need power.

The Problem with 'Interruptibles'

When it comes to interruptibles (foolishly called "renewables" ... as though windmills "renew" themselves after a couple dozen years, rather than going—as indeed they do!—into the trash), their unsuitability as a basis for an energy *system* makes an even stronger point

than their resource-heavy production and poor power output.

Solar panels are fine if you don't care when (or whether) the electricity is available, or whether you have to achieve a competitive cost (such as when you have solar panels on your roof and the utility company pays you full retail rates for the power they provide on sunny days).

But for building an energy *system*, the unreliability of these interruptibles doubles their effective physical cost, since they require either storage (outrageously expensive) and / or backup natural gas plants (not free) to produce power when the sun don't shine, a situation that reliably occurs every night.

Forward to Fusion!

Instead of trying to capture the faint light from the distant sun, why not recreate here on Earth the process that powers the sun, and use the power directly? That is the idea behind nuclear *fusion*, which liberates energy by uniting small isotopes of hydrogen or helium into larger nuclei. It will provide even greater energy densities than current fission-based nuclear plants.

As coal allowed for steam engines, trains, and modern factories, allowing machines to do work that could not be accomplished by human muscle, nuclear power—especially nuclear fusion—unlocks an economy that processes materials (and waste) far more efficiently, reducing the difficulties of mining.

With nuclear fusion, we can desalinate ocean water as needed, even for agricultural supply, making droughts a thing of the past. And nuclear allows us to *reliably* electrify the economy, including rail and other transportation, while allowing the efficient production of hydrogen and other synthetic fuels to spread its benefits to applications that currently rely on combustion.

Without building up *reliable* electricity infrastructure, we face the certainty of an increasing number of black-outs, which take a terrible toll on society, causing damage, significant safety risks, and jeopardizing health and well-being. (How will you or your elderly neighbor fare without air conditioning in 100 degree heat, or without heating in sub-zero temperatures?)

A reindustrialized, productive United States will require at least an additional 500 GW of reliable electricity generation to power its industries, resource and water needs, and increasing freight and passenger movement carried on electrified rail.

Nuclear Fusion: Power for the Future

By the year 2100, human civilization should require 100 times as much power as it consumes today. How will this be provided?

When it comes to powering the human species, technologies of higher energy and power density are the path to progress. There is no power source on the horizon that packs a bigger punch than nuclear fusion, the process that powers the sun itself.

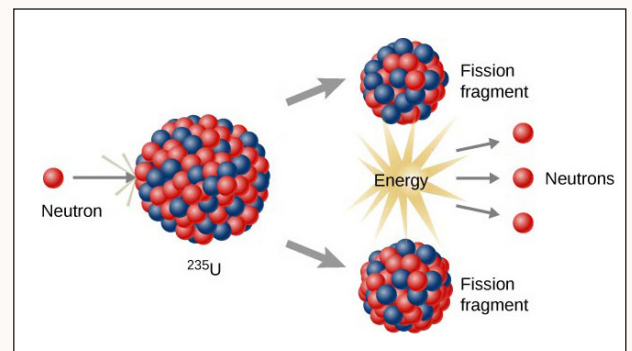
The weakest forms of power are of a *physical* nature: flowing water, blowing wind, or the direct motion of



people or animals. Far superior is the *chemical* power provided by fire, first from wood and later from sources such as coal, oil, and natural gas, which allow for efficient engines to create motion. The *nuclear* power of the atom itself is one million times greater than that of chemical reactions.

Current power plants operate by *nuclear fission*—the breaking apart of large nuclei (primarily uranium) in a process that puts previous power sources to shame. But *nuclear fusion* is still greater, with higher energy intensities and potentially much easier conversion to power on earth, and to rocket thrust in space.

In fusion, small nuclei are combined. This is what powers the sun, whose enormous mass drives the nuclei together and causes them to react. Here on earth, we must drive the nuclei together in other ways—with magnets, electron beams, lasers, and other technologies.



Left column, top: A society that has only **physical** forms of power, such as animal-powered agriculture, is limited in the level of development it can achieve. A large portion of the population will be involved in agriculture itself.

