

The Story of Miall and Judy & Their Adventures Circumnavigating the Universe

Preamble and Disclaimer

What you are about to read began as a great idea! It was a thought experiment – A grand and novel thought experiment. I was proud and wanted to show it off, so I wrapped it in a really atrocious short story and forced it on my friends to read. I got a lot of “Uh ... that’s nice!” type of comments, through clenched teeth.

That was years ago. Turns out, the idea wasn’t even that novel. Shortly after writing that original story, I stumbled across the same damn idea in Michio Kaku’s book Hyperspace. Ah well. It just goes to show you that very few things are ever truly “new”. Just because you happen to stumble across something, it doesn’t mean a million people didn’t stumble across it before you.

On the other hand, the fact the Michio Kaku not only had the idea, but published it, means that at least one other person on this planet likes the idea, so I can’t be totally alone here! This is not, by the way, something that Kaku went into great detail over. Rather, the core idea was highlighted with a brief paragraph and diagram before Kaku moved on to the broader topics of his book. My story, in contrast, focused on the idea and on the many nuances and ramifications it entailed. For this reason, I still think my story has merit, even though my writing style really sucks and I’m not a known (or for that matter published) author.

The Beauty of Symmetry

So much for the disclaimer. This is, as you will discover, a story about symmetry. This is the sort of thing I think about while staring into my bathroom mirror brushing my teeth. Symmetry is beautiful, and it is all around us. Some forms of symmetry are obvious: My reflection in the bathroom mirror for example. Cubes, cylinders, spheres – these are all clearly symmetric

objects, possessing many planes through which the objects may be divided into identical sub-objects. Some forms of symmetry are far less intuitive, such as the symmetry that exists between our universe and black holes contained within our universe. The universe is often said to be finite, but unbounded. A black hole might also be regarded as finite, but unbounded. Or, it may be said to be infinite, but unbounded ... it depends entirely on your point of view and what sort of coordinate system you chose to use. The universe appears (from our perspective, as inhabitants of the universe) to be expanding. Yet, the density of the universe is suspiciously close to the required density of a black hole. And if the universe is expanding, then it must have been even denser in the past ... once a black hole, always a black hole! There are many such parallels between black holes and the universe. The relationship could be a coincidence, but I doubt it.

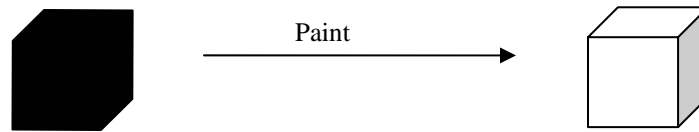
There is a third category of symmetry. This is the symmetry of the symmetries: The relationship between the exotic and prosaic symmetries of our world. I return again to my bathroom mirror for an example. I am left-handed. My reflected self is right-handed (by my reckoning). Is there a difference? My mind tells me that I am left-handed. But what if I am the reflection? Is this notion of handedness an illusion, or is it real? These are the questions that are explored in the story that follows.

Flatland

The “universe” of Miall and Judy is of the same flavor as the world described in Edwin Abbott’s wonderful book, *Flatland: A Romance of Many Dimensions*. For those who may not be familiar with it, *Flatland* is a rich fantasy of a “flat” world comprised of only two physical dimensions, originally published anonymously under the pen name “A. Square” in the 1880’s by a fellow named Edwin Abbott.

Imagine a world with no “height” and in which the occupants have no concept of the meaning of height since their world is devoid of dimensionality of this type. The creatures that live in Flatland are flat shapes – squares, pentagons, hexagons, circles, etc. When you and I look at one

another, we see only two dimensions (height and width) while we can infer a third dimension – depth. I, for example, could be a cardboard cut-out or a painting, and you would have a hard time telling until you had walked at least part of the way around me to confirm that I am indeed a solid being of three dimensions. You do not need to do this, however, because you have lived all your life in a world of three physical dimensions and you can easily infer the dimension that is hidden from you. *Sometimes!* Sometimes this inference is not so easy, and this is a source of great entertainment for us in the form of optical illusions. Suppose for example I took the object shown in figure X and painted lines and shadows on it so that it looked like the object shown in figure X. If I then cut it out from the page on which I have drawn it and held it up for you to see, you might mistake this two dimensional hexagon for a three dimensional cube.



By analogy, while we see two physical dimensions and infer a third in our three dimensional world, the indigenous peoples of Flatland can see only one of the physical dimensions and must infer the second of their two dimensional world.

