The Thermonuclear Option: Extinction or Existence

by Benjamin Deniston

> The placement of new strike weapons in the south and northwest of Russia against [NATO] missile defense components, including the deployment of Iskander missile systems in the Kaliningrad region, is one possible way of incapacitating the European missile defense infrastructure…. [Taking into account] the destabilizing nature of the [NATO] missile defense system … *[a] decision to use destructive force preemptively will be taken if the situation worsens* [emphasis added].

This was the warning issued by Russia's highest military official, Chief of the Russian Armed Forces General Staff Gen. Nikolai Makarov, speaking at an international conference on ballistic missile defense systems (BMDS), hosted in Moscow by the Russian government. The two-day event (May 3 and 4) featured Russia's clear warning that it recognizes NATO's planned development of BMDS in Eastern Europe as a strategic threat to Russia, and, more importantly, that it will not back down to such threats. This missile defense conference was timed in an attempt to preempt the NATO summit in Chicago, starting May 20. It included statements by the secretary of Russia's Security Council, Nikolai Patrushev, who also emphasized Russia's view in no uncertain terms: "The geographical regions and technical characteristics of these [NATO] missile defense systems create the foundations for additional dangers, especially considering the current and future levels of high-precision armament of the United States…. [T]here simply are no targets for the missile defense shield other than Russia."

Will those fighting on behalf of the common aims of mankind succeed in redirecting the focus of international efforts at this time of grave crisis?

Rounding off Russia's clear warning that it will not back down, Defense Minister Anatoly Serdyukov described the status of Russia-U.S.A. talks on missile defense as follows: "So far, we have not found a mutually acceptable solution to the missile defense issue, and the situation is at a dead end…. There is a dilemma facing our countries now…. Either we pass this test of cooperation and respond together to new missile challenges and threats, or we will be forced to undertake the necessary military measures."[1]

And to underscore the timing of this missile defense conference, Alexander Lukashevich, the Russian Ministry of Foreign Affairs spokesman, stated outright the deadline that Russia is setting in stone: "I think that the signals sent not only by General Makarov, but also by other senior military officers, were intended to make the participants of the upcoming Chicago NATO summit understand the how serious the situation is and to reconfigure their thinking to take the Russian arguments into account in the further development of their BMDS."

At the present moment, due to the failure of the U.S. institutional forces to remove Barack Obama from office for his constitutional violations, we now sit at the brink of conflicts that would rapidly escalate into full scale thermonuclear war.

These are not statements of Russia as an aggressor; these are warnings from a threatened Russia being told to submit to the global dominance of a bankrupt trans-Atlantic financial empire.

Look at the clear ironies of the present situation

1. For further coverage of this Moscow conference see "Russians Warn of Pre-Emptive Strike Against Missile Defense System," http://larouchepac.com/node/22576

FIGURE 1

To demonstrate that Russia is the real target of the NATO BMD Systems, in 2007 then-Prime Minister Vladimir Putin publicly offered to help in upgrading Russian-rented systems in Azerbaijan, to be used for protection of Europe against Iran. (If NATO's BMDS were indeed focused on supposed threats from Iran, Azerbaijan is an excellent location, as it is much closer to Iran than either Poland or the Czech Republic.) The offer was never taken up, and NATO has continued in the development of BMDS which are closer to Moscow than to Tehran (see "Putin Moves To Outflank 'Ring Around Russia' Provocations," EIR, June 15, 2007). This was followed by Russia's request to the United States to put into writing a statement that NATO's BMDS were not directed at Russia. The United States refused.

(**Figure 1**). These recent warnings from Russia come in the context of a longer period of such warnings. In November 2011, President Dmitri Medvedev issued similar warnings, and over the past six months, Dmitri Rogozin, earlier speaking as Russian ambassador to NATO, and since December as the Deputy Prime Minister, has repeatedly condemned this NATO activity.

However, the Russian leadership has also proposed an alternative.

As early as October, Rogozin proposed to break the implicitly thermonuclear showdown over the NATO ballistic missile defense systems by offering joint cooperation between Russia and the United States on both missile defense, and, raising the focus of discussion, on the defense of all of mankind from the threat of asteroid or comet impacts.[2]

This has been followed by a pattern of activity coming out of Russia, taking up exactly this issue.

