

# The Gifts of Prometheus

## *Physical Chemistry and Nuclear Fusion*



**PROMETHEUS:** *But of wretched mortals he [Zeus] took no notice, desiring to bring the whole race to an end and create a new one in its place. Against this purpose none dared make stand except me—I only had the courage; I saved mortals so that they did not descend, blasted utterly, to the house of Hades. This is why I am bent by such grievous tortures, painful to suffer, piteous to behold.*

**CHORUS:** *Did you transgress even somewhat beyond this offense?*

**PROMETHEUS:** *What's more, I gave mankind fire.*

**CHORUS:** *What! Do mortals now have flame-eyed fire?*

**PROMETHEUS:** *Yes, and from it they shall learn many arts.*

— Aeschylus, *Prometheus Bound*

**T**he Special Report you are now reading, “Physical Chemistry: The Continuing Gifts of Prometheus” serves two purposes.

The first, is to impart a living, joyous sense of the difference between mere money and true value. The qualitative nature of real human advancement is best seen in broad terms by looking at the changing use of fire, from which Prometheus says man “shall learn many arts.”

From wood to coal to nuclear power, the *platforms* for activity provided by these power sources mark successive stages of human economic development. In this report, we will use the development of physical chemistry, whose origins stretch to the beginning of human prehistory, with the uses of fire to change materials, from the birth of metallurgy to today's semiconductors and nuclear science, to give an image of true physical value.

The second purpose, is to sketch out the foundation for a human future based upon this concept of Promethean value. Value, which lies in what will be brought about in the future, can always be expressed in specific, wide-ranging goals. The specific goals that will measure the depth of our powers to develop will be covered briefly: the development of controlled nuclear fusion and the implementation of continental water management. Reference is made to our previous Special Report: “Nuclear NAWAPA XXI: Gateway to the Fusion Economy.”<sup>1</sup>

Prometheus was a true non-mythical historical personality, who endured the wrath of the god Zeus for daring to bring “fire” from heaven to man (along with poetry, astronomy, and science in general). Though chained by Zeus to a rock to have the torture of an eagle devouring his liver every day, Prometheus was unawed by Zeus’s power to punish him, and held him in utter contempt. The story of the Olympian god Zeus and Prometheus the Fire-Bringer is not fictional, not a piece of idle drama. Here we find the most pure expression of the fight that has dominated large-scale political and economic conflict throughout mankind’s existence. We find the essence of the confrontation between an oligarchical outlook, in which some few rulers maintain capricious power over (preferably stupefied) masses, and the humanist outlook—in which the true identity of every human being as a potential genius is embraced and in which providing the opportunity (physical, moral, and emotional) for every individual to lead a functionally *immortal* life is the ultimate goal.

### **“Every art possessed by man comes from Prometheus.”<sup>2</sup>**

Our exploration of the successful applications of this Promethean power will take us through four main fields, which can all be grouped under the general concept of *physical chemistry*. These fields are: metallurgy, the birth of modern chemistry, the world of electromagnetism, and the science of the nucleus. After our voyage, we’ll be able to reach new conclusions.

Metallurgy, the great science of transforming rocky ores into useful metals, came into being roughly at the birth of history, of man’s written records of his doings. While some few metals, such as gold and occasionally copper exist in pure states, the birth of the Bronze Age marked the advent of extractive metallurgy: transforming the green stone malachite into shining copper, and producing an entirely new metal, bronze, by combining

copper with tin. From bronze to iron to steel, the transformation of ores into increasingly specialized metal alloys requires tremendous amounts of heat and the transportation logistics to move ores, flux, and fuel sources to processing sites.

As modern science was born, with the work of Nicolaus of Cusa and his follower Johannes Kepler, the alchemy of the middle ages (which sought to “make money”—gold) was replaced by the science of chemistry, which sought to understand the powers and activities of *all* physical substances, to increase man’s power over them. Specific properties, sometimes found in only a few substances or elements, were found to represent general principles of nature. Understanding the elements of nature by their *potentials to act*, rather than their observable properties was key. Antoine Lavoisier’s demonstration that heat was not a substance, the periodic system of the elements (based on the comparison of their potentials for action and atomic weights), developed by Dmitri Mendeleev, and the use of electricity to pry apart previously inseparable elements are a few of the examples that illustrate man’s increasing knowledge of, and power over, the principles that govern nature in the small. This *power* is valuable; it is true economic wealth.

