

Sallorna

Sallorna woke. Instantly alert, she glanced at the chronometer above her head and smiled. Unless the instrument were wrong, she had been unconscious for thousands of Earth years. It seemed only a moment since she had started on the journey yet it was not so. She was light-years from home and the mission was apparently on track.

She turned off the capsule life support system and lay, waiting for her body to reach full acclimatisation to the craft's freshly generated atmosphere. 'Hello' she said softly to the picture fixed above her head. It was the one personal reminder in the spacecraft of her past. It showed close family laughing with Ralph, her lover. Her eyes misted slightly but only for a moment. The loss, she firmly believed, was temporary.

Knowing it would be foolish to move too soon, she waited according to the protocol. She desperately wanted to know if her craft had reached the pre-set destination. She also longed to check if the predictions about the development of cosmic object X325BN7687/Y482TX6358/ Z742SP3440 were anywhere near accurate. Would there be human life and, if so, would it be at a level of evolution where she could have a useful impact? Too little development, or indeed too much, could make her journey futile. But it would be foolish in the extreme to jeopardise the mission through hastiness. What were a few moments in the time span of her journey?

As she lingered, another nagging anxiety pushed into her consciousness. It was altogether possible, likely even, that technology on her own planet had advanced during her absence to the point where problems associated with very rapid travel had been overcome. It could be that when she opened the interior covers she would be treated to the sight of orbiting capsules, with perhaps one of them bonded to hers, awaiting the moment of her awakening.

This she did not want. Yes, in some ways it would be comforting to meet members of the Alliance and to hear what had been happening for the millennia of her coma but she had set her heart on this being *her* planet and on repaying the total trust granted by the Universe Alliance.

She had almost drifted into natural sleep when the soft gong-like beat came to tell her that it would be safe to move. As she stretched each limb there was no discomfort, only a pleasant awakening stiffness. 'Mmmmm!' she murmured as she lifted her head from the pillow, 'the best sleep I ever had.'

She laughed and swung her legs out of the complex capsule which had held her for the ages of her unconsciousness. Standing was easy. Walking to the covered porthole was no different from the first steps of any day in her Earth apartment. A green light flashing every second told her that it was safe to raise the porthole shield. For the first time in the mission she felt fear, not for her own safety but of failure.

'Come on Sallorna!' she muttered, 'the time of truth.'

She pressed the button. Noiselessly the shield slid. A bright, pinkish light flooded the capsule. Sallorna blinked, adjusting quickly, and then peered out. She could not contain the cry.

‘My planet!’ she exclaimed, noting immediately, with a surge of joy, that there were no accompanying Alliance craft.

Even without optical aids she could see that there were seas and land-masses, cloud cover and patches of clear sky. ‘Just like dear Earth,’ Sallorna told herself, ‘but is there human life?’

With a single keyed command, she activated the scanners which would field data from ‘her’ planet. Whilst the essential information was being collected and collated, she took in the essential post-coma nutrients and fluid.

The data which the Alliance scientists had used when planning the journey had, of course, been derived from light which had been travelling for thousands of years. The effectively ancient signs had been that all the ingredients for full evolution had been present on the far distant planet but, as everyone knew, this was no guarantee. There were so many potential pitfalls, natural and man-made, which could have wrecked all progress.

Her repast was over by the time the capsule’s computer flashed the message that the initial survey was complete. Shaking with a mixture of anxiety and excitement, Sallorna requested a report. The sound of the automated voice was expected but still it shocked her.

‘Sallorna, congratulations,’ it said, ‘the predictions which you and your colleagues made were very accurate. There is human life here, at various stages of development. For your landing I recommend an island quite close to the equator which I have indicated on the on-screen map. It has stable governance, a tradition of research and scholarship and a benign climate.’

‘What’s the level of development?’ Sallorna asked.

‘I would say that the society there is roughly equivalent to the one in Europe in the time of Leonardo,’ was the swift response.

‘Feed me the most relevant data,’ Sallorna ordered.

‘The humans are of unfamiliar physiology. You might find them repellent.’

‘No matter,’ Sallorna replied quickly.

‘Shall I include the language?’

‘Yes.’

‘Are you sure?’

‘Yes’

Sallorna felt the familiar mild dizziness as a large amount of information was beamed into her brain. She accessed the new material almost at once and was delighted by the language which was rich in nuance. It was also, like many other tongues in the universe, completely devoid of gender. The universal forms devised by the Alliance allowed for this. Words such ‘shee’, ‘heris’ and ‘herim’ had become familiar.

In her newly acquired tongue, the planet was called Gombran and the target island Itraki.

Not without anxiety she conjured up an image of an Itrakian. The computer had been right to warn her. For all that Sallorna had met many human beings who differed considerably from Earthlings she could not suppress a slight shudder.

The hermaphroditic Itrakians were smaller than most humanoids. Their hairless heads were almost perfectly spherical with eyes to the side as well as the front. There was no nose but the centrally located mouth was large, doubtless because, as Sallorna gathered, this was the route that Gombranian babies came into their world. Ears were just orifices below the side-located eyes. Like Earthly insects, the people had six limbs but they stood upright. Their clothes were complex and colourful, clearly objects of enjoyment as well as protection against the Gombranian elements.

Sallorna learned that for all the differences. Gombranians shared a great deal of body language with Earthlings, including smiles, nods, head shakes and expressive gestures.

The computer was still taking in information. It told Sallorna that it had identified an individual of high standing and great learning. ‘Heris name is Terro-arwah,’ the machine said. ‘Do you want heris details?’

Within seconds Sallorna knew all about her target. Terro-arwah was coming to the end of a long life. There was a distinguished history of achievement in arts and sciences. Shee was an intellectual colossus with a considerable following; the perfect person for the purposes of the mission.

Sallorna instructed the computer to undertake a final detailed analysis of the atmosphere and to prescribe the medication which would adapt her bio-rhythms to the Gombranian conditions.

When the time was right, she removed all of the life-support clothing which had kept her for so long in perfect condition and stepped into the hygiene chamber to rid her body of all potential contaminants. As soon as the all-clear light flashed, she broke open the packaging which contained the tight-fitting, silver, light-shield suit. Even though she

knew that the system had provided precisely the correct level of nutrition, she was delighted that the garment fitted.

Dressed for the next stage of her adventure, she entered the descent capsule which was already primed. In the darkness of night the automated vehicle took her noiselessly to the safe spot the computer had identified. The craft rustled through some dense foliage and came to a gentle stop. 'Perfect!' sighed Sallorna.

Excitement kept her awake until dawn when, characteristically, she was able to doze for a while. She was glad, when she woke, that she hadn't induced sleep with a pill. She took in some further nutrition and fluid before opening the upper hatch and climbing into the smallest of her vehicles, the simple person-transporter, which would take her to Terro-arwah.

The Itrakians had a strong tradition of architecture which employed organic shapes to create highly functional but astonishingly beautiful buildings. Though Sallorna had visited, through the wonders of virtual experience, many inhabited planets she never ceased to wonder at the creative variations devised by humans.

The transporter glided over Terro-arwah's magnificent city and located the great thinker's residence without a hitch. Sallorna knew that her unwitting target would be enjoying heris routine morning walk through a colourful garden not unlike ones which flourish in the Earth's tropics.

