II. LaRouche's Fourth Law

STRATEGIC DEFENSE OF EARTH

A New Paradigm for Russia, China, America, and All Mankind

The following are edited excerpts from the LaRouche PAC's weekly Webcast of Dec. 16, featuring Benjamin Deniston of the LaRouche PAC Science Team.

In the recent weeks, we've had some discussions with Lyndon LaRouche about the prospect of bringing the principle of the SDI—the Strategic Defense Initiative, or in its modern form, the Strategic Defense of Earth (SDE)—bringing that principle back onto the table in this potential new strategic environment where, assuming Obama doesn't start thermonuclear war before the next President even has a chance to take power, we could see a new alliance emerging between the United States, Russia, and China. Mr. LaRouche was very supportive of this being a time in which the Strategic Defense of Earth policy can come back as a real pillar of a new security architecture for the planet. This can be a critical pillar for how the security, the defense and the military institutions of nations in this new era might come together, with cooperation on the new challenges, the common threats and issues that face all nations.

The reason why I say this is a principle, is because we're in a new—really for the past couple of generations—a new historical phase for mankind in this thermonuclear age. We've reached the point where if we continue a geopolitical, imperial policy, where a leading power tries to maintain control at all costs, this could lead to full-scale war, as it has in past periods, past centuries, but this time you would be talking about the annihilation of mankind. In this thermonuclear age, full-blown warfare has the ability to wipe out civilization as we know it.

EIRNS/Stuart Lewis

LaRouche continues the fight for his antiballistic-missile defense policy at a conference in Washington, D.C. on April 13, 1983.

Now, however, we are seeing the potential for a build-up around that kind of war to be put off the table, to be put on the back burner by a new administration. Instead, what we are talking about, with this Strategic Defense of Earth, is a cooperative effort for the broader exploration of space, the joint development of space. This needs to become a central positive issue that we rally nations around; it can't just become, "Let's not have war or conflict because it's bad"; but, "Let's have a positive, truthful conception—a real principle—of the issues that face all nations together, that we should be rallying around in cooperation."

That outlook was the original intent of LaRouche's SDI: *LaRouche's SDI,* not necessarily the program that got implemented to some degree. LaRouche's idea of the SDI, was a joint open cooperative program with the Soviet Union, sharing technologies and capabilities and jointly developing new capabilities to—as Ronald Reagan said—"render the threat of thermonuclear weapons impotent and obsolete." We would actually be working with the Soviets to do this, and Mr. LaRouche recruited Dr. Edward Teller and President Reagan around this idea.

These were not hippie, flower-wielding peaceniks; these were not people that just ran around saying, "No war. War is bad." These were pretty serious, staunch conservatives—Cold Warriors to a certain degree—but they recognized the truthful validity of what LaRouche was developing around his idea of the SDI. Mankind had reached a point where we needed positive, collaborative, joint development of these kinds of capabilities for the common aims of nations. Mr. LaRouche came incredibly close, in collaboration with Reagan, Teller, and others, to really overturning the strategic framework back in the '80s with that program.

This outlook has not really gone away. We have discussed this on shows in the past, but it's worth just reminding people that in the '90s, in the aftermath of the attempt to get the full SDI program, there was a re-emergence of the same idea around the defense of Earth. There was a recognition at that time—in the early '90s—that the Earth is actually incredibly vulnerable to asteroid strikes and comet strikes; and we should actually be looking at what we can do to defend the planet from these kinds of potential disasters. That was something that Dr. Edward Teller, in direct collaboration with other veterans of the SDI and their direct counterparts in Russia, took up as a major focus in the '90s. There was a whole series of conferences, investigations and proposals for the same type of joint, open cooperation between the defense institutions and related institutions in the United States and Russia, for cooperation around this common threat through the defense of Earth from not only missiles, but missiles coming from the Solar system—these asteroids. Unfortunately, it didn't fully go through at the time. Instead, we had the continuation of this geopolitical framework, which has obviously continued through both Bush and Obama. But this issue has come back up again. It was in 2012 that the Russians refloated the offer, and it was named the *Strategic Defense of Earth* in some of the news coverage. They said: Why don't we have a joint cooperative program for a Strategic Defense of Earth against the threats of asteroids and related issues? Now, today, with the prospect of a real shift in the United States, assuming we can contain Obama and he doesn't return to his murderous orientation as Mr. LaRouche has warned, we could actually see this principle emerge and become a central pillar of a new historical era today.

