CounterClockWise

Chapter 10 -- Dimensions

It is the first day of hurricane season, but the only storm brewing today isn't tropical in nature at all. It is inside Kevin's head. He has enjoyed watching Diana learn to manipulate him. That is unless she is manipulating him to do something he doesn't really want to do. And that is definitely the case today.

In his estimation, she has brought him across a state line for immoral purposes. They are in the lobby of the Beau Rivage – a casino in Biloxi, Mississippi – and they are entering the gaming area. Kevin is frowning as he says,
"I don't know how I let you talk me into this. This is crazy."

But Diana turns the corners of her mouth down in a little girl pout and opens her eyes wide and says in a begging tone, "Come on now you said you would show me."

Knowing in his mind that the battle is already lost, he offers one more objection, "Yes but I'd like to do it without getting arrested."

But she also knows he can't resist her when she begs. She points and says, "There's a roulette table…let's go."

Grumbling while he follows her toward the table, he says as much to himself as to her, "OK, but I don't like it."

Kevin proceeds to play roulette…betting on odd/even or red/black. He always puts his bet down after the dealer starts the ball spinning on the wheel and he wins 10 times in a row. Once Kevin chooses not to bet and the ball lands on green.

After watching this in growing amazement, Diana asks,
"Why don't you play the numbers?"

To which Kevin answers,
"The payoffs are too large. If I won 10 times in a row playing a number, they would throw us out or worse. This way, they may not like it, but they are unlikely to make a scene."

Nodding her understanding, she says,
"Kevin, I would like to see you place your bets before the dealer places the ball on the wheel."

"OK," he says, "but why?"

Instead of answering his question, Diana does her begging eyes again and says, “Pleeeaaaassseee?”

So Kevin continues to play …betting on odd/even or red/black. Now he puts his bet down before the dealer starts the ball spinning on the wheel and he wins and loses with appropriate statistical regularity.

And Diana is nodding as she says, “I thought so…let’s try our luck at Blackjack.”

And Kevin asks, “You thought what?”

But she just says, “In a little while, dear, I don’t want to influence the experiment.”

And Kevin looks up to heaven as he says, “Now I’m an experiment.”

She smiles as she gets up on tiptoes and kisses his cheek and says, “And a wonderful experiment if I do say so myself, my hero.”

Totally outflanked, Kevin proceeds to play blackjack…making some unusual bets and winning when he does so. He hits some unusual hands and stands when it would seem he should hit.

After a bit of this, the dealer looks at him with narrowed eyes and says, “You play like you are counting cards…are you?”

And Kevin answers him honestly, “I don’t know how…so I don’t think so.”

But Diana has seen enough and takes pity on him as she says, “I think it’s time to get back to our other research, Kevin, take me home please.”

Smiling for the first time since entering this place, Kevin says,
“Gladly!”

An hour later, they are back at the library, none the worse for wear. They won $250 and didn’t get arrested. All-in-all …a successful trip.

Diana is smiling widely as she says,
“THAT was fascinating”

But Kevin is still grousing as he says, “I’m glad you enjoyed it.”

And Diana explains, “Today, you are going to brief us about dimensions, and I wondered if your ‘talent’ for knowing things could be related. But after watching you at the casino, I have formed a theory about how you do it.”

Doubtful but willing to listen, he says a bit sarcastically, "Expound away, I am waiting with bated breath."

Diana ignores his tone entirely and launches into her theory, "The roulette experience is direct evidence that you are getting your information by observing physical reality. Then somehow, you extrapolate that into the correct answer.

"The blackjack is a little more vague, but the fact that the dealer thought you were card-counting suggests that you can do subconsciously without any thought things that others have to work and strive to accomplish.

"Amazing!"

Kevin just shakes his head and says, "Just call me Kresgin… let's go to class, huh?"

They walk to class together with Diana still rambling on about whether or not a roulette wheel is a chaotic system. If it is, the final resting place of the ball couldn't be forecast. She concludes that it cannot be chaotic because Kevin can indeed forecast its destination.