The world of Flatland is, of course, a fantasy. However, it is a particularly valuable fantasy since it allows us three-dimensional creatures to construct models of our universe that we can comprehend. What does it mean to say spacetime is curved? What does the word “curvature” mean when it is applied to the universe? I cannot build a model of the universe that contains three space dimensions and the dimension of time. However, by removing an irrelevant spatial dimension, I can construct a three-dimensional model comprised of the remaining two physical dimensions and one dimension of time. Or, by removing two irrelevant dimensions, I can draw a simple two dimensional model comprised of a single physical dimension on one axis and the time dimension on the other.

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Once upon a time, in a world very unlike our own, there lived a happily married couple, Miall and Judy Cedilote, who were fortunate to live in a time of great intellectual discovery and achievement. The world, which they called "*the Universe*", was long and narrow, and quite flat as well, although they did not call it flat for they knew of no such word. It was a simple Universe, comprised not of stars and planets and galaxies and quasars as our Universe is comprised, but simply of small towns and hamlets that existed, without the need of stars and planets, in the vast emptiness that was their cosmos.

The people of Miall and Judy's township of Silica, and indeed all of the peoples of the Universe, were left-handed, due primarily to the fact that they each had a large tumorous growth on the right side of their bodies just behind their right arms. The tumors interfered with the function of their right arms to such an extent that in all cases they favored their left arms. Technically speaking, it isn't entirely accurate to say they were *all* left-handed, for half of the population suffered from a genetic defect that caused their tumors to be incorrectly located at birth on the left sides of their bodies rather than the right. However, the left-tumored, as they were called, were considered to be completely devoid of all but the most primitive mental abilities. They were therefore neither educated nor counted in the annual census from which the population statistics were drawn. Therefore, the entire population of the Universe – all the people of all the townships *who participated in the annual census* – THEY were ALL left-handed and right-tumored!

The burden of providing all intellectual needs of society was thus left to the proper right-tumored citizenry such as Miall and Judy, who, as has already been mentioned, lived during a time of great intellectual achievement. Prior to their era, relatively little was known of their Universe. The Universe was known to be narrow of course, as it had always been known to be narrow; countless brave adventurers had proved this fact as they ventured too near the edges and disappeared. What exactly happened to those who strayed too close to the edges remained a mystery, although it was widely believed in the scientific community that the edges of the Universe terminated in tremendous gravitational forces so powerful that not even light could escape them! Thus, the edges of the Cosmos were often referred to as the Great Black Lines.

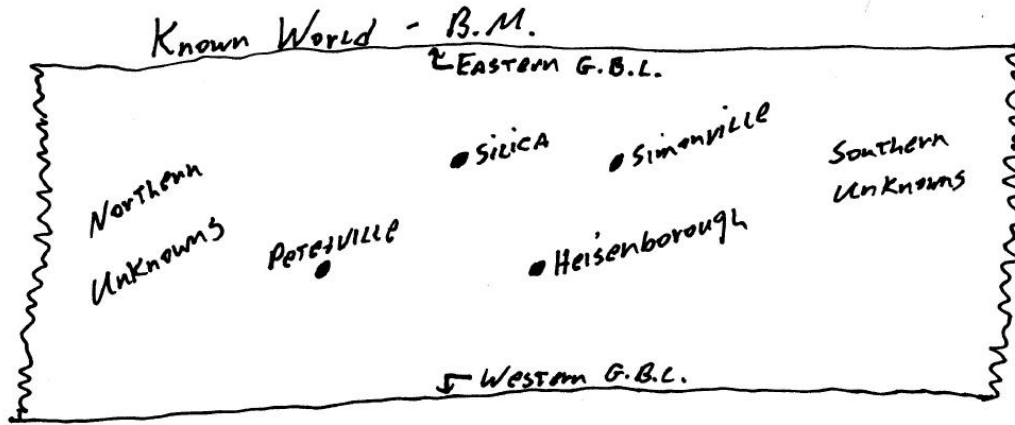


Figure xxx. Old World Map of the Known Universe.

The length of the Universe was another matter. Prior to the era of Miall and Judy, or in the B.C. (Before Cedilote) era as the old era has come to be called, the length of the Universe was a complete mystery. Many adventures had set out to find the distant edges of the Universe, but none had ever returned. When Miall and Judy were in the last years of their graduate studies, however, the development of new telescopes that were capable of piercing farther than ever before into the distant unknowns led rapidly to a series of startling and wholly unexpected discoveries. One of the earliest and most extraordinary of these, certainly, was the discovery that the Universe was apparently lengthening!