On March 2, speaking to a meeting of space experts, Rogozin repeated the need to take up the issue of defense against asteroid or comet impacts. Then on April 26, the head of the Russian Federal Space Agency (Roscosmos), Vitali Davydov, proposed the creation of a new Russian federal program to address these threats, saying, "Various means of acting on potentially dangerous space objects should be developed and perfected in space, using both powerful one-time actions, and those employing weak influence over long periods of time," and implying the need for international collaboration. Davydov made this statement at a scientific conference, "Russia's National Interests in the Context of Global Security."

The keynote speaker at that conference, Nikolai Patrushev, also reiterated the importance of global defense against the threat of impacts, announcing that the Russian Security Council (of which he is the head) is going to, for the first time, place this issue of asteroid and comet impacts on the agenda of its upcoming global security conference (June 6-8 in St. Petersburg). The coverage in the Russian daily *Rossiyskaya Gazeta* stated, "In addition to the traditional international security problems, entirely new threats will be discussed in Petersburg [in June]. For example, ones such as counteracting the asteroid danger. This is not a joke and not science fiction." If the attendance at this June global security conference is similar to the previous two, we can expect 50 nations to be represented, including China and the United States.[3]

This underscores the pattern coming from the top levels of the current Russian government, a refusal to back down under imperial pressure of thermonuclear

2. See Benjamin Deniston, "As World War Threatens, Russia Proposes 'SDE', " *EIR*, Nov. 25, 2011.

3. See Rachel Douglas, "Strategic Defense of Earth: Russia To Put SDE at Top of Agenda," *EIR*, May 4, 2012.

war, while at the same time offering the United States an alternative route, one towards collaboration in overcoming the threats plaguing the future existence of all of mankind.

But perhaps the most significant factor in this pattern of activity is both the implicit, and explicit, focus on the work of Lyndon LaRouche. Russia's October 2011 "Strategic Defense of Earth" proposal was properly covered by Russia Today (RT.ru) as named in an explicit reference to the Strategic Defense Initiative program of the 1980s—of which LaRouche was the key author and organizer. More recently, the online Russian website Terra America has initiated a series of articles focusing on LaRouche [see article, this issue]. In their comprehensive coverage of LaRouche and his activity, they provided, as one Russian specialist described it, some of the most honest coverage of LaRouche's authorship of the SDI to ever come out of Russia.[4]

As those knowledgeable in matters of global strategy have stated, the SDI is still, to this day, a living factor of history.

Extinction or Existence

There is a common underlying question posed by these threats, both thermonuclear war and asteroid or comet impacts: *Can mankind demonstrate its fitness to exist in this universe?*

Countless species have come into existence on our planet, and countless have then left—*rendered extinct by the forces inherent in a developing and changing solar-galactic system.*[5]

At the same time that Russia is calling out the threat of NATO's BMD systems in Eastern Europe, we also look to the United States' fleet of Ohio Class military submarines, 14 of which are loaded with Trident multiwarhead thermonuclear missiles. Each submarine alone, if fully loaded, has the capacity to deliver from 96 to 192 nuclear warheads (each warhead being either 8 or 40 times more powerful than the bomb dropped on Hiroshima in 1945). Some of these submarines are currently deployed in the Pacific Ocean, in positions from which hundreds of locations across Asia can be targeted for annihilation.

TABLE 1
Thermonuclear Capability

The US Navy Ohio Class Submarine Fleet

- 18 Ohio Class submarines (14 Armed with thermonuclear weapons)
- Up to 24 Trident missiles each
- 4-8 Thermonuclear Warheads* on Each Missile

National estimates of thermonuclear capabilities

United States	→	~10,500 weapons
Russia	→	~10,000 weapons
China	→	~410 weapons

* Either W-76 (100 kt) or W-88 (475 kt) warheads

Source: Estimates for the national totals come from the Center for Defense Information.

This is only a part of the total U.S. thermonuclear capacity, not to mention the thermonuclear arsenals of Russia and China (**Table 1**).

Thermonuclear war is unlike any other form of warfare ever to have taken place. It is total annihilation warfare, in which the first strike immediately ensures the last strike, as the first confirmation of a launch on either side triggers immediate full retaliation from the other. Within a few minutes, human civilization could be over.

