

Session 9 – Stage 5 of Spiritual Hierarchy

March 16th, 2014

Jai Swaminarayan! Sahajanand Swami Maharajni jai, Bapashreeni jai, Sadguruoshreeni jai, Swaminarayan Bhagwanani jai, tatha anant anadi muktoni jai!

A humble prayer in their lotus-feet and our Guru AMPP NarayanMama-LeelaMasi's lotus-feet to augment this assembly with their divinity and grace, and to enhance our knowledge and guide us towards them.

Last week we looked at remainder of Stage 6 and Stage 5 as it is mentioned in the Hindu scriptures and in Swaminarayan philosophy. This week, we will map science to these states and talk about some scientific discoveries and theories. Since we have stepped higher up in the hierarchy, some of the concepts have also become more involved scientifically and mathematically. Many concepts may be difficult to grasp or understand. I do not want our Satsang to become physics or a math class, so will not go into too much detail. If there are things that are not clear, please ask questions. I will answer to the best of my ability, but since I am not a research scientist, and am still with badhitanuvrutti, even if we had time, I may not be able to explain the entire physics and mathematics behind some scientific discoveries and theories. The bottom-line is that many things mentioned in our scriptures have a scientific basis that we are gradually finding out now, and it is enough to know and trust just that much. So let's get started.

One of the most controversial concepts to understand in Stage 5 & 6 is the naval lotus of Vairat Purush. What is it? Since the 14 worlds are created in the naval lotus, it is definitely bigger than 4B miles in diameter. And in its stalk Lord Brahma walked for his 100 years – which is 311 trillion human years but could not find its end. So what possibly can be the naval lotus and the stalk? We have talked about similar patterns in the past. Have we observed how the water swirls down the drain from a filled up sink or a bath tub? Have we observed the tornado? Have we observed a hurricane? Have we observed a mushroom cloud from an explosion? I know most of us would not have real life experiences around this, but we would at least seen it somewhere on news or some TV series. The patterns seen in all of these consist of a spiral or a stalk, and then an expansion, just like the flower blooms from a stalk. It is Holi time, and a fun way to understand this is may be with a water-gun or "pichkari". The water emerges out of it very initially as a stream from a small hole and then expands all around, splatters all around, due to the force with which it is thrown out. Similarly, something emerged from the body of Vairat Purush with tremendous but regulated force, the shape of it looked like a flower and therefore the naval lotus. Since the force was regulated, it came out in a very symmetrical way, and lotus is one of the most symmetrical flowers and is used very commonly to represent spiritual progress, wealth, etc. So a scientific way to understand the naval lotus is as a vortex of energy of creation, which expanded into symmetrical space to create the 14 worlds, like a flower blooms from its stalk, or like the water emerges from a water gun. This vortex need not be a straight stalk, but a spiral or a convoluted stalk. The reason is, given 311 trillion human years, if Brahma only walked 3 human miles a human year, he would have still found the



end of the stalk if it was a straight stalk. We will look at dimensions next week (and we may probably touch upon it next week as well), but just wanted to mention it here that, there must be some curves, convolutions or spirals in that stalk. It was the energy of creation which arose from the body of Vairat Purush, which helped create the space for 14 worlds.

Talking about lotus and its symmetry, AMPP NarayanMama used to say that the divine form of Lord Swaminarayan – the Moorti – is super-symmetrical. He would get blissfully overjoyed talking about it and say, “The divine form is so beautiful, so symmetrical...” and then he would pause.... After some time, he will come back, look at you and smile and say, “It is so beautiful that it is hard not to get engrossed in it.” A study has shown that people we find beautiful are the ones who have the most symmetrical features. So there is something about symmetry. In particle physics there is a theory of SuperSymmetry which states that every particle has its super partner - one operating at higher energy level and another at lower energy level, just like there are multiple octaves on a musical instrument. In fact, physicists have been talking about symmetry and patterns all along. In the slides I have included a link to Supersymmetry theory for those who are interested in reading further. The text in this link is a little old – about three years old, but it is nevertheless an interesting read. It is from the theories leading to Supersymmetry and the theory of Supersymmetry that the existence of Boson and Higgs Boson was predicted.

