Creation Starts With Brokenness
Erev Rosh HaShanah 5776
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Temple Beth El, Charlotte, North Carolina
Rabbi Jonathan Freirich

I actually began to think about this talk in the Spring, when I heard a podcast by one of my favorite teachers, Rabbi Bradley Shavit Artson, called "Kabbalah and the Big Bang".[1] When I looked at talk I had written, inspired by Rabbi Artson, I was crushed. I had put together a science lecture, not a sermon. In order to get to this talk, I had to break what I had written to begin with. And it turned out that in doing this, I also found the central message for tonight - that brokenness is the start of creation. Brokenness is not a problem, it is the beginning.

Which makes sense, since on Rosh HaShanah we celebrate the beginning of everything. Here's the scientific part, so bear with me a bit. We start with a question:

"How big was the Big Bang?"

In 1964, two physicists, Alpher and Herman, who had already come up with an answer to this question, also figured out that the Big Bang was so big, that it would have left a faint residue, an after-glow, that could still be detected today, fourteen billion years after the original explosion. Being scientists they called this after-effect something official sounding: "Cosmic Background Radiation", and calculated exactly how intense it is right now.

Around the same time Bell Labs in New Jersey built the Horn Antenna, which was the largest of its type - it would listen farther into the universe with greater accuracy and sensitivity than ever before. As the lab started using this antenna, no matter what they did, they couldn't get rid of some background

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[1] Please listen to the entirety of Rabbi Artson's talk here: http://www.zieglertorah.org/2015/04/14/kabbalah-and-the-big-bang-rabbi-brad-artson/ - his work was the Genesis of almost all of this talk, and the source of any unannotated quotes as well.

noise, a hum that made the researchers think their new antenna wasn't quite right. They cleaned it, chased off any birds or animals that might be soiling the surface, rewired it, and they still couldn't get rid of that hum.

Eventually, these technicians at Bell Labs complained about this persistent noise that they couldn't get rid of, and Alpher and Herman heard about it. They drove up to the lab from Princeton, tested the frequency of this hum, and found that the persistent noise exactly matched their calculations of the current intensity of the Cosmic Background Radiation, that echo of the Big Bang. In other words, entirely by coincidence, the Bell Labs people developed the means by which they could actually hear what the Big Bang still sounded like, fourteen billion years later.

Now, here's the really interesting part - this sound, this original echo of the Big Bang, was the same everywhere. No matter where they pointed the antenna the same, steady, constant sound could be heard. What's weird about this is that we don't live in a universe that makes a steady, constant, sound. Our universe is incredibly varied, with different types of matter and energy and lots of space in between it all. It looks different, and sounds different, everywhere.

This is a problem. The original thing that exploded out - the reality that came out of the Big Bang - exploded outward with perfect consistency. One big uniform ball of energy, matter, and space, without any variations. That's what they heard and proved from the evenness of the sound of the explosion detected at Bell Labs. So, when did that big ball of consistent and unvaried everything turn into the beginnings of the very uneven universe that we recognize today?

We don't find out until 1989, when a research satellite detected faint ripples of intensity in this Cosmic Background Radiation - variations in the constant noise that is that echo of the Big Bang. These faint ripples showed the first appearances of areas where matter came together unevenly, leaving other places where things were spread thin, creating the variations in everything that would become galaxies, stars, solar systems, and planets. These faint echoes picked up within the background noise didn't occur until 300,000 years after the Big Bang.

Sir Roger Penrose, a physicist who works with Stephen Hawking, said: "From the view of modern physics the entire world can be seen as the manifestation of a broken symmetry. If the symmetries of nature were actually perfect we would not exist." Symmetry, that evenness, orderliness, and sameness in all places, prevented the creation of anything at all. When the universe became irregular, matter and energy came together and became galaxies and stars, eventually creating us. All of this depended on a break in the evenness in which everything began.

George Smoot, a researcher who helped discover this irregularity, said: "If you're religious, it's like looking at God."