Beyond the hundreds of immediate targets, the carryover effects of hundreds to thousands of thermonuclear detonations would produce a so-called thermonuclear winter, from which we have no guarantee that the human species would emerge.

But what does such a power express?

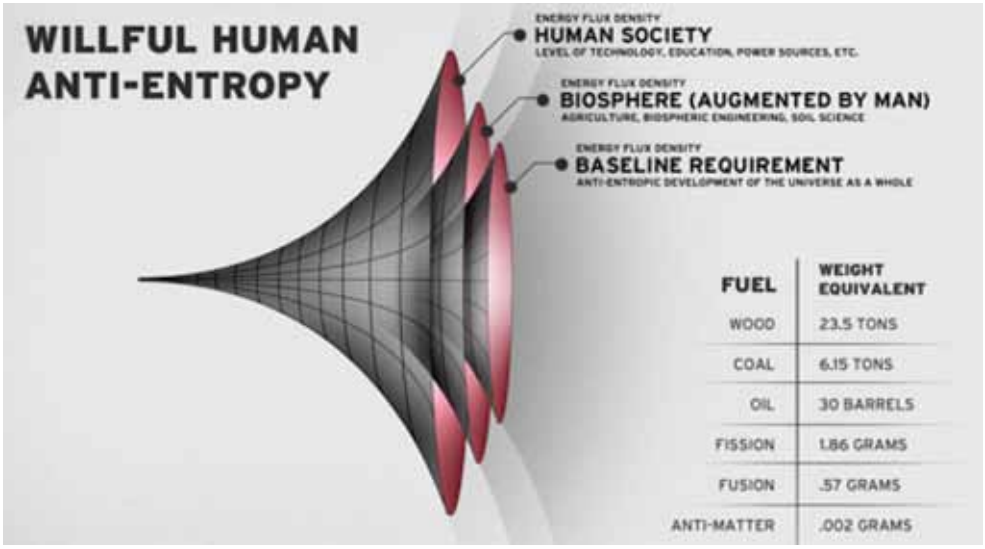
Among all forms of known life, mankind is absolutely unique. Whereas all simply animal species are characterized by a fixed, biologically defined mode of behavior, the human species is not defined biologically. Mankind's existence is defined by the scientific and cultural level of our economic activity, in which transitions from one cultural-scientific mode of existence to the next are strictly qualitative transformations (**Figure 2**).[6] As Lyndon LaRouche has rigorously defined in his

4. This coverage started with an interview with LaRouche, and continues with a series of articles on LaRouche. See, "The SDE and Mankind in the Cosmos," and, "LaRouche Responds to Questions from Russia," in *EIR*, April 20, 2012; and "Russian Website on LaRouche's SDI," *EIR*, April 27, 2012.

5. For a more detailed discussion of the galactic determination of the conditions of life here on Earth, see the LaRouchePAC report "Planetary Defense: An Extra-Terrestrial Imperative," http://larouchepac.com/node/21671

6. For an illustration of this qualitative nature of human existence, see the important new LaRouchePAC Basement report, "The Riemann Project: Economic Reflections," by Jason Ross, at http://science.larouchepac.com/riemann/

FIGURE 2



Successive power sources of mankind's economic activity measured in energy-flux density, as indicated by the comparative weights of fuel required to achieve the equivalent energy release. This is a purely qualitative, not simply quantitative effect, as discussed in "The Riemann Project: Economic Reflections" report at www.lpac.com.

TABLE 2

Events (Nuclear, Thermonuclear, Asteroid, Comet)	**TNT Equivalent** (Energy Release)
1945 Hiroshima Atomic bombing (fission bomb)	0.014 Megatons (Mt) (14 kilotons)
W-88 thermonuclear warhead Larger thermonuclear warhead of the Trident missile (currently deployed on the US Navy's Ohio class submarines)	0.475 Mt (475 kilotons)
1908 Tunguska event ~30-50 meter object Believed to be the blast of either an asteroid or comet as it entered the Earth's atmosphere, though there remains some debate on the issue.	Estimates range from 3-5 Mt to as high as 30 Mt
1961 Tsar Bomba Largest bomb ever tested (USSR; thermonuclear fusion bomb)	50 Mt
140 Meter object impact Either an asteroid or comet impact (smallest sized NEO's that NASA is seriously trying to find and track the majority of)	100+ Mt
Total global nuclear arsenal Some estimates indicate about 30,000 nuclear warheads	Roughly 5,000 Mt (5 gigatons)
Chicxulub impact Impact event 65 million years ago, thought to be associated with the extinction of the dinosaurs (although not the only cause of the extinction). The object was ~10+ kilometers in size.	96,000,000 Mt (96,000 gigatons)