The discovery was first made in the small hamlet of Edgeville. Astronomers of that small hamlet had observed what they referred to as a 'Doppler Shift' or an apparent shift in the wavelength of light from blue to red the further out they looked in every direction. Everything in the Universe, it seemed, was moving away from Edgeville, to the North and to the South, with the more distant objects moving away the fastest.¹ Observing that all of the Universe was moving away from *them*, they proudly declared themselves to be the center of the known Universe.

¹ It should be pointed out that 'light' in goofy world travels considerably slower than light in our World (approximately 1000 times slower).

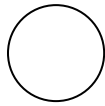
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The joyous citizens of Edgeville were just finalizing their plans to rename their township “Centerville” when the rug was pulled out from under them: Silica was announced to be the center of the Universe. The announcement came from a research group just down the hall from Judy’s in the labs of Silica University.

A week later, however, the town of Simonville was found to be the center of the Universe.

It soon became obvious that no town was the center of the Universe. “It isn’t that matter is moving away from this town or that” concluded one prominent scientist. “Rather, the very fabric of the Universe appears to be stretching length-wise, dragging the towns along with it.”

The scientific literature was soon saturated with publications supporting the new “Inflationary Model” of the Universe. Two models of the Universe soon emerged: The Growing Ribbon Model and the Expanding Circle Model.



Expanding Circle Universe.

The Circle Model is one-dimensional in which all space is confined to the parameter of the circle and is expanding outward from the origin. A peculiar characteristic of this Universe is that the center of the Universe is not actually located within the Universe but is instead located “elsewhere” in two-dimensional space.

Figure xxx. The Expanding Circle Model of the Universe.

Miall of Silica strongly favored the Expanding Circle Model of the Inflationary Universe, in part because it implied a form of symmetry to the Universe that he found strangely beautiful. But there was another, more practical reason why he favored this model: If correct, he felt that that this model could be more easily proved than the alternative.

It was Miall who first suggested the idea of an origin. “If the fabric of the Universe is stretching,” he declared, “then logically it must have been much smaller in the past: Surely if one were to go back in time far enough, the Universe must have had an origin!” This was all Miall needed to make one of the most

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important scientific discoveries of all time. Using the average of all the independently measured rates of universal expansion,, he extrapolated *backward* in time to the moment at which all reference points converged at a single location – the moment in time when the Universe had an area of zero. On performing the calculation, Miall triumphantly declared in the most celebrated scientific paper of all time, “The Universe is forty-two miles long and 3700 years old!”²

Secretly, Miall meant forty-two miles in circumference, since he was in favor of the Expanding Circle Inflationary Model. Still, evidence was lacking to support either of the two popular models over the other, and he felt it best to postpone the use of the word “circumference” until sufficient evidence existed to justify it.

Miall had a good idea of how to set about getting that evidence!

“Judy,” he asked one evening, “how would you like to go on a little trip?”

“How little?” Judy responded leerily – she had a good idea what was coming.

“Oh, about forty-two miles or so.”

“You’ve got to be kidding! You do know that nobody who has ever set out to find the lengthwise ends of the world has ever returned, don’t you?”

“Ah, but you won’t be looking for the end! You’ll be walking in a straight path, right around the world. You’ll be the first person to circumnavigate the Universe! Think of the fame!”

“Posthumous fame?”

“Probably not.”

“And what of the savages? Miall, I’m your wife!”

² It is the publication date of this paper which marks the end of the B.C. (before Cedilote) era and the beginning of the A.C. (after Cedilote) era. The reason for this is that the Universe is so small and young, expanding at just over one mile per hundred years, that the declaration of "forty-two miles long and 3700 years old" was no longer accurate after only a few months. Thanks to the A.M. system, however, the size of the Universe, which expands by one mile per eighty-eight years, may easily be calculated. In the year 88 A.M., for example, the Universe will be 43 miles in circumference.

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Miall knew of at least three instances in recent years that a left-tumored mutant had wandered into the known world from the great beyond. It was widely known that mutants existed beyond the civilized world.

“They’re harmless! You know that! The left-tumored are stupid, not violent!”