FIGURE 1

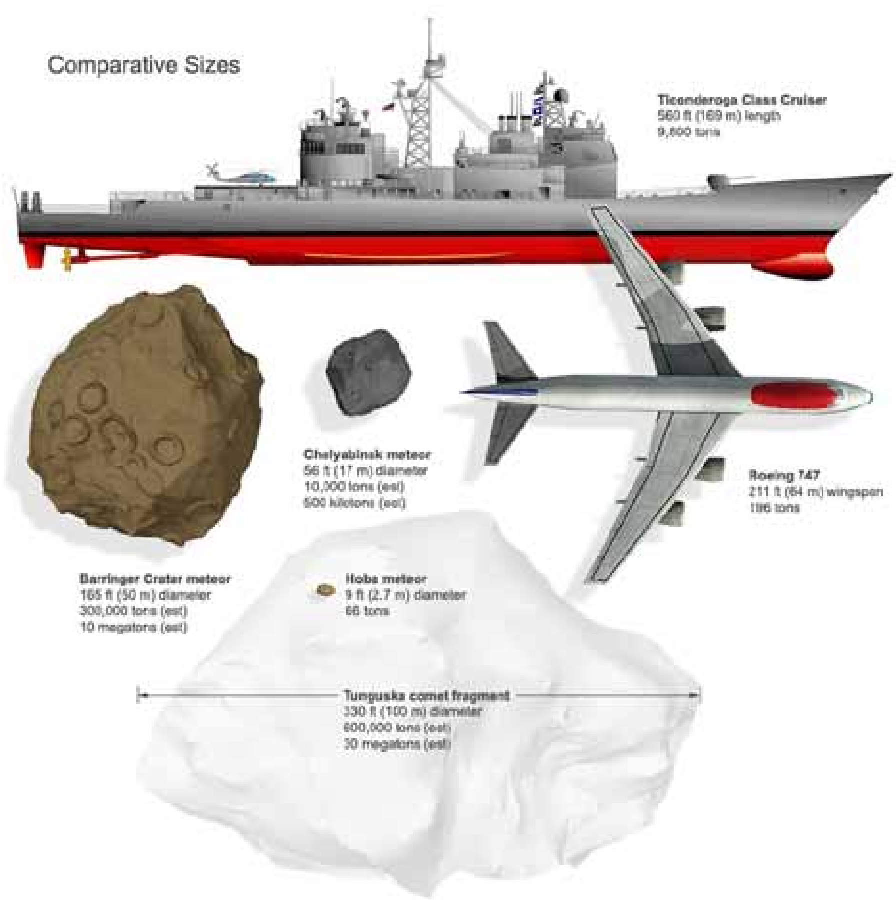
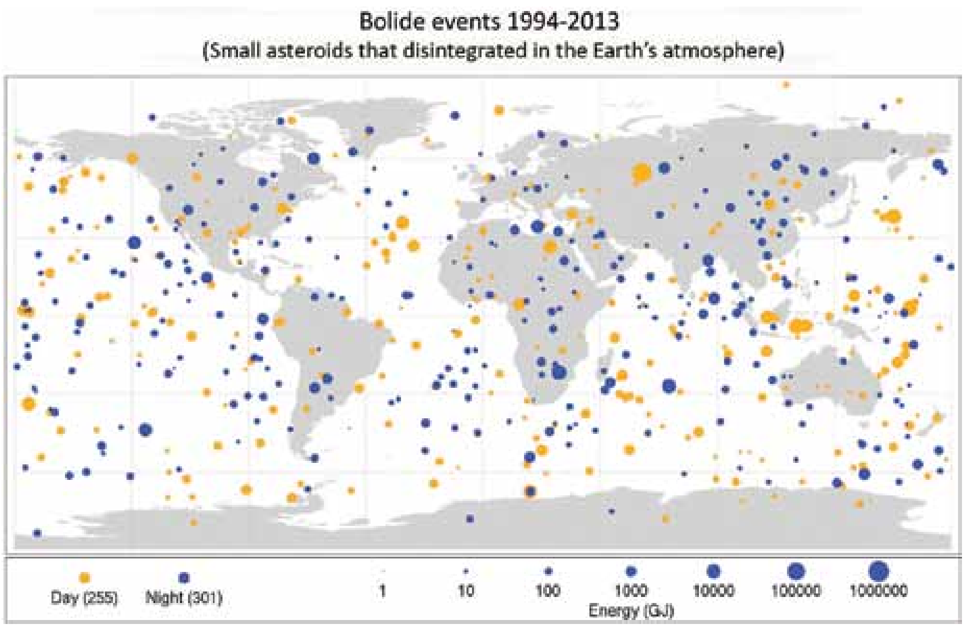