Boson and Higgs Boson are quantum particles. We have mentioned in the past that the rules and laws governing the quantum particles do not seem to be the same as those of the larger world. There is research going on to map it all in one single equation of creation, but as of today, we have not been able to find one. However, it seems there is a likeness amongst the two – which is the small particles and larger world, is in terms of symmetry. One of the models used to describe the behavior of infinitesimally small particles, is called the standard model of particle physics. It has its limitations, but it is one of the most well-known model these days. This model talks about those quantum particles and their nature and it primarily includes fermions and bosons. Fermions are what constitute the matter and no two or more fermions can exist in the same space. Their super symmetry partners – the bosons, on the contrary are the energy particles and more than one boson can occupy the same space. In one of the Satsangs we had talked about 4 fundamental forces – the Electromagnetic, the Strong, the Weak and the Gravitational. These forces are carried by different types of Bosons – Electromagnetic force by photons, Strong force by Gluons, Weak force by W & Z bosons, and Gravity by gravitons. Gravitons are not yet found. It is believed that even if we find gravitons, they will quickly disappear in other dimensions that we cannot see or perceive.

Talking about Boson, brings us to the question of what is Higgs Boson? A couple of weeks back we had talked that scientists are now trying to find out what holds our bodies together. Taking that one level further, the physicists also asked what holds the particles together to create satellites, planets, stars, and galaxies? They determined that after the big bang, the time without any fermions, or time of pure energy was 1 undecillionth ($1/10^{36}$ or 10^{-36}) of a second. That was the pure energy state, after which the fermions started forming. Starting from the large, they gradually came to small and started looking at what forms the smallest visible matter particle – the fermions? What converts energy into mass in the first place, at the smallest level? They mathematically determined it to be a



force field and it was named Higgs after the physicist who first proposed the theory. And we discussed that every force has a Boson particle associated with it, since Higgs is a force field, it should have a force particle – a Boson, associated with it, and this Boson is called the Higgs Boson. To find Higgs Boson, the physicist theorized that if they create a big enough disturbance in the Higgs field, they will be able to generate Higgs Boson for an infinitesimally small time. They created this disturbance by colliding two protons and found Higgs Boson in 2012. However, the mass of Higgs Boson is much smaller than what it should have been based on mathematical equations and theory of the standard model and supersymmetry. Due to this finding, there is now one belief that there is not 1 but 5 Higgs Bosons and hence 5 Higgs force fields, not one. So given that there is possibility of multiple Higgs Boson, there is a possibility of multiple force fields governing the universe at different levels. Each Higgs Boson interacts only with its own Higgs field and therefore goes unnoticed in other parallel Higgs fields. Higgs Boson slows down some particles just as magnet slows down metal particles, and that forms matter. But it does so only in its own Higgs field. Bosons, pertaining to our Higgs field will pass unnoticed in other Higgs fields and likewise, Bosons from other Higgs fields will be undetectable in our Higgs field and flow through seamlessly.