All of this research happened decades after the Big Bang Theory was proven.

In 1929 Edwin Hubble discovered that the universe was expanding, and then figured out exactly how long it has been expanding, leading to the proof for the Big Bang as a description of creation. In all the science about the Big Bang there is a point in time, near the moment of explosion, before which physicists cannot understand anything because nothing works in that space and time according to any rules anybody can figure out. When we look backward into time around the Big Bang we run up against a wall of mystery, a thing called a singularity, before which, nothing can be known.

This barrier of knowledge is so serious that Penrose, that brilliant physicist, wrote: "Space-time singularities are regions where our understanding of physics has reached its limits. If one is trying to be scientific, it is understanding that appeals, and here, at the singularity, you just have to give up."

From a scientific point of view then, the story of creation sounds like this: a point of infinite density, a singularity, which we can't even begin to understand, exploded, also for no reason that anyone can ever understand. Exploding outward evenly, that ball of everything got big enough and cool enough over a long time, three hundred thousand years after the original explosion, so that irregularities emerged in the unvaried state of everything,

allowing clumps to form, and gather together, into the beginnings of what things look like today.

Here is how we normally begin the Jewish story of Creation, and we're going to look at it almost word-for-word:

> Gen. 1:1 At the beginning of God's creating of the heavens and the earth,
> 2 when the earth was wild and waste, darkness over the face of Ocean, rushing-spirit of God hovering over the face of the waters-
> 3 God said: Let there be light! And there was light.
> 4 God saw the light: that it was good…[2]

Later, after two days of creation, the Torah continues:

> Gen. 1:14 God said: Let there be lights in the dome of the heavens, to separate the day from the night…

And then we hear all the details of the creation of the sun and the moon and the stars. What happened to the light from Day One?

The Book of Genesis describes three days of creation, including the creation of Light, and "and there was evening, and there was morning, Day One", then Day Two then Day Three. After that, on the Fourth Day we get the sun and the moon as if there were not already light. We could focus on this as an inconsistency, an error in an old story, or even a reason to dismiss Torah entirely.

A Jewish way of reading says that this apparent inconsistency hints at a deeper truth, that we have to read between the lines and the letters. We use this as an opportunity to tell a story behind the story. This is when we create *midrash*, and imagine answers to questions in the text. The text is not broken, it is demanding interpretation.

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[2] Translations from Genesis adapted from Everett Fox's translation, *The Five Books of Moses*, (Schocken - 2000)

We can answer the question, "What happened to the Light of the First Day of Creation?" by retelling the story of creation from God's perspective.

Aviva Gottlieb Zornberg, a Jewish scholar of the Bible and teacher at Pardes in Jerusalem, observed that all motivation comes from needing something - we notice something is missing and we work to fill the absence.[3] From this perspective, Jewish mysticism suggested that God began to create because God did not want to be alone. God was lonely and wanted to fix it. Later in Genesis, God expressed this sentiment by sympathizing with Adam's loneliness. God says: "It is not good for the human to be alone, I will make him a helper corresponding to him" (Genesis 2:18).

God was everything and everywhere, infinite, and alone. In Jewish tradition, God the infinite is entirely unknowable. According to the Zohar, the unknowable infinite God decided to become smaller in order to create and share reality with some company. God shrunk into an infinitely tiny point, and from that point, poured divine energy back into the empty space that God had left so that there would be room for creation. When God starts sending divine power into the world, that is the first creation of light, and it is the light of God's unfiltered raw creative essence. God forced all that power into spaces, newly created vessels that were no longer made of God. These vessels couldn't contain God's energy, and they shattered, spreading shards containing the bits of the essence of God throughout the universe.

Instead of a tragedy at the beginning of time, this enabled God to be present in all Creation as slivers, remnants that we uncover when we create, when we work together for a higher purpose, when we participate in repair of the universe.

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[3] Aviva Gottleib Zornberg, *The Beginnings of Desire*, (Schocken - 2011), particularly the chapter on *Lech L'cha*.

