



HIGH HOLIDAYS

Rosh Hashana 1

Going Nuclear: Rosh Hashana and How Jewish Holocaust Survivors
Built the First Nuclear Reactor

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GOING NUCLEAR: ROSH HASHANA AND HOW JEWISH HOLOCAUST SURVIVORS BUILT THE FIRST NUCLEAR REACTOR

ABSTRACT

One of the biggest stories of the past year has been the abrogation of the Iran Deal and the inroads made with North Korea. Both have nuclear concerns in common, and their nuclear capabilities impact the Land of Israel and the Jewish people specifically, as well as world safety at large. We may look back at 5778 as a significant year in how – and how not – advances in nuclear energy were made.

Nuclear refers to the nuclei, the nucleus at the core of things. Rosh Hashana is the nucleus of existence, quite literally the nuclear energy source of our year. Rosh Hashana (not techilas hashana) – literally the “head” of the year – is the central nervous system of the year. On this day the world was created. It is the beginning of the world, the origins of earth. Often times the best way to understand a current situation is to dissect its origins. Where does it come from? How did it get here?

What are the origins of nuclear reactors that allow for nuclear energy? How did they come to be? And why are they such threats today?

Believe it or not, a predominantly Jewish team of physicists, many of them refugees from European communities devastated by the Nazis, had ushered in the origins of the atomic and nuclear age. A major motivation of theirs was combating Hitler and the threat he posed to Jewry and the world. Understanding their motivations and scientific breakthroughs sheds much light and teaches many lessons in our daily personal and global lives.

Perhaps by studying their story we can to better live ours, harnessing the nuclear potential within every one of us to create and recreate a G-dly world.

1. Rosh Hashana: The Birthday of Existence

Shana tovah! May this year bring revealed blessings to each one of you, all in good health, joy and abundance, materially and spiritually.

Rosh Hashana offers us many personal lessons, as well as lessons that can be applied to our communal, business and social lives.

I always find great comfort in the fact that we have been celebrating this day for 5778 years! There are very few things in life, if any, that have such continuity.

And when you think about it, it should come as no surprise why we honor and celebrate Rosh Hashana – as our parents, grandparent and ancestors did since the beginning of time: Rosh Hashana is the birthday of the human race and by extension, of all existence. As we will declare in today's prayers: *Zeh hayom techilas maasecho zikoran l'yom rishon*, this day is the beginning of your works, a remembrance of the first day.¹

Think about it: Today is the birthday – the beginning – of everything! No small matter!

It's therefore no wonder that the birthday of the entire universe contains a multitude of lessons for us. How then does one choose what to speak about?

So I thought that I would turn to some of the news that dominated headlines this past year, and see what divine providence we can derive from current events in context of this Rosh Hashana.

One of the major recent events is the challenge to contain the spread and threat of nuclear weapons in Iran and North Korea.

Everything that poses a great threat also contains great potential. Rosh Hashana – the nuclear energy source of all sources – can teach us much about nuclear power and the opportunities and challenges it presents us with. And conversely, nuclear energy can help us better understand Rosh Hashana and its message for our lives, how to harness the nuclear potential within every one of us to create and recreate a G-dly world.

2. From Challah to Nuclear Fission

Nuclear fission is the process exploited by nuclear reactors to generate heat and, subsequently, electricity. When the atomic nucleus of uranium is split, massive amounts of energies are released. This process is also the basis of the nuclear weapons that were developed in the U.S. during World War II and used against Japan in 1945.

Lise Meitner (along with Otto Hahn) led a small group of scientists who discovered nuclear fission. Lise Meitner was a Jewish woman from Austria. Legend has it that her great grandfather, Reb Meitner, would clandestinely go about town in middle of every Thursday night and place a loaf of Challah by the door of the Jewish families who were too poor to buy their own

¹ The liturgy for *Mussaf* of Rosh Hashana, based on *Rosh Hashana* 27a.