Man’s use of electricity and the electromagnetic properties of materials has developed dramatically: from the knowledge that rubbing amber (*elektron* in Greek) could cause it to attract small bits of lint, to the development of the first machines capable of producing and storing “electric fluid” as it was then known, to the use of chemical reactions (batteries) to produce *running* (“current”) electric fluid, to the generator and the motor, and to the use of semiconductors in today’s solid-state computing equipment. Who could have imagined that the attractive power of rubbed amber would be used as the primary source of industrial motion (via the motor), or form the basis for automated control systems for industry via the integrated circuit?

Nuclear science, which arose from humble beginnings of uranium salts and photographic plates, brought to light properties of matter that lay below the scale dealt with by chemistry. It offers the greatest as-yet-unrealized potential to transform human life through remarkable properties of matter that are invisible to the eyes of chemistry and electricity. We see this in the power inherent in the ability of the uranium nucleus to fission, the new materials based on isotopic specificity, and the enormous potentials for fusion power. Fusion will fundamentally transform our relationship to materials in a way unmatched since the original birth of metallurgy, and can provide the power basis required to develop a system for planetary defense from errant asteroids and comets.

1. See [http://21stcenturysciencetech.com/Nuclear\\_NAWAPA.html](http://21stcenturysciencetech.com/Nuclear_NAWAPA.html)

2. Heading quotes are Prometheus speaking in Aeschylus’s play.

## “I caused unseen hopes to dwell within their breasts.”

The full implementation of these myriad gifts of Prometheus *currently allows the very rapid elimination of poverty, worldwide*. Why, then, have these gifts been withheld? Why have they not been put to use? Surely, it is not by accident. The same species that has developed these powers certainly has the ability to put them fully into practice. Is there a physical law that has prevented the use of fertilizer, irrigation techniques, and modern harvesting technology in poor areas of the world? Is there a law of nature that prevents the application of nuclear fission power and the development of fusion? Would a Promethean society spend more on movies, video games, and gambling than on the scientific breakthroughs that will define human history for generations to come?<sup>3</sup> Is it *natural* to prefer “traditional” beliefs to new discoveries? Is it *natural* to orient to base pleasures, rather than those of the mind? Is it *natural* for humanity to act as though it were another species, devoid of reason?

The *unnatural* cause of these uncharacteristic behaviors is the presence of what may be considered another species: the oligarchical species of man. This pestilential social ill, the presence of an oligarchy, and its too-general toleration, has held mankind back for millenia through empires, wars, the suppression of science and culture, and myths of overpopulation dating back literally *thousands* of years.

It is commonly said that the Dark Ages followed the collapse of the Roman Empire. In reality, the Roman Empire, which existed by looting and slavery, rather than technological advancement, *was* a dark age. The Byzantine Empire developed ornate palaces, but no technological improvement. It was in the early part of the second mil-

3. Americans now spend \$10 billion annually just at movie theaters, and more than that on electronic games. NASA’s budget is currently \$18 billion. Meanwhile, Americans lost \$119 billion gambling in 2013.

lenium, a lull between empires, before the full establishment of Venice as an imperial power, that the development of the great cathedrals of Europe began, and the first structure taller than the great pyramid of Giza was built.

The formation of the United States represented the aspirations of those in Europe seeking the means to rid themselves of oligarchism, and develop society according to the pursuit of happiness: bringing about the increasing perfection of others. The origins of this project, initiated by circles around Nicholas of Cusa, saw substantial, but ultimately, temporary, victories in the Revolutionary War, the Constitution, the policies of Alexander Hamilton, John Quincy Adams, Abraham Lincoln, and other more recent leaders. But the most noble aspirations of those who formed this nation will not have been achieved so long as oligarchism exists on this planet—so long as Zeus has not been defeated.

## “Though they had eyes to see, they saw to no avail.”

What really matters? What matters to us of people from three millenia ago? Those who developed bronze or made their lives possible contributed something of unquestionably durable importance to human civilization, an *evolution* of the species: not a genetic evolution, but a super-genetic one. What do the lives of those who wasted their potential in dissipating pleasures mean to us today? What opportunity for long-lasting contributions are afforded to those subject to grinding poverty, unable, by their conditions of life, to develop their mental faculties?

Truly, creating the conditions for the elevation of all members of the human race, to being meaningfully *human*, is the greatest of political goals, and the most noble aspiration for the life of any individual. This is the Promethean outlook, and it can no longer coexist with the oligarchical.

— Jason Ross

## Video: The Gifts of Prometheus



Creighton Jones



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View the Feb 1, 2014 video webcast at: [larouchepac.com/GiftsOfPrometheus-Webcast](http://larouchepac.com/GiftsOfPrometheus-Webcast)