Middle: The steam locomotive is an example of **chemical** power: the chemical combustion of coal creates heat that powers its motion. The effort involved in mining coal is far less than the power it produces. Even though a portion of the workforce is now involved in coal production, the economy as a whole is more productive, and can support higher living standards.

Bottom: A **nuclear** power plant capable of providing power for hundreds of thousands of people uses very little land and resources. Nuclear reactions are a million times more energy dense than the chemical reactions they can replace. Instead of involving coal molecules composed of atoms, nuclear reactions transform the atomic nucleus itself.

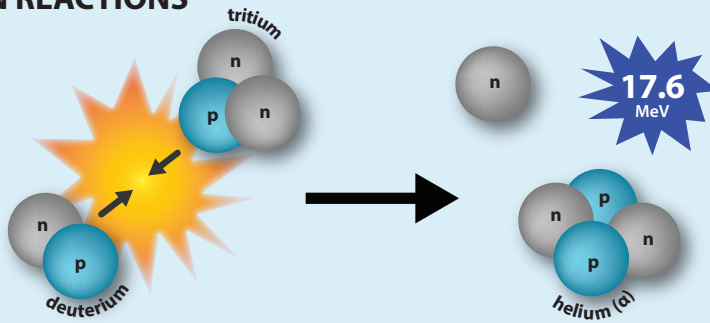
Above: In nuclear **fission**, a large nucleus (typically uranium) is broken into smaller nuclei, releasing enormous amounts of energy.

Next page: In nuclear **fusion**, very small nuclei are caused to fuse together, releasing—per mass of fuel—even more power than fission reactions.

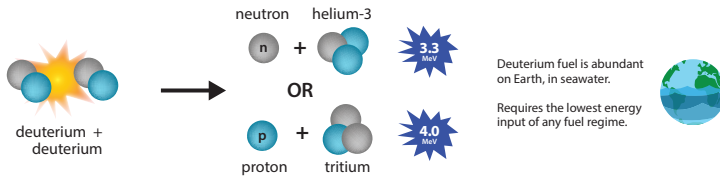
Credits: Train, Drew Jacksich; Nuclear plant, AMEREN Missouri

FUSION REACTIONS

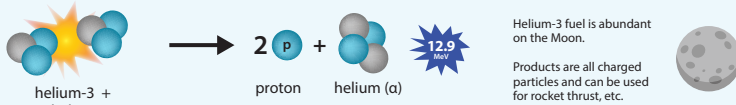
D-T reaction



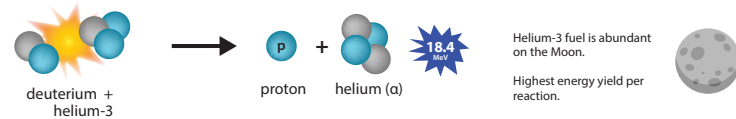
D-D reaction



He-3-He-3 reaction



D-He-3 reaction



rected thrust from a rocket.

With nuclear fusion, we overcome limitations imposed by lower forms of power:

- A lifetime's supply of electrical power produced from only grams of fuel per person.

- Large-scale desalination and pumping, allowing irrigation of massive tracts of land using ocean water.

- An entirely new relationship to mining, whereby even low-quality ores (or landfills!) could be productively sifted to draw out useful elements by using a powerful technology called the plasma torch.

- A fundamental expansion of our relationship to the solar system, where rockets could be fired not only for a few minutes including their takeoff, but *for the entire flight*, making a journey to Mars, which takes many months under current conditions, a trip of only a week's duration! This will dramatically expand our ability to protect our home planet from asteroids and comets headed our way.

Most experiments use a combination of two kinds of hydrogen, known as deuterium (D) and tritium (T). When they react, they produce what is called an alpha particle (α , a helium nucleus) and a neutron (n). Although the D and T nuclei and the α have positive charges, and can therefore be controlled by magnetic and electric fields, the n does not. This means that in the tokamak—a magnetic bottle that holds D and T plasma at tens of millions of degrees—the n will not be controlled by the magnetic bottle, and will crash into the walls of the device. This creates heat, but it also degrades the device over time.