Image © TheObjectReport.com

The Asteroid Threat

We thought it would be appropriate, today, to start to put this issue back on the table. I want to start by illustrating some of what these threats are, what we're facing in terms of the threats to the Earth from these objects in our Solar system. If we go to the slide-show, we have a first graphic [**Fig. 1**] illustrating the reality

FIGURE 2



NASA

that these impacts happen, and they happen a lot more frequently than people tend to realize. In the animation, you can see the famous, very well-documented Chelyabinsk impact over Russia, an impact which we had no warning about; we did not know it was coming. This very small asteroid, which came in and impacted with a very high speed, which is characteristic of all of these collisions in the Solar system. A lot of the energy release is due to the fact that these speeds are incredibly fast.

When you get an impact of two orbiting bodies in the Solar system, you tend to get massive energy releases, explosions. Here you had a very small object intersecting the Earth, slamming into the atmosphere and releasing the energy of a small nuclear explosion as it hit. This awakened a lot of the world to the reality that these kinds of things do happen, and we have no defense.

One, we didn't even see this one coming; and two, if we had seen it coming, we have no demonstrated, developed capability to defend the Earth from these kinds of challenges. Additionally, I'd like to point people to some data that's been released in the relatively recent period, as we can see in this map of the world [**Fig. 2**], an illustration of many smaller meteor impacts into the atmosphere that have occurred just between 1994 and 2013. The Chelyabinsk impact was the largest in this time range; these others were smaller than the Chelyabinsk impact, but these were still large explosions in the upper atmosphere. You can see that they've painted the entire Earth over the course of this time period. These impacts are constantly occurring.

To give another sense of defending the Earth from these asteroids, here is a schematic of the inner Solar system [**Fig. 3**]. You can see Jupiter's orbit as the farthest orbit out there; then comes Mars, and Earth's orbit is a little bit darker than the other orbits. All of these blue lines—assuming you have high resolution to see the details of this visual—this blue haze you might see is actually composed of over 1,400 orbits of asteroids that are specifically classified as particularly hazardous asteroids. These are asteroids whose orbits cross the Earth's orbit at some point and create the potential, where the asteroid is at the intersection at the same time as the Earth, and you have an impact, a collision. You can see here how crowded the inner Solar system is.

Fortunately, among these that we know of, none of these is expected to hit in the next century or any foreseeable time-frame. This alone looks pretty dense, pretty packed in the inner Solar system here. What people should really get their mind around is that this is a tiny fraction of what we expect to be out there.

We can see here, if we take a little bit more complicated graphic [**Fig. 4**] and break it down, there are literally hundreds of thousands to millions of asteroids of the size of the Chelyabinsk meteor, or bigger, that we have not yet discovered. Based on our understanding of the distribution of asteroids of different sizes, we know that they are out there; we just don't know where they are. We don't know which ones might impact or which ones might not. We don't know when the impacts would be.

