

# Chapter 1



## THE BATHTUB

I love my bathtub. To all appearances, there is nothing special about it except that it is rather small. It is an old fashioned bathtub made of enamelled metal, discoloured at several places with spidery patterns showing up where the enamel has cracked. But, there is magic in my bathtub. It has strange, unusual powers. I shall tell you all about it in good time, if you will bear with me. First let me recount how I came to acquire this treasure of mine, which was an extraordinary event in itself.

It happened a few days ago. I woke up late and lazed around having worked all through the previous night. What kind of work do I do? You may ask. Well, I am a FLOP, a Free Lance Organiser of Proposals, that is. You would be surprised at the number of people who find it hard to write up projects and proposals that enable them to sell their ideas. I help them. For a fee of course! I arrange facts and figures, make up charts and tables, generate graphs and diagrams, and tie up the whole caboodle in pink ribbon ready for consumption. I am the systematiser of the disorganised and the voice of the inarticulate. Do you have a proposal for a genetically engineered purple cow with green spots that gives claret instead of milk and lays dinosaur eggs? No problem. By the time I am done with it, any funding agency would be eating out of the cow's hoofs. As a matter of fact, on the night before the fateful day, I was working on a patent application for a high-tech toothbrush. The computerised handle of the toothbrush contains toothpaste that is released in accurately measured, minute quantities. The bristles are the sensors of a miniature ultra-sound seismograph that scans the cavities and generates colour-coded pictures on the back of the brush head, which serves as a video screen. The data are transmitted to the user's dentist by e-mail, fax, and telepathy. The treatment can be received instantaneously, if it is in the action-at-a-distance form like *Reiki*, which invokes the universal life-force. Does this gadget work? What does it matter?

## CHAPTER 1

It is ideas that rule the world, even if they do not work. The toothbrush idea worked for me all right, since I had collected my fee in advance.

To continue. On the day that I consider to be the most important one in my life, I shaved, showered and got ready to go out. I live on the third floor of an old apartment building. The roof-terrace above me is, by arrangement with my landlord, exclusively my domain. There I can do whatever I please. If I so wished, I could freely sun bathe in the nude, stargaze with the naked eye or just let the fog swirl around me. Graduate students, who study in the nearby university, occupy apartments other than mine. Descending the stairs is like making a culinary tour around the world. A sensitive olfactory analysis of the smells emanating from different apartments would reveal the cuisine of various nationalities. Such as the Chinese, Indian, Spanish and so on, all characterised by the spices of the respective regions, like ajinomoto, asafoetida, and aceite de oliva virge. I am unable to identify the smell coming out of one particular apartment. For all I know, a bunch of students from the Arctic may be living in that apartment, frying algae in whale fat for their food. The ground floor is filled with the fragrance of various perfumes. Some girls live there. Probably, they never cook, managing to subsist on – dates.

As I walked down from my apartment house to the street corner, Fernando and his wife Maria, who own a small store that sells groceries and household goods, greeted me. When they are not busy, Fernando and Maria relax on the sidewalk in their lounge chairs outside their store, often sipping beer or wine and chatting away. Their eleven-year old daughter Falicia keeps a menagerie of animals – a cat, a rabbit, a turtle, and small animals of different kinds. I am expected to say hello to at least one of them whenever I meet Falicia. This time it was Macho the turtle. The turtle lifted one eyelid, looked at me dolefully and made a sound that resembled a deep sigh. ‘Off to Bruno’s as usual, *Señor* Alfie?’ called out Fernando. Ah, that is my name, Alfie for Alfonso L. Sabio. I nodded, smiled and moved on.

