Relativity

Nine-Day Retreat Talk by Ann Pepper, JDPSN
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Hello everyone. I am so pleased to be here to give this talk about relativity, that is, about emptiness from yet another way.

There is so little time in our short, precious lives.

I know I want to see everything that is right here.

Touch everything.

Thoreau said "I have traveled much in Concord."

And I get it. I get it

But nothing **seems** to stick or stop long enough

To let us breath together for more than a moment.

But then comes this teaching on emptiness.

So I'm going to be talking about science or science sounding stuff a bit, but we are here for the dharma and not the science and I want to remind all of us of that right here at the start, because for a minute or so it might seem otherwise.

But that's only because in reality they are wonderfully linked – relativity and emptiness. How could it be otherwise?

The idea that SSN had for this talk, I think, is that some of the vocabulary of science and our familiarity with physical objects might provide us with a metaphor for the way our minds work and perhaps give us another path to seeing into emptiness.

Because it just so happens that the scientific view of relativity is very close to our dharma view of emptiness. Maybe it is indeed exactly the same – but that you will decide.

So…

Let's start with Nagarjuna.

How many of you routinely associate Nagarjuna with relativity?

I see. Not too many.

This, I must tell you does not come as a great surprise.

This is completely fair.

So, over this week – and the wonderful talks by Jeff popsa, Eric popsa and Jeong Ji Soen Sa, it's become clear to us that this great second century (what about 150-250 of the CE philosopher/monk, Nagarjuna, is widely considered to be the second greatest philosopher/teacher in our tradition, after the historical Buddha himself.

So that's established.

But now let me ask you, who was it that discovered relativity?

Come on, who? Yes! Yes! We all know! Einstein!

Wonderful! Wonderful!

Also wrong!

Einstein's **special theory of relativity explains** how space and time – SPACE and TIME – the two elements we are working with here -- are linked

for objects that are moving at a consistent speed in a straight line. This theory of special relativity was developed by Albert Einstein in 1905 and it forms part of the basis of modern physics.

But you'll notice that I didn't say was discovered by Einstein in 1905, but DEVELOPED by Einstein, who expanded it incredibly in 1905, because the discoverer of relativity was flipping Galileo.

Yes.

The original book of Galileo sets the principle of relativity in "The Dialog on the Two Systems of the World." You can prove this to yourself by simply reading the book because in 200 or 300 pages he uses an incredible number of examples to show the relativity of motion. He shows it in one way, then in another, then in another. An incredible number of proofs.

In fact, many others besides Galileo did this -- it is just that their proofs are unintelligible, but his are clear as the proverbial bell and we're going to prove this to each other today. In a little while.

It is neither complicated nor mystical. That I am going to be the guide through this demonstration is plenty of proof of that.

First, I want to just stop here for a moment to give credit to the two great teachers who helped me here. One was the astrophysicist Laurent Nottale who wrote the paper ("The Principle of relativity-emptiness: Since Nagarjuna until Einstein") that Soen Sa Nim gave me that got me through the section on motion. And the second was Anthony Birch PhD and his paper: "Enlightenment and Time: An Examination of Nagarjuna's Concept of Time."

I am grateful to them both.

OK. Now…

But the amazing thing is, the extraordinary thing is not about Galileo, but that we have access to the writings of Nagarjuna that are 2000 years old

and in particular to his Middle Way teachings and his book, the Madhyamika, and that there are chapters on relativity in it with some sentences that are word for word those of Galileo. (1564-1642)

And no, by the way, I do not think Galileo cribbed from Nagarjuna. Galileo's proofs are far more elaborate. And he does not link them to the dharma as Nagarjuna does.

The dharma is Nagarjuna's only interest, while science is Galileo's.

Galileo sets relativity as a scientific principle. He says so in his book. He says, quite plainly: "We shall erect relativity as a principle." And he defines it: "for all things that participate in it, motion is not detectable: it is like nothing, as if it was not."

In other words, we just don't notice it.

Easy enough to show. We all know, don't we, that the Earth is blazing through space at a breathtaking 67,000 miles per hour plus spinning at the equator at about 1,000 miles per hour.

But even with the doors and windows open are you feeling any particularly brisk breeze in your hair at this moment?