The shattering of the vessels explains where the original light went and why God needed to create smaller sources of light, the sun, moon, and stars, later in the creation story.

A Late Medieval mystic, Menachem Azaria of Fano explained this need for things to break in order to create, in this way: "Just as the seed cannot grow to perfection as long as it maintains its original form, growth coming only through [the breaking of its shell]. So [creation] could not become whole as long as [it] maintained [its] original form, but only by shattering."

What makes a seed grow is that it breaks open. The breaking of the seed's shell is the beginning of the growth of the plant. This allows a root to emerge from the seed into the soil and stretch towards the sun. An intact seed, one that never breaks open, will never grow.

Our universe, like a successful seed, broke, and thus grew. It had to be broken, it had to have irregularities, in order for creation to happen and our familiar world to emerge.

The mystical version says we are created in the divine image because everything is from God. Everything is filled with the shards of God.

Two parallel stories. Unknowable infinite points burst into reality spontaneously, meaning we have no idea why it happened, creating all that exists in the process, and only became recognizable as something like our world when wrinkles of brokenness, errors, entered into what was originally a flawless expression of power and energy. The brokenness in the stories is not a problem, rather it is the reason that everything can exist.

We are the stuff thrown out from flaws that entered into the original explosions that created time and space. We developed the mindfulness, the awareness, to understand that we are made of that stuff from the stars. The mistakes in God's perfection are us, and we evolved into souls who can look out and up at each other and the world and offer praise for the mystery at the core of everything. The story that we use to explain our Jewish texts helps bring meaning to the science that we use to describe the world.

We need both versions. I know that the medieval Jewish Kabbalists did not come up with the Big Bang Theory. These are two separate stories. We need them both because the poetry and power of the mystical narrative that places us in relationship with the source of all things helps us find the ethics and the meaning in the poetry and power of the scientific narrative that shows that we are made of the same stuff as all things. No matter how amazing the work of Newton and Einstein and Hawking and their students and colleagues, taking the implications of their teachings and communicating them to the world in a way that emphasizes the behavior that responsible people might aim for, still remains the work of those of us outside the labs and observatories. We must take these insights about the way things work and transform them into inspirations that help all of us work together, better.

At the heart of all of this lies the connection between creation and being broken. At this time of year, and on this day celebrating creation, when we turn towards the image of God as sovereign of all the universe, who brings order and crafted beautiful stable substances out of the *tohu va'vohu*, the "wild and waste" of early Genesis, we might get disheartened, thinking, "It took God to bring order. So much of my life feels broken. I can't do what God did, I can't do anything to fix it".

When we look at these two stories we realize that brokenness is not a problem, it is the beginning. Nothing begins from a sense of completion. All our motivations come from our recognition that we must do something to fix things.

We are not the only people to think this way either.

Japanese culture has the concept of Kintsugi, which is the art of repairing broken pottery with a lacquer dusted in precious metals. The method, which results in beautiful pieces like this one, is supported by a philosophy that treats breakage and repair as part of the history of an object, rather than something to disguise.

Everyone of us is broken. We all bear

scars, some internal and some external. We are all broken vessels containing shards of the divine. We all bear the history of our difficulties, our conflicts, our struggles. We do this as individuals and we do this as the people Israel. Israel is the name we bear from Jacob who earned it by struggling with an angel and walking with a limp from that experience for the rest of his life.

From each moment and encounter of breaking we can create. We are the seeds that grow from broken shells. We bear the elements of broken stars that exploded and spread through the galaxy billions of years ago. We see with reason, feel with poetry, and bring them together to build a better whole. We are the remnants of shattered vessels from which we gain the strength and inspiration to participate in the completion of all creation. We can become the partners that God sought by helping alleviate loneliness around us.

On this birthday of the world, as we celebrate the creation of all things, let us remember that everything starts by being broken. Our brokenness is part of the universe, part of God, and it is our strength for entering the year to come as a partner in Creation.