Bruno’s, as it is popularly known, is *Benvenuto* the cosy little Italian restaurant. Bruno Beltrametti is its owner, chef, and the headwaiter all rolled into one. The tables are neatly arranged, covered with beige tablecloths embellished with intricate designs in maroon. Placed on each of them is a cylindrical flower vase made of solid Venetian glass accommodating a single flower. Bruno plays soothing classical and folk music in the background and sometimes, if persuaded, sings arias from his favourite operas. Most importantly, he supplies stacks of paper napkins that are freely used by the university people who frequent the restaurant. Physicists write formulas on them, biologists doodle

molecular structures, artists make sketches, while mathematicians just twist them around as they think their abstract mathematical thoughts – or at least that is what they claim.

As I munched on the toasted cheese that came with my pasta and sipped my second glass of Bruno's delicate wine, I walked George Gallagher. Blew in like a whirlwind I should say. George works in theoretical astrophysics. He is one of the university people I have met at Bruno's. Over the years, a close and warm friendship has grown between the two of us.

George slumped into the chair next to mine and ordered a Sicilian and a large beer. A Sicilian, if you have never tried it, is a small, thick, square pizza. According to George, his colleagues at the university are fond of Sicilians, because, like the dish, they are all square and thick even though they claim to be liberal intellectuals. Of course George is an exception. Bruno dislikes the Sicilian immensely. 'What can I do, I have to make a living, no? So I prepare it,' he says. Probably no one in Sicily has ever heard of this dish. If you insisted that it originated in Sicily, the *Cosa Nostra* might rub you out.

'Oh, Alfie my boy, I am tired, tired, tired,' sighed George as he took a big gulp of his beer. 'It is all because of old Albert Einstein you know.'

'Why, what has he done to you now?'

'You see, in 1905, sitting in his patent office in Berne, he did wonders. He explained Brownian motion, the feverish motion of molecules in a liquid. He explained the photoelectric effect, electrons streaming out of some metals when light was shone on them. He gave the world his special theory of relativity. Which completely changed the way we look at nature. Space and time became relative quantities. So did mass. It was a revolution. Drum rolls, cannons firing, the whole works. Bam, bam! That was good enough. Did Einstein stop there? No, the old fox goes on and formulates his general theory of relativity. A brand new theory of gravitation totally different from that of good old Isaac Newton. What happens? The new theory predicts all sorts of crazy things like black holes, gravitational radiation, the expanding universe and what not. And I have to deal with all this in my old age. Bruno, another Sicilian and a large beer please. And Bruno, please stop grimacing like that. It takes away my appetite.'

'Go on George,' I patted his hand. 'Pour it all out: I shall drown your sorrows in alcohol for you.'

'All right, once we theoreticians could dream up things unhampered by reality. Reality, my friend, is a redundant nuisance if you ask me. But now, observations have caught up with us. We have to account for all sorts of bizarre things happening up there in the sky. Just yesterday, we learnt about some ex-

traordinary phenomenon occurring in our own galaxy. I think two binary systems, each containing a black hole, are merging together. Dealing with just one black hole, swallowing up matter and energy is difficult. Two make it extremely hard. But handling two binaries each containing a black hole! Heaven help me, it is almost impossible. We shall crack it anyway. Alfie, you don't look too happy. What is the matter, my boy?

'Let me confess. I feel a bit uncomfortable with all this black-hole talk.'

'Why? Black holes are beautiful you know!'

'I don't doubt that. But, I hear all these words – black holes, binaries, mergers and what not. You'll have to explain everything to me from scratch, George, so I am able to understand what is going on. Then I can really appreciate your problems.'

'Fair enough. All right, next time we meet I'll begin my private lessons tailored to suit you. Provided the drinks are on you,' said George. And then he added, 'Seriously, Alfie, would you like me to talk to you for an hour or so and give you just an overview of black holes? Or should we have several sessions so I can deal with the subject in some detail complete with all the background material and do justice to it? The choice is yours.'

'No doubt about it, George, let us meet as many times as you wish. I'm ready for a detailed exposition. Would you be using mathematics though? Not that I am afraid of it.'

'Very well then, I'll write down some very simple mathematical expressions, which even a high-school kid can understand. That makes things much more precise, you know. Of course, they are not absolutely essential for understanding black-hole physics. But, they would help. And we can draw enough diagrams to illustrate whatever we discuss. What do you say?'