That was true, as Judy knew. The left-tumored were often feared and associated with violent outbursts, but the reality was such that the left-tumored were no more and no less violent than the right-tumored intellectuals.

Judy sighed, knowing that further protests on her part would be futile. “When shall I leave,” she asked?

“Tomorrow morning. Don’t worry – I have some gear for you to wear. You’ll be fully protected in the unlikely event that you should meet a hostile mutant.”

The next morning, they departed their home early and set off for a launching point which was just outside of the town limits of Silica. Miall had chosen the site because, in addition to offering a clear Northerly/Southerly path through known space, the site and the path that Judy was to follow were approximately equal-distant from the Great Black Lines that ran the length of the known Universe to the East and West.

Miall presented Judy with the ‘gear’ he had mentioned the night before. It looked like a simple disk with arm and leg holes in it, and Judy was somewhat skeptical as to what function it could possibly serve. Nevertheless, she suited up and Miall, after a brief salute, sent her on her way into the Great Northerly Unknown.

Days passed, and after three full days there was still no sign of Judy. Early in the morning of the fourth day, however, Miall detected the familiar shape of Judy’s protective suit far off in the Southern Distance! Miall was elated – only by fully circumnavigating the Universe could she have returned from the South and

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not the North. She closed the remaining distance and Miall prepared his congratulatory remarks as she began to remove the suit. But no congratulations were to come from Miall on that day.

“Left-tumored Freak!” Miall wailed. “What have you done to my beloved wife?”

“Me? What’s become of you,” Judy retorted. “In fact, what’s become of ... everything?”

“Police! Police! A dingo ate my wife! Help! Police!”

“Miall! ... If you are Miall? It’s me, Judy ... Don’t you recognize me?”

The entity in Judy’s spacesuit seemed genuinely confused. If it was, as it claimed to be, Judy, she didn’t seem to notice that her tumor had somehow shifted from her right to her left side.

Miall was happy to see the left-tumored Judy hauled off by the police. But upon interrogation, she revealed an astonishing amount of information about Judy. Besides, she did look exactly like Judy, aside from the apparent inversion of configuration. Ultimately, Miall had no choice but to concede that his wife had been transformed into the monstrosity now in prison. He dropped the charges and took her home, trying his best to hide his revulsion of her present condition.

While Miall and his wife had been preparing for their first expedition around the Universe, a colleague of Miall at the University was busily designing a new form of telescope that was to be able to pierce far deeper into the Northerly and Southerly expanses than previously thought possible. At the same time, another colleague was in collaboration to craft a new form of radio communicator. Miall managed to acquire prototypes of both devices and planned to use them both in a second expedition around the Universe.

As Miall planned the coming expedition, Judy continued to complain that nothing had happened to her. It was widely rumored that she had been attacked on the opposite side of the Universe by a gang of lunatic left-tumors who surgically moved her tumor as part of a terrorist plot to overthrow civilization. Judy was growing tired of the endless conspiracy theories.

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“I’m telling you for the last time,” she said to Miall one day in exasperation, “absolutely nothing happened to me on my trip around the Universe! It is YOU who has been changed ... you and everything else. You’re all backwards now!”

“Shut up, Freak! Left-tumored demon from Hell! I’m sending you back to the great unknown, and this time I’m going to be watching you and talking to you the whole way around! We’ll just see what happens!”

Bright and early the next morning, Miall and Judy returned to the launching point. Miall equipped Judy with one of the prototype radio communicators. This time, however, there was no spacesuit.

“The demons out there somehow inverted your configuration and at the same time corrupted your mind so you would not know any better. I don’t know how they did it, but I need to be able to see your configuration the entire time so that I might detect the point at which the inversion occurs.

“You will again be traveling into the Northerly unknowns. Try to follow the same path as before. Rest at the same points as you did before. This time, we will be in radio contact the entire time, and I will maintain visual contact for as long as possible using the prototype telescope.”

Judy departed as Miall watched, and for two full days he maintained constant visual and radio contact. Miall grew increasingly excited as Judy neared what must have been the half-way point of the journey.

“You’re still a left-tumored freak,” he noted into the radio every few hours. “Keep going.”

Then, the third day came.

“You’re still a freak. I detect no changes in your condition. Keep going.”

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But the third day drew to an end without incident and soon the morning of the fourth day was approaching.

The trek was nearing an end.

“You’re still a freak. Whatever happened to you the first time around doesn’t seem to be happening this time.”

