

The Cosmic Monopole

first volume in the Time Crystal Series

by

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Hidden Sacred Book Chapter 1

Cosmic Monopole

And so at last I come to you, blessed Monopole, seed of the becoming, to whom this Hidden Sacred Book is most humbly dedicated. I am dictating this to the Princess Uskabellu in total secrecy, with instructions to reveal it to no-one. This work is not just an act of homage to you, Oh glorious Monopole, but as a stimulation to my thoughts as I contemplate the mystery of your current location. For it is beyond doubt that resolving this problem is the key to the fate of the Universe.

Your story begins in the skies above the domain known as Entroilia. At that time you still took the form of a cosmic seed. During the annual mating of Her Imperial Majesty Queen Karolinda, an unidentified drone did fertilise one of her eggs with you, thereby creating the Cosmic Egg and giving impetus to the unfolding history recounted with devotion in my preceding chronicles. Once inside the living egg, you became manifest as the object later known to mankind as “the Cosmic Monopole”.

When the Egg subdivided into incompatible regions with different physical laws, as I explained in Book 1, you were trapped at the junction between three of these regions which mankind would eventually call “Universes”.

Each region obeyed different fundamental laws of physics. You must have felt as confused as a child finding itself on the disputed border of three nations, all speaking different languages and obeying mutually incompatible laws. You shared aspects of all three domains but belonged to none.

From your vantage point between these regions, no doubt you surveyed them with much distress, for clearly you were different from the swarms of other particles flickering momentarily into existence around you in the intense heat of the complex sequence of events

known to mankind, in his simplicity, as “before the Big Bang”. For one thing, the lives of those particles were short whereas you, blessed Monopole, you endured over time so that even many microseconds later, when those others had settled into stable configurations, you were still obviously special and apparently unique.

For of all the particles surrounding you, Oh Cosmic Monopole – may your name forever be venerated in the minds of all living creatures – you alone possessed that magical property which mankind would later call a “magnetic charge”.

True, many of those others had “electrical charges”. Of these the commonest were the large heavy protons with their positive charges and the tiny, cloud-like electrons with their negative ones, although some particles such as the neutron had no charge at all.

And true, some of their movements resulted in the creation of small magnetic fields around them. But not one of them had the magical property of a permanent magnetic charge, the single magnetic pole which gave you the wonderful name “Monopole”.

As I have explained hitherto, as time went on the Cosmos expanded and the energy density fell to levels below which particles could no longer be created. From now on their number was more or less constant. Occasionally two of the smaller ones would collide and fuse together to make a single large unit. Sometimes large ones would split apart into several fragments, but the great age of particle creation was over. Later still the opposite charges of protons and electrons attracted them together and they stuck into tiny objects called “atoms”. The cosmos was now full of a simple atomic gas.

But none of this was of any interest to you, Oh majestic Monopole! You still hovered on the boundary between three regions, unable to decide which one should be your home.

There were magnetic fields within these domains, lines of force which reached endlessly around space in wildly gyrating coils and spirals, loops and bands. As the Cosmos expanded, these fields interacted with charged particles, both pushing them around and in turn being itself shaped by their movement. And you too were affected by these fields, Oh Monopole. Unable to maintain your position on

that narrow border between the three regions, the lines of force pulled you by chance into one of them, the one which mankind would eventually call “the Universe”, and henceforth you found yourself trapped therein, losing contact with the uncounted other domains in the wider Cosmos.

For a long time you drifted listlessly around your new home. Far away there appeared tiny splashes of light which men now call “galaxies”. Hundreds of billions of them traced out walls and filaments around vast dark oceans of almost empty space. But for all this time, Oh Monopole, you remained isolated within one of these spaces, drifting restlessly, pulled by weak magnetic fields, as if searching for another particle like yourself.

After a billion years or so, a winding line of magnetic force drew you closer and closer to one of these glowing galaxies and finally you found yourself inside. Wandering through this island of gas, you discovered the source of the light. It contained billions of those glowing globes of plasma men call “stars”. These too had magnetic fields and occasionally you would be trapped inside one of these nuclear fusion reactors, where the force of gravity was forging smaller particles together into larger ones and, almost incidentally, converting matter into radiation which seeped out as starlight.