Taking care to avoid tell-tale branches, Sallorna brought her simple craft to rest between a wall and a thick bush. Calmly she took her first few Gombranian steps, then stopped, waiting until Terro-arwah's predictable path brought herim close. Then, as unthreateningly as she could, Sallorna called out '*kalyeka*' the Itrakian formal word of respectful greeting and parting.

The side-eye that she could see swivelled but the head did not move. Terro-arwah stopped walking and calmly demanded to know who was hiding in the bushes. Sallorna could not tell whether her target was afraid or mildly amused at some presumed prank.

'My name is Sallorna,' she said. 'I come from a distant planet to converse with you.'

The large mouth opened, the head swivelled so that the frontal eyes were directed precisely towards the source of the sound.

'A jester that I hear but don't see,' Terro-arwah said guardedly.

'No jester,' Sallorna said. 'I am able to make myself invisible to you but I can appear whenever you are ready.'

The mouth closed and there was a long pause before Terro-arwah said; 'Either this is magic, in which I don't believe, or a trick.'

‘Neither trick nor magic, Terro-arwah, but science, just science in which you *do* believe.’

‘You know my name!’

‘Yes, and I remind you of mine. I’m Sallorna.’

There were a few more moments of silence during which the Earthling struggled against an inconvenient urge to laugh.

‘Well, Sallorna, I’ll play your amusing game. Why do you choose invisibility?’

‘Because people on my planet are of considerably different shape to you and you might at first find me, er, repulsive.’

Terro-arwah moved heris head in a way which Sallorna recognised as politely dismissive.

‘I have seen and dissected many strange creatures brought up from our oceans and I think of them as interesting, sometimes even beautiful, despite the differences. Surely you realise that if I am to believe in you, which I scarcely can, I must at least see you.’

Sallorna paused before saying; ‘It’s different. We have much experience of visiting other planets. Aquatic creatures are one thing, weird-looking beings who can talk and think are quite another.’

The small, round head bent forward. ‘Try me!’ Terro-arwah said with a touch of humour and waited patiently whilst heris extraordinary visitor pondered.

‘Just a first glimpse, then,’ Sallorna said.

She knew that Terro-arwah carried no weapons and that if shee attempted to make a lunge towards her, unlikely anyway in view of heris age, she could vanish instantly. The risk was small. She de-activated the light shield and was mildly amused to see a Gombranian expression of deep shock. For a moment she thought that Terro-arwah was going to be sick or, worse, have a baby. Instantly she resumed invisibility and waited for a moment before saying; ‘On my planet I am considered to be very beautiful.’

Terro-arwah struggled to regain composure. Eventually shee said; ‘Ah well, I suppose that we must seem repulsive to you.’

The fact that shee had thought of this touched Sallorna. ‘No,’ she replied not entirely truthfully, ‘but only because we have seen so many different forms. The fear of the unknown soon goes when there is no threat.’

There was a long silence. Terro-arwah looked around, as though to make sure that shee was unobserved by others. At last shee said; ‘Unlike most of my contemporaries I don’t believe in spooks and spirits and neither do I think that I am now dreaming. Unless this is

a fantastic hoax then I am inclined to believe your tale of travel. Though ridiculed by others I have often speculated that the stars might be suns like our one, with planets similar to Gombran. Yet..’

Sallorna decided to let herim ponder further. At length shee said; ‘Please show yourself again.’

Sallorna breathed in a lungful of the thin Gombranian air and took a few steps forward. Instead of turning the light-shield completely off, she adjusted it so that her image was slightly softer than before. Terro-arwah was not fooled. ‘No,’ shee said, ‘the full picture.’

Then the two gazed frankly. Terro-arwah’s middle limbs moved in what seemed like a gesture of acceptance.

‘What is that strange growth on the top of your head?’ shee asked. Sallorna laughed for the first time in heris presence and was relieved to observe that Terro-arwah recognised the noise as unthreatening. ‘We call it hair,’ she replied. ‘Originally it had survival value for the people on my planet but now we think of it as decorative.’

Terro-arwah focused on the light reflecting from Sallorna’s auburn tresses and seemed also to smile. ‘I can see,’ shee said, ‘that it could be beautiful. But,’ shee went on, pointing in a very Earthly fashion with heris upper right limb, ‘your mouth is so small; how can children come from that?’

Sallorna emitted another, involuntary, little laugh and said; ‘Babies used to come from our bodies in a different way which I will explain later if you want me to but we no longer have children in such a fashion. We create them via beautiful machines.’

‘That sounds heartless,’ Terro-arwah quickly responded.

‘I’m sure it does,’ Sallorna countered, ‘but it is far from it. We still have families and love is overwhelmingly our primary value.’

Terro-arwah thought for a moment and seemed to assent.

‘Any more fundamental values?’ shee asked.

‘Truth,’ replied Sallorna brightly, to apparent approval.

‘And the third?’

‘There are no other fundamental ones, only derivatives.’

‘What of justice?’

‘Justice is a combination of truth and love.’

Terro-arwah seemed on the point of arguing but instead took a deep breath and said nothing.

Sallorna, who had planned to judge things by the moment, made an instant decision.

‘I have here,’ she said, ‘a means of moving about which is made invisible by a light shield. I have also an invisible base craft some distance away in the jungle where I can sleep and refresh myself. I have tucked it into a remote place where some of your island’s dangerous animals ensure that no human will bump into it. I’m going back there now,’ she added, ‘but I’ll return tomorrow at the same time.’

Terro-arwah extended an upper limb, as if to protest, then withdrew it. ‘Yes,’ shee said, ‘it has been an unusual experience to say the least. I need to think and convince myself that I still have my reason. But, before you go, two questions.’

Sallorna assented.

‘Firstly, how is it that you speak our Itrakian language like a native?’

‘We have machines which can codify speech and then feed the information directly into our brains.’

‘Impressive!’ said Terro-arwah. ‘It takes us many years to learn an alien tongue.’

Sallorna felt that a small tactical advantage had been gained. ‘And the second question?’ she said.

There was a long pause during which the great Gombranian thinker seemed to become ever easier with the image of Sallorna.

‘Yes,’ shee at last said, ‘it is this. Why have you come here?’

Sallorna also allowed time for, even though she had rehearsed the sentence until the words had almost lost sense, she was acutely aware that this was a crucial moment. She said:

‘I have been sent by my people, not just those of my native Earth but those from all the hundreds of planets in our Universe Alliance of Peace and Progress, to seek your help.’

‘Our *help*?’ Terro-arwah queried with an unmistakeable hint of scepticism.

‘Yes,’ Sallorna said softly. ‘I’ll explain later.’

There was a subtle shift of mood.

‘You say you want help but how do I know that you are not here to take over our planet? So often do those who declare for peace have a warlike agenda and you are evidently so clever, so powerful.’

‘It is my job to persuade you that I come in peace,’ Sallorna said. ‘If I cannot convince Gombranians, through you or some other leader, then I will leave.’

‘To go back to your planet?’ asked Terro-arwah.

‘No’ said Sallorna, ‘to die.’

The sage, seemingly shocked, was ready to formulate another question but Sallorna cut him off.

‘Tomorrow!’ she said and instantly vanished from Terro-arwah’s view.

