

Chapter Sixteen

Sunday morning arrived with the crash of thunder. Carl blinked as he opened his eyes to a blue haze, the remnant of lightning on his retina. His bedroom was still dark so he was surprised to see his clock reading 11am. Rain and hail rattled against the window panes and could be heard bouncing on the balcony outside. Refreshingly cool air was blowing through the door presumably from the bathroom window he had left open.

The cleansing spirit of the storm had brought with it a clarity of thought too. The nervous stress and tensions had evaporated and he could analyze his life rationally. He reflected that he did not like sex. Of course, he enjoyed it as much as everyone else. What he meant was that he objected to it intellectually. There is a fundamental contradiction between the instinct to fill a woman's every orifice with goo and the respect inherent in love. Every man knows in his heart that rape is only the end of a spectrum that contains his own desires, he lamented melodramatically. In fact, even one of Carl's previous girlfriends had commented that in orgasm it really didn't matter who you were sleeping with. Thinking like this was presumably what had got Englishmen labelled as useless lovers. Well, good for us, championing intellectual reason and compassion over animal lust, Carl concluded.

The plan of the day before, to propose to Sasha, did not stand up well when held to the light of clear analysis. How pitiful it would look to admit to infidelity and then attempt recompense through an expensive ring and promises of life-long devotion. He very much hoped Sasha would throw said ring back in the face of anyone crass enough to make such an offer. Great, so no plan. He was just going to have to humiliate himself by telling her the truth and submit to her verdict. What he wondered would that be? Would he forgive in her place? Probably she would feel used and stupid, particularly if she had passed up opportunities herself. Any feelings of virtue would be quickly replaced by humiliation. He wasn't sure at all he wouldn't show himself the door as a matter of pride. As Amber had said, it was not his decision.

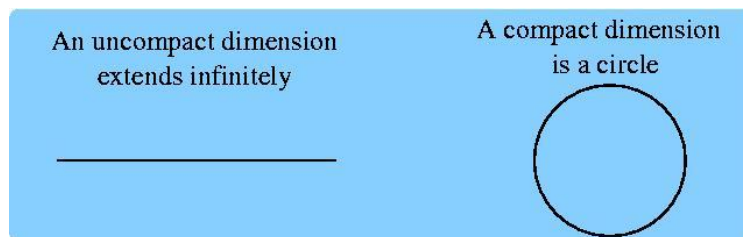
He realized he'd still not seen or heard any sign of Amber. She hadn't left a message on his mobile. Now, if there was a woman capable of acting irrationally under trying circumstances it was Amber. She may very well have got a plane to Rio with no plan of return. He almost caught himself growing angry at Trevor.

The will to rise from bed was not growing. He had to go and buy a black tie for the funeral the next day, he remembered. No wonder it was raining.

WPC Thatcher had awoken earlier. Her body clock was locked into 7am as rise time since that was when her daughter normally began to shout the place down. This morning though, Chloe and her husband were miraculously both still asleep – she should leave them together for an evening more often! An uninterrupted bowl of cereal was a

considerable luxury. The encyclopaedia was still on the coffee table from the day before, so she flicked her eyes over the section she had passed up before

Compactification: *A dimension of space can be a circle. Essentially this means that if you travel westward in this direction then you will emerge from the east and return to the point you started. The three directions of space we know are believed to be infinite in extent and not compact. The six extra dimensions of space predicted by string theory may exist and be compact though. For this to be the case the distance before you return to the same point in space must be smaller than any distance so far measured in science since we have not observed the extra dimensions.*



This seemed a peculiar idea to the WPC. Again her period for reflection was cut short by a cry

“Mum! Imbles!”

With a sigh the WPC realized they were indeed missing the Fimbles on breakfast TV. The meaning of life, the Universe and everything would have to wait until later.

Eventually Carl had dragged himself up, and while waiting for the remnants of the storm to pass outside, was trying to summon the motivation to continue his researches into alchemy. The field did not seem like one of Mankind’s greater intellectual achievements consisting, as it appeared, of the sloppy interpretation of experiment generously mixed with mysticism. How, Carl wondered, could Newton have been interested? Suddenly this seemed a worthwhile question and his enthusiasm re-emerged.

Carl agreed with many of his colleagues who considered Newton to be a genius and the founding father of modern physics. Newton had dared to propose an astonishingly simple model of gravitation. The accuracy of his predictions created belief in the idea that the Universe was open to simple, mathematical description. Everything else in science has followed from the precedent Newton set. So why had this man written more on alchemy than science? Perhaps, Carl decided, he should look a little more at the concepts in fifteenth and sixteenth century alchemy.

