

CounterClockWise

Chapter 5 -- Genome

It is the witching hour on the Eve of All Hallows. Diana is a child, and she is running in a graveyard. Something is chasing her. There is no sound other than her footfall as she runs...and somehow it turns into the sound of her own heartbeat...THUMP-thump... THUMP-thump. When she looks back she can see three shadowy figures gliding smoothly after her. They are wearing blood-red robes that are flowing out behind them, and their heads are cowled so she can't see if they have faces. They are gaining on her. She tries to run faster but she cannot. The path she is on is seemingly against her as well as it has the shape of a perfect spiral and she is running inward toward the center. There is no escape. They are getting closer...closer...CLOSER. A shadow falls across her face...she opens her mouth to scream and...

...coming instantly and fully awake with a start, Diana lifts herself up from her bed on one elbow. Her mouth is open and she is panting heavily, and her heart is beating like a caged animal trying to escape from her chest.

Across the hall in his own room, Kevin suddenly opens his eyes and looks around his dark room. Through his slightly open window, he can see the full moon is rising. Listening intently, he is trying to decide what it is that has awakened him. He cannot. Disturbed, he walks silently to the hallway door, opens it, and steps out. He stares intently at Diana's closed door, convinced that the source of his awakening is inside. But as he stands there, the feeling subsides. Another minute and the night has swallowed whatever it was. Taking a deep breath, he quietly re-enters his room and closes his door behind him. He sleeps very little the rest of the night.

As is its habit, morning follows night, and Kevin is grateful. Rarely is his organized mind as uncontrollable as it was last night. At first light, he heads to the cafeteria for an early breakfast. And then he proceeds to the table in the corner of the library where he and Diana frequently work together.

Much to his surprise she is already there. She looks like she hasn't slept much either, but as he sits down she smiles brightly and says, "Chaucer has asked that I put together a summary of how DNA encodes the blueprint for making a human being. I will present it tomorrow in his lab for both of y'all.

Feeling immediately better at seeing her smile so easily, he replies "Let's use YOUR DNA for the subject. I would love to know how your DNA works."

“Hmmm,” she says, “I had already taken a clipping of your hair to use, but I guess I could use that to make an effigy doll to stick pins into.”

Free-associating now, Kevin says,
“You know casting spells or putting hexes on people like that is a non-local phenomenon – kinda like the collapse of a wave function when the entangled objects are physically separate in space.”

Thinking he is teasing her, Diana replies
“Where ARE those pins...”

“But I was somewhat serious.” Kevin says. “Quantum Mechanics admits of a non-local process that makes teleportation possible. In fact way back in 1997, physicists had managed to teleport a photon from one position in the laboratory to another.”

Still not sure, and not wanting to be too gullible, she asks,
“You’re teasing me, right?”

But he insists, “Not at all. Ever since Chaucer gave us that briefing on Complexity, I have been working on an idea. It involves teleportation thru time instead of through space. But the two are so closely intertwined that teleportation through space is a great first step.”

Interested now but still dubious, Diana asks,
“And exactly what happened in 1997?”

He explains,
“I’ll cover it in more detail later, But basically, you can take two fundamental particles -- which as you remember are absolutely identical. Then you entangle them together in a Quantum Mechanical way. After that you can separate them as far apart as you like...even across the galaxy.

“Finally there is a way to examine all the properties of another particle here on earth and instantly transform that particle across the galaxy into an exactly identical state.

“In essence teleporting the local particle to another place.”

“And you aren’t kidding?” She asks one more time.

He smiles raises his right hand and says,
“On my honor as a Petty Officer...it’s true.”

Remembering a story he once told her, she says,
“I thought you got busted and weren’t a Petty Officer any more?”

Smiling and sticking his chest out, he proudly announces,
“Busted yes, but promoted again, three times!

“Anyway the teleportation story is as true as $10+10=20$ ”

But being a true mathematician, he reconsiders and adds,

“...in a number system based on any number less than 11 and more than 2”

...he thinks about it again and adds,

“...and the symbols represent scalars and not vectors or higher-rank tensors”

...once more he looks thoughtful and adds,

“...and the set of natural numbers...”