Terro-arwah was waiting. ‘Come,’ shee said as soon as Sallorna had revealed herself, ‘there is a place in my garden where nobody will disturb us.’

Shee led the way into a shady spot which had comfortable seats.

‘What help do you seek?’ Terro-arwah asked with a wariness which came close to hostility. Sallorna judged that heris night time thoughts had been more about danger than opportunity. She said; ‘I will have to explain a great deal before I can answer satisfactorily.’

‘So be it.’

‘But ask questions at any point.’

‘Rest assured, I will.’

Sallorna then said; ‘Firstly I must give you a summary of what we in the Planetary Alliance believe about the universe.’

‘That would seem to be a useful starting point,’ Terro-arwah responded, with a hint of irony. Sallorna knew that for a proud and original thinker it might be invidious to be lectured to by an apparently youthful stranger but there was little choice. She smiled briefly and began.

‘Well, let’s begin by talking about the size of the universe.’

‘Surely, it’s infinite. Utterly without limit.’

‘So it has been said for most of history but we have an excellent reason to reject the notion because we can accurately measure its extent and mass.’

Terro-arwah made an unambiguous expression of surprise.

‘In fact, as we’ll discuss in a moment, the size changes but there can be no doubt that it is a contained system.’

‘I will have to take your word for it, of course, but I would like to know, if indeed the universe is finite, what your great scientists think lies outside it.’

‘Nothing.’

‘But surely “nothing” is unimaginable and therefore meaningless.’

‘Well, in fact we take the view that it is infinity which is unimaginable. The point about “nothing” is that we don’t have to imagine anything. That’s its meaning. No thing. It’s an instruction to ourselves to stop the process of imagination.’

Terro-arwah’s expression of dubiety intensified.

‘Well, we might debate these things for some time but supposing, for the sake of argument only, that I accept that the universe is a self-contained thing of a measurable size, what if one day it bumps into another huge finite entity. Would that be two universes or one?’

‘Our practice is to use the word “universe” to refer to everything that exists so we would have to change our view of the universe.’

‘Not impossible, surely?’

‘By no means impossible, but there is a very sound principle of science which says that we should deal only with what we’ve got. There’s no point in pure speculation, other than for the purposes of enjoyable fantasy, because pretty much anything is possible in theory.’

Terro-arwah nodded. ‘In fact, we too have such a principle of economy of concepts and it is one I support. And what you are saying is that in this case we have a closed system with no evidence whatsoever of the existence of anything else.’

‘Exactly.’

‘None?’

‘None!’

‘Very well,’ Terro-arwah said, ‘because I am keen for you to go on with your account I will accept the idea that the universe is finite though vast.’

‘Thank you, but at the risk of driving you away altogether I now have to reveal that although the universe is now vast, it was once exceedingly small.’

‘Oh, come now! How can that be? Even if all the heavenly bodies were piled into a single heap it would surely be a very large heap.’

‘It would, but we have discovered that things are not what they seem.’

‘Now you are talking of mysteries.’

‘Not at all. The proven scientific fact is that everything within the universe is made of something we call energy. This seemingly solid bench on which I am sitting is in fact composed of tiny particles. Some of these particles orbit other ones, just as planets go round the sun. But the particles are not solid. They are all made of energy. It is the universal substance.’

Terro-arwah made a rueful face. ‘How interesting. One of our ancient thinkers postulated something along these lines but shee was ridiculed.’

‘Often the way, alas,’ Sallorna commented. Terro-arwah, in a fashion which Sallorna was beginning to recognise as characteristic, took time before saying;

‘So I take it that this energy is neither solid, liquid nor gas?’

‘Correct. It’s elusive, ephemeral. You see manifestations of energy shooting across the sky in an electrical storm, sunlight is energy, heat from your fires is energy. Sometimes it seems almost like a facet of nothing, though we tough-minded scientists tend not to speak in such terms. We have devices which can see into the innermost workings of things and all we see, whatever we investigate, is energy.’

‘So you are telling me that when the universe was small there were no solid objects but just a condensed collection of this stuff you call energy?’

‘In a way, yes.’

‘But I still don’t understand. Surely the stock of energy in the universe must remain constant because, if it is finite as you say, there’s nowhere for it to go. How can there be less energy in the condensed version?’

Sallorna looked at her companion. By this time she was totally at ease with the physical differences, she could even see that there was a magnificence, a magisterial dignity which, knowing that Terro-arwah was unable to determine the time and manner of heris death, brought her some sadness.

‘Well? I await,’ Terro-arwah said with a reassuring touch of amusement.

‘You are absolutely right,’ Sallorna responded, ‘The stock of energy does remain constant but now we need to take another step in the exposition.’

She marshalled her thoughts for a moment before saying:

‘You are very aware that we humans can experience the physical world around us but that we can also look inwards. We have a physical aspect to our lives but we also have a mental one.’

‘With that I have no problem whatsoever, although the relationship between the two is deeply puzzling.’

‘Quite,’ said Sallorna, smiling. ‘But, leaving that complexity aside for the moment, the next stride is to accept that mental activity is dependent on the workings of the brain which, like everything else, relies on the operation of energy.’

‘I’ll have to take your word for that, but do go on.’

‘Well, our theory is that when the universe was physically very small, most of the stock of energy was being used for mental activity.’

‘You say ‘theory’; why can’t your wonderful scientists test this proposition?’

‘Because science has no direct access to the workings of mental energy. Science deals with the outer, that is, with what we sometimes call “the real”’

‘Surely thoughts and feelings are real?’

‘Indeed so, to the individual who experiences them they are real but I’m sure that you are all too aware of the distinction between the subjective and the objective.’

Terro-arwah waved one of heris upper limbs and smiled. ‘Of course,’ shee said distractedly before lapsing into deep thought. Sallorna waited patiently until her puzzled pupil spoke again.

‘So, you are suggesting that this physically condensed version of the universe was in fact a body of thought?’

‘Yes, but not entirely so. We hold that there was a small core of physical energy, the universal brain so to speak which was the basis for all the mental activity.’

‘This is proven?’

‘No. It’s also hypothesis but maybe you might be persuaded to accept it when you have heard the remainder of our arguments.’

‘Time will tell but first; does this vast mental entity have a name?’

‘We call it Alphoma.’

‘But it does not exist now, as we speak?’

‘No.’

‘So, pray, what happened to Alphoma?’

‘It exploded.’

‘It what?’

‘Blew up, like a Gombranian volcano, only much, much more so.’

Terro-arwah’s jocular mood disappeared. Shee seemed almost impatient.

‘You’re going to have to work hard to convince me of this,’ shee warned.

‘Oh,’ said Sallorna, ‘the explosion which, rather simplistically, we call the Big Bang is incontrovertible. Science can prove that it happened. The condensed universe cracked open and the stock of energy was instantly converted from the mental form into the physical. All that thought was partially replaced by solidity and heat and brilliant light.’

‘Partially?’

‘Yes. You’ll probably be surprised to hear the easily the majority of the energy in the exploded universe is invisible to humans. I’ll tell you more of that later.’

‘I’ll wait impatiently but in the meantime tell me the name of the exploded phase.’

‘We call it “Nature”.’

Terro-arwah smiled and said, ‘Yes, of course; Nature.’