Challah for Shabbos.²

Reb Meitner's great granddaughter, Lise, became one of the most prominent influencers of the atomic age. As we shall see, she was but one of many Jews who were instrumental and fundamental in discovering the nuclear wonders – and horrors – of existence.

3. Nuclear, No Joke

Nuclear energy, which has the potential to energize and change the world or, G-d forbid, destroy it, is no laughing matter. Be that as it may, humor is often the best medium to convey a deep truth about a given subject. Nuclear energy is a prime example.

A popular Arabic joke circulates throughout the different communities in the Middle East.

In 2003, President George W. Bush of the United States of America sent a delegation to search for weapons of mass destruction all over the Arab world. Finding such weapons world-threatening weapons would clearly justify the unpopular wars in Iraq and Afghanistan. President Bush authorized the delegation to search everywhere in the Arab and Muslim countries, from Morocco and Algeria in the west to Pakistan and Afghanistan in the east, from Turkey and Syria in the north to Yemen and Sudan in the south.

And of course in the center of it all: Iraq and Iran.

The delegation roamed and combed through the entire region for a whole year. Alas, they did not find even one weapon of mass destruction.

The delegation returned to Washington, came to the Oval Office in the White House, and said to Bush: “We checked every place in the entire Middle East, searched under every camel and within every cave, around every falafel ball and beneath every kaffiyeh, through bowls of babaganush and platters of hummus – and we did not find a single weapon of mass destruction.”

The incredulous president asked them: “If you didn't find weapons of mass destruction, what exactly did you find?”

“Well...” said the members of the delegation as they looked gravely at their president, “...we did not find weapons of mass destruction. Instead, we found mass destruction.”

² <https://www.washingtonpost.com/wp-srv/style/longterm/books/chap1/lisemeitner.htm?noredirect=on>

4. 5779: Going Nuclear

Nuclear weapons are called “weapons of mass destruction” because they can literally cause mass destruction. But nuclear energy could also cause mass construction and mass positive energy to electrify cities and fuel countries.

Indeed, planet earth gets virtually all of its natural energy from a nuclear source, the sun, a natural nuclear reactor of enormous proportion.

The past year, 5778, saw many major headlines for the Jewish people, including moving the United States’ Israeli embassy to Jerusalem. Perhaps the most globally consequential headlines involved nuclear energy. President Trump’s abrogation of the deal with Iran and the in roads made by the Trump administration with North Korea can potentially position our world for a better and safer tomorrow.

The Islamic Republic of Iran and the People’s Republic of North Korea are perhaps the two greatest international threats to global stability and safety. Those are the two countries we don’t want having nuclear capabilities. Why? Because we are afraid they will use that capability not to heal and energize the world but as weapons to threaten it

Batteries, which store electricity, can energize a cell phone or, G-d forbid, electrocute a person. Fires can warm homes or, G-d forbid, burn them down. And nuclear energy can quite literally empower an entire city or, G-d forbid, decimate it.

Nuclear energy is so much more powerful than say a fire or electric currents stored in a battery because, as its name implies, it harnesses the nuclei of existence. In the first decades of the twentieth century, physicists and scientists discovered that by manipulating and tapping into the atomic and subatomic particles of matter man could generate massive amounts of energy.

As opposed to other forms of energy – from coal to hydro to wind – nuclear energy accesses the very core essence of existence and is therefore exponentially greater in its potential to influence – positively or, G-d forbid, negatively

But where did this discovery come from and how?

5. The First Nuclear Reactor

The world celebrates its 5779th birthday today, but scientists and physicists have been studying the world’s nuclei for less than a century. A major driver for its study and harnessing of power was World War Two and the Holocaust. Many of its major forces and prime influences were Jews who had escaped Hitler’s rise to power. Let’s journey back to the origins of the nuclear

reactor to understand existence today and how we can live lives of nuclear goodness.