Kevin listens patiently without saying much and is happy to arrive at Chaucer's.

After greeting Chaucer, they get started.

Jeeves begins:
"… Generally, a dimension is a characteristic of an object that is defined by a measurement.

"For example consider a geometric POINT…
Since a point is infinitesimally small, it has no extent in any direction and has no dimensions. Mathematically this is a fine concept, but in the physical world, it turns out there is a size (really really small to be sure) below which further measurements are effectively useless because space itself breaks down on this scale.

"We have mentioned before that this size is known as the Planck length. Recall that a Planck length is about 10^{-33} centimeters. So a point is any object with its greatest length being smaller than 10^{-33} centimeters. You may remember that the size of a proton is 10^{-13} centimeters, so 10^{-33} centimeters is a really really small length.

"Next consider a LINE

… you can create a line in your imagination by thinking of taking a point and moving it.

“Next consider a SURFACE
…we can generate a two-dimensional surface by taking a line and moving it in a direction other than the direction of its length.

“And a SOLID figure is the stuff of everyday life. It has length and width and height … we can generate a three-dimensional object like a cube by taking a square and moving it in a direction other than the directions of its length and width.

“Now consider SPACE-TIME
Here we get to a dimensionality that is somewhat familiar but a little fuzzy in its exact definition in the minds of most people. As we shall see when we get to the session on relativity, space and time are not independent concepts. To define an event in the world in which we live however, it is never sufficient to describe its location in space. We must also specify what year, what century, what time the event occurred. Thus since it requires 4 measurements to locate objects and events in our everyday life, it follows that we live our normal lives in a four-dimensional manner. One way of imagining this four-dimensionality is to think of a three-dimensional object such as yourself existing throughout your life with one moment attached to the next in a kind of tube. If you can imagine it this way, your existence in space-time is sort of like a twisty worm with any cross-sectional view representing you in a single moment in time.

“This view suggests that every moment in time is always there. You can visit it if you can find a way there…but if you can find a way there – then you were always there since you cannot CHANGE a moment in time.

“Finally consider the UNIVERSE
It has the dimensions we just talked about plus 7 more. And it is these that extra dimensions that may obliquely suggest a method for sending things backwards in time.

“We finally have the basics of a time-machine model and here are the salient facts:

“There is plenty of evidence that real, physical systems can exist in a superposition of states. For example, an electron can go through two slits simultaneously and if we set detectors downstream from the slits so that we can see where the electron is at that point, then that action forces the electron into just one of the 2 states. And the now-resolved state is apparently retroactive to the time the electron entered the superposition in the first place. That is either we are affecting (changing) the past or we need to re-define the present to include times that date back to any physical system entering a state of

superposition. For simplicity, it is probably easier to let the definition of "present" include unresolved superposition of physical systems. That is to say that the state of the universe in the past is vague and undetermined.

"Combining the Standard Model of physics with gravity thru the utility of super-symmetry and super-strings was the beginning…and brane-theory gave us the answer.

"The fundamental existence of the universe is successfully and completely described in an 11-dimensional construct. A few years ago, it was finally confirmed that some of the extra seven dimensions are quite large…on the size of a micron.

"This means that gravity is a much stronger force than had been thought previously. In fact it means we can produce microscopic black holes in the laboratory.

"And if this micro-blackhole is spinning in just the right way when it is formed, it can collapse into a Kerr ring with the black hole in the center of the ring.

"Because of its spin, its gravity will drag space-time with it and will in fact tilt the time axis on its side…providing a passageway into the past through the center of the ring.

"However, in practice it will probably prove that this passageway is too small to accommodate any object of reasonable size.

"So the methodology involves sending information through instead. A breakthrough in the development of InformationTheory from a mathematician on Chaucers's team does allow information to be transmitted thru this portal using the expediency of quantum teleportation.

"The information we can transmit appears sufficient to allow us to destroy an object at one point in space-time and exactly reconstruct it in another (at least in theory). Taking advantage of the encoding already done for us in an organism's DNA reduces the information content by 10^{24}. So that sending living things through time is infinitely more practical than sending inorganic items.