There was yet another contemplative silence eventually broken by the Gombranian.

‘So, presumably after the explosion the universe expanded very rapidly.’

‘Yes. It’s still expanding.’

‘Into nothing?’

‘Yes. As energy pushed out, space was created. The two are interdependent. Without energy there is no space.’

‘But something must have kept things in some kind of order because one thing we have observed from Gombran is that the movements of the cosmic bodies are very regular.’

‘Indeed. There were forces operating right from the start. One of these we call gravity. It’s relatively weak but it managed to pull some things together. It’s what keeps your three lovely moons in place.’

Terro-arwah pressed an upper hand to heris cheek for a moment, a gesture which Sallorna found endearing.

‘I’ve often wondered about that,’ shee said.

‘Gravity is one of the forces which guarantee what we call the Laws of Nature. These forces operate throughout the universe and they are what make science possible. We believe that they are mediated through dark energy.’

Terro-arwah got to heris feet and began to pace slowly, deep in thought. Sallorna remained silent until shee said, ‘Alright, please continue.’ Sallorna obliged.

‘In the first phase after the big explosion, the universe was a fearful place. Mental activity was at a minimum, the physical dominated. There was extreme heat and cold, explosions, crashings, dreadful noises.

‘But slowly gravity introduced a modicum of order until millions and millions of years after the explosion, planetary systems such as yours and the one I come from were formed.’

Terro-arwah nodded, as though giving permission for Sallorna to continue.

‘Over aeons the planets cooled and on some of them there began a process which we call evolution. The basic laws of nature bring energy together in what seems like a huge series of experiments. Some combinations didn’t last but others did. The more complex arrangements of energy also interacted, producing even more sophisticated forms. Through this process, and over a very long period of time, the first signs of life appeared. This took many forms but a very obvious one, here and on many other planets, is vegetation.’

‘Once again we have a classical philosopher who suggested such a process. Shee wrote about the survival of the fittest.’

‘A thinker ahead of heris time,’ Sallorna said. ‘That’s precisely the process. In the workings of evolution some things survive because they are adapted to their environment. And once life forms emerged, vegetation, aquatic life, animals, the plants and creatures

handed down the recipe for survival success. It's a process which is guaranteed to produce winners.'

'Culminating, so far at least, in humans,' Terro-rwah said with evident excitement.

'Indeed,' Sallorna said, 'but with humans came a massive change. Animals have consciousness, of course, and higher forms may have some rudimentary self-consciousness but humans are different. When we came on the scene there was, for the first time since the Big Bang, an identifiable mental aspect to the universe. It was tiny, of course, in relation to the physical immensity but it was something like candles spluttering into life in a vast sea of darkness.'

'Some of the candles have evidently been burning longer in some places than in others,' Terro-arwah offered. It seemed to Sallorna almost like an apology and she smiled. 'True,' she said. 'But it's what Earthlings would describe as the luck of the draw.'

The ensuing short silence was slightly uncomfortable but Sallorna felt that great psychological progress had been made. She was the first to speak.

'Of course, humans changed the nature of evolution radically. We produced language, methods of recording information, theories and, crucially, ways of harnessing power. We have not always used the power wisely but overall the balance has shifted very considerably. In the early times of human evolution, physical forces were dominant. An earthquake, an eruption, drought, pestilence and many other natural phenomena were to be dreaded. Now we can predict, escape or, even better, control; humans are more and more in charge. We have discovered wondrous things about the nature of energy which promise to deliver us not just dominance over Nature but total power.'

Terro-arwah shuddered, a piece of body language which Sallorna instantly understood.

'I see your anxiety,' she said softly.

'Well,' the Gombranian answered, spreading heris four upper limbs wide, 'can this be good? Here we revere Nature, some even worship it. Humans are so fallible, so self-seeking. Absolute power is surely a guarantor of disaster.'

Sallorna reached up to caress the silvery leaf of a nearby bush. The texture was that of satin and the tendrils on the underside seemed to charge her fingers with creative energy.

'The worry is entirely understandable. All of the planets in the Alliance have histories involving examples of terrible abuse of power but this is the nature of the evolutionary process. As will, I trust, become clearer as I tell you more about our beliefs, the struggle is inevitable as is the gradual growth of understanding. However tempting it is to cling onto innocence, all attempts in the history of the universe to stifle the growth of knowledge have eventually failed.'

Terro-arwah nodded. Shee confirmed, with some reluctance it seemed, that this was true of Itrakia which was just emerging from a dark, repressive century.

The leaf which Sallorna was fingering came away from its fixing. She felt embarrassed and begged forgiveness. Terro-arwah laughed and politely dismissed her worries. 'The leaves are harvested and used for the healing of skin,' shee said. 'Those ones are just about ready. Try it; rub the smooth side on your cheek.'

Sallorna complied and immediately felt a blissful warmth which spread deliciously throughout her body.

'See!' said Terro-arwah, with a hint of pride, 'they have power even over a visitor from another planet.'

Heris guest was so engrossed by the sensations that it was a shock when Terro-arwah prompted her.

'So, Sallorna,' shee said, 'what are the members of your mighty alliance going to do when they have acquired total power?'

'*Our* alliance!' Sallorna said. 'All of us.'

Terro-arwah smiled. 'Well, then, what are *we* going to do?' shee conceded.

Sallorna let the leaf fall to the ground and rallied her thoughts.

'We are going to re-create Alphoma,' she said.

Her pupil registered gratifying shock.

'Surely not remotely possible!' shee declared. Sallorna smiled and said;

'We believe it is. We think that it is the ultimate goal of all human endeavour.'

'But how could it be? Engineering on such a vast scale is surely beyond human ingenuity.'

'Not so. As I said, humans, in full cooperation with each other, will gradually acquire total knowledge and complete potency.'

'But why would you, or as you insist, we, want to do that; to re-create something which is destined to self-destruct?'

'Well, we think that the cycle happens only once.'

'So it's both historic and in the future? How can that be?'

Sallorna knew that this would be one of the major stumbling blocks to the success of her mission. She took a little while to compose her thoughts before saying:

‘Terro-arwah, you are a scientist. You observe the world around you and you conduct experiments. You formulate hypotheses and you test them. When you think you have established a series of truths you link them into theories.’

‘All this is gladly agreed.’

Sallorna nodded and persisted with her theme. ‘You have accepted, as billions of other humans have, that the linear way of thinking, which deals with cause and effect, is extremely productive.’

‘Indeed so. What else?’

‘Well, you have also found, in common with so many others, that the linear approach has its limitations. It breaks down when we try to form a complete theory of the universe because if a ‘first cause’ is postulated then the notion of universal causation is thereby abandoned. And if we don’t postulate a first cause we have to invent the impossible notion of infinity.’

‘I’m still not persuaded by your disdain for this concept.’

Sallorna hesitated for a moment, searching for another form of expression but eventually deciding to say;

‘All I can do is point out again the logical impossibility of the idea. If infinity is a real thing it cannot, by definition, be imagined because if our imaginations could contain it, it would be finite.’

Terro-arwah showed signs of slight irritation.

‘But what’s the alternative? Pure moonshine?’