You can see in Figure 4 the relationship between

FIGURE 3

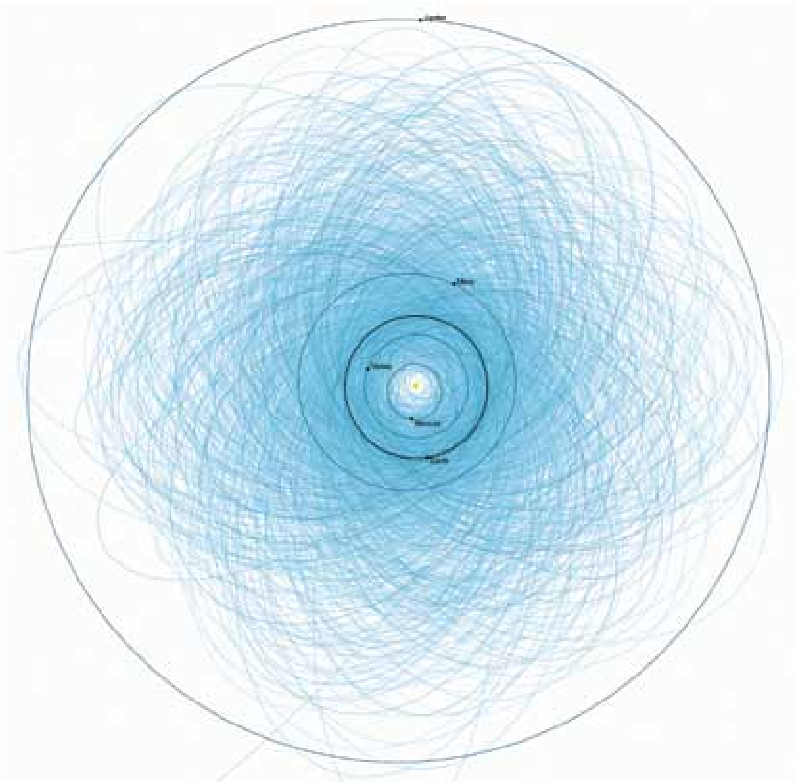


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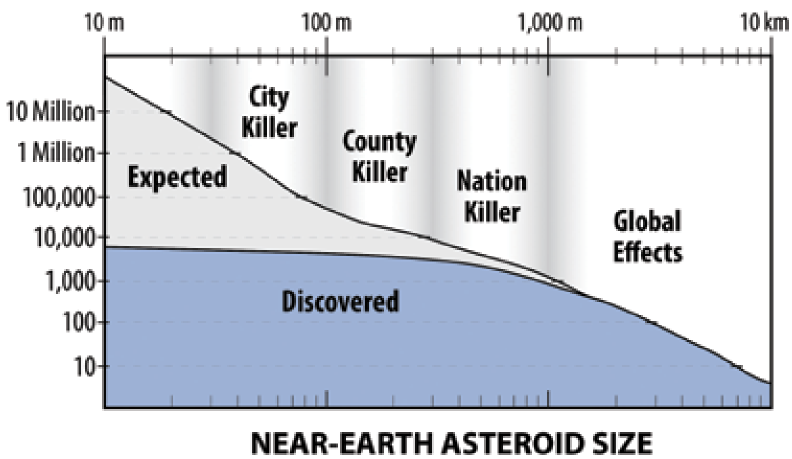
FIGURE 4



Ben Deniston

different sizes of near-Earth asteroids on the horizontal axis in a logarithmic scale. On the far right, you can see the very large ones in the range of kilometers in diameter, all the way down to sizes of meters. On the vertical axis, you can see the expected estimates of the distribution, the number, of near-Earth asteroids of those sizes. You can see for the very large ones, we believe there are not very many; but as you start to get to smaller sizes, you get a geometric growth in the number of near-Earth asteroids of these different sizes.

You can also see the scale of the damage depicted, that would be inflicted on the Earth if one were to hit over an unlucky location. The Chelyabinsk impact was at the upper limit of one that doesn't do a huge amount of damage. But if it were just a little bigger, it could have caused really catastrophic effects for the entire region around Chelyabinsk, Russia. In this range, what people sometimes call a "city-killer" range, with an impact that would release the energy of a large thermonuclear explosion—we've discovered that about one percent of the near-Earth asteroids are in this size range.

Comets

NASA has done a good job of discovering a number of the larger objects which can do damage over a large fraction of the Earth—even potentially the entirety of the Earth. But as you start to go to these smaller sizes, we've barely scratched the surface. As dense as you think this previous graphic is in terms of the number of bodies out there, there are orders of magnitude more, that could do serious damage, that we just don't know about. Again, the first step is knowing where they are and when they might hit; the second step is actually having a defense capability. We've not really done anything besides general studies and theoretical investigations on that front. So, this is still an open, unanswered challenge.