'Sounds great,' I said enthusiastically.

'I have to rush now, Alfie. My students are running a monstrous computer programme. And I have to be there all night to give them moral support.'

'In other words: To breathe down their necks. George, don't be too hard on those poor boys.'

'Two boys and one girl to be precise. I will be no harder on them than on myself, I promise. Bye, Alfie. Ciao, Bruno.'

George swept out like a tornado. All this heady talk and the somewhat generous consumption of wine had made me a bit tipsy. I wished Bruno good night and started on my homeward journey.

Just before reaching the street on which I live, there is a blind alley. Along the short stretch of this passageway there are a few empty derelict buildings and a

couple of warehouses. There are no streetlights. At night it is dark and dismal here. But that night, there seemed to be some signs of life within one of the buildings. A diffuse shaft of light emerged from one of the windows and dissipated itself in the surrounding fog. This was a bit surprising, because this building has been sealed off for quite some time now. Even more intriguing was the fact that there was a sign above the door, which read *Al's All-in-One Store*. There were several other signs as well listing an assortment of items available within and a big one announcing *Bathtubs for Half Price!* I had never noticed any of this before. Quite curious about this new place, I pushed open the door, which happened to be unlocked, and entered.

The place was crammed with a chaotic variety of merchandise. There was no one in sight. Rather suddenly and instinctively, I felt a presence close to me. Sure enough, a man had appeared at my elbow, presumably the storekeeper. I was riveted by his eyes looking straight at me. Eyes that were gentle and kind, yet with a mischievous twinkle in them. Time had etched a network of lines on his calm face framed by a halo of white hair.

'I am Al, at your service,' he said with a warm, friendly smile. 'So you have come for your bathtub, *ja?*'

He spoke softly but with a thick accent. I could not place it. German? Swiss? Or perhaps it was one of those accents that belonged everywhere and nowhere.

I had entered the place with no intention of buying anything whatsoever. But this stranger had assumed that I had come to buy a bathtub of all things. Before I could even think about this turn of events, Al spoke up.

'*Wunderbar!* Follow me please, if you will, *mein lieber Herr.*' He gestured with his head, his long, unruly hair waving in the air, to show me the way. He had a quiet way of walking almost like a slow dance movement.

As Al led the way, the room seemed to expand and turn into a large gallery that held an assortment of bathtubs of different sizes, shapes and colours.

'Ah, you are surprised,' said Al with amusement. 'Yes, we have a magnificent collection of bathtubs. Many of them have great historical value. Obviously, they are not for sale. Here, let me show you some of them. Look at this one. It comes from ancient Egypt. Belonged to some queen or the other they say. Nefertiti perhaps. Maybe Cleopatra. Let's assume it was once Cleopatra's since she is better known. Legend and fantasy are as important as reality, sir. Or possibly more. But look at it. Is it just a bathtub? No, sir, it is a magnificent piece of art! What is more, its design and decoration reflect the cosmic order that the ancient Egyptians once believed in.'



According to the Egyptian cosmic myth, Al went on to explain, the sky goddess Nut, decked with shining stars, arches over her reclining husband Seb, the earth god, while their offspring Shu, who controls the winds, kneels between them. The sun, in the form of Amon-Ra, god of gods, sails in his

divine barge along Nut's body. Each night he dies and enters Amenti, the nether world, to be broken up and scattered in a thousand sparks that turn into the stars. At dawn he is reborn to repeat the perpetual cycle of birth and death.