‘No. We have to accept the dual nature of the universe. It has two phases or aspects, the physical and the mental. The scientific approach is totally appropriate for the physical aspect of existence but the mental aspect is altogether more subtle. We have to school ourselves to think in a different mode where time assumes a different character. It takes practice but after a while it becomes easier. The two phases are totally interdependent. In one phase, time is manifest, in the other, it is not. And in the phase where there is no time, it makes no sense to think in terms of cause and effect.’

Terro-arwah gestured and Sallorna understood that shee needed time to digest these ideas. At length shee said:

‘I will, as you suggest, need to practise this change of thinking but whilst I do so I’d like to tax you with another question which has been troubling me.’

Sallorna smiled once more. ‘Please. Ask away.’

Terro-arwah’s expression was more of a grimace than a grin.

‘You say that Alphoma is a mental state. That presumably means it must have identity.’

‘In a manner of speaking, yes.’

‘Then who is it? The god in which so many believe?’

‘No, not god.’

‘Then?’

This was yet another big step for Terro-arwah to take and Sallorna decided to soften her certainty.’

‘We cannot yet know for sure but we believe very strongly that Alphoma contains all the consciousness generated by the processes of Nature.’

Sallorna thought that if Gombranians could whistle in surprise then this is what Terro-arwah would have done. Instead there was a gasp. Undeterred, Sallorna continued.

‘Alphoma houses every single person, every bit of animal consciousness, even that tiny, fragmentary element which attaches to the simplest manifestation of energy.’

‘You’re saying that objects such as plants have consciousness?’

‘To a very, very tiny extent; yes, everything does.’

Terro-arwah pondered. At length she said;

‘The prospect is frightening, especially so since you said earlier that your wonderful science cannot directly investigate Alphoma. You believe that Alphoma contains all consciousness. Is it not possible that Alphoma might be the very pit of terror?’

Sallorna shook her head gravely.

‘It’s true that we cannot inspect Alphoma as a complete entity,’ she said, ‘but there is a source of information which makes us very confident indeed that we are on the right track.’

She saw that the Gombranian was waiting attentively so she continued.

‘I have absorbed your writings and I know that you have made a special study of the people you call mystics. As you have so clearly recorded, these thinkers come from many ages in your history and from diverse cultures. They eat and drink to the minimum and instead of concerning themselves with the world around them, as most of us do, they focus inwards.’

‘Indeed,’ Terro-arwah confirmed, ‘and I think I see what you are getting at. Without exception the mystics reach the conclusion that blissful unity will be the final state of the universe and that, in that unity, each individual will have god-like powers. But, as I concluded in my book, these ideas can have no great status. Ultimately we have to dismiss mystics as fantasists, dreamers; people literally not of the real world.’

‘So it might seem,’ Sallorna said, ‘but the truth is that on every planet in the Alliance we have the same phenomenon. The explorers of the interior almost invariably come up with the same picture.’

Terro-arwah seemed exasperated.

‘But, if I may speak thus, so what? They claim to be seeing into the future, not researching the past.’

‘It is very understandable that they think so but the truth is that if Alphoma once existed and will exist in identical form again, then the mystics are both reporting *and* predicting.’

The movement of the four upper limbs spoke volumes of Terro-arwah’s agitation.

‘But surely you don’t think that they have access to the future. How could that be scientific?’

‘No, we don’t think that.’

‘And according to you, Alphoma was a mental state which was not accessible to science but in any case it was smashed to tiny pieces. It is surely doubly unavailable.’

Sallorna could not help raising a hand in what she instantly realised was a teacher-like gesture, one she regretted. Happily, Terro-arwah seemed not to notice.

‘I agree that that would seem to be the case but please bear in mind that Alphoma was a very highly organised state. Energy was at its most efficient arrangement. You could imagine it as a beautiful structure or perhaps a three dimensional picture.’

‘When the explosion came, everything was distributed but we have discovered, improbable though it might seem, that each tiny fragment of energy contains information. These fragments are segments of the great picture. For reasons which I’ll explain later, some of this data helped to shape the physical development of the universe but at the moment we are talking about the mystics and their sources of information.’

Terro-arwah smiled. 'May I hazard a guess?' shee asked. Sallorna nodded, also smiling and knowing that the great mind was racing.

'You are going to tell me that the human brain is the most complex entity to have emerged, at least thus far, and that it's composed of information-bearing fragments of the Alphoma picture. Mystics just happen to have fortuitous arrangements of energy which make more sense.'

'Precisely! And they work hard mentally to move their particular pieces around, to try things out, to derive some hint as to the overall meaning. It's like peering through a mist or, as one of the early religious leaders on Earth put it, through a glass darkly, but they can see more than we can.'

'But if there's this mystical picture available, surely there must be other information about the physical world which could be derived from this source.'

Sallorna smiled and waved her hands acceptingly.

'There is,' she declared. 'That's where ideas come from.'

Sallorna judged that it was right to allow time for reflection and it was the Gombranian who broke the silence.

'One of our ancients here in Itrakia, a thinker called Zibonda whose thoughts have shaped our intellectual development, put forward the idea that all learning is a kind of remembering.'

Sallorna clapped her hands.

'It never ceases to amaze me. We too had such a one, a philosopher called Plato.'

'If what you are saying is correct then both our Zibonda and your Plato were right, though I'd prefer to express it that all *inspiration* is remembering because learning, at least without your miraculous machine, is very often just hard work.'

'I agree absolutely,' Sallorna said, 'but the principle that there is inherited information surely has to be accepted. It's the simplest hypothesis and, as I say, we can show that energy is coded.'

'So this is also perhaps the source of artistic inspiration?' Terro-arwah suggested.

'Surely! Artists also see through a glass darkly. They cannot give us precise pictures but they provide profound sketches of the truth.'

'Especially musicians?'

‘Yes!’

‘Sing me something from your planet,’ Terro-arwah demanded suddenly and totally unexpectedly. Sallorna felt foolishly embarrassed and protested that she had no voice and in any case could not think of anything. The Gombranian refused to accept these excuses. ‘Here’s one of our Itrakian tunes,’ shee announced. ‘When you have heard it you will have no choice but to return the favour.’

Though she knew a great deal about the universality of humanity, Sallorna was pleasantly surprised and delighted by Terro-arwah’s assumption of polite reciprocity.

There then began a noise which seemed to go direct to Sallorna’s heart. There were no words, only a succession of sounds which changed in quality as though members of an Earthly orchestra were playing in sequence. At times it seemed as though Terro-arwah was capable of creating a duet or even a trio from the single mouth. Though she had resolved never to cry whilst on her mission, Sallorna could not stem the first prickling of tears.

‘I can’t follow that,’ she declared when the tour-de-force was over. Terro-arwah countered that she could and must.

There was a long silence. Terro-arwah waited patiently, seemingly confident that shee would get her way. Sallorna sighed. ‘Alright,’ she said. ‘It’s the only one where I can remember the words.’

The Gombranian nodded encouragingly and was then treated to a wavering, moderately accurate rendition of the Brahms lullaby.

‘Beautiful!’ Terro-arwah said when it was over. ‘The universal language.’

‘My mother taught me that,’ Sallorna said, ‘but she could really sing.’

‘It could not have been more moving,’ Terro-arwah replied.

And it seemed then that the force had fled from their exploration of ideas. They agreed to go their separate ways and to meet the following morning.