All of this, however, is just the first step in a real defense of the planet Earth from these types of cosmic challenges. Additionally, as people are probably aware, there is also the issue of comets. This really grabbed people's attention in the mid '90s when mankind sat on the planet Earth, looked to Jupiter, and watched a massive comet that had broken apart into a series of fragments—as you can see [**Fig. 5**]—collide with Jupiter. In the animation, you see the explosion of one of these

FIGURE 5

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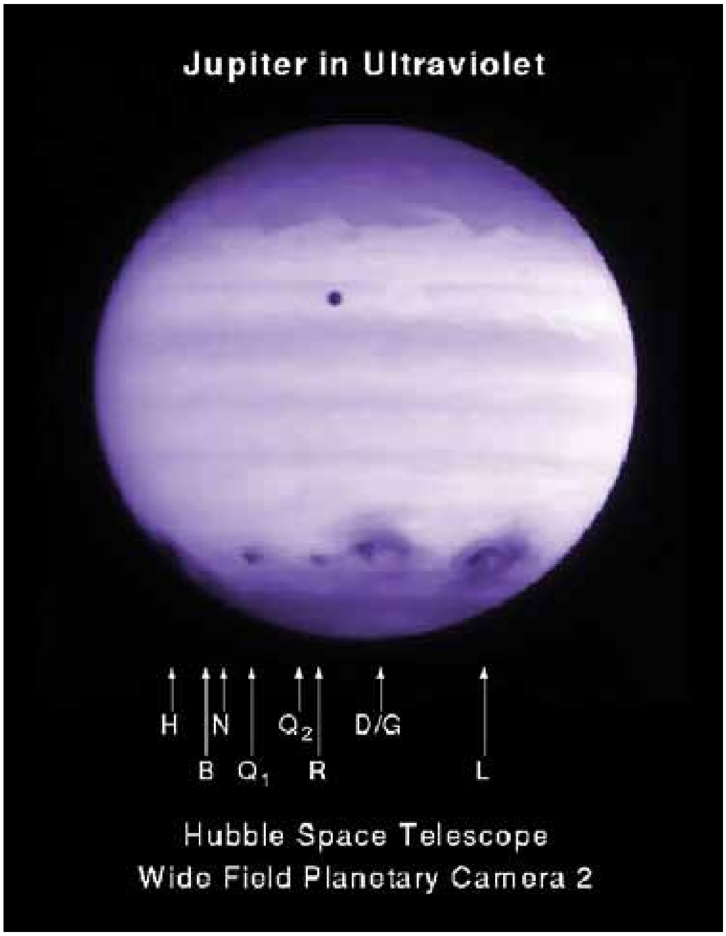
fragments as it impacted Jupiter's surface. The other bright object is one of Jupiter's moons, but this is an image in the infrared where you can see the effects of these energetic types of activities more clearly. In the purple image [**Fig. 6**], you can clearly see the effects of the impact on the surface of Jupiter after the impact had occurred. These impacts left marks the size of the planet Earth on Jupiter's surface.

So, this was a big wake-up call in the mid '90s. This was comet Shoemaker-Levy 9. Before this period, it wasn't widely accepted that we had to think about these types of impacts. When this occurred, and they found this stream of comet fragments about a year before it actually hit, they looked at its orbit and said, "Wow! This is going hit Jupiter." So, everyone was sitting there watching as this thing went in. We had the Hubble telescope, all these telescopes pointing; we saw this thing as well as we could from all over the world. This really was a major wake-up call to the fact that these impacts really do occur. They can come from asteroids, which you saw in the illustration of the inner Solar system, but they can also come from comets. This represents a qualitatively different challenge, as we'll see in the next animation.