Back to Lise Meitner. Meitner spent most of her scientific career in Berlin, Germany, where she was a physics professor and a department head at the Kaiser Wilhelm Institute; she was the first woman to become a full professor of physics in Germany. She lost these positions in the 1930s because of the anti-Jewish Nuremberg Laws of Nazi Germany, and in 1938 she fled to Sweden, where she lived for many years, ultimately becoming a Swedish citizen.

One of her colleagues was a Jew named Leo Szilard. He too was a prominent physicist who had to run away from Nazi Europe.

In November 1938, Szilard moved to New York City, taking a room at the King's Crown Hotel near Columbia University. He encountered John R. Dunning, who invited him to speak about his research at an afternoon seminar in January 1939. That month, Niels Bohr (another Jew) brought news to New York of the discovery of nuclear fission in Germany by Otto Hahn and Fritz Strassmann, and its theoretical explanation by Lise Meitner, and Otto Frisch. When Szilard found out about it on a visit to Princeton University, he immediately realized that uranium might be the element capable of sustaining a chain reaction, which could be potentially weaponized and transform the world as we know it.

Meanwhile, back in Germany, they too were trying to tap into nuclear energy to create weapons that could put Germany in a terribly powerful position.

Szilard drafted a confidential letter to the President, Franklin D. Roosevelt, explaining the possibility of nuclear weapons, warning of the German nuclear weapon project, and encouraging the development of a program that could result in their creation. In August 1939, he approached another Jew, and old friend and collaborator named Albert Einstein, and convinced him to sign the letter, lending his fame to the proposal. The famous Einstein–Szilárd letter³ resulted in the establishment of research into nuclear fission by the U.S. government, first as the Chicago Pile-1, which was the world's first nuclear reactor, and ultimately to the creation of the Manhattan Project, which gave birth to the bombs that were dropped on Hiroshima and Nagasaki and officially ended World War Two.

Nothing in this world happens by happenstance – especially not when Jews are involved, and regarding such a fundamental power as nuclear energy.

We shared only three Jews who were essential in ushering in the atomic era and nuclear age, almost all of them refugees from Nazi Europe. There were many, many more we haven't mentioned. Why is it that Jews have had such a global impact? And what does it mean for us today?

³ <https://hypertextbook.com/eworld/einstein/#second>

6. Rosh Hashana – The Nucleus of Existence

Rosh Hashana (not *techilas hashana*) literally means the “head of the year.” The head is more than the uppermost and foremost part of the body, it is the nucleus, the core, the essence of the body that drives all of its decisions and influences all of its limbs and body parts.

For example: if G-d forbid someone gets a cut on one’s finger, one puts on a band-aid and goes back to business as usual. If however one G-d forbid gets a cut on one’s brain, one’s nucleus, one’s entire life is in jeopardy.

On decisions we make on a regular Monday in middle of the year may require a band-aid. But a decision we make on this Monday (and Tuesday), on Rosh Hashana, on the nucleus of our year, has ramifications across the entire span of the year’s body.

Another way of looking at it: the world nuclear is rooted in the word ‘nuc,’ which means ‘nut’ or ‘kernel’ or ‘seed,’ the most inner part and prime core of something. If you scratch or neglect to water a full-grown tree, big deal, it has enough sustenance to grow and heal. But if a seed is scratched or not watered, it can destroy the seed and never grow into a tree.

Imagine this with a human being. If a full grown adult makes a mistake, or a mistake was made to him, it’s rather easy to recover. We make mistakes every day. But if a mistake is made at conception, when the seed is trying to take root, the potential human being will never be born and that mistake can thus not be rectified.

Rosh Hashana is the “head,” the central nervous system of all life. It is the nucleus, the ‘nut,’ the ‘seed’ and the nuclei of existence. On this day the human being and all of existence was born. And on Rosh Hashana each year the world is recreated – existence reverts back to its original nucleus state. As such, the decisions made today can have profound positive impact on our entire year.

This is true both on the individual level, as well as the communal and cosmic levels. What we pray for and commit to individually, communally, and cosmically has nuclear effects on our individual, communal, and cosmic year.