For the first time since her revival from the coma Sallorna felt uneasy. It was not that things were going badly, far from it, it was that, despite the rigorous training, the human aspects of her work were in danger of weakening her resolve. It had all seemed so academic and, at the same time, so carelessly adventurous when the mission was being planned but now she was facing the truth; this was real. Terro-arwah was a fully fledged human being and she was proposing to intervene on a dramatic scale in the development of heris life and indeed, eventually, that of the entire huge planet.

Instead of returning immediately to the capsule she embarked on a transporter tour of the island, skimming silently and invisibly above the cities, towns and villages. The beautiful Itrakia was very primitive by Alliance standards and Sallorna saw many circumstances where she knew that an intervention from her could have spared much suffering. Yet she knew it would be very damaging to her mission if she were to appear suddenly to unsophisticated people.

She saw also many examples of human joy. The open air schools seemed mostly to be happy places, many families worked well together, there were artists everywhere and their work was highly valued.

Sallorna parked her craft on an unpopulated purple beach which was washed by a gentle, emerald green sea. Richly coloured, complex flowers adorned a low cliff which defined the landward boundary of the strand. She strolled for a while, then sat, absorbing the peace. Further doubts trickled in to corrode her certainties. There were so many examples of good outcomes. Alliance statistics proved beyond doubt that intervention was the most humane policy yet there had been not a few counter-examples. 'Supposing Gombran is one such?' Sallorna thought. 'Left to themselves they may develop ideas which even the mighty Alliance would find new and wonderful.'

Deeply troubled, she decided to return to her orbiting spacecraft for the night. There was energy a-plenty thanks to the re-charging power of the Gombranian sun. She docked the shuttle and entered her home. Immediately the picture of her loved ones caught her eye and she fought against tears. She had resolved to be strong. It had been her intention never to use the simulator but the loneliness overwhelmed her.

With tears still flowing, she donned the helmet. She knew that the virtual experience would be less potent than it had been on Earth because no other real person would be connected to the system but in this, of course, she had no choice. Thanks to the fact that her family and friends had all contributed large amounts of personal data, the computer would do a very convincing simulation.

She set the parameters, choosing a rural, hilly, verdant setting close to a blue sea. The weather, she decided, should be summery for a garden party. She specified most of the cast but demanded that all of her real memories of her lover, Ralph, were to be temporarily suppressed. She wanted to meet him afresh. Setting the time at three months before the start of her mission, so that her departure would be a big topic of conversation, Sallorna activated the device and was instantly on Earth.

The wonder of virtuality allowed her to be aware that she was in an unreal world but it provided her with every experience as though real, from the warmth of the sun on her back and the smell of the grass to the light of love in the eyes of her family.

In the scenario she was home from training and all her familiars greeted her warmly. Benign strangers, created by the computer, were introduced. Several of them were

interesting and the conversation flowed, some of it flirtatious. Missing interaction with her own kind, Sallorna determined that she would find at least a temporary love.

All the newcomers wanted to know about her courageous plans. Her family and friends reiterated that they didn't want her to go yet almost all said that the trip was right and that they could not imagine anyone better equipped than she to make it a success.

Sallorna felt strength gathering. There was sadness at leaving everyone but abundantly there was confidence that in Alphoma they would all be together. Her mother, perhaps the one with the most to lose, was certain. 'It's your destiny, darling, a great honour. We will content ourselves with the virtual you until we are all reunited,' she declared.

A brother, Graham, something of a rebel, spoke strongly against her coming mission but others put the irresistible arguments and said that Graham took this stance only because he was jealous or could not bear to think that his beloved sister was going away.

When Ralph appeared, a stranger as she had ordered, her heart instantly reacted. The loveliness was multiplied. Everyone loved him, all could sense their rightness for each other. Sallorna spilled some wine on her clothing thus making an excuse to change into a dress which appeared to make Ralph reel. They laughed and touched and shook with the force which flowed between them.

She had specified romance. The computer cooperated. She had requested love and sensuality and she was not let down. In the afterglow, Ralph said that he could not bear to lose her yet part of his love was generated by her determination, her courage, her willingness to postpone delight in the service of the universe. His words were: 'The loss will be temporary. We will have our simulations. You must go.'

The virtual session over, many Earth days compressed into minutes of Gombranian time, Sallorna returned to her reality with a delicious warmth of mind and body, with memories of romance and of bliss. Her doubts were banished. She knew, of course, that the voices and the views had been simulated but they had been entirely true to her Earthly life and she felt once more courageous.

The protagonists were in business-like mood as the conversation resumed. Terro-arwah seized the initiative.

'We were talking yesterday of the mystics. Your claim is that they have something very useful to say. They themselves generally believe that they are experiencing the future, or at least something which exists perpetually, but you are saying that their information is coming from the past which, if your reconstruction of Alphoma turns out to be possible, will also be the future.'

'That's what we intend.'

‘So, the universe is a three stage process; Alphoma, Nature, Alphoma?’

‘In a way, yes, but we think it’s more accurate to see it as in two parts; Alphoma and Nature.’

‘But you said that Alphoma preceded the big bang.’

‘Yes.’

‘And you are also saying that our successors will create Alphoma?’

‘That too.’

‘So in what sense are the two manifestations of Alphoma one and the same?’

A powerful memory of the garden party and the ensuing loveliness came to Sallorna and she had to work to push it back into her unconscious so that she could focus on her words. Terro-arwah looked intently at her as she hesitated but seemed to understand that the pause was nothing to do with intellectual uncertainty. Sallorna said:

‘They are so, we believe, because they are identical in every way and because, in its mental aspect, Alphoma is timeless. The people of Alphoma existed prior to the Big Bang and they will exist again when it is reconstructed. They are not aware of any gap just as I had no perception of time during my very long journey from Earth.’

This time the silence was of Terro-arwah’s choosing. Shee broke it with the observation that timelessness is a difficult notion.

‘Indeed’ Sallorna replied, ‘but again, if I may be so bold, you yourself have written very eloquently about what you have called ‘the timeless moment’ and about the tricks that dreams and spells of unconsciousness play with our experience of time.’

‘Yes, I have had some intimations, especially when listening to music, or enjoying nature or appreciating art, where time seems to be suspended. Timelessness not an entirely alien concept. But I’m struggling with the physical implications. Surely, whilst energy is operating, time must exist.’

‘In the physical domain, yes. Our belief is that in Alphoma there is a residual physical core but this, we suggest, generates a vast seamless envelope of mental activity which has no discontinuity and therefore has no real time.’

‘So eternity is banished as well as infinity?’

Sallorna nodded firmly. ‘Indeed. It is another word without sense. It’s an unrealisable notion and therefore meaningless. One of our early philosophers, a man called Aristotle, said, “How can one conceive of an actually infinite series? Nothing actually infinite can

exist.” But despite this wisdom, people on Earth persisted in speaking of infinity and eternity for ages and ages, causing vast disquiet and confusion.’

‘But it is not the case that people in Alphoma lose all sense of time?’

‘No, they enjoy what we call virtual time which is theirs to control. Virtual time is the servant of consciousness not its tyrant. We have devised machines which create virtual worlds which are so vivid that they seem completely real yet we can control them, set the parameters so to speak.’