"The final question to be addressed is…Can a human mind be described in sufficient detail at the quantum level so that if it is replicated (to the limits of quantum precision as defined by the Heisenberg Uncertainty Principle), it will reproduce the essence of the original -- memory, morals, ethics, emotions – soul

"While we await the answer to this question, I suggest we build ourselves a time-machine!"

Diana, eyes wide, is shaking her head in amazement as she says,
“Wow! I only followed a fraction of that, but it sounds like we have enough to get started?”

But Chaucer matter-of-factly asks,
“I assume you have worked out the necessary equations?”

“Most of them yes.” Kevin answers. “The rest will be solved as we go.”

So they proceed to build a time-machine. Over the next few weeks the large central lab is a beehive of activity. Workers and staff are everywhere. Some are writing equations on blackboards, some are discussing or arguing, some are carrying equipment, some are working on computer boards. And finally it is done.

In appearance the machine looks like something built by a mad scientist using a giant erector set from the future. There are inverted pyramids and massive cylinders and hollow hemispheres and twisted tori joined in indescribable disorder. Some parts are for scanning the subject in the center of the array, others are for storing that data temporarily, and still other parts are for creating the modulated gravity waves and creating the Kerr Ring. And finally there is the machinery to do the quantum-teleportation of the stored data through the Kerr Ring to the target time.

There is a control board off to one side of the lab that is as simple as the machine is complicated. A few dials to fine tune the settings and a lever to initiate the process. Once begun, the process cannot be stopped.

It is a warm night in late June. Kevin is in his room lying on his back on the bed. Diana is sitting cross-legged at his side, and she is upset as she says,
“You can not do this!”

Unhappy that she doesn’t understand, he answers,
“But can’t you see that I have to?”

“No,” she says, “I know the machine is finished, but we have been unable to send anything through it to anywhere or anywhen. Inorganic matter is simply unaffected by the matrix we have established. The scanning part of the machine is tuned to read the genome in your cells and then we rely on our knowledge of genetics to recreate the matrix of the organism somewhere or somewhen else.

“Since inorganic material doesn’t come with a built in blueprint, the machine cannot establish a sufficient matrix to rebuild it.

“I know that,” he agrees “that’s why I have to be the guinea pig. It takes a living creature to work!”

So she expresses her real fear, “But the brain scan of the placement of your neurons isn’t exact. Quantum Mechanics says it can never be exact and we still don’t know if those tiny differences will be important. We don’t know if you will still be you when you come out the other end of the tube!”

But Kevin is pragmatic, “We have done what we can. The statistical likelihood is over 90% that I will be OK.”

Unconvinced, she asks, “Then why haven’t we been successful in sending test animals through?”

“I am not sure.” He answers. “None of those subjects were harmed. They seem to be going somewhere, but within seconds they are back. You know that all of our test animals are in perfect health…not a single animal suffered an ill effect.

The equations suggest that there is a rebound effect. That is to say the subject goes through but is almost immediately caught up in the returning field and returned to the starting point.”

Curious, she asks, “And how do you plan to avoid that effect yourself?”

But he has an answer, “My calculations show that the longer the time jump, the longer is the slight pause before the rebound of the field. If I jump at least 100 years, and make haste to leave the immediate vicinity of the field, I should be able to stay in the past.”

She again expresses her real concern, “Kevin, you know how I feel about you. I can’t bear the thought of losing you.”

Needing to say it out loud, he looks deeply onto her eyes and says to her, “You are the happy ending in my personal fairy tale. If this works, you can follow me at your leisure and we will live happily ever after…or before.”

He offers her a weak smile and she tries to smile back at him. Understanding that he is going to do this, she offers her support. She says bravely,
“If you make it back to our time, the keys should be in the ignitions of both cars in the garage. Help yourself to either one.”

“Thanks,” he says simply.

Afraid of the answer but wanting to know, she asks “When are you going to go?”

Still looking into her now teary eyes he says, “First thing tomorrow morning. Now come over here and snuggle a bit. I need to hold you close for a while.”