A few web pages later Carl’s frustrations were returning. There was John Dee who had tried to talk to spirits some passing con-man claimed to hear. Paracelsus invented the name Laudanum for the opium he took. Vast numbers of intricate woodcuts mixing

chemistry, erotica and mythological themes were produced that apparently held the secrets of the Universe if only you stared at them for long enough. And every practitioner was claiming others' failure was a lack of some undefined enlightenment. Yet still, there were discussions of Newton's attempts to reconstruct the floor plan of the temple of Solomon in search of clues. His library had contained more than 200 alchemical books and he had worked himself to a nervous breakdown and near poisoning in his laboratory. Why, why?

What Carl wondered was he missing? - most likely historical perspective. Alchemy was a mix of religion and an overly ambitious attempt to solve the properties of matter. So the first point was to approach the subject with a strong Christian world view, which after all would have been impossible to avoid in the 1600s. Perhaps if you believed that God had created everything, then the assumption of some "first matter" which could be transformed into anything seemed reasonable. That you would need to reach a state of being equivalent to God's to be able to make the transformations also seemed convincing (and blasphemous?). In this mind set, after seeing reactions that interchanged mercury with its powdered compounds, perhaps one would think one was close to the original transformations. It would require some arrogance to assert this though (it's turned out wrong after all!).

Suddenly Carl started grinning feeling he had understood at last. Of course Newton would have thought he could work out the answer. It was that arrogance that had led him to dare to try to unify all motion into a small set of mathematical rules. Without the presumption that you can understand anything, science could not function. There are all sorts of parallels even in modern physics research. His colleagues spent a great deal of their time trying to write down TOEs – theories of everything. Here they presumed that the current understanding of the particles and forces of nature were the sole ingredients needed to write down a complete theory of everything at all energy scales – these theories attempted to describe even collisions billions of times more energetic than man had ever observed.

He realized he'd failed to tell WPC Thatcher of this crucial aspect of the search for the Higgs boson. The strong and weak nuclear force theories are based on the existence of identical copies of the particles as he had explained to the WPC. For the strong force there are three copies of the quarks, in the weak force two, such as the electron and the neutrino. The force-carrying particles interchanged the particles in an interaction – a red quark becomes a blue quark and so on. The Higgs, though, makes the particles that interchange an electron and a neutrino heavy and hence the force weak. So then one could imagine a greater theory with five identical particles and force-carriers that flip each into the other in an interaction. Now a Higgs-like particle could make some of those force-carriers so heavy we would never have observed the forces. We might be left just seeing three of the particles interacting and call them quarks and another two interacting only with each other, and call this the weak force. There would be force-carriers that could convert a quark in a proton into a positron so that the proton would decay. No one had ever seen such an interaction so the force-carriers must be super heavy.

We should give thanks for that, reflected Carl, since the existence of eternal protons at the centre of atoms is rather crucial to the existence of everything we know.

Such an idea of a super theory might lead to the idea that all the particles of nature are just identical copies of each other and there is one overarching force that we see only part of. The mechanism for making force-carriers heavy, involving the Higgs boson, was therefore an essential ingredient of the dream of an ultimate theory.

Carl considered he had now placed alchemy correctly in the scientific endeavour. It was an example of a paradigm of theories that had been imagined by science, pursued experimentally, and then found wanting. That it had survived so long was a warning that scientific theories are driven by the very human beliefs and desires of the practitioners. Alchemy was the hanged man at the gate of a medieval city then? That's too harsh surely because the imagination and daring of the attempt had still to be cherished. Alchemy had nourished chemistry too – it wasn't all rubbish. Now Carl thought it would be fascinating to decipher Newton's alchemical work, to see the leaps he must have made to try to make this theory fly. There were parallels to the last years of Einstein's career. He too had tried to unify all the forces in the spirit of his General Theory of Relativity, yet lacked crucial ingredients we had since found in understanding forces in the quantum realm. Still, life is short and could one really bury oneself in recreating the confusions and despair of these failed endeavours? Carl would keep working at the frontier of what worked, he decided.

Had this interpretation of alchemy been shared by Andreas, Carl wondered?

The sharp ring of the telephone suddenly cut through Carl's musings and researches. Sasha. He looked at the telephone in trepidation, his stomach freezing. Three rings, then four. He had to pick it up but he hadn't planned what to say.