Terro-arwah said: ‘I think I begin to understand why you sometimes seem to speak of Alphoma as having two existences and sometimes only one but there’s another profound barrier blocking my route to understanding.’

Sallorna felt a huge surge of well-being. It was, she thought, one of those rare portentous moments when vital streams converge and merge. She smile radiantly and was rewarded with reciprocal warmth.

‘Please. Ask,’ Sallorna said.

‘It’s this,’ Terro-arwah began. ‘However much you emphasise the unitary nature of Alphoma there’s no escaping the fact that this wonderful creation exploded and thus generated the phase you call Nature. If my understanding is correct, you are saying that the overall purpose of Nature is to generate ever more self-conscious beings who acquire more and more power. These beings will, you claim, design and then create Alphoma.’

‘Nicely put!’

‘Including setting up the parameters, presumably via the laws of nature, which guarantee that the process will work out.’

‘Well, not just the laws because a system built entirely on laws would not give us the essential opportunity to develop will power. There has to be freedom but, as you say, there have to be controls which ensure that the re-creation of Alphoma eventually takes place.’

‘So?’

‘So. There is a universal principle that nothing happens without a cause. Some of the causes are forces of Nature and some are efforts of will. But for many centuries on Earth it was widely held that some things happen at random.’

‘Ah, random – a tricky fish.’

‘Tricky indeed, particularly for a scientist but we now believe that dark energy provides two levels of control, one via the rigid laws, the other by what we call ‘nudges’. These

ensure that the evolutionary process stays on track overall but give us considerable scope for doing our own thing.'

'There are so many questions! but the first in the queue in my over-working mind is this. Are you claiming that in some sense we are self-creating?'

Sallorna's face indicated that she was all too aware of the complexity of the issue which Terro-arwah had raised. The Gombranian responded with an enigmatic smile.

'I accept,' Sallorna said, 'that this is a difficult notion for linear thinkers. How can an effect be the cause that produces that effect? But we have found that the drive to think in a scientific, linear way is programmed into us. Without science humans could never have gained power. Those who had a strong drive to think in classical cause and effect terms were the ones who survived. But we also have to acknowledge the impossibility of infinity and eternity. No purely linear account of the universe is viable so we have to accept circularity. As I said before, it takes practice but it becomes easier with use.'

'I'm by no means convinced but I'll let that thread go for a while because there's the next query in the queue is about virtual time. You say that from a physical point of view it's in two segments but that to Alphomans, if I may call them that, it seems like one existence because there is no perception of the break.'

Sallorna nodded vigorously and said; 'Well put.'

'But we also exist, more or less fleetingly, for part of Nature. In your natural lives you and your colleagues have formed the theory about Alphoma but, if I may turn things around, what might our Alphoma selves know about Nature?'

'Oh, in Alphoma everything is known. It is possible to visit, examine, enjoy every aspect of Nature but it will be like a process or a picture or a structure; not something in which Alphomans can participate.'

'So, no secrets?'

'No, and none needed.'

'And no communication between Alphoma selves and Nature selves?'

'None.'

There was another long period of contemplation. Sallorna wondered if she were pushing the pace too quickly but her sense was that her listener had become eager.

'Tell me,' Terro-arwah said, 'all the people you left behind on Earth, are they long-time dead?'

‘Not necessarily. We don’t die unless we choose to. Perhaps one or two have stayed on but probably not. Even with guaranteed health and rich lives, people get weary and opt to take the quick route to Alphoma. And I’m fairly sure that if I were to take another three thousand years to get back there’d be nothing on Earth that would mean a great deal to me.’

Terro-arwah sighed and looked thoughtful.

‘But I take it that you are not about to offer me new youth?’

Sallorna exuded apology.

‘Terro-arwah, I’m sorry. We have thought deeply about these things, even tried experiments on other planets but such gross interference always leads to disaster. We need to be subtle, we have to ensure that the process of evolution is not significantly distorted. Will power has to emerge; cooperation and understanding have to grow organically.’

Terro-arwah nodded. ‘I knew as much of course’, shee said. ‘It was but natural wistfulness. But why should I care? If what you say is true I shall die and then be instantly in Alphoma.’

‘The best way to look at things which also happens to be true,’ Sallorna said.

The Gombranian made what appeared to be a conscious effort to lighten the discussion.

‘You know, I have been thinking about all these profound things but a thought just popped into my head which might seem trivial.’

Sallorna invited herim to reveal the thoughts, glad also of a change of intensity.

‘Well, might it be that the idea of a cosmic break up and reconstruction could account for the human love of puzzles. Presumably Gombranians are not alone in this?’

Sallorna was pleased with this contribution. Things, she thought, were going exceedingly well and she blessed the scientists who had made the last night’s virtual experience possible.

‘No, you are by no means alone.’ she replied. ‘There are examples throughout the Alliance. Most planets have jigsaw puzzles just as you do. There’s also a widespread pastime for two which on Earth is called ‘cat’s cradle’. It involves string and starts with something simple, gets very complicated and then reverts to the original simplicity. It’s found in very many cultures.’

‘So the thought’s not new then?’

‘Remember what our respective ancient thinkers suggested; in a way there are no new thoughts.’

She could see that, tired though shee was, Terro-arwah was also getting tired. Shee was, after all, subject to ageing and had been alive for almost eighty Gombranian years.

‘Let’s stop for today,’ Sallorna suggested. Her companion waved in agreement but said that shee wanted to give advance notice of the next question.

‘It’s this,’ Terro-arwah said.

‘I think you are claiming that everyone who existed, exists or will exist in Nature is also in Alphoma?’

Sallorna signalled her approval.

‘How can this be? We die, we rot or are burned, we cease to exist. Surely we are gone forever?’

Sallorna brushed away a few strands of hair that had fallen across her eyes and she saw that Terro-arwah observed the gesture with interest, perhaps even with an awakening fondness.

‘Excellent,’ she said. ‘Let’s talk of all such things tomorrow,’

Even though Sallorna arrived early the following morning Terro-arwah was waiting. Shee seemed to be in excellent spirits.

‘I was thinking, during the night, of something that Gombranians can do which you Earthlings couldn’t.’

Knowing that the mood was light, Sallorna said, ‘Go on then, challenge me.’

Terro-arwah smiled and moved heris four upper limbs simultaneously to pluck almost perfectly spherical fruit from a nearby tree. Shee then began to juggle, starting sedately and building pace, throwing and catching with faultless accuracy. Sallorna laughed, feeling girlish in her delight. ‘Astonishing!’ she cried. ‘I capitulate! Not even the best Earthly circus performer could match that!’

Slightly out of breath, Terro-arwah tossed the fruit into the foliage and sat down. ‘Misspent youth,’ shee gasped. ‘I indulged myself with a few years as an entertainer, travelling, seeing as much of the world as I could. I haven’t juggled for years but remnants of the skill are still with me.’

‘Not remnants!’ Sallorna protested, ‘and nothing will persuade me to try to emulate that feat.’

There was a slightly awkward transition from the playful to the serious which Terro-arwah ended with a blunt question.

‘So,’ shee said, ‘how do we live again?’

Sallorna began by talking about causation. ‘Everything that happens,’ she was soon saying, ‘has traceable effects, even if the cause is an act of will.’

‘True.’