FIGURE 6



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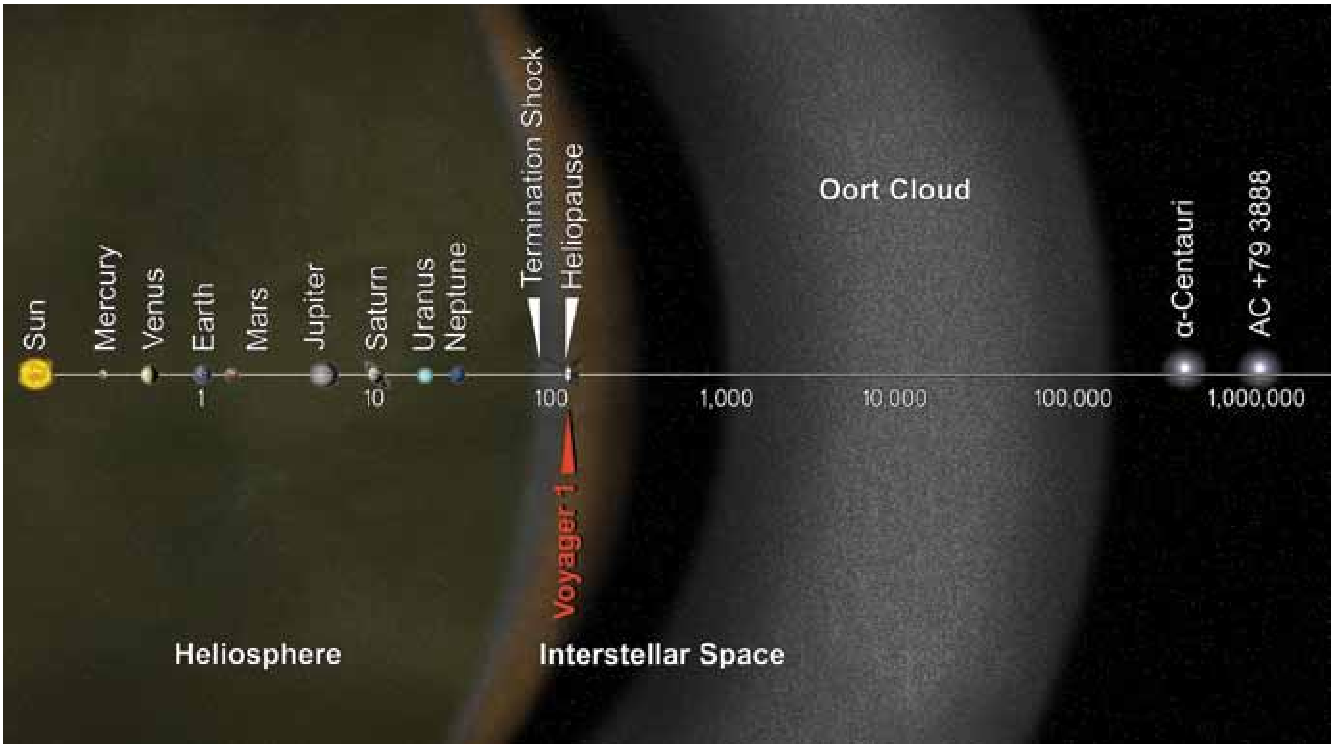
This should give you a sense of this greater, more difficult, challenge posed by comets. This is a particular case of a comet named C1996B2, and this was discovered on Jan. 31, 1996. That's when we first knew this comet even existed. As you can see in the animation, which is based directly on the orbital data from NASA, we discovered this comet when it was just out past the orbit of Mars. Within two months, it made a close pass by the Earth. We had no idea it was out there until *two months* before it made a close pass by the Earth. Whereas the object that hit over Russia—the Chely-

FIGURE 7



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abinsk impact—was measured at about twenty meters in diameter, the comet C1996B2 is estimated to be about five *kilometers* in diameter. That's about half the diameter of the comet that's believed to have taken out the dinosaurs. As we let the animation play out, we see something very interesting that's characteristic of this distinct nature of the challenge of comets. Look at its orbit.

The circular orbits you see here are the outer planets, but comets have extremely elliptical orbits that take them far out into the depths of the Solar system. When these comets are out there in the far reaches of the Solar system, they're incredibly difficult to see. So, we only see them when they're starting to come into the inner Solar system. Again, as this case demonstrated, we saw this one only two months before it made a close pass. If that had been on an impact trajectory, there would have been nothing we could have done. A comet of that size is one which could wipe out civilization. We're not talking about the local-scale damage of the asteroids; we're talking about catastrophic effects across the whole planet.

Mastering the Entire Solar System

So, this is another depiction [**Fig. 7**] of where we think these bodies are. Based on the orbits of these comets—sometimes technically referred to as long period comets—it's believed that many of these comets reside in the farthest reaches of the Solar system, far, far beyond the outer planets. This is a logarithmic scale, so you can see that this distribution of comets—sometimes referred to as the Oort Cloud—begins over tens of times past where Voyager has currently reached, and extends tens of times farther than that. We're talking about the very outskirts of the gravitational hold of the Sun. We haven't seen this region, but based on the orbits of comets that have been observed in just the short time period mankind has been able to make these observations, it is believed that there is a very large population of bodies out in this outer region of the Solar system. Because the gravitational effect of the Sun is so weak out there, it doesn't take much to perturb their orbits and potentially send some into the inner Solar system. Again, with our current capabilities, we only see them months, maybe if we're lucky a few years, before an impact, certainly not enough time to do anything about it with our current capabilities.