Miall continued to gaze into the Northerly wastelands with the prototype telescope which was performing much better than had been expected. The journey was almost at an end and still he could see Judy quite clearly.

Judy’s voice crackled in the radio, “I think I can see you,” she said. “Far off in the distance. I can’t see you clearly yet. I should be approaching your position from the South.”

Miall watched as she closed the final distance. Soon, as he watched from Judy’s rear, he could see that Judy was approaching another form. “Wait!” Miall called out into the radio excitedly, “I can see someone else! You’re approaching someone! Can you see him?”

Judy sighed. “That’s you, you idiot! I’m home ... don’t you recognize yourself!”

Startled, Miall tweaked the focus of the telescope slightly. “You’re still a freak,” he said as he adjusted the focus. He focused on the other form in his viewfinder. “It does look sort of like me ... wait ... wait ... Okay, I can see now that it is me, but ... **Crap!** *Now I’m a left-tumored freak as well!*”

Now standing immediately behind Miall, Judy turned off her radio communicator. “What the hell are you talking about Miall? You’re perfectly normal.”

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The startled Miall removed his eye from the telescope and turned around to greet Judy. She was back to normal – her tumor was properly located on the right side of her body. As far as he could tell, he was normal too! In disbelief, he turned back to the North and looked again into the telescope. Through the telescope, they both appeared to be left-tumored.

“This makes no sense whatsoever!” exclaimed Miall. “How can this be?”

“Maybe it’s a problem with the telescope?” Judy suggested. “Turn it around to the South and look at me directly.”

Miall followed her instructions and looked directly at Judy through the telescope. She appeared to be perfectly normal and right-tumored through the telescope, just as she did with the naked eye. But whenever he turned the telescope to the North and looked at her, thus allowing his line of vision to circumnavigate the Universe, she appeared to be left-tumored. He aimed the telescope toward the Southerly wastelands and carefully panned back and forth until he could see her. Looking around the Universe to the South, both she and he appeared left-tumored.

“This just cannot be!” Miall wailed. “From a great distance, you are left-tumored, but up close you are right-tumored! What’s going on here?”

“Looking-glass,” said Judy, somewhat distantly.

“What?”

“Looking-glass,” she repeated. “Alice ... the hole ... symmetry ...”

“Woman! Get off the crack already! What the hell are you babbling about?”

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“Down the rabbit-hole and through the looking-glass. Alice went through the looking-glass.” Judy turned to Miall. “The Universe, husband, is not as it appears!” Judy concluded.

* * *

Miall was thoroughly confused and over the next several days he tried without success to come up with a model to explain the strange visual effect he referred to as “spooky sight at a distance.”

One evening he sat frustrated staring off into the distance when Judy approached him.

“Husband,” she said. “Perhaps before trying to figure out what it is that we don’t know, we should instead focus on the question of what is it that we do know?”

Judy showed Miall her notebook page on which she had listed several observations:

We know:

- (a) *That the Universe appears to be long and narrow.*
- (b) *That the Universe is closed and unbounded to the North and to the South, such that a traveler walking in a straight line in either direction will eventually return to the starting point.*
- (c) *That, because of (a) and (b), the Universe must be bent in an unseen direction – that it must have dimensionality that may be inferred but cannot be visualized.*
- (d) *That two identical twins, when separated by one circuit of the Universe, each appear to be inverted to the other. The traveler appears to change to the stationary observer, and the stationary observer appears to change to the traveler.*
- (e) *That each circuit of the Universe appears to result in this inversion so that two circuits result in a no overall change.*
- (f) *That physical separation is not necessary to detect an inversion – two observers who look at one another by a line of sight that circumnavigates the Universe will witness the inversion.*
- (g) *That the Universe has an appearance of expansion. Whether or not this is related to the current problem of inversion is unknown, but should be taken into account as a possibility.*

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Judy sat with Miall and waited patiently for him to absorb the observations she had presented to him.

Judy: *Husband, I have been thinking a lot of these things - of the physical texture of life and of this strange Universe in which we find ourselves. I've had a lot of time to think of these things during my lonely treks around the Cosmos. I think that perhaps I'm beginning to understand.*

As you know, for you have calculated it and we have together measured it in journey, the Universe is forty-two miles long, or in 'circumference'. Correct?