The bathtub, shaped like the sun's barge, was enormous. It was made of black marble covered with innumerable semiprecious stones of different kinds. One half of it was inlaid with flakes of turquoise and lapis lazuli to simulate the blue sky. In the middle was the brilliant sun fashioned out of a mixture of gold and silver. The blue sky turned gradually into yellow and red twilight created by shimmering pieces of amber and garnet. Finally the night sky was depicted by the dark background of black marble itself studded with a variety of sparkling white stones including a spray of small diamonds. An opal moon shone with a soft glow. The effect, to say the least, was stunning. This bathtub, which was supposed to have belonged to Cleopatra long ago, reminded me of her barge as described by Shakespeare:

*The barge she sat in, like a burnish'd throne,  
Burn'd on the water; the poop was beaten gold,  
Purple the sails, and so perfum'd, that  
The winds were love-sick with them; the oars were silver,  
Which to the tune of flutes kept stroke, and made  
The water which they beat to follow faster,  
As amorous of their strokes. For her own person,  
It beggar'd all description.*

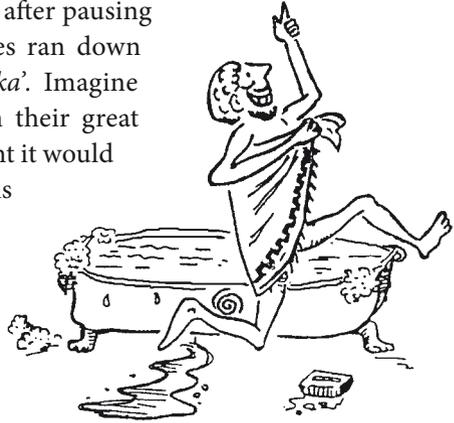
## THE BATHTUB

Lovely, don't you agree? At this point, I must warn you of my phenomenal memory for anything and everything I read. I can reel off short quotations, recite long passages and supply you with an abundance of unbelievable trivia at the drop of a hat. And I often make good use of my rare gift, as you will see. But let me continue with my story.

'Here is my favourite one, *mein lieber Herr*,' said Al as he patted the next bathtub. It had been carved out of white marble, simple and elegant, in the shape of a perfect ellipse. On one side was engraved the picture of a pole balanced on a conical peg, while on the other there was a spiral.

'The owner of the bathtub discovered the spiral you see engraved on it. He claimed that, if he were to be given a long enough lever and a place to stand in space, he could move the earth,' Al said. And then he jubilantly announced, 'His name was Archimedes'

'From this very bathtub,' Al continued after pausing dramatically for a moment, 'Archimedes ran down the street, stark naked, shouting *Eureka*'. Imagine our scientists following his example in their great haste to publish their results! What a sight it would be!' Al bellowed with laughter, tears in his eyes. The contrast between his soft speech and his ringing laughter, which echoed from wall to wall, was enormous. I was totally unprepared for this roaring, booming, friendly, all-enveloping laughter.



Al's expression turned serious as he led me to the third bathtub. It was in the shape of a crude rectangular box and the material used was humble sandstone, chipped at many places. It was unadorned and looked more like a coffin rather than a bathtub. Lying inside was a badly decayed plank smudged with patches of black.

'Here is a gory one that was much used by its former owner Jean Paul Marat, one of the leaders of the French Revolution. As the story goes, he had contracted some horrible skin ailment when he was hiding in the sewers of Paris and had to soak himself constantly in lukewarm medicated water. He used that plank lying there for writing. A woman named Charlotte Corday stabbed him to death during one of his soaking sessions. What a way to go! You must have seen the painting entitled *Marat*, by the French artist Jacques Louis Da-

vid, depicting Marat's death. I am told that, if you look carefully, you may still discover some faint bloodstains in this bathtub. Gives you the creeps.' Al seemed to shiver at the thought. 'Well, there are many other historical specimens. But let us take a look at the one you have come for. Pardon me, the small black box over there is not a bathtub. It is my violin case,' Al roared with laughter.

'As you know, sir,' continued Al, filling his pipe and lighting it as he led the way. 'Taking a bath is an extremely important part of one's life. Could anything else offer the blissful state of prenatal insouciance as when you lie soaking yourself in warm water, eyes closed and preferably sucking your thumb? Throw in some bath salts containing special ingredients including specific metals. Then millions of molecules in frenzied Brownian motion will massage your muscles and photoelectrons will stimulate your cells. Time will stand still. Somebody should take out a patent on this invention, the Brownian Photoelectric Bathtub. What do you think?'