"Carl?" It was her.

"Hello"

"I tried last night but you weren't in," a question clearly implied. Snogging a policewoman was not the right answer.

"Oh, I went to the Institute to catch up on some work – this week's been rather interrupted." So much for the new era of openness and honesty!

"You shouldn't work so much." A slight pause grew. Now was when he needed those carefully constructed chatty few lines to relax them both.

"Are you still OK for Tuesday?" Was there a bit too much forced enthusiasm there?

"Yes, it's fine," she sounded tired, "I'm really looking forward to it."

“Me too.” Another pause which she followed with, “We need to talk face to face don’t we?” Oh shit. She knew something was wrong.

“Yeah, the phone’s hard,” he added lamely. Should he just tell her now?

“Well, OK, let’s leave it until Tuesday. Look after yourself until then, love.”

“You too – love you,” that last almost sounded pleading.

“Bye”

“Bye”

Carl had finally made an expedition out to the shops in the later part of the afternoon after the rain had passed and fresher sunshine returned. The choice between a matt black or a silky black tie had almost been beyond him. He had finally found one that lay in between the extremes available and settled on that compromise. The day was slowly turning to evening and the only activity he had planned, to brush down his suit and check his dress shirt could escape without ironing, were already complete.

His morose contemplations were interrupted by the door bell. Amber? In fact it was Paolo seeking a companion for an evening coffee. Soon they were settled on light weight aluminium chairs that a somewhat trendy pub had provided out on the high street. Carl thought their coffee was OK so Paolo’s Italian sensibilities were presumably being assaulted.

Paolo seemed unusually on edge or at least not as completely laid back as normal. He was even sat up to the table rather than sprawled over his chair. The reason for this, and probably the whole point of the coffee, soon emerged,

“So, amazing thing! I’m on a shortlist at Indiana. They e-mailed yesterday.”

The transition from postdoc to postdoc who gets on shortlists for full time jobs was a big thing. The University of Indiana sounded grim though. He tried not to let on,

“Wow, that’s great!” Paolo looked unconvinced.

“Indiana is very flat,” he pointed out, “and they e-mail their job candidates on Saturdays.” Carl tried to remember the name of the state capital of Indiana.

“You should send your name to the US job rumour mill web page – you’ll start getting other offers then.” The winning of permanent positions in theoretical physics was a

sufficient matter of worry and gossip that web pages existed all over the world to spread any news as fast as possible.

“You think I should?” asked Paolo.

“Well, as I understand it, in the US, appearing on the rumour mill is crucial since it convinces other places to look at you more seriously – somewhere has rubber-stamped you as worthy. It’s a bit different over here. I even heard one guy saying he didn’t want to be on the UK board because to be seen to have been on the shortlist but not got the job would look bad. The US world view seems to make more sense to me.” Paolo shrugged apparently unconvinced either way.

“The interview is three days!” he snorted in disbelief.

“Ouch! You won’t be able to wear a football shirt the whole time!” Paolo looked pained. “In fact, when are you going to stop wearing that Italian shirt? Sure you won the world cup but it was only on penalties!”

“Penalties are a perfectly good way to win. The statistic that is most linked to winning a league is percentage of shots on target scored. Penalties test the same thing.”

“That’s a new one on me. I’ve always argued in favour of penalties on the basis that in football being the better team only seems to give you at most a 20% advantage. The random refereeing is worth 30% - you might as well have the lottery of penalties!” Paolo gave another big bear-like shrug.

They had finished their coffee and Paolo headed off to phone his brother with the news. Carl assumed the point of the evening had been to prompt him to spread the gossip around the Institute for Paolo.

As Carl clattered back up the stairs to his flat, he passed Amber’s door. It was late – you’d think she would be back by now. His knock went unanswered though. He could get her spare key from her window ledge. Should he enter?

A few minutes later he returned, key in hand and opened the door. The place was dark and quiet. The broken bottle still lay in the hall in a soggy mess of carpet and red wine. No sign of Amber. No sign of packing although he didn’t want to start opening her drawers. Where the hell was she, he wondered? He started to imagine all sorts of worrying scenarios if she’d gone out alone on Friday night. He couldn’t think what to do though. She was an adult and free to go away if she wanted.

In an attempt to suppress some of his guilt he decided to clean up the wine. It took much of the rest of the evening to soak it up into paper towels and reduce the mark to a background stain. Amber had still not returned.