Having explained this concept, let's map it to some of the things that we talked about. In Hindu scriptures, it is mentioned that Dev or demigods were born from cosmic matrix, it is mentioned that Brahma created time to manage the 14 worlds in the naval lotus, it is mentioned that Vairat Purush created space-time continuum. Similarly there is a space-time continuum managed by Pradhan Purush and Pradhan Prakruti. We have not talked about Mahakaal but there is another level of space-time continuum beyond Pradhan Purush level. Some entities are born as children, some are born through some unknown methods – for example Lord Brahma was born in naval lotus of Vairat Purush, and Vairat Purush himself is a child of Pradhan Purush and Prakruti. All in all, there could be Higgs fields or similar force fields, governing each of these strata, and must have their own associated Higgs Boson or similar particles which eventually form their bodies, their world, etc. So irrespective of how their body is formed, or how they are born, there must be some sort of a force field there. So let's say for example, that Lord Brahma created 14 such force fields for the 14 worlds. These worlds could be intertwined and exist in the same time-space continuum but be governed by different force fields and different laws of physics in each force field. In addition to force fields, there could be other space-time continuums intertwined with ours – the one created by Vairat Purush, the one created by Pradhan Purush, and it could all exist in the same physical area or vicinity without ever being noticed, or without ever interfering with each other. So even though science has managed to look at distant galaxies and stars, there may still be intertwined worlds, which they may not be able to see. And those may not be far away.

If the concept of Higgs field and Higgs Boson is not readily understood, it's ok – it is more for the advanced physicists to decipher. Let's walk forward with an understanding that with the latest scientific discoveries, there is a proof of probable existence of more than one world intertwined with ours. This is determined based on two Bosons – Higgs Boson and Graviton. Graviton is not yet found, but based on the overall force of gravity, it is weaker than it should be, and therefore points to other dimensions that we cannot see or perceive. That is enough to know that there could be multiple force fields or multiple



governing laws mapping to each of the worlds created by Lord Brahma, or by Vairat Purush or by Pradhan Purush. And that there is scientific basis to that.

There is also an emerging belief that just as for almost 2000 years we believed that atom was the smallest particle, but we have now found sub-particles of atoms, likewise, maybe there are sub-particles to Higgs Boson that we are not even aware of. These sub-sub-particles in turn could have force fields associated with them, which could in turn mean more subtle intertwined worlds.... The LHC, the Hadron Collider is undergoing upgrades right now and will reopen in 2015 with much greater capacity. When it reopens, one of the things that physicists want to do is look into particles smaller and subtler than Higgs Boson. It is believed that these sub-sub-particles may be combining in different ways to form multiple Bosons as well as to form Dark Matter. Talking about Dark Matter, Dark Matter was an imaginary thing a few years ago, but now it is a real thing. Its existence is proven by gravitational lensing. I will not go into details of what is gravitational lensing, but because of gravity, we are able to see things past Dark Matter, and that shows that there is Dark Matter. It is believed that Dark Matter constitutes 26.8% of the total mass & energy in the universe. There is also dark energy which is continuously expanding the universe, and it constitutes 68.3% of the total mass & energy in universe. Of the remaining 5%, 4.6% is the matter that is visible to us and 0.4% is the neutrinos. One belief is that the dark energy is the fifth fundamental force, and it is associated with a Chameleon Boson which is sluggish and slow when it is heavy and zips through everything when it is light. It changes form based on the environment, in other words, it is a shape-shifter and hence the word Chameleon.

In Vachanamrutam, Lord Swaminarayan has called Maya Jad-Chidaatmak – meaning it is slow and lifeless, and it is full of energy and alive. When we map this with what we know about dark matter and dark energy, and the hypothetical Chameleon Boson, may be it is the Pradhan Maya – the consort of Pradhan Purush or MulMaya – the mother of Pradhan Purush. It's the dark matter and dark energy that we are talking about here. Another reference is that Lord Swaminarayan and Shree Abaji Bapashree have mentioned that beyond the layer of Pradhan Purush is the darkness of MulMaya all around, and no one can see the divine brilliance beyond that. When we talk about dimensions next week, we will most probably end up mapping Pradhan Purush to galaxies, and the dark matter and dark energy would then subsequently map to MulMaya, the mother of Pradhan Purush. I want to disclaim that this is speculative mapping, no real data is available to show exactly how it works.