This is also exactly what’s happening in heaven right now as we speak. The mystics explain that as the sun goes down before Rosh Hashana, the universe goes into a comatose state. All things revert to their primordial nuclear state. A slumber descends on all existence, everything comes to stand still in cosmic silence, in apprehension of its contract being renewed. Then, as Rosh Hashana begins, the awakening starts.

It begins slowly until the full awakening the next morning, when the ram's horn known as the shofar is blown.⁴

Every Rosh Hashana, just as it was 5779 years ago, Hashem renews existence at its nucleus and nuclear source.

Our service on Rosh Hashana – our prayers and shofar sounding – beseeches and evokes the nuclear decisions that G-d makes on this day impacting the entire body of existence. We ask G-d to bless us all – and the entire universe – with the best possible year materially and spiritually.

Through our actions we influence this nuclear process, which in turn affects positive nuclear change in our lives and the entire world.

7. Nuclear Lesson: You Can Change the World

One transformative lesson we learn from nuclear energy is the enormous power of even the smallest detail:

Before atomic and nuclear energy was discovered power was defined by sheer size and strength. A larger army and a bigger weapon dominated over smaller armies and weapons. Most people could not even imagine how much strength was contained in a hair follicle, or any miniscule entity.

With the discovery of the atom, and the ability to create nuclear fusion or fission, we learned how much power can be generated by virtually the sub-microscopic world.

This teaches us the immense power each one of us wields. You may consider yourself a small person. You may think that what can you – one individual among 7.5 billion people in the world – already accomplish. What difference can one tiny act make?

Comes the nuclear force of Rosh Hashana – and especially this year when there is much talk about nuclear energy – and it declares to each one of us: You are a walking nuclear reactor! You contain tremendous energy; immeasurable resources. Even one small act of yours can move worlds!

⁴ Pri Eitz Chaim, Shaar Rosh Hashana, ch. 1. Shaar HaKavanot, D'rushei Rosh Hashana. Siddur Arizal. See Likkutei Torah Net-zavim 51b.

As Maimonides writes: “A person must see himself and the world as equally balanced on two ends of the scale; by doing one good deed, he tips the scale and brings for himself and the entire world redemption and salvation.”⁵

And this power comes to the fore on Rosh Hashana – when the universe and each one of us returns to our primordial nucleus state, when existence is renewed at its root energy source.

Today is the birthday of the human race, when we are charged with the mission of transforming this world into a beautiful garden. Every Rosh Hashana our contract is renewed.

You and I – and every human being – have the power to harness the nuclear potential within us, and tap the deepest potential in the universe, to realize its purpose: to create and recreate a G-dly world.

8. Conclusion: The Three Reactors

We read in today’s prayers that there are three major way to influence the nuclei of existence:

Teshuva

Tefilah

Tzedaka

Teshuva: Returning to who we truly are, reminding ourselves of our nucleus

Tefilah: Bonding with something greater than ourselves by opening our hearts in conversing with and praying to G-d

Tzedaka: Righteous acts of goodness and kindness.

These three work all year round, and especially today as we stand in the nuclear reactor that is Rosh Hashana, the nucleus of creation.

The reason the threat of a nuclear Iran and North Korea frightens us so is because of the havoc that negative energy could wreak on our world.

The spiritual preemptive solution to that is to resolve today, on Rosh Hashana – when the destiny of nations is determined – to release into the world the positive nuclear energy within each one of us.

⁵ Maimonides, Laws of Repentance, 3:4.

And to reveal for all to see how “everything that has been made will know that You have made it, and it will be understood by everything that was formed that You have formed it” (as we will say in today’s Musaf prayer) – revealing how the true core nucleus of existence, G-d Al-mighty, energizes all and embeds within us all the nuclear ability to make this year the best, most energetic, and sweetest year ever.

Kesiva V’Chatima Chasima Tova and a Happy and Sweet New Year!

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