Momentarily, his eyes became distant and dreamy as though he had been transported to another place, another time. 'Patents, Brownian motion, photoelectrons, time slowing down. Oh yes, those were the days!' he whispered to himself. Returning from his reverie, he went on, 'Where were we? Oh yes, the virtues of taking a bath. You know, sir, a whole species could be wiped out for the lack of bathing. Take for instance the dinosaurs. I vaguely remember a verse written in the early nineteen hundreds that described dinosaurs and their two brains. That verse I think is quite relevant to what we are talking about. I am sure you must have read it too.'

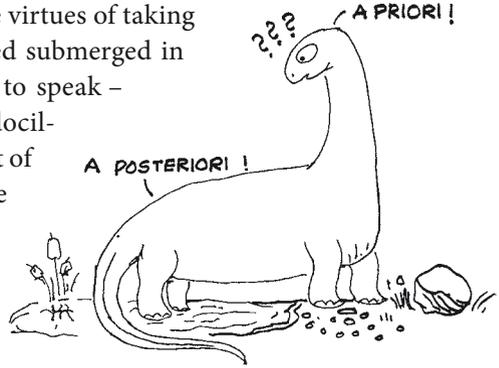
As a matter of fact, I had read the poem Al had in mind. One Bert Taylor of the *Chicago Tribune* had written it in 1912. I had long forgotten it, but my un-failing memory brought it back to my mind. The lines about the dinosaur's purported two brains are as follows:

*The creature had two sets of brains.  
One in his head, the usual place,  
The other in his spinal base.  
So that he could reason a priori,  
As well as a posteriori.*

The entire poem is quite interesting. I hope you will read it some time. For the moment, let me go on with what Al was telling me.

## THE BATHTUB

Al went on with his discourse on the virtues of taking a bath. 'As long as the dinosaurs stayed submerged in water – taking long, healthy baths so to speak – the bottom brain was kept lulled into docility. But when the dinosaurs crawled out of water and became land animals, the lower brain started competing with the upper one. *A priori* and *a posteriori* got mixed up and the species became extinct. Humans do not have this problem mercifully, since they are not equipped with a brain at



the base of their spines, although many behave as if they did. Well, I am told that modern findings do not support the hypothesis that the dinosaurs had two brains. What a pity, a beautiful hypothesis dashed against the hard rock of fact. Anyway, allow me to let you in on a secret. Personally, I hate baths myself. That follows in the tradition of the great Kepler who bathed only once in his entire lifetime. That too was at the insistence of his wife and against his own better judgement. It nearly killed him. So, I try to avoid taking a bath although I extol its virtues. As you very well know, sir, there is nothing nobler than to preach what one does not practice.'

Al bent down to tie his shoelace. His shoes were scuffed and he wore no socks beneath his rumpled trousers. Straightening up as he smoothed the sweatshirt he was wearing, he exclaimed, 'Ah, now for your bathtub!' With a flourish, Al pulled off the tattered cloth that covered the bathtub. I could not believe my eyes. This bathtub, as he called it, was nothing more than a kitchen sink! How could anyone but a midget get into it was beyond my comprehension.

'You are obviously surprised at the modest dimensions of the bathtub. Half price, half size!' laughed Al. 'But take my word for it. You will find no difficulty in getting into your bathtub. What is more important is the fact that the bathtub is a magical one. It is filled with myth, math, science, philosophy, art, literature, and above all dreams; not to mention your bath water.

The so-called bathtub came with a kit on which was written *Five Easy Steps to Install Your Bathtub*.

'Oh, yes, it is child's play to install your bathtub,' said Al. 'I am going to wrap it up in brown paper, and tie it with string. There you are, all yours.'