While on the topic of particle physics, it will be a dishonor, if we do not talk about dual nature of particles. One of the fundamental theories of particle or quantum physics is that a quantum particle behaves as a particle and as a wave. We can explain this concept with a very simple example – think of a toy boat that we have played with as kids. The boat would propel in the water, and at the same time will also generate ripples in water. The boat is the particle form and the ripple is the wave form of the boat. The wave form of a particle is however not the effect of the particle form. It is determined that there are pilot waves in the wave-form which decide the direction and next states of the particles. Associated with theory of duality is Heisenberg's uncertainty principle which says that at any given time, one cannot exactly say where a particle is going to be. When we combine these two together, what we get is that at any given point in time, the position of the particle and its nature or form is unpredictable. Also, through



its wave form the particle can exist in two different places at the same time. And as we have discussed, this applies to Bosons, not fermions.

There is a famous experiment done where a single photon, which is a particle of light, is released from a photon source. An obstacle with two slits is placed in its path, before it gets projected on a wall. This experiment is very similar to – those who studied Physics from say around 10th – 12th grade, must have done the experiment of interference of light, where there 2 slits, there is a source of light and then on the backside on the wall you see the interference patterns. So this experiment was very similar to that, except that instead of a source of light this was done with only one photon that is being projected. Since there is only one photon, the physicists expected that on the wall behind the obstacle, they will see the image of the slit. Just one image of the slit through which the photon passes. Instead they saw 2 slits and interference patterns as well. This would happen only if the photon was passing through both the slits at the same time. To determine what exactly was going on, the physicists put a camera in front of the obstacle, or the slit. At that point, the photon passed through only one slit, and projected only one slit on the wall, as the physicists had originally thought! So when there was an observer – a camera, the photon behaved as a single particle, and when there was no observer, the photon behaved as a wave and existed in multiple places at the same time. This can also be related to Jad-chidatmak nature of Maya – it either behaves as a particle or Jad, and as a wave or Chidatmak.

Based on this and similar experiments and other theories like Einstein's spooky law, physicists have come to a conclusion that nothing is certain until an observer makes a measurement, due to duality and uncertainty principle. We often ask, if a tree make a sound when it falls, if no one is watching? What physicists say that forget making the sound, there is no tree, when no one is around to observe! Reality begins and ends with observer. Another famous example used to explain this concept is that say there is a box, and there is a cat inside the box, and one is asked if the cat in the box is dead or alive. The answer to that question based on these principles, is that there is no cat – forget it being dead or alive. This is confusing to understand, so let's keep it simple and say that based on quantum physics, it is possible for some particles to exist at multiple places at the same time or not exist at all.

Now, since Pradhan Purush and Pradhan Prakruti created 24 elements through Mahattattva and Ahankar, and also gave birth to Vairat Purush, they can all manipulate the entire creation, space-time continuum, force fields, matter as it exists, in multiple ways. Not only that, they pass on some of these powers down to the next levels as well. And of course, anyone who is above and beyond the Pradhan layer, can do the same. Along these lines, one of the things mentioned in the scriptures are the Siddhis. There are supernatural or superhuman powers. These include things like increasing and reducing the size of one's body – Anima & Mahima, Laghima & Garima relate to weightlessness and too much weight. I think what we all need to do is forget weight watching and going to weight watching clubs, simply acquire these Siddhi Laghima to become weightless 😊. Hanumanji showed these in Ravan's palace in Lanka. This could involve manipulating Higgs Boson and similar particles like the Chameleon Boson to increase and decrease weight, to walk through matter, to see and hear distant things, shape-shift, etc. The manipulation of dual nature of particles can be used to attain Siddhis like walking through matter, being visible at multiple places at the same time and so on. So while all these things seemed miraculous earlier, there is now enough evidence to show that these things are possible by those who have the



power to work through quantum particles, force-fields, time-space continuum, and other subtle laws like dual nature and uncertainty principle. This power to manipulate matter and energy comes through by default in some spiritual strata. For us humans, we have to cultivate and earn those by creating a reservoir of spiritual energy. This reservoir is built by controlling mind and senses and by meditating.