Comet/asteroid sizes are measured by their diameters.

science of physical economics, a rough, but very important measure of mankind's advance is the physical economic metric of *energy-flux density*.

A "thermonuclear mankind" requires that we either end warfare as we have known it over the past few thousand years, or we end human civilization by the continuation of such forms of warfare.

That is one strategic aspect, but there is another.

A thermonuclear mankind also carries, for the first time in the entire billions of years' history of life on our planet, the possibility for the continuation of advanced life in our Solar System's travels through the Milky Way galaxy.

Near-Earth Objects as a Step into the Galaxy

Take the already mentioned vital issue of defending mankind against asteroid and comet impacts.

Despite decades of growing interest (especially increasing over the past 10-15 years), resulting in studies, conferences, reports, and coordinated observation programs, there is currently no serious program to ensure the protection of the human species from even the most basic inevitability of future impacts.

The energy released from comet or asteroid impacts can be hard to even conceptualize, and could easily supersede even that of nuclear war, including the global atmospheric effects (**Table 2**).

Based upon our best understanding of the activity within our Solar System, the problem of an impact is not an issue of *if*, but *when*.

Based on work initiated in the early 1990s, the U.S. Congress has mandated that NASA find, catalog, and track asteroids and comets that have orbits either near to, or

crossing the Earth's orbit. These are often referred to as Near-Earth Objects (NEOs). Over the past nearly two decades, a loose affiliation under the name of Spaceguard, has coordinated the efforts of telescopes around the world to find, track, and forecast the future orbits of NEOs, including by centralizing the observational data, data processing, and orbital forecasts (often attempting to forecast the NEO orbits 100 years into the future to see if there are any possible impacts with the Earth[7]).

This is an important and crucial effort, as far as it goes.

However this does not include so-called "long-period comets" (whose orbits take them to the farthest outskirts of the Solar System), which, though rarer, are generally significantly larger and come at us faster. These are currently classified as "too difficult to deal with," and using present observation technologies, we would be lucky to have a few months to maybe a half-year of advance warning.

Six months may sound like a long time, but any current intercept mission, based on mankind's existing space-faring capabilities, would take *many years* to design, construct, and execute.

Our best defense absolutely depends on early detection and early action. Attempting to move an NEO off an impact course at the proverbial last minute would require an impossible amount of energy. Our planetary defense depends on moving NEOs when they are much farther from the Earth, where a smaller (but possible) effect on their trajectory can ensure that they miss the Earth.

Even considering the years of lead time needed to design, construct, and launch an intercept mission, we have to add the time it takes to reach the asteroid (which could also be on the order of years, depending on where in the Solar System we wish to intercept it). In the case of a serious threat, we could obviously attempt to speed up each of these steps, but the point is that right now we are talking about years to just reach a potentially threatening NEO. We still then have to move it.

The best chance of moving an object off its collision course depends upon affecting either its speed or its orbit, years before its expected impact date. Because of the immense size of these space rocks, it takes a tremendous amount of energy to affect them, but a small change in either the speed or the orbit of an NEO will cumulatively add up to a larger effect over a longer period of time.

The earlier we affect a dangerous NEO, the more of a change we will have made in its trajectory by the time it reaches, and hopefully misses, the Earth.

With the present observation technologies, we may well be able to get decades of warning time for a threatening NEO (at least for the larger ones which are easier to see, though many medium and smaller sized NEOs remain undiscovered[8]).[9]

This is still only the detection side. Effective defense also requires more detailed characterization of the potentially threatening object (for example its composition, general structure, or spin rate), and a means to alter its trajectory, so we can guarantee that it won't impact anywhere on the Earth. Having a detailed characterization is crucial to any attempt to move an NEO, as some are solid rock, others are referred to as "loose rubble piles"; some spin fast, some spin slowly, etc. These and other properties of a particular NEO will have to be understood in order to determine the best method of affecting its trajectory.