No? No. Because "for all things that participate in it, motion is not detectable: it is like nothing, as if it was not."

This is the emptiness of motion.

This is why the statement of Galileo on relativity is really a statement about emptiness.

Again, Galileo said for all things that participate in it, motion is not detectable: it is like nothing, as if it was not."

Does this remind you of anything?

Compare this to Buddha's words in the Diamond Sutra:

"All conditioned phenomena
Are like a dream, an illusion, a bubble, a shadow
Like dew or a flash of lightening,
Thus we shall perceive them."

You've got that pinned up on the bulletin board by the door downstairs – and for good reason – yeah?

Notice that the Buddha does NOT say they **are** a dream, or an illusion – he says they are **like** a dream or an illusion or **like** nothing or as if they were not – the words that Galileo uses.

Thee Buddha says – It is like an illusion, a dream. The Buddha does not say that it is really a dream or an illusion.

Echos of Eric popsa's talk on the two truths.

Thus we do perceive them, Thus we shall perceive them.

Same as the quote Jeff popsa used from the Dalai Lama:

So Galileo is not telling us that motion does not exist at all. Neither is he telling us that motion really exists by itself in an absolute way.

And to show that, we will need a volunteer.

Roger, I think your hand was up to volunteer and you just happen to have a book and a pencil, right?

Good. Amazing.

Roger will walk slowly around the room now with the book. If you haven't met him, this is Roger, my homeboy from Golden Wind Zen Center in

Long Beach. There, the book is in motion – compared to the earth we are all sitting on.

And now, here's proof that motion does not exist by itself.

We have the right, of course, to use any other object as a reference system, right, not just the earth. So now Roger will hold the book in one hand and the pencil in his other hand and walk again without moving his arms. Look at the motion of the book compared to the motion of the pencil. And the pencil compared to the book. The book is totally motionless now.

Forget all the rest.

Imagine you are in an empty space where there are only these two objects. There is no other reference available. Look at one object compared to the other. Where is motion? There is none. Now, if there is a third object, like the earth, motion appears.

So is the book at rest?

No, compared to the Earth it is moving.

Is the book moving?

No, compared to the pencil, it is at rest.

Is the book both moving and at rest?

No, that's impossible.

It is either moving or at rest compared to a given reference system.

Is the book neither moving nor at rest?

No, it is always either moving or at rest.

So we refute all possibilities, the positive and the negative ones.

Now, check it out, using the possibility of changing the reference system makes it also possible to answer yes to all the questions which seems to

contradict our binary logic: is the book moving? Yes, compared to the earth. Is the book at rest? Yes, compared to the pencil.

Is the book both moving and at rest?

Yes, it is moving compared to the Earth and at rest compared to the pencil.

Is the book neither moving nor at rest?

Yes, it is not moving because it is at rest compared to the pencil and it is not at rest because it is moving compared to the earth.

Therefore, Galileo and Nagarjuna agree that motion – movement through space -- is empty.

But even more fascinating is Nagarjuna's proof of the emptiness of time.

Thank you, Roger.

Long before Galileo wrote that sentence about motion, Nagarjuna looked over the various components of existence, and saw their relationships, their relativity to demonstrate the emptiness of all these components – including the mind, sensations, perceptions, impulses, consciousness – aggregates of form, such as physical objects, components of what today we might call – physics.

Of course, he does all this without the math, so we call him a philosopher, not a mathematician. But it is a philosophy of Nature. Right?

In Nagarjuna's writings there are sections on the relativity of motion, the relativity of position, the relativity of scale, the relativity of time…a deep understanding. There is a chapter about space, in which he says "gravity is like space."

This is like in the year 200!

Stuff like this has our scientists heads spinning right this moment.

So we are all 21st Century beings, most of us, and most people pretty much are comfortable with their belief in the independent existence of things in the world. It's a nice, common-sense view of thing as they are.

Trees outside the window, these walls, your robes, the earth, the stars, and the great wheeling galaxies all exist and will continue to for some time to come with or without us.

Very straight-forward. Very logical.

We can also see that time passes. Inexorably.

The arrow of time.

You, me, my movie-star handsome cat, Dexter, the cushions we're sitting on, even the sun, all have come and all will go. Right?