Here, no doubt, you searched at first with great excitement, hoping to find another monopole like yourself. But when you found only the same particles you had seen in the Big Bang your disappointment must have been intense. You did, however, discover something entirely new. Occasionally one of protons around you was able to adhere to your outer surface. Although these new companions invoked in you no interest, nevertheless you began slowly to grow.

After a few million years of fusion, your star ran out of fuel and the nuclear power plant at its centre shut down. Normally a star dies quietly but your star happened to be larger than average. It exploded into a spectacular “supernova”, fusing smaller particles together and creating entirely new species of heavy particles such as you had never seen before.

This must have attracted your interest, for surely you wondered whether any of these new particles had a magnetic pole, like yourself. But you had no chance to find out, for the explosion which made these particles also spewed them out into the galaxy as a shower of pollution. You too were ejected from the dying star and you continued to wander the galaxy, observing new stars forming around you from this polluted gas. Eventually these stars also died and released more heavy particles. This pollution finally became so bad that particles were able to stick together to produce grains of dust. Dust absorbs starlight and the galaxy began to grow dark from the pollution released by generations of dead stars.

For the next fourteen billion years you wandered around the galaxy, poor disconsolate Monopole, moving in and out of stars, carried along by the lines of magnetic force. An observer might have imagined you searching these clouds of dust, picking over the debris of dead stars, hoping perhaps to find another like yourself, searching among the debris for a brother or even a distant cousin with whom you could identify. But you were destined to be utterly disappointed, for the new particles created inside stars were merely larger accumulations of the protons and neutrons you already knew and despised. No doubt you felt you did not belong here, unrelated to the particles among which you found yourself, a stranger in a strange place, trapped by the galaxy's magnetic fields.

You probably did not notice that, on the surface of these grains of dust, smaller atoms were bonding together into little groups called "molecules", and so the first appearance of water in the Universe almost certainly passed without remark. But you probably did notice that your galactic prison was changing.

For the whole galaxy was drifting through space and slowly rotating. As it drifted it occasionally collided with a neighbouring galaxy, creating new showers of stars. Even more important was the effect of its rotation. The resulting centrifugal force pushed its equatorial regions outwards while gravity pulled the northern and southern sections inwards. These forces reshaped the galaxy's structure, turning it from a large ball into a flat, plate-shaped disc with a slightly bulging centre. Henceforth new stars would form

within this disc. Furthermore the new stars would be organised not at random but in several narrow bands which spiralled elegantly outwards from the central region.

These stars were created from the debris of gas and dust left over from older supernovae, the pollution which had accumulated over the aeons. When finally humans looked up into the night sky, from their position upon a tiny planet within the disc, they saw it as a thin band of glowing light smeared across the heavens. This band came to be called the “Milky Way” and eventually when astronomers worked out its true nature, it gave its name to the whole galaxy, the “Milky Way Galaxy”.

Two million years ago, Oh Monopole, following a magnetic line of force, you happened to pass very close to a middle-aged star, the one later given the name “the Sun”. It was surrounded by a small array of planets spread out in a flat disc around the star. At first you hardly noticed the third one out from the centre, the little rocky planet which mankind calls “Earth”. Orbiting by a single moon, this rocky speck in space did not at first seem very interesting. Only its beautiful blue colour and its unusual oxygen-rich atmosphere distinguished it from the millions of other planets which you had wandered past during your long life.

You had occasionally visited planets before. There were many of them scattered around in the Galaxy. Small ones such as this were mostly formed from the heavy atomic debris left over from previous supernovae, atoms such as oxygen, silicon and iron collected together in dirty little balls of rock. You had sometimes even passed through these objects, drawn in by their magnetic fields, but inside they were just as boring as everywhere else, same old particles, nothing you could call a relative.

The exact source of the line of magnetic force which drew you towards this planet has not been established with certainty. It might have been a chance configuration of the solar magnetic field. More likely it was the planet’s own field, originating in its iron core, which pulled you inward. In either case, you began to descend rapidly towards the surface.

And so it was that one morning in early April you were finally swept along by the Earth's magnetic field, Oh Monopole, and approached the continent known as "Europe". Plunging down through the thin cloud you descended rapidly towards a lake trapped between two mountain ranges. You might have been curious about this lake for you had never been close to liquid water before. Water ice yes, that was common enough upon dust grains in the Galaxy, but it was rare to find a planet which was at just the right distance from its star that water would neither boil nor freeze but remain as a liquid. You might even have hoped to plunge into this exotic medium, this curving lake, to explore its properties and probe its hidden depths.