There have been a number of proposed methods which could be attempted to alter the trajectory of a threatening NEO. **Table 3** highlights some of the more prominent proposals.

Among these proposed options there are various benefits and shortfalls depending upon the characteristics of the target object: for example, its size, its composition, and how much time we have to act will determine what options are best suited for that particular situation.

Here we must emphasize, despite extensive written

7. Though numerous uncertainties in the forecasting capability often remain, such as the NEOs' spin and tumble rates, mass, composition, solar heating and radiative effects, close fly-bys of other objects, etc. These can pose challenges to determining the exact likelihood of a potential impact decades into the future.

8. A NASA release from September 2011 provides an updated estimation of the total NEO population (based on data from the Wide-field Infrared Survey Explorer (WISE) infrared space telescope), and new estimations of what percentage we have yet to find. See, "NASA Space Telescope Finds Fewer Asteroids Near Earth," http://www.nasa.gov/mission_pages/WISE/news/wise20110929.html

9. However this is presently not the case for long-period comets, an issued that has been raised by concerned scientists. Again, although they are significantly less frequent, they are generally much larger and are faster. Currently, little or no action has been taken to improve our chances against long-period comets, because the task is deemed too difficult to handle with existing capabilities.

TABLE 3

Fast approaches

Methods to alter the trajectory by delivering a large force in a very rapid period of time. The force required to have a noticeable effect is quite large, but even if the change is rather small (say a change in velocity of a few cm per second), if this is done years before the threatened impact with the Earth, over this time it can amount to a sufficient change to ensure that the object misses the Earth entirely.

- **Kinetic impact** Slamming a high-velocity spacecraft into the object, to provide an instantaneous change in the object's trajectory.
- **Thermonuclear explosives** Detonation of a thermonuclear device either within or above the surface of the object.

Slow approaches

Methods to alter the trajectory by delivering a small force over a long period of time, culminating in a large effect.

- **Gravitational tractor** By hovering a spacecraft above the surface of an object, over a sufficiently long period of time (possible years depending upon the size of the object), the spacecraft's mass can slowly alter the trajectory of the object.
- **Tug boat** Attaching a spacecraft(s) to the object which can provide a low, but continuous thrust, slowly changing the trajectory of the object.
- **Laser ablation** Firing either a powerful laser or particle beam at the object, creating a jet of material from its surface, which acts to provide continuous thrust to slowly alter the object's trajectory.

reports and concept proposals, and although we have developed many (but not all) of the technologies that would be involved, we have yet to test or demonstrate the capability to deflect a potentially threatening object.

To quote from a 2009 report of the International Academy of Astronautics, which summarized a decade of serious research into this subject:

> Given the wide diversity in characteristics of these objects and the continuing dynamics in the NEO population, the certainty of a successful deflection, even if all systems of the [deflection mission] work as designed, is not great. Furthermore, neither today's technologies, nor those likely to be available in the next decade or two lead to systems with extremely high reliability.
>
> Thus the probability of a successful deflection of an NEO with a single mission using any known concept is far lower than desired, given the likely horrendous consequences of a failure. It is therefore clear that the development and deployment of a robust, multiple option, redundant, coordinated system of multiple and diverse systems is needed; and that the deflection of an NEO cannot be a mission but must rather be a campaign of multiple orchestrated missions.[10]

Immediately, years of preparation time can be saved by designing, developing, and demonstrating deflection systems, and creating the international cooperation and structure to achieve these goals. This presents a current challenge for the international community, to take advantage of all existing technologies, space launch systems, etc., and create a defense capability for the entire planet which no animal species has ever had before.

Certain significant steps can be initiated in the relatively short term; however, the only way to actually ensure the continued existence of the human species is to engage nations in a very specific form of economic activity known as *a science-driver program.*

Energy-Flux Density

The immediate economic crisis that plagues the world, centered on the hyperinflationary bankruptcy of the trans-Atlantic economic region, sufficiently demonstrates the deadly failure of the vast majority of present economic thinking.

It also demonstrates the genocidal nature of the green/environmentalist ideology generally.