Our teachers are always reminding us: Changing, changing, changing. It seems that only the flow of time is unchanging.

But Nagarjuna would like to help us get past this delusion too.

His writings on the middle way show us that not only do physical objects have no independent reality, but neither does the flow of time. It too is relative. It too is empty.

And, he says, unraveling this confusion is essential to waking up. Nagarjuna says we must do away with our "common sense" view of the flow of time, that last refuge perhaps of what we thought was "common sense."

Time, he explains, is also relative, is also empty.

So let's step back a bit.

Nagarjuna's basic argument in his Middle Way writings is one we've heard a lot this week and that is that there are no "things" either you or me or

this cushion or anything else that exists by itself, of its own accord and is not dependent on other beings somehow for its existence.

And we call that situation by this very awkward name: emptiness.

By way of a quick example, what happens to life on this planet if we just remove the sun.

We're all down with this, right?

All things are "empty" of a permanent, separate existence. We have only relative dependent beings. This applies, by the way, even to the reason we are all here, to waking up. It is not separate or inaccessible. It requires life to exist doesn't it?

And look, when it comes down to it, even emptiness is empty. It's just a word, a convention. We have to have something to say, I suppose. But emptiness is not a permanent reality, something with some kind of real existence we can grasp behind the word. It is an ambiguous and suggestive word that can help guide us and that is where its usefulness lies for us.

So, turning to back to time,

To our "common sense" logic, time is split into past, present and future, right? Now, Nagarjuna explains to us, that if these three parts of time have their own being, our conception of time quickly stops making sense

If the past is seen as prducing the present and the future, then the components, the things that make up the present and the future would have to be already in the past and could therefore not be properly said to have separate being.

Great-grandma and great-grandpa components for instance.

On the other hand, if the present and the future are separate from the past, then they have no cause at all, they're independent and have no reference to the past.

But since the very notions of present and future imply a relation to the past, this is self-contradictory.

That would mean the present and the future do not exist.

Oops.

So, neither identity with nor difference from the past is enough to establish the reality of the present and the future.

Nagarjuna can use the independence of any of the parts of time to attack the basis of their inseparability as a necessary reference to each other.

The past, for example, can't be independent because it just doesn't make any sense if the past doesn't end in the present.

He has other arguments. Such as if time can't be grasped, that is if you can't hold on to a single moment, how can you ever perceive it as time.

In other words, if we agree that time is always fleeting – changing, changing, changing -- there are absolutely no static components that can be experienced, or grasped by the mind.

Time, therefore, in and of itself, can never be grasped.

OK, you say, uh-huh, that's all well and good. But if I show up to work an hour late and tell my boss it's ok because time doesn't have any real separate self-nature, I'm probably not going to make the rent next month.

Ahhh. But,, Nagarjuna is on to that too.

While he is denying the independent existence of time, he is not denying the experience of change. He is not denying the existence of clocks, either.

In other words, what he is really saying is that time is not a separate, independent substratum of reality.

That is, time and phenomena are mutually dependent.

That is: they inter-be. They inter-be.

Or, in other words – time and the things that change are essentially one.

When that first sunk in for me, I found it mind blowing.

This cloth is literally the fabric of time.

Time and the things that change are essentially one.

How could it be otherwise?

We are time. It doesn't exist apart from us.

Or, in other words – phenomena are always phenomena-in-flux and time is always flux-in-phenomena.

There is not a Time and Things that persist through it, but only a changing of things that "is" the change over time.

This is the relativity -- This is the emptiness of time and phenomena.

Once we truly "see" that there is no self-existent thing in the universe, we "see" things as empty of separate self-being, of separate self-nature -- relative and dependent. The very emptiness of things, in fact, is what makes them what they really are.

Once we see this, we can become open to the true experience of our lives. Then we can travel much in Concord – or Seattle. Finding the emptiness of our pain becomes finding the emptiness of our waking up. Waking up is you and me. It is not to be found somewhere else. This is Nagarjuna's teaching.

Thank you for your patient listening.

Bibliography

"The Principle of relativity-emptiness: Since Nagarjuna until Einstein." by Laurent Nottale.

"Enlightenment and Time: An Examination of Nagarjuna's Concept of Time." by Anthony Birch, PhD