But, as you approached the end of the lake, a long finger terminating in a small city called Geneva, you were suddenly pulled off course by a local magnetic field and you swerved towards the west. As you flew rapidly over streets swarming with shoppers and traffic, over planes heading for the airport, you must surely have been surprised at the difference between this and the other planets, sterile and lifeless, which you had visited during your long existence.

Did you, perhaps, notice a silver BMW driving up the long straight road, the Route de Meyrin, along whose path you flew? Did you note how it slowed as it approached the tunnel, or see it change lanes to follow the little road over the hill?

Probably not. And even if you had noticed the car, there was no way for you to know that your fate would be intimately connected with that of the occupants.

Episode 1 Arrivals

‘Don’t worry if nobody loves you.’

Alone in the back of her BMW, Ambassador Brigit O’Brien’s heart sank as the first line of Ireland’s entry for the forthcoming Eurovision Song Contest, sung a semitone flat, drifted over the car’s front passenger seat. She looked up to see the back of her daughter’s ginger head wobbling.

Catriona was holding up a photograph of Kieran Gable, plastered across the front of the Irish teen magazine she had brought from Dublin. Then she turned to the driver. ‘Thanks for coming this way, Sam,’ Catriona said.

‘That’s okay, Catty,’ Sam said. ‘I know how you hate tunnels.’

Brigit had no idea what they were talking about. As Sam drove them out of Geneva, she had been concentrating on the “United Nations Commission on Sustainable Development Report of the Inter-Sessional Briefing on Sustainable Consumption and Production”. It was not easy reading. She had just found her place again when the second line of the song warbled around the car, this time even flatter.

‘And nobody seems to care.’

Brigit slammed the heavy document onto her lap. *How the hell can I concentrate with that bloody noise going on?* she thought as her eyes burned into the backs of the two heads in front. Sam Fitzpatrick didn’t notice. His fingers were drumming on the steering wheel in time to the noise.

Brigit was about to scream at her daughter to shut up when a pleasant idea suddenly struck her. *Maybe this is the opportunity I’ve been waiting for!*

She caught a glimpse of herself in the driver’s rear-view mirror, thick blond curls above a heart-shaped face with perhaps a little too much make-up, a broad smile playing upon her ruby-red lips. She forced her expression into an angry scowl and glanced at the driver, but Sam was concentrating on the traffic and still failed to see her.

‘When everyone tells you you’re ugly.’ Catriona seemed to be on stage now, singing her heart out for Ireland as if the eyes of the world were upon her.

Sam drove over the brow of the Meyrin village hill. They were on the outskirts of Geneva now, looking over a little valley. A long tram was slowly rolling up the hill towards them. Brigit could see a long range of mountains, the Juras, spanning the horizon ahead of them, their peaks sprinkled with a dusting of icing-sugar left over from last winter’s snow. At their foot, on the far side of the valley, a large brown dome came into view.

That must be CERN, Brigit thought. We’ll be there in a minute. It’s now or never.

‘Keep smiling and you’ll get your share.’

Catriona gave the somewhat lack-lustre lyrics everything she had with full throated expression. With equal passion, Brigit lifted the heavy report and hurled it viciously over the front passenger seat at the back of her daughter’s head, screaming ‘For God’s sake Catriona, shut up!’

Catriona gave a yelp of pain mixed with alarm as the missile struck her head and exploded across the windscreen in a paper snowstorm. Unable to see the road, Sam braked sharply and the car swerved across the road into the path of the on-coming tram, now a mere twenty metres away. It’s bell began to clang urgently.

‘Mother you’re going to get us all killed!’ Catriona yelped as she scooped the papers away from the windscreen onto her lap. Sam swerved, narrowly missing the tram, reached his own lane and stopped. The tram stopped too. All the passengers were staring at the car. The driver got out.

‘Drive on, Sam,’ Brigit barked. ‘I’ve got CD plates.’

Sam frowned, glanced at the tram then drove down the hill.