A far superior nuclear fusion fuel is a special isotope of helium, known as helium-3. This isotope has two protons (which makes it helium) and one neutron (giving a total mass of 3). When helium-3 reacts with D, the results are an α and a proton (p). Since both the α and p can be controlled by magnetic fields, this means they can more directly be converted into electricity through a process known as magnetohydrodynamics or used as di-

Lunar Helium-3: Nuclear Fusion Power for the Future

This all sounds great ... but where can we find this fuel? It turns out that the best nearby source is on the moon! While advocates of solar panels collect the feeble light reaching our planet from the sun, fusion pioneers have discovered a far superior emanation from that heavenly body—a stream of helium-3 particles, which are deflected from Earth's surface by our magnetic field, but obligingly lodge themselves in the lunar crust, just waiting for us to liberate them to perform useful activity in the service of human development and further human creativity.

Will we bring this unique isotope into our expanding collection of resources?

Our Mission in Space: What is a Crash Program?

During his 1988 run for the U.S. presidency, Lyndon LaRouche proposed a forty-year project of developing a science city on Mars—a “colony” rather than a “base.” The step-by-step work necessary to achieve the capability of building Earth-like artificial domes on Mars would itself be a driver for developments in nuclear fusion, lasers, biology, and computing.

“The Mars-colonization mission is not only feasible, both technologically and economically,” LaRouche argued in his 1986 article “The Science and Technology Needed to Colonize Mars.”

“It is urgent that we undertake this project, both for scientific reasons, and also for economic reasons. There are certain classes of technical and economic problems now developing on Earth, which we shall not solve on Earth without help from some of the scientific and economic byproducts of a Mars-colonization project.”

The project, necessary for affirming our true human nature, our highest self interest, through the good deeds of expanding humanity’s scientific horizons, economic standing, and self-conception, expressed a policy that was at its heart an expression of human love.

LaRouche’s proposal built on President Kennedy’s call for what became the Apollo lunar program in a 1961 speech Kennedy made to Congress:

I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish.

Kennedy’s goal was achieved on July 20, 1969. Culturally, the world was in inspired awe as it witnessed video of human beings walking on our celestial neighbor. If man could walk on the moon, what *couldn’t* we accomplish?

Economically, the effects were enormous. The Apollo moon mission had racked up expenses of over \$250 billion in today’s dollars. But, properly conceived, going to

the Moon cost the U.S. *far less than nothing*: for every **\$1 spent on that ambitious (and successful!) goal, the economy as a whole reaped more than \$10 in benefits** over the following decade. This was because the technological innovations and advancements in manufacturing required to achieve the lunar mission went on to improve the productive economy more broadly.



NASA’s *Spinoff* magazine reports on the wealth of new technologies that “spin off” from space research to the broader economy. Every issue demonstrates why the benefits of technology programs are *incommensurate* with the expense.

And that ten-to-one payback does not fully capture the true economic value created by the program. Although the costs were incurred once, the benefits in science and technology continue to improve our world decades later. Unlike financial profits, the value created by such a technological crash-program is *incommensurable* with its cost: it allows us to create new materials and use new production techniques that were previously not available at any price.

In a 1984 article on US-USSR collaboration, LaRouche explained how this works:

Advances in technology are transmitted into the productive process as a whole through the incorporation of improved technologies in capital goods, most emphatically capital goods of the machine-tool or analogous classifications. Therefore, the only means by which a national economy can sustain significant rates of technological progress, is by placing emphasis upon the capital-goods sector of production, and maintaining sufficiently high rates of turnover in that sector to foster high rates of technological innovation in the goods produced.

To be successful, an economic crash program must accelerate the development and adoption throughout the economy of new technologies that increase the productive powers of the labor force and the effectiveness of the economy's infrastructure platform. Apollo did that. Jeff Bezos has not.

Capital goods for the aerospace industry leapt by 90% for the 1960s over the levels of the 1950s. But capital goods for the general economy (excluding aerospace and defense) soared by even more: 130%. The benefits spread far and wide, providing a decades-long boost to uplifting U.S. productivity.