Miall: *I agree so far. Please continue.*

Judy: *We use the word 'circumference' abstractly to suggest the Universe is closed or looped in an unseen direction. We observe that the Universe is long and narrow, but that walking in a straight path through the length of the Universe returns the traveler to the starting point. We explain this phenomenon by saying that the Universe is closed and we infer a circumference. But we cannot actually see this curvature. Suppose though, that the nature of this 'closure' is more complex than we have assumed thus far. Suppose it is closed twice!*

Husband, I believe that the nature of the Universe is such that it is comprised of two phases or regions that overlap. To make a journey around the forty-two mile perimeter of the Universe is to complete only one of two superimposed circuits. A full journey requires two such treks! Observe the model I have drawn in my notebook. I call it the 'Pretzel' Universe:

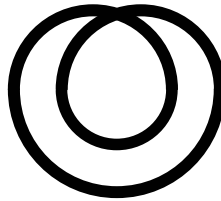


Figure xxx. Judy's Pretzel Model of the Universe

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Miall: *Your model of the Universe has a node – a place where it intersects upon itself. Is that where the inversion takes place?*

Judy: *Yes and no. Like the simple model of the Universe, this model denotes an implied curvature of a sort that we cannot actually perceive – we may only infer. I believe that in reality, there is no node – that the Universe never intersects upon itself. Yet at the same time, it is all node – the two phases of the Universe that I have drawn here as separate loops should actually exist in a superimposed state, occupying the same space.*

Miall: *I won't pretend to understand what you mean, but for now let's continue anyway. Explain to me how this model of the Universe leads to inversion in the geometry of the traveler, such that an individual who circumnavigates the Universe may depart left-tumored and return right-tumored. This requires a physical modification!*

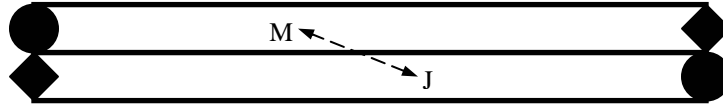
Judy: *Does it? This may be hard for you to accept Miall, for our society teaches us that our culture is divided into two classes of citizens: The educated right-tumored gentlemen and the uneducated left-tumored mutant freaks. However, I believe my model of the Universe suggests the possibility that these two species may actually be identical – that chirality itself is actually an illusion.*

Miall: *What crap! Judy, you should know better! You're beginning to sound like a child!*

Judy: *Miall, when I returned from my first circuit around the Cosmos, you claimed that I had been inverted – changed from a right-tumored gentleman into a left-tumored freak of nature. And yet, I felt fine. I felt in no way different. At the same time, on my return from that first trip, to me you had appeared to be a left-tumored monster. We each appeared to have changed in the eyes of the other. I believe neither of us changed, but we did change relative to one another!*

Judy's Theory of Chiral Relativity
(Also known as Judy's Model of Relative Tumorosity)

An explanation of the phenomenon known as "*Spooky sight at a distance*"



The Universe consists of two superimposed phases which may be given arbitrary assignments such as "up & down", "red & green", "positive & negative". The phases have no real meaning except with regard to how two observers perceive one another. Miall and Judy both *feel* right-tumored, but in actual fact the designation is meaningless. While in the same phase, they appear identical relative to one another. If one travels around the Universe, however, he/she will return in the other phase relative to the stationary observer and they will each see the other as having undergone an inversion of configuration.

While standing next to Judy but in the opposite phase as her, Miall's line of sight to Judy must cross the imaginary phase boundary and she therefore appears inverted. He may also look into either the northerly or southerly direction and see Judy from a distance of 42 miles, in which case his line of sight never crosses a phase boundary and she looks normal.

Theoretically, Miall may see infinite Judys. The pair of Judys that he would see at distance of 84 miles would appear inverted!

Judy: *Imagine that the Universe is comprised of two superimposed lobes or phases. Two individuals who are standing next to one another may be in the same phase, or they may each be in a different phase. Imagine also that looking across from one phase into the other is like looking through a lens that inverts the perceived image. When we are in the same phase, we appear to be identical to one another, while when we are in different phases we appear to be opposites – one left-tumored and one right-tumored. According to my model of the Universe, to make one circuit of the Cosmos is to travel from one phase to the other. Two such journeys are necessary to make a truly complete trip around the Universe.*

Miall: *Still, I have difficulty understanding this. In my mind, my tumor is either on my left or my right. The two possibilities are physically distinguished from one another.*

Judy: *Perhaps we believe this because we live in a culture that teaches this to us. Let me ask though: In the absence of one, would the other exist? By analogy, consider two charged particles: We can either say they carry the same or opposite charges. But what does it mean to say that this one is*

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positive or that one is positive? If I place a charged particle in isolation from all other particles, what is its charge? Does it have a charge?