Diana snuggles in next to him and buries her face in his chest. There is nothing more to be said. Now is simply a time to appreciate how deeply they feel for each other.

Early the next morning they make their way to the lab where Kevin meets additional opposition. Chaucer is waiting for him and says,
“You know I don’t agree with this move at this time. I think we should wait until we understand everything about the machine before you risk using it… But the boss said to leave it up to you and whatever he says …we do.”

Kevin expresses a note of regret, “I’m sorry I never got to meet him.”

And Chaucer explains as he has many times in the past year, “He says he didn’t want to influence the way you attacked the problem, so he has remained out of the way for the duration.”

Getting impatient now, Kevin says, “Let’s do it.”

Arguing no more, Chaucer says, “OK … stand in the center of the matrix… the scanning process will begin momentarily. I know you know this but I have to say it. The scanning process must destroy your cells in order to read every detail of them.”

“I know,” Kevin replies.

He throws Diana a kiss and walks to the designated spot. Once he is there, Chaucer nods to the technician at the controls.

As the technician interacts with the controls, an immense pulsing light envelops Kevin. Through the light you can see a tube opening up like the one that Kevin traveled in before. Kevin’s clothes become transparent and disappear, and he begins to spin counterclockwise. This is quickly followed by the melting from the outside in that he experienced before.

Then he is gone! The light slowly fades and the room returns to normal.

Even though that was what was supposed to happen, Diana’s face has lost all color. She keeps looking at the spot where Kevin stood just moments before – half expecting him to re-materialize. Until now no subject has disappeared entirely… or rather the living test subjects rematerialized almost immediately in the same spot. But he does not re-appear.

She turns to Chaucer and asks in a thin voice, “Do you think he is ok?”

And a voice from behind her answers her question – a voice she is very familiar with. It says, "I am sure he is, my dear."

Diana whirls around -- a smile forming and then dying on her lips as she says, "Kevin?" And realizing it is not Kevin but an older man she continues, "Oh I'm sorry, sir. You sound like Kevin and look enough like him to be his older brother."

And the man replies, "Well actually I am more closely related to him than that. Why don't we go to the lounge and talk. Chaucer, would you care to join us?"

The old man guides Diana and Chaucer through the door to the lounge and gestures for them to take seats at a table.

Once seated, Diana can contain herself no longer and she asks nervously, "Sir, what did you mean you are more closely related to Kevin than his older brother?"

And the man answers lovingly, "Because, sweetheart, I AM Kevin." He pauses, waiting for Diana to grasp what he has said.

But she cannot and she asks, "But …how…can …that be?"

And the man explains, "I want to tell you that your Kevin made it safely back to the past. And I know that to be true because I made it safely back to the past a very long personal time ago.

"And much as your earlier self cautioned you against telling Kevin too much too soon, I must refrain from telling YOU more than you need to know.

"We still don't comprehend fully the impact of all of this on causality, and until we do, caution is the watchword of the day.

"Chaucer can assist you with what you must do now, so I will take my leave. Again, I only spoke to you because of your obvious anxiety on his behalf. He loves you, you know."

He rises to leave, and Diana jumps up with him and throws her arms around his neck as she bursts into tears. He endures it for a moment until it is clear she is regaining her composure. Then he gently pries her loose, hands her a tissue from his pocket and heads towards the door as he says,

"Good bye, my dear."

Chaucer gently pats the table and says to her, "Sit back down, Diana and let's talk."

Diana looks at him accusingly and says to him, “You knew all of this the whole time and withheld it from me...us?”

But Chaucer denies it. “No, I certainly had my suspicions, but the old man didn’t confide in me either. He just told me that when the project was over he would tell me everything, but until then it would be better if I didn’t have that knowledge.

“Last night was the first time that he was open and frank about all of the proceedings and he only confirmed that which we have already experienced. He certainly knows some things about us that we are yet to experience, but he will not speak of them.

“He did say that you and I can travel back into the past at any time we are ready, and that we need to arrive at least 3 months before you and Kevin traveled here to begin with.