So while talking about Siddhis, I was reminded of a few incidents from life of AMPP NarayanMama that I would like to share. I am sure lot of us have either experienced it directly or heard about it. AMPP NarayanMama once attended a sabha in Saraspur temple as well as the Muli temple at the same time. Later when the devotees from both the temples got together, they realized that he was at two places at the same time. There are similar incidents from life and times of many Anadi Mukta like Shree Abaji Bapashree, Gopalanand Swami, AMPP Somchandbapa, and of course Lord Swaminarayan Himself during the Ras at Panchala, where He had one form in Ras with every saint. During that raas, He got half the Kaliyug out. Thanks to Sadguru Anadi Mukta Shree Brahmanand Swami, we are still living in Kaliyug. What happened was the raas continued for almost half the night, and the saints were getting tired. The next day was a huge celebration. So Sadguru Shree Brahmanand Swami was concerned about the health of the saints, so he asked one of the disciple saint to go to the residence of the saints and start shouting "Thief, Thief". All the saints scattered and the Ras stopped. Later on Lord Swaminarayan explained, that He wanted to continue with the Raas the whole night and get rid of Kaliyug, but since the raas continued only half the night, only half of the Kali was through. We will talk about Kaliyug next week when we talk about dimensions and timelines, as to what's the length of Kaliyug and how much of it is gone. Another incident is the 12 forms of Lord Swaminarayan at the Hindolo in Gnanbaug Vadata. The second incident of AMPP NarayanMama's life was when he visited the US. Some devotees took him for a casual medical check-up, with the thought that the doctors who would see him would benefit by meeting him. The doctor asked AMPP NarayanMama to push his hand a little, to determine strength of AMPP NarayanMama's hand. So AMPP Mama gently pushed doctor's hand. The doctor asked to push the hand a little harder. AMPP Mama pushed doctor's hand a little harder, and the doctor was thrown off to the wall. There was so much force in his hand and those who have met him, and I am sure almost all of us have met him, know he was not that big as to push someone to wall. Similarly, in His childhood, Lord Swaminarayan ended up having a competition with malla. The wrestlers are called malla in Gujrati and Hindi. Lord Swaminarayan tied a chain to one of His legs and asked the mall to move His leg. All the mallas together could not move His leg even a little bit.

There are similar incidents from life and times of other avatars like Lord Krishna's raas lila, Lord Krishna's mall-yuddha, Hanumanji's leap to the sun, Hanumanji's visit to Lanka, etc. where we find all across Hindu scriptures these kinds of miraculous behaviors. We talked about sound levitation last week. May be sound levitation combined with siddhis like Laghima, which is weightlessness, was used to create the monumental pyramids of Egypt, the Stone Henge, etc. as well as to build the Rameshwaram bridge. There is another research going on to create a cloaking device. A thin sheet (like a shawl) that can be wrapped around the body. This sheet would have the capability of manipulating the particles around it to hide anything under it and show through and through. US government is known to have conducted telepathic experiments for distant viewing and distant communication, under a project named Stargate.



These are real experiments that are being conducted, which align with Siddhis mentioned in Hindu scriptures. These are no longer talks of some old scriptures but a possible future reality.

The other thing is when we apply the duality and uncertainty principle to time-space continuum we get a creation where there are immense possibilities. On Webex, we have a picture for determining a gradient descent of a mathematical equation. Do not worry about the detailed concept. Just look at the picture – if we are standing at point marked “1” at the top of one of the slopes, in the red area, and want to get down the slope, there are two possible ways to do that. Due to the dual nature of particles, both the ways become a possibility, rather than just one way. It gives all the living things in the paradigm, multiple options and multiple possibilities. This would not have been possible without the dual nature of universe. These are a little advanced concepts of Maths and Physics, so let’s just understand that it is possible to scientifically prove that there are immense possibilities and things can evolve in any way depending on the path that we take in our life. And whichever path we choose will take us somewhere, but we have the ability to decide what path we want to choose and there are multiple such paths.