Advocates of the Green New Deal claim it too is a crash program, some going so far as to liken it to a modern-day Apollo mission. But while the Apollo mission *increased* productivity, the Green New Deal would do precisely the *opposite*: making the economy *less* productive by reducing the quality of power and the reliability of its infrastructure. Even more fundamentally, it encourages a view of humanity in which people are a blight on the planet, rather than a unique species, destined to find its future in the stars. LaRouche addressed this perspective in December 2009, speaking at a Moscow conference:

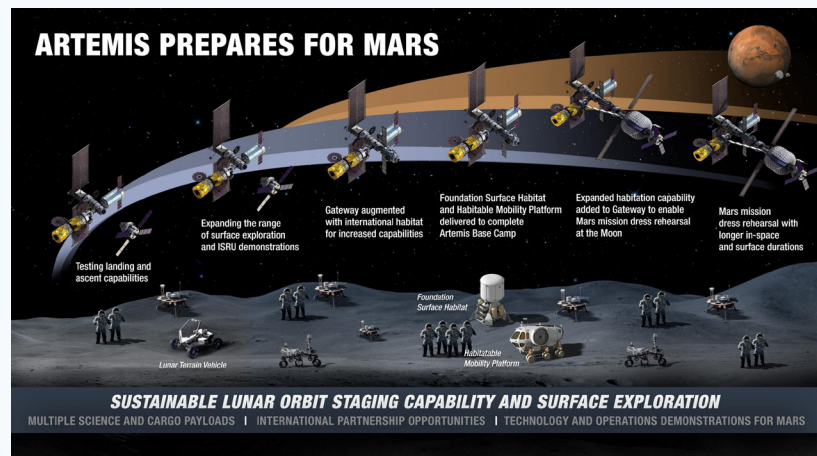
In order to realize the objectives which stand before us now, we have to give mankind a new mission—mankind as a whole. The mission is typified by the idea of the Mars colonization program. This requires us to make the kinds of changes, in terms of scientific progress, which are needed for mankind's future existence.

We have many problems on this planet. And we can not solve those problems, extensively, without going into a

development of the Solar System as a habitat of mankind. We're on the edge of doing that, scientifically. There are many scientific discoveries, yet to be made, which will make it possible to act for man's colonization of Mars. That will be in some time to come. But what we need now is the intention of accomplishing the Mars colonization program. We need to educate and develop generations of young people who will be oriented to that kind of mission. In the coming period, we will have the birth of young people who will be part of the colonization of Mars, in one way or the other, before this century is out.

We need to give mankind a sense of purpose, developmental purpose, not only throughout the planet, but through the influence of Earth on the adjoining regions of the Solar System, and beyond.

Those objectives are feasible. There are, admittedly, many problems to be solved, scientific problems, which are not yet resolved. We have many questions. But, essentially, we know this is feasible. We know this should be feasible within two or three generations. What we have to do, is give to people, who will be the grandchildren, born now, to give them something to realize. When we're dead and gone, they will be there, three generations from now, four generations from now. They will be the people who actually colonize areas beyond Earth itself. We need to give them the opportunity to do so. We need to give society, in the meantime, the mission-orientation of achieving that colonization, for our descendants, three generations or so down the line.



NASA's Artemis program came from President Trump's 2017 Space Policy Directive 1, which called for the United States to "lead the return of humans to the Moon for long-term exploration and utilization, followed by human missions to Mars and other destinations." Artemis was to bring "the first woman and the next man" to the Moon by 2024 and, as this graphic shows, use the lessons Artemis has learned, and the infrastructure developed on the Moon, to prepare for a mission to Mars.

Join The LaRouche Organization!

New Feature



The LaRouche Organization published a new feature documentary with the goal of returning the United States to its original principles of peaceful cooperation with the world. We must finally break from the British-centered system of geopolitics and economic colonialism.

This documentary demonstrates that China's Belt and Road Initiative (BRI) is based on the same principles of what is known historically as the "American System" of political economy, as advanced by Lyndon LaRouche and developed into the proposal he made with Helga Zepp-LaRouche for a World Land-Bridge of development. *If the U.S. were to reject the BRI, it would be rejecting its own historical identity.*



Contribute to The LaRouche Organization
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