“Further, we are to purchase an establishment just east of Fairhope, refurbish it and rename it the Outside Inn.

“Then I am to stay out of sight until after you and Kevin have traveled to 2121, after which time, my cover is that of owner and proprietor of the Outside Inn.”

A glimmer of light is dawning on her, and Diana says, “OK, I am starting to see some of it. When do you want to go?”

And Chaucer surprises her by saying, “After my conversation with the boss last night, I finished everything I needed to do. So I am ready now…how about you?”

Diana smiles and quotes the words she heard Kevin say, “Let’s do it.”

But then she is thoughtful and adds,
“But tell the technician that we must arrive between 8:00 and 10:00 PM on a Friday night. I was always out of the house at that time.”

They exit the room together and re-enter the lab. Chaucer goes and talks to the technician who resets the controls. Then they jointly enter the central matrix.

Diana clicks the heels of her shoes together and chants, “There’s no place like home…There’s no place like home…there’s no place like home…”

As he did in sending Kevin on his way, the technician interacts with the controls, and an immense pulsing light envelops them. Through the light you can barely make out a tube opening up like the one that Diana traveled in before. Then their

clothes become transparent and disappear, followed by the melting from the outside in that she experienced before.

Then they are gone! The light slowly fades and the room returns to normal.

They re-materialize in the old mansion back in Diana's time. Running through the mud room that leads to the garage, they grab a couple of raincoats to cover themselves. But they cannot linger. Remembering Kevin's words about the rebound field, they dash to the garage, jump in the only car there (keys are in the ignition), and drive off the grounds.

After they have driven for about ten minutes, Diana is starting to breathe normally and she says to Chaucer,
"Well do you think that was long enough, is it safe to return to my house without getting caught in the rebounding field?"

"Yes," he answers, "our best calculations indicate that the rebound field subsides in about 10 minutes… so by the time we return it will have been at least twice that. Let's head back."

As they are driving up the driveway of the old mansion, they see that the lights are now on. Suddenly, the front door bursts open and another Diana steps out.

Chaucer says to his Diana, "Wow she must have just arrived else she would have been caught in the field rebound!"

The other Diana shouts at them from the front porch, "Who are you and what are you doing with my car?"

And the Diana in the car says to Chaucer, "Stay in the car and let me talk to her alone for a minute, please.

"You bet," Chaucer agrees, "try to keep us out of jail please. I am allergic to jails."

Diana gets out of the car and says to her younger self, "Brace yourself for a shock, Diana."

The younger Diana is eyeing her suspiciously but obviously recognizes herself and says, "Who are you? Do I have a twin I never knew about?"

The older Diana smiles and says, "It is more bizarre than that. We need to go inside, make some cocoa, and talk it out. But can I bring my associate inside with us. We need to rustle up some clothes for both of us?"

“Clothes?” asks Diana the younger, “Why do you need clothes? …Never mind -- bring him inside and we can talk all you want, but it had better be good!”

As the three of them enter the old mansion, Diana closes the front door behind them.

Three months have flown by and Chaucer is outside the Outside Inn supervising the final touches on the new sign over the establishment. It cleverly says, “Outside Inn”.

Diana the elder is just driving up in a car. She examines the sign and says to Chaucer, “Wow, we just made it. Who would have thought that buying an old bar and reopening it would be so tedious.”

“Yep,” Chaucer agrees, “Grand Opening is tonight and tomorrow night is action night. Whew!”

It is action night and it is unusually dark in the parking lot of the Outside Inn. There are quite a few vehicles in the lot and one of them is parked directly under a light and is facing towards the exit of the parking lot -- Kevin’s truck.

Diana drives her car into the lot and pulls up next to Kevin’s truck. She gets out and helps Diana the younger, who is wrapped in a towel, into Kevin’s truck on the passenger side. Diana the younger curls up on the seat and tries to appear asleep.

Diana the elder says to her, “It won’t be long now. Have fun; he’s a great guy.”

She jumps back into her car and pulls a few spaces away—finding the perfect vantage point to watch the action.

End Chapter 10