Miall: *But why is it that I cannot witness the phase change? It seems that if I'm watching you as you travel the perimeter of the Cosmos, I should be able to detect the moment that you cross over into the other phase and your tumor changes sides.*

Judy: *Such a moment never actually occurs. There is no point at which I cross from the right-tumored to the left-tumored Universe, or from the positive to the negative Universe. Only relative to one another does that phase change occur.*

Miall: *But so what? Again, why can I not witness the change! So what if the change is relative to one another? Why does this matter?*

Judy: *Are you able to observe me continuously as I make the journey?*

Miall: *Yes! That is precisely what I did on your last trip, remember?*

Judy: *Did you? Are you sure? Think about it. You watched me leave you in the left-tumored state. I walked into the Northerly wastelands and, with the aid of the telescope, you were able to continue to watch me as I journeyed around the Cosmos. But when I returned, what is it that you did? What is it that you had to do? You had to look away from the North and see me in the South. You changed your perspective, and when you did so, I appeared different!*

If the change were not relative, than it could be observed. But because the change is relative to each observer, it can never be observed. Suppose I were to walk continuously around the Universe again and again and again, and that throughout the entire path of the journey witnesses

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are placed. The phase change would still not be observed because it would occur relative to each observer, and none of the observers would be capable of watching me continuously!

Miall: *Good grief! You're right! I can watch as you arrive at my location from the South and head away into the North. But eventually, I must take my eyes break my line of sight of you in the North and look to the South to see your return. Or, I can watch continuously into the North as you walk away, but eventually, even as I keep my eyes to the North, you will walk past me again and I will have to shift my sight from you in the distant North to see you in the near North!*

This is incredible! Judy my darling, you are a true genius!

The ecstatic Miall lavished praise upon his beloved wife. But she was quiet and appeared lost in thought.

“Judy darling,” Miall began, “what’s wrong? What is on your mind?”

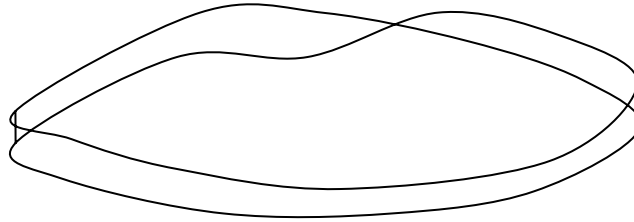
Judy spoke:

I was thinking only yesterday about these things. About our observations. It seems that nature has a strange ... texture about it. A flavor that, in fleeting moments we recognize but then the moment is gone and we are left thinking “what was that? It tasted so familiar.”

Last night I had a dream. In the dream, the Universe was revealed to me in all its three-dimensional glory. There was a voice in the dream that seemed to come from everywhere at once. A gentle voice. It was both a male and female voice, and it spoke only one word. The word was “Mobius.”

This morning, I tried to remember the vision I had but it was gone. We can witness nature Miall, but only it seems in our peripheral vision. We see it out of the corners of our eyes, but always when we turn to look it is gone.

The Story of Miall and Judy



Miall and Judy lived on a Möbius strip. Although they could infer this geometry, they had no way to visual such geometry. Their world was comprised only of the two-dimensional surface of the strip, and although they could imagine or infer that the texture of their “space” was distorted into another dimension, they could not visualize such a distortion.

The people of Miall and Judy’s world believe that they and other objects of their universe possess the property of chirality – that “left-handed” and “right-handed” are separate, distinguishable forms. We three-dimensional may look down on their world and see that this was not so: To us, they are merely flat, two-dimensional cartoon-like creatures that we can simply flip-over. But this act of flipping would require that we physically remove them from the two-dimensional plane of their world ... something they simply cannot fathom. For them, right-handed is distinguished from left-handed unless their universe just happens to have a Möbius-like deformation.

What does this mean to us? I don’t think it’s unreasonable to extrapolate upwards by one dimension and imagine a similar situation for our universe. I am left-handed while my mirror reflection is right-handed. I feel left-handed. I look down at my two arms and I see that I am left-handed. But might there not exist an unseen plane of symmetry which would effectively erase any perceived notion of a distinction between right and left-handed?