I mentioned “Einstein’s spooky law” a little while ago. This “Spooky law” can be explained by quantum mechanics. In essence what it states is that if there are two particles related to each other and with exactly opposite spins, are joint at some point in time and are separated later on, each particle still seems to know what is happening to the other particle and is able to change its behavior accordingly. So there is something governing their behavior even when they distance apart. This theory sits very well with the universal 24 elements we talked about last week, that tell us that we are all connected eventually through those 24 elements. Spooky Law is yet another example of scientific validity of what is mentioned in the scriptures.

So far what we did today was we mapped Higgs field to different categories and looked at the possibility of many intertwined worlds and many time-space continuums. We also mapped dark matter and dark energy to Pradhan Maya and Mulmaya. We then talked about dual nature of particles and uncertainty principle and understood Siddhis, multiple options in every situation, and the validity of us all being connected through 24 elements. During the course of our Satsangs we have looked at biological hierarchy, physical hierarchy, and spiritual hierarchy, and made our best effort to align them together, and establish credibility of what is mentioned in the scriptures as spiritual hierarchy. We visited Blackholes – which could relate to Lord Shiva, to Destruction state of Vairat Purush, to Tamas Ahankar, and so on depending on their size. Likewise there is a hierarchy of creation of satellites, planets, stars, clusters, galaxies, galactic clusters, and so on. So all in all, what we have done is, we have looked at multiple ways of understanding the hierarchy, and taken multiple approaches to understand it.

During the course of this series, we have also talked about mapping big to small and vice versa. Very early on we emphasized on a concept of “Whatever is in the body, is also in the universe, and vice versa.” We took very simple example of similar triangles and Russian doll to explain this. Along the way we have seen that the 24 elements are common all across, so big and small map from that perspective. We have taken very simple examples, and since we have talked about some higher level Math and Physics today, for those who are interested in deeper understanding on how this works, it can be very



intimately understood with the concept of Fractals. Fractals are essentially 2-Dimensional or 3-Dimensional mapping of simple or complex linear and geometric progressions. With different types of equations, different types of patterns emerge. For example, let's take a simple equation " $x = 1+2x$ ", and start with value $X = 1$, the subsequent values of X will be 3, 7, 15, 31 and so on. When we run this hundreds of thousands of times and plot a graph of this equation, we get a simple curve that follows a pattern. The pattern looks exactly the same whether we look at it at a very small level or at a very large level. If we take any small portion of the pattern and enlarge it, it will look exactly like the bigger pattern. I have included some Fractal images in the slides. Those on Webex can see them. These images only scratch the surface. For more images, simply Google on Fractal images. When we look at the images in the fractals, it has a very close resemblance to the real-life things that we see around us. For example, the bottom-left picture looks very much like a broccoli. It also helps map large to the small and vice versa. It also helps us mathematically grasp the concept of how the large maps exactly to the small. For those who want to have hands-on experience, there are fractal generators available out there on the web, that can be used to generate our own fractals. Be creative, write your own equation of creation – try to arrive at an equation for something you see around you. Explore. It is going to be extremely interesting.

So this was some scientific mapping around some of the concepts that we have been talking about. Some of it was probably complicated to understand. In such cases, let's simply accept that there is scientific evidence that is available. There is tremendous knowledge out there around all these concepts and if we start talking about each one of those in details, our Satsang series would go on for a very long time. So we have maintained it at a manageable level.

Next week we will talk about the dimensions mentioned in Hindu scriptures and Vachanamrutam and map them to the dimension as science knows today.

That's all for today. Thank you to the Satsang sabha for being patient and spending this time. Please be kind to overlook my shortcomings. May Lord Swaminarayan and His Anadi Mukta bless us all. Happy Holi to everyone! Jai Swaminarayan! Vishalbhai, over to you.