But Diana finally cuts him off,

“OK, ok enough already. I believe it. Let’s head to Chaucer’s.”

Outside on the walking path, Diana gets a thoughtful look on her face and asks him, “Do you like poetry?”

Without a moments pause, he says,

“You mean like...”

There was a young girl who begat
triplets named Nat, Tat, and Pat...

It was fun in the breeding

But bad in the feeding

When she found there was no tit for Tat”

Interrupting before he can finish, she says, “Not exactly... Have you ever heard of Hesiod?”

“Can’t say that I have,” replies Kevin getting more serious. “Who was he?”

She explains. “He was an ancient Greek poet who wrote that Gaea, Mother Earth is the firm seat of all things for ever.”

But Kevin says,

“Too esoteric for me... how about...”

“Let old Timotheus yield the prize

Or both divide the crown.

He raised a mortal to the skies

She drew an angel down.”

Surprised, Diana says,
“I like that! Who wrote it?”

“Fellow named Dryden.” Answers Kevin. “It seems there was a banquet and a musician named Timotheus was playing to the crowd when Cecilia, the patron saint of music, appeared.

So Timotheus and Cecelia proceed to have a music contest like the time the devil came down to Georgia...but that’s another story....anyhow it was a tie....so the last line reveals the outcome...

“Let old Timotheus yield the prize
Or both divide the crown.
He raised a mortal to the skies
She drew an angel down.”

And Diana is beaming at him as she says, “You never cease to amaze me!”

Arriving at Chaucer’s lab, they enter and exchange greetings with him. Diana wastes no time in getting started as she says,
“OK, Chaucer, here we go...Jeeves, help me out please?”

Jeeves quickly begins by displaying various human activities as he narrates:
“The human body is a truly amazing machine
...650 muscles including a heart that can beat more than 3 billion times
...206 bones...
...more than 1000 miles of airways in the lungs
...all coordinated by billions of electrical circuits in the form of nerve cells...

“...Over one hundred trillion cells that somehow know how to grow and develop according to a central plan...that is encoded in the heart of every cell inside an amazing molecule called DNA.

Showing a compendium of encyclopedic volumes consisting of about 50 books, Jeeves continues,

“**This** is the human genome. Three billion letters long ...this is the instruction set for making a human being.

“Deep within this molecule is important information ...

“Which ones of us will be smart, or athletic, or tall or beautiful?”

The screen freezes as Kevin Interrupts,
“I know the answer to the ‘beautiful’ question and I pay homage YOUR DNA,
Diana”

A little irate, Chaucer says,
“Cute, can we get on with it please?”

And without missing a beat, Diana requests of Jeeves, “PLAY!”

Jeeves obediently continues,
“Which ones of us will get cancer, or arthritis, or Alzheimer’s?”

“The existence of this tiny code, written molecule-by-molecule inside each of our cells is a remarkable discovery all by itself. But we have now READ that code – examined it letter by letter and written it down.

“Now that we know our complete genome, we turn our attention to locating the specific parts that perform the actual tasks of guiding the construction of our bodies.

The display depicts a human body being assembled system by system. Skeleton first, followed by the nervous system...then organs...then tissues and muscles...and finally skin.

Once again the screen freezes as Kevin interrupts,
“Hey! That looks a lot like us when we time-traveled. We were layered from the outside in and reassembled very much like that!”

Diana agrees, “Yes, that’s what I thought when I was putting this together. Anyway...”

Now it’s Chaucer who interrupts,
“That’s probably enough for today Diana. Let’s pick it up here next time.”

And she replies,
“Great...will do.”

Turning to Kevin, she asks,
“Kevin, There’s a place down the road that rents horses...have you ever been horseback riding?”

He looks a little dubious, and responds,
“I used to ride occasionally with my Mom when I was a kid, but it has been many years.”

“Come on,” She says. “There is nothing like riding horses at the beach.”