Satisfied that her little melodrama had opened well, she pulled out an exquisitely embroidered handkerchief from her ample cleavage, conveniently exposed by the low-cut jacket of her vermilion designer trouser-suit, and howled ‘I can’t do this job another minute, Sam! It’s all official reports and briefings and bureaucratic gobbledy-goo. How am I ever going to become the President of Ireland if I can’t hold down a simple Ambassador’s job? I give up!’ she howled, putting as much expression into the words as her daughter had put into the

song, 'I'm going to quit the UN and come back to Dublin with you two.' Finally she began sobbing theatrically into the handkerchief.

For a moment the only sounds were Brigit's sobs. Then, in an astonishingly calm voice Sam said, 'No, don't do that, dearest. You don't want to resign, Bee.' The car picked up speed as they joined the stream of traffic emerging from the tunnel and pouring westwards along the Route de Meyrin out of Geneva. 'You're just a bit stressed out at the moment. 'It's natural. You've been working your socks off for the past two months. Why don't you have the rest of the week off and—'

'You've got to be kidding, Sam!' Brigit yelled. 'You don't get it, do you? My diary's packed every day and every evening for the next two months. I need help, Sam,' she wailed and once more began making the sounds of sobs.

'I think you do, Bee. Listen. Why don't Catriona and I stay here after Easter and lend you a hand?'

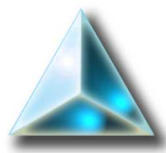
'Would you?' Brigit said with exaggerated enthusiasm. 'Would you really, Sammy? That would be so helpful. Oh thank you, darling.' She pushed the handkerchief back in her bra feeling elated. He had capitulated almost without a fight. She smiled at him in the mirror and even smiled at her daughter.

Beside him in the passenger seat, Catriona was staring at him too, an expression of utter disbelief on her pale oval face, but she wasn't saying anything.

'Of course we will my love,' Sam said. 'I'll phone my school and tell them I've broken a leg skiing.'

'Good idea,' Brigit said, leaning over the passenger seat and taking the papers off Catriona. 'Better make it both legs. I'm going to need you here for quite a while. And for God's sake keep quiet, Catriona. I've got to work.'

She began to rearrange the sheets in order, humming 'Don't worry if nobody loves you' happily to herself.



Catriona stared at the balding man sitting beside her, feeling torn in two. The idea of staying in Geneva was utterly delightful. It was a dream town, surrounded by mountains. They could cruise the lake, visit the ancient hilltop town, shop for fashion, eat delicious food in expensive restaurants. It was more beautiful and far richer than Dublin, a town she hated and feared since her eighth birthday, but to stay here just to look after Mother? To put up with her tantrums and obey her whims.

‘You’re not really planning to stay here are you, Sam?’ she hissed. ‘Surely you weren’t fooled by Mother’s pathetic little performance? You know what an actress she is! You know what would happen if we stayed? We’d just be unpaid servants. Anyway you can’t take time off your job and me miss school because she’s having some problems. That’s just selfish. Utterly selfish.’

He glanced at her and she saw an indulgent smile playing on his lips but she couldn’t quite make out what it meant, especially when he said ‘I’m sorry, Catty, but it was your idea to come here in the first place. Don’t you remember?’

Oh yes, I remember it very clearly, Catriona thought, Sam sitting at my computer reading his emails and saying ‘You’d be interested in this one, Catty. Your mother’s been invited to CERN. Wasn’t that where your father used to work a lot of the time?’

The idea had hit her immediately. At first it seemed so audacious it took her breath away. ‘When’s she going?’ she had asked, trying to sound casual, thinking: *Don’t want to frighten him.*

‘Hmm, in the week before Easter.’

That was it, the moment when fate had stepped in and taken control of her life. ‘We’ll both be on holiday then!’ she had said, trying not to let her excitement show. ‘You ever been to Switzerland, Sam?’

Oh yes I remember, she thought, the days of nagging and begging and persuasion before you agreed to come.

‘You can’t take a decision like that’, Sam was saying as he drove up the hill on the far side of the valley, ‘and then blame somebody else when it goes wrong. What’s the matter, don’t you want to stay here?’

Catriona sighed. *He’s right, she thought. It’s my choice to be here so I have to take the consequences.* ‘Listen Sam,’ she said. ‘I don’t care what

happens as long as I solve the mystery. Actually it might be quite interesting, staying here and going to finishing school. What is a finishing school, anyway? Sounds expensive, Sam. Can you afford it?’