Real value, *real wealth* is produced only by mankind's uniquely creative capability, and its application to increases in man's power in the universe. Lyndon LaRouche's physical economic metric of energy-flux density is a crucial correlative of this power. A mankind embarking upon the mastery of the atomic domain (fission, fusion, matter anti-matter) is simply not the same mankind as one defined by simply chemical modes of action. Therefore, as a fundamental economic principle, the human species must always engage a limited, but significant portion of its economic activity in task-oriented challenges whose solutions require science and technology beyond the present scope of what is immediately available to mankind. Science-driver programs which increase the range of available technolo-

10. "Dealing with the Threat to Earth from Asteroids and Comets," p. 66, International Academy of Astronautics, January 2009.

gies are the most effective and useful economic programs available to mankind.

They are not just profitable, as the threat of NEO impacts demonstrates, they are absolutely necessary for the continued existence of mankind.

Too much of the present planetary defense discussion is characterized by the present economic paradigm of ridiculous budget restraints and obsessive focus on the monetary costs. In response we can obviously present the inevitable cost to life and our planet if we don't develop such defense systems, but there is a more fundamental point to be made. NASA's Apollo program is a prime example of how a science-driver program can transform the entire economy of mankind. After the mission was completed, financial analysts calculated the ratio of the investment made by the government into the Moon mission, to the profits for the economy generally which resulted from the program (focusing on the benefits of so-called spinoff technologies[11]). The Apollo program was probably the most profitable national investment of the century, with some analysts giving a figure as high as a 14:1 payback ratio.[12]

The prospect being put forward by the top levels of the Russian government, for collaboration on both missile defense systems—to eliminate the threat of thermonuclear missile exchange—and defense against threatened impacts of asteroids and comets, presents an incredible opportunity for mankind as a whole. If this were taken as a science-driver program, and part of a first step towards man's colonization of the Moon, Mars, and beyond, then, for the first time, we have a truly viable option for the future existence of the human species.

On that note, we end with an excerpt from an April 12 interview that Lyndon LaRouche conducted with the new Russian online publication, Terra America:

> **Terra America:** How realistic would it be for Russia and the U.S.A. to unite efforts, possibly with other countries, too, for implementation of a Mars program? Does mankind need to colonize Mars?
>
> **LaRouche:** It is not merely realistic; it is an urgent need of all mankind. Whereas, the factor of national and cultural sovereignty must be maintained during foreseeable generations now before us, the fact that human culture has already reached a point at which general warfare were virtually unthinkable, especially in the presence of an inevitability of thermonuclear weaponry, and, soon higher energy-flux densities, we must be working for the goal of concurrence of efficient national sovereignties and accelerating rates of general development and employment of accelerating rates of increase of energy-flux densities. War as we have known it must be prevented by means of advanced productive technologies, rather than curbing their combined development and employment.
>
> To speak of a notion of the colonization of Mars, falls far short of the reality which we must accustom ourselves to foresee. We must approach the process of what some might consider colonization of Mars, by taking into account the challenge assumed by Russia's SDE project. The deployment of systems of management within the Solar System which we require as preparations for human habitations and related activities, can not be competently confined to the localities of a planet, or Solar System.
>
> We must begin to clear our minds by taking into account the implications of a thermonuclear-fusion-impelled craft reaching Mars from our Moon within a duration of a week between launch and arrival at destination. That will not be the limit of the needed instrumentation of the Solar System. We must instrument more and more features of the Solar System to the effect that primitive beliefs in a fixed order of space and of time no longer exist for those in times to come, even within our presently advancing century. We should aim to have entered the early phase of man-Mars developments within the range of leading developments to be accomplished within the coming quarter-century.[13]

11. That is, technologies that were developed for the space program objective of landing a man on the Moon, but then found many other applications in the economy generally.

12. Again here we must refer to Jason Ross's presentation of the qualitative, not merely quantitative, nature of fundamental economic progress. Simply put, the post-Apollo dollars are not the same thing as the pre-Apollo dollars. Money is a tool and an effect, nothing more. See, "The Riemann Project: Economic Reflections," at http://science.larouchepac.com/riemann/

13. See http://www.terra-america.ru/. The English version of the entire interview can be found on the LaRouchePAC website, http://larouchepac.com/node/22352