There are some studies—although the data is limited—indicating there might be a certain cyclical nature to these large comet impacts. Some people even believe it could relate to how the Solar system moves through the Galaxy, which raises some very interesting questions about how this outer region of comets could get perturbed on a periodic basis and send in what they call "showers"—i.e., cometary showers of many comets coming into the inner Solar system, creating a scenario where it's much more likely that Earth or the other planets might get hit with an impact, as Jupiter got hit in the '90s.

It's worth noting that one of the leading astronomers in this whole field, Eugene Shoemaker, who unfortunately passed away in the late '90s, had pioneered much of the work in this field. The comet that impacted Jupiter is named after him; he and his wife discovered it together. Shoemaker believed that it is likely that *we are currently in a period of a "comet shower."* He published articles on this in the late '90s. Based upon types of crater records and other evidence, he said it's not certain, but it could be the case, that we're currently in the middle of what on a human time scale is a long period in which there's an increased frequency of cometary entries into the inner Solar system and an increased likelihood of impacts occurring.

Relevant to this hypothesis, it was only last year that we found out that a relatively dim star had actually passed through the Oort Cloud about 70,000 years ago—this being one of the scenarios that can perturb many of these bodies. Again, since these things are so far away, it can take 70,000 years for the effects of such an occurrence to reach the inner Solar system. The point is, this is still incredibly preliminary knowledge of this region—of the Oort Cloud and of the region between the Oort Cloud and the inner Solar system. There could be a long-period comet that's only ten years out, that's been travelling for 50,000 years from the Oort Cloud, or even longer, and it's now only ten years away on a direct impact course with the Earth, and we wouldn't even know. It could be just in the outskirts of the outer planets region of the Solar system, not even in the far, far depths region. Again, we're talking about things that can devastate civilization completely, globally, as we know it.

This discovery of this dim star passing through the Oort Cloud 70,000 years ago, we just found that out a year ago. How many other bodies are out there that might have had close passes in the geologically recent past that could be creating similar effects? The point is, our knowledge is incredibly minuscule for something that threatens the entire planet, and our defense capability doesn't exist. This typifies one of the issues that is front and center for this principle of the SDI, the SDE, to re-emerge, and for nations to come together and cooperate to combat this threat. These are threats that don't recognize national borders; they don't recognize cultural boundaries. They challenge the entire planet, and they are outside of our current capabilities. If we are going to have a sane and principled relationship of the leading nations on our planet, then it has to return to these kinds of challenges. The task is to recognize these common aims and to address these threats, as Dr. Edward Teller had spoken of, as Mr. LaRouche put on the table with the whole SDI proposal.

Mankind's Future

The point we should really end on, and maybe discuss a little bit in conclusion, is that—and this is something that we've been discussing with Mr. LaRouche over the recent weeks—this isn't a separate, isolated issue. This is part of mankind becoming a Solar system species. This is part of mankind expanding to a new level, developing a platform of economic activity that makes mankind a presence, an active force in the Solar system. We can come up with specific scenarios, where you can deflect one asteroid, or maybe develop a new telescope that might help us see some of these things—and we should be discussing and looking at those things. But the fundamental issue is, how do we expand mankind into the Solar system as a much more active and capable presence, where we can handle these kinds of challenges? How do we engage other nations in cooperation and collaboration, instead of hiding our technology and hiding our capabilities because we want to have a leg up over China or Russia? How do we jointly develop the fundamental science and technologies mankind needs to defend the planet Earth in an open, cooperative way?

If we're going to seriously get into that, Mr. LaRouche has been emphatic: this takes us right to the work of Krafft Ehricke, to LaRouche's collaboration with Krafft Ehricke, and to those early space pioneers who really worked out the fundamental principles of mankind's development of the Solar system. I think that this must be fully integrated with this Strategic Defense of Earth perspective. This must become a critical part of this new space paradigm that we've been discussing in recent weeks.