



# Unitarian Universalist Fellowship of Athens

The Reverend Alison Wilbur Eskildsen, Parish Minister  
The Reverend Don Randall, Community Minister

---

## “Time for Einstein and Yoda”

© by the Reverend Alison W. Eskildsen

A sermon delivered on December 13, 2015

At the Unitarian Universalist Fellowship of Athens, GA

### Centering Thoughts

*Astronomy compels the soul to look upward, and leads us from this world to another.*  
Plato, 342 BCE

*When ships to sail the void between the stars have been built,  
there will step forth men to sail these ships.* Johannes Kepler, 1610

*Imagination is more important than knowledge. For knowledge is limited, whereas imagination  
embraces the entire world, stimulating progress, giving birth to evolution.* Albert Einstein, 1931

*“Traveling through hyperspace ain’t like dusting crops, boy! Without precise calculations  
we could fly right through a star or bounce too close to a supernova, and that’d end  
your trip real quick, wouldn’t it?”* Han Solo to Luke Skywalker, STAR WARS, 1977

*“You must unlearn what you have learned.”* Yoda to Luke, THE EMPIRE STRIKES BACK, 1980

### Sermon

Thank you for bringing the *Star Wars* ‘Cantina’ to Timothy Road. I know we embrace diversity, but I hope that musical selection isn’t a commentary on the nature of UUFA’s members and friends.

Our faith tradition embraces many people as well as many sources. Today, our inspiration and wisdom comes from the findings of a scientist and the creativity of a filmmaker. Be warned, we’re heading into deep space this morning.

Blockbuster movie openings are a regular holiday tradition in America. This season, *Star Wars: The Force Awakens* opens, the latest installment of the nearly 40-year old franchise. You may know I’m a big movie fan, especially science fiction, so I’m more than ready for its release. And being a *Star Wars* fan, I couldn’t help but bring a little pop culture into our sanctuary this season.

Not that *Star Wars* needs advertising help. Almost as ubiquitous in stores as Santa Claus and his elves are Storm Trooper and Jedi knight products. Fan though I am, I haven’t succumbed to their lure. No, I succumbed long ago. As proof, I display my vintage, 1980s, exceedingly low-tech light sabers kept all these years.

But that's nothing. Ask Robin about her tricked-out Storm Trooper car.

Now, just as I imagine most of you know something about Storm Troopers, Jedi knights and the rest of the *Star Wars* universe, I imagine you also know the name of the scientific genius who changed what we know about our universe. Yes, Albert Einstein.

I imagine just like you could describe that funny-looking, little Jedi-genius named Yoda, that you could also describe that funny-looking little Germanic genius, Einstein. His rumpled clothing and wild, white-haired cranium are equally iconic. In fact, Einstein's eyes and facial wrinkles were copied onto Yoda's face. Linked forever Einstein and Yoda will be.

Although true this is, are the various possibilities George Lucas imagined for the *Star Wars* universe also true? Could the movie reveal our future? Could Einstein's genius enable us to encounter alien species, fly through space, and tap into a force that connects and binds us together? (And would we want to?) Quite possibly.

Before we look to the future, let's look back exactly one hundred years ago. In late November 1915, Einstein proposed his General Theory of Relativity which turned Newtonian physics and accepted natural law on its head. Isaac Newton claimed that *space is distinct* or separate from physical matter and that *time is absolute* or passes at the same rate regardless of what's happening around it. These laws remain mostly true for our everyday experience.

But Einstein realized *time can change* depending on the speed of a traveler relative to the speed of an observer. And we're all travelers because, although you think you're sitting still, you're in motion because you're riding spaceship Earth. And furthermore, *space is not separate from matter* because matter, its physical mass, distorts space.

Einstein's method for solving scientific questions was as unconventional as his appearance. His theory emerged after revisiting a 'what if' idea he entertained when he was 16 years old. While looking out over a Swiss lake at beams of sunlight reflecting off the lake's surface he wondered, 'What if I could run alongside the light at light's speed, would the light look motionless?' He knew two trains moving at the same speed alongside each other both appear motionless to the passengers looking from one train into the other. Would light beams also appear to stop?

He didn't answer his question then, but using his imagination twenty years later, Einstein realized that traveling near the speed of light would *alter time*. Minutes might pass for him racing alongside the light beam, but decades might pass for those not moving as fast. *Time* therefore is relative and it's the *speed of light* that's absolute. Just as Yoda once advised Luke to 'unlearn what he had learned', Einstein had to unlearn Newton.

Astrophysicist Michio Kaku in his book *Einstein's Cosmos*, describes Einstein's problem-solving technique:

It was precisely his ability to isolate key principles behind any phenomena and zero in on the essential picture that put Einstein on the brink of mounting a scientific revolution.