That wiped the smile off his face, but only for a moment. ‘Your mother can. But don’t worry, Catty. We won’t have to stay too long. She’ll settle down in a week or two and we can go home. Oh look, that must be CERN.’

As the car crested the hill an industrial estate came into view, sprawling across the pretty Swiss landscape. Catriona began to tingle all over with excitement. *This is the moment I’ve been waiting for*, she thought. *Not just for two weeks but for the past six years of my life. This is the promised land.*

Even the grotesque electricity pylons standing beside the road looked majestic to her, the guardians of the secret world of science and perhaps of the mystery she was trying to resolve. Behind the pylons, a huge wooden dome bulged out of the ground like a giant football at the feet of the two guardians. Everything she saw looked beautiful, especially the range of mountains filling the horizon ahead of her.

Catriona’s excitement was intense as Sam turned off the road, drove between troughs filled with young willows and parked outside a building labelled “Reception”. So it was an enormous disappointment when Brigit got out with Sam and told her to wait in the car. Catriona wandered round the car park, looking back towards Geneva, watching the aeroplanes taking off from the airport and wondering vaguely whether she would ever fly home or stay here forever, but not really caring either way. The city was invisible from here, the tall jet of water and the cathedral on the hill were hidden by the valley they had just—

‘Francesco, may I introduce my daughter?’

Catriona spun round to see her mother standing beside a smiling, corpulent man. Even his smart blue Italian suit failed to hide the ample fat which hung about his body. ‘Catriona,’ Brigit went on, ‘this is Professor Francesco Romani, the Director General of CERN.’

When he reached out and shook Catriona’s hand, she barely managed to control her disgust as her fingers sank into his soft yielding flesh. And when he bent forward to kiss her on both cheeks the smell of his tobacco-heavy breath made her feel nauseous. His

long nose dangled down towards her like a monkey's proboscis. His hair was unnaturally black for a man of his age, about sixty she guessed. *He's the ugliest man I've ever seen*, she thought.

Yet he oozed self-confidence and when he let go her hand and spoke, his heavy Italian accent was so charming Catriona began to forgive him his revolting appearance.

'I am so happy to meet you, signorina Catriona.' He made her name sound like a little melody. He turned towards a young woman who was standing beside Sam. 'May I introduce your guide for today? This is Marianne. She will answer any questions you might have about CERN.'

The young woman stepped forward, smiling and holding out her hand. Catriona shook it timidly. Marianne was as lovely as Francesco was ugly. *Beauty and the Beast*, Catriona thought. She had long dark hair with auburn highlights. Her face was almost without creases except for the two little dimples in her cheeks when she smiled, which she did often. Her skin seemed to glow with health, her cheeks pink, her forehead a lovely creamy colour, and her eyes showed merely the faintest trace of makeup.

It was only when Marianne turned to lead them across the car-park towards the road that Catriona noticed the jacket of her blue uniform hanging open below her bust, revealing a big bulge in her abdomen. Catriona had always been fascinated by pregnancy, and she walked close beside the young woman, who was about ten years older than herself, twenty-four or twenty-five she thought, with Sam on the other side listening attentively as she answered his questions. Francesco and Brigit followed them, deep in conversation. Catriona had no interest in what Marianne was saying, technical stuff she could not understand and did not want to. But her soft voice and her beautiful accent fascinated the girl. Catriona thought she was French although she wasn't sure. She repeated Marianne's words silently to herself trying to imitate the sound.

Ze Lardge Adron Colliderr. Ze ATLAAS Detectoor.

The guide led them over the road and round the outside of the huge brown dome which towered over them, its horizontal wooden slats and thick curving legs giving it the appearance of a giant sea-urchin without the spines. Behind it lay a building with a huge painting on the outside showing some sort of machine with big brown discs and

yellow gear wheels and orange pipes. That building was apparently where they were heading, but on the way Marianne took them into the wooden dome for a quick look at the exhibition.

Catriona's attention was immediately caught by the words written on the wall near the entrance.

“WHERE DO WE COME FROM?”

“WHAT ARE WE?”

“WHERE ARE WE GOING?”

Her spirits soared as she read them again. *Where do I come from? From a land of hell called Ireland. What am I? I'm a girl who wants to solve a mystery. Where am I going? I'm going to find out the truth about how my father died. That's more important than anything else in the world.*