There was a problem though. Old-fashioned kitchen sinks, like this one, could be quite heavy. How was I going to carry it home?

‘How are you going to carry it?’ Al seemed to read my mind. ‘Not to worry! We will have it delivered to your doorstep in no time. Oh, I almost forgot. Along with the bathtub, you get a free sample of our special bubble-bath additive.’

He produced a plastic bag filled with perfectly spherical black beads. They were black in a peculiar manner, reflecting no light at all, but quite pretty in a way. He walked me to the door and held it open for me.

‘Rest assured that your newly acquired possession will give you wondrous moments you could never have imagined. Goodbye now,’ said Al. As I watched him, I wondered whether I had met him before. No, no, that was impossible. Did he closely resemble someone whose description I had read before? My mind seemed to have become fuzzy and I was confused. I caught myself meandering through the maze of my memories as I realized that Al was regarding me with a mysterious, knowing smile. As I was about to leave, Al said gently, ‘We shall meet again soon enough, my friend.’

Slowly I started walking home. Before turning the corner, I looked back. The alley was plunged in darkness and there was no longer any light in the shop. Had I been dreaming? The shop, the shopkeeper and everything that had happened, was it all my imagination? The whole episode was a bit scary.

Fernando and Maria were still in their lounge chairs. They had closed their shop and were having a beer before retiring.

‘Want to have a sip with us, *Señor* Alfie?’ Fernando asked.

‘Thanks Fernando. Some other time. I am a little tired.’

‘Tired? You look more like, let me see, dazed I would say. What have you been up to, *Señor* Alfie?’ Fernando grinned slyly.

‘Oh, I have been browsing around a bit in this quaint little store I found. That’s all, Fernando,’ I replied.

‘What store is that?’

‘*Al’s All-in-One Store*. You must know it.’

‘Never heard of it. Where is it?’

‘At the beginning of the blind alley behind our street. Second shop on the right you know.’

‘Are you sure? There’s no such shop. I was there just this afternoon. That place has been boarded up for long time now. Well, what more can I say?’ Fernando looked at me searchingly. But before Fernando could fire off more questions, I said good night to the two of them, who seemed to be quite curious, and left.

## THE BATHTUB

I trudged up the stairs to my apartment, tired and confused. Once again I wondered whether I had imagined the whole thing about Al and his store. I stopped short at the door of my apartment. There it was! Neatly arranged in front of my door was the big package wrapped in brown paper, tied around with string. I was stupefied. My bathtub delivered to my doorstep as Al had promised! I quickly unlocked the door and carried the bathtub inside. Surprisingly, it felt quite light. I went straight into my bathroom and fixed the little bathtub in five easy steps as instructed by the accompanying kit. The magic moment had arrived. I filled it with hot water, stirred in half a spoonful of the bubble bath mixture and gingerly got in. To my amazement, I was able to fit into the bathtub quite comfortably. Had the bathtub expanded? Had I shrunk? It mattered little. The bubble bath was unbelievably soothing. Not just physically. The vapours rising from the bath water seemed to seep into my mind and turn it into a soft, smooth fluid in which thoughts, imagination, and awareness of the external world mingled in a flowing stream. Countless bubbles surrounded me now. Transparent, multicoloured spheres that glistened and trembled. Within each bubble, I could see a dark speck, once again a minute, perfect sphere. Each black speck appeared to grow a little, as it absorbed the vapour in its immediate vicinity. Here and there, bubbles would combine and become one, while the black specks too coalesced. As they did, they seemed to become warmer. Some bubbles burst when the black specks within them evaporated and disappeared. Slowly, words I had heard in the evening came to my mind. Black holes, swallowing up matter and energy, merging together! Was this happening in my own bathtub? Or was I imagining things yet again?

The bubbles were swirling all around me massaging my body. There was a large concentration of them near my feet. They were gently tugging at me. As I luxuriated in this fantastic bubble bath, my eyes grew heavy and I drifted into a supremely blissful slumber.





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