Unlike lesser scientists who often got lost in the mathematics, Einstein thought in terms of simple physical pictures—moving trains, falling elevators, rockets, and moving clocks.

These pictures would unerringly guide him through the greatest ideas of the twentieth century [page 44-5].

Einstein called his process 'thought experiments'. He began with simple pictures in his mind, working them until he made sense of the science.

Imagination, the ability to create images in his mind and consider unconventional ideas, was more important to Einstein than knowledge. Logic and facts can tell us what we already know, but imagination and intuition can lead to new insights and knowledge, as they did for him.

George Lucas imagined a galactic world where it's possible to travel great distances across space in 'real time', meaning that time for travelers would pass no differently than it does for today's global travelers crossing a few time zones.

But Einstein's famous equation, Energy equals Mass times the Speed of Light squared ( $E=mc^2$ ), throws doubt on that possibility. He proved that if an object, a space ship, tried to move near or at light speed, its mass would increase exponentially, as would the energy required to keep it moving, making light speed impossible to reach or sustain.

Obi Wan, is there no hope for interstellar travel?

Maybe *faster* than light isn't what sci-fi creators, fans, or future space travelers need.

In the *Star Wars* universe, seemingly fast space travel is possible with hyperspace. Imagine if Han Solo couldn't jump into hyperspace in the 'Millennium Falcon' just in the nick of time to escape some attack, or Luke couldn't travel within his lifetime from Tatooine to Dagobah to become a Jedi knight. Without some mechanism to cross planetary systems and galaxies, their fictional universe would need to be set on a single planet. Science fiction would be severely crippled if it stayed true to known science.

In 1931, Isaac Asimov popularized the term hyperspace in his Foundation book series. In the 1960s, Gene Roddenberry's *Star Trek* series introduced viewers to *warp drive*. And these ideas may one day be realized outside of science fiction – and Einstein may help.

Einstein's General Theory indicates massive objects, like a star or planet, create a gravitational warping of space that could lead to curved shortcuts or a way to manipulate space and shorten distances.

Try this. Imagine a bowling ball lying on a mattress. The heavy, massive ball causes the mattress to sag, creating a curve or well around the ball. Toss a smaller ball into the well and if it's not too close or too far away, it will circle the well, just as Earth circles the Sun.

Newton believed gravity was an independent force holding Earth in place. Einstein proved that gravity is the *result* of an object's mass. The gravitational mass bends space, so that space is no longer a flat plane but dimensional. (I bet you didn't know you'd get a physics lesson this morning? Stay with me just a moment longer...)

If space isn't linear or flat, then the shortest distance between two points isn't necessarily a straight line. It could be curved and scientists might someday discover we can navigate it as easily as Han Solo plots a jump into hyperspace. Physicists, mathematicians, and others are working on these challenges and I'm hopeful we'll figure it out.

I dream of interstellar travel because sailing amongst the stars must be awesome! When I look up to the night sky to view the swath of the Milky Way, I'm in awe at the beauty and wonder of our universe. It is a miracle that we exist, not just our sentient life forms, but our planet, our solar system, and all the rest. It's a miracle that our special star, the Sun, shines its light onto our planet, providing life with the energy it needs to exist.

Einstein once said that we can live as if nothing is a miracle, or as if everything is a miracle. He chose the latter and his life was dedicated to finding out how it all worked. He remarked that he sought the mind of God.

I think all that exists is a miracle, too. A natural miracle that amazes me everyday. This morning Paul and I paused to look at a beautiful, glorious sunrise! Magnificent, wasn't it?

I'm excited by the idea that intelligent life may exist somewhere else in the universe. It's a little scary, too, but I'm willing to risk the possible danger that they might not be friendly towards us.

We humans have explored mountains, oceans, and earth's interior depths. I know we'll journey to the stars one day. Many an 'imagineer' has created an idea that has been realized. Wrist-watch phones, rockets, satellites, lasers, and more were first dreamed up by active sci-fi imaginations.

We too can imagine a wonder-filled future that we can make real. We can use our imagination, intuition, and science to solve current conflicts and discover new wonders. We can hope for a future where we sit in a bar with an alien being who looks nothing like you or me, but similarly enjoys the music and camaraderie, the freedom and peace we know is possible.

May all our imaginings be made real someday soon.

May it be so.

### **Questions for Reflection or Discussion**

1. Where does your imagination take you? What future do you hope for?
2. Have you had an experience of time that felt 'out of time' or distorted in some way? How do you understand that event or what meaning do you give it? Please share your experience.
3. Do you hope humanity will colonize other planets some day? Share your thoughts and feelings.