“Isn’t it a little cold for that?” He asks hoping for a reprieve.

But she won’t let him beg off that easily as she says,
“A little fresh air will do you good!”

They make their way to the stables where she picks a small roan filly for herself and a beautiful young Appaloosa stallion for him. He is again a little doubtful, but once he mounts, he finds that he and his horse blend very well.

They ride along the beachfront and Kevin is pleasantly surprised that the warm afternoon sun and lack of a chilly wind quickly has him shed his jacket. The sun on his muscular arms feels great.

The beach is narrow along this quiet stretch, so the horses frequently have to wade to get around overhanging trees or piles of driftwood. But they don’t seem to mind, and the splashing of their hooves in the shallow water adds another element to their ride.

There are no houses to be seen here, and there is nothing visible to remind them that they are in their future. For all intents and purposes, they could be back in their own time.

They are riding side by side when Diana looks at him thoughtfully and asks,
“Why do you want to go back?”

Thinking she is talking about returning to the stables, Kevin asks,
“Back where?”

And she clarifies her meaning,
“Back to our time...why do you want to go back? Don’t you like it here?”

They bring their horses to a halt. And, thoughtful, Kevin leans on his saddle horn and answers,

“In some ways, yes. But I don’t think we belong here. We don’t really fit in.”

“Did you “fit in” back in our time?,” she asks.

And he answers her question with one of his own,
“Did you?”

Somewhat wistfully, she answers,
“All of my life, I always felt like I was on the outside looking in. I guess I was never willing to do what was necessary to conform.”

“I never played much with dolls when I was little and that separated me from most of my classmates.

“I was always in advanced-placement classes and activities, so I was never the same age as my contemporaries.

“I never believed in the same things as my aunts and cousins.

...I never went to a prom...”

Her explanation trails off suddenly, and Kevin looks at her carefully for a moment before responding. He continues looking at her as he tells this story,

“When I was about eight, I was on campus with my Dad. It was toward the end of the time that ‘streaking’ was the thing-to-do on college campuses. If you didn’t streak, I guess you weren’t part of the in-crowd.

“Anyway, I happened to see an amazing sight. I saw a blind student streaking. He was naked except for his shoes, and he was slowly running...holding on to the arm of another student with one hand and tapping with his cane with the other hand.

“If you think about it – that’s the ultimate in irony -- a kid who couldn’t see was making a spectacle of himself for others to see. Streaking was not about seeing, it was about being seen.

“But I have no doubt that despite his physical disability, that dumb act helped him to fit in. It helped his buddies think of him as more like themselves.

“We – you and I -- don’t fit in either because we are different from most people. We have gifts that separate us from the crowd like that blind kid’s disability separated him. And crowds don’t like people who are different.

“And...we can’t or won’t bring ourselves to do the stupid things necessary to compensate for our differences...the kind of things even a blind kid could see were necessary to fit in.”

And Diana neatly summarizes for him,
“So you didn’t fit in back in our time either?”

He agrees,
“Only when I was pretending to be something I am not, and I got tired of that game at a pretty early age. You are who you are...accept it.”

And Diana returns to her first question,
“So why go back?”

And he returns to his first answer,
“Because we BELONG back there whether or not we fit in with the people there.
We don’t BELONG here. We are here by accident.”

Her eyes get a little distant and perhaps a little worried as she asks,
“Do you think we will make it back?”

He smiles bravely and says,
“Ahh, my lover of poetry...how’s this for an answer:

A woman who never fit in
With her cronies, her classmates, her kin
Traveled forward through time
With a guy who loved rhyme
And returned home by the... teeth of her skin.”

She starts to laugh, then she opens her mouth to say something... but all she
can think of to say is,
“...The teeth of her skin” ???

Smiling broadly now, Kevin says weakly,
“Well the anapestic meter was pretty good wasn’t it?

...What do you expect for an extemporaneous effort...”

She is laughing out loud now as she says again,
“...The teeth of her skin” ???...”

Laughing together, they turn to ride back to the stables.

END Chapter 5