‘In fact, there’s a fantastically complex chain of causes and effects which began at the big bang.’

But surely the tracing task would be impossible. How could so much data be processed?’

Sallorna was ever trying to play down the gulf between Alliance knowledge and that of the Itrakians but at this point she felt she had no option but to explain about computers, about nano-technology and all the other science-based developments. Terro-arwah was indeed astonished.

‘So in principle you, or of course I should say we, could map out the entire process of history?’

‘The project had been started before I left Earth.’

‘So we could know the details of what was in a person’s brain at the time of death?’

‘Yes.’

‘And your wonderful technology allows you to reproduce brains?’

‘Indeed. We have decided on ethical grounds not to do this until we are closer to the re-creation of Alphoma but yes, we could bring anyone back to life.’

‘This is both inspirational and alarming.’

‘It’s reality.’

The teacher sensed that her pupil was beginning to feel emotional and, rather than see herim embarrassed, she suggested a short break. Terro-arwah was instantly against the idea. Sallorna moved her hands in a gesture of acceptance.

‘But even so, you are talking about the re-creation of unimaginable numbers of people, not to mention all the other levels of consciousness of which you spoke; where will all these bodies be, where will they find sustenance?’

‘There will be no bodies, Terro-arwah,’ Sallorna answered gently, ‘bodies are of the physical universe whereas we will be returning to the mental. Already, even in its imperfect form, virtual reality is almost as immediate as the physical one.’

‘It becomes clearer,’ Terro-arwah said. ‘The physical aspect will be relatively small, just something like the computers you were telling me about.’

‘Yes, but it will be organic, a super-brain.’

A small flock of brilliantly coloured birds swooped and settled in a nearby tree. The noise of their chatter reminded Sallorna of Earth. She and the Gombranian remained silent for a while, an interlude which was ended by Terro-arwah.

‘But why would you, or rather *we* if you insist, want to revive people?’

Sallorna paused for a few moments, framing her reply. She then said:

‘Please recall what I said about everything being made of energy.’

‘How could I forget?’

‘Well, everything that happens in the universe does so via energy flow.’

‘I’ve been thinking a great deal about energy and I’ll accept that.’

‘Good. Then the next step in the argument is that every time physical energy is expended the total stock of available energy in the universe is diminished, often ever so slightly, but it is the case that there is always less energy available for the future. Your mighty sun, which sustains all life on Gombran, is like a vast fire which one day will run out of fuel.’

Despite the warmth of the morning, Terro-arwah shivered.

‘We had not thought of such things,’ shee said. ‘The conclusion must be that the universe will run down, getting ever cooler, until all life dies.’

‘That *would be* the conclusion,’ Sallorna said with a surge of brightness, ‘if it were true that the universe is purely a physical phenomenon. But it isn’t. It’s also mental. And there is a source of energy associated with the activity of the mind.’

‘Will power.’

Sallorna smiled at heris quickness of thought and said: ‘Precisely.’

The Itrakian seemed pleased by the tacit praise.

‘So we need consciousness to generate the power?’

Sallorna nodded.

‘And Alphoma relies on this mental power?’

‘Utterly.’

Terro-arwah lapsed into deep thought and, having learned heris pattern, Sallorna remained silent. The Gombranian ended the pause with a new idea.

‘But you previously said that Alphoma contains all consciousness? Surely it could not encompass those beings we call ‘evil’, those who have gone often violently against the values of love and truth?’

Sallorna held her hands downwards, palms facing out, in a gesture of universal acceptance. She said:

‘We need all consciousness because otherwise Alphoma would not be the complete universe but in any case we have long since moved away from the notion of evil. There are undeniably actions which are against the movement towards greater love but we do not judge any individual.’

‘But do not some deserve to be punished?’

‘If anyone feels guilty they punish themselves. If they feel no guilt they cannot be punished because they feel they have done no wrong.’

‘But surely, people who have acted unlovingly will not be in a state to participate in Alphoma without going through a process of change.’

‘We agree with that. Indeed, all of us will probably have to go through some transition process.’

‘Just like some religions suggest.’

‘Indeed. We believe that religions, though inaccurate in many respects, usually convey some truths. After all, they derive from introspection and they are also supported by very many thoughtful people over very long periods of time; their ideas are not to be taken unreservedly lightly.’

‘But why a process? Why not, when recreating people, change them so that they are ready for Alphoma?’

‘Because they would then not be the same people. One way of putting it is that they wouldn’t recognise themselves. In any case, recall that we need to maximise will power. Change thus has to be voluntary. But we are very confident that there will be no problem with this, for once people have seen what Alphoma offers, that is, freedom to do and experience absolutely anything and everything, there will be no hesitation in wanting it to come about.’

Terro-arwah said that shee had many further questions but that shee could no longer deny that shee was getting tired. Sallorna gladly agreed to suspend the discussion until the following morning.

Inevitably Terro-arwah had been pondering during the remainder of the previous day.

‘Sallorna,’ shee said, ‘I have a very fundamental question to start this morning’s proceedings. Sallorna said she was delighted and would do her best to answer.

‘Well, it’s the age-old conundrum as I’m sure you have guessed.’

‘That is; where does the whole thing come from?’ Sallorna suggested. Terro-arwah gestured heris agreement and congratulations.

‘Nothing made it. This is all there is. This is the description of existence. As we have discussed, and I think more or less agreed, there cannot be a ‘first cause’ because, if we are thinking in causal terms, such a cause would itself have to have a cause.’

Terro-arwah shook heris head and said; ‘Intellectually I accept this but it is so difficult to quell the insistent causal question.’

‘I’m sure this is so,’ Sallorna said, ‘but please take my word that with logic as a tool it is possible to engineer a change of mental habit.’

‘We’ll see,’ Terro-arwah said, ‘but in the meantime, settle something for me.’

‘Gladly.’

‘It’s something I have been thinking much about for the past few days. Suppose I accept that there can be no first cause there is still the question as to why the universal system has to have these two phases of Alphoma and Nature. Why is it not possible to have just Alphoma and to cut out the suffering?’

Sallorna smiled once more.

‘It’s similar to the question that is put to many religious leaders. Why does your wonderful god, who supposedly loves humans, create a world with so much misery?’

‘Well?’ Terro-arwah said with some force.

‘Well! One thing to be borne in mind is that if there were no opposites there could be no meaning. For there to be love there has to be at least the idea of hate, for there to be peace there has to be conflict. This, we are sure, is one of the reasons why the universe has to have two phases.

‘But it’s much more than this. For there to be will-power, which is essential for existence, there have to be choices. And this implies that there will be destructive as well as creative choices.’

‘Yet how can you know that the whole thing will work out. If there is free will, as you say, surely there can be overall destruction.’

‘Not so, simply because if the outcome is destruction then there could be no existence.’

‘But this implies that, despite what you said about dark energy and nudges, there is no freedom. The outcome is guaranteed!’

‘Overall, yes; there is such a guarantee. But within the system, as I said, individuals have choice.’

‘I still find this very difficult.’

Sallorna thought for a moment before saying:

‘Imagine a tube which has been completely emptied of all matter. At one end of the tube a cloud of dense gas is introduced. This cloud stays together but the individual particles from which it is made dash about in all directions. A very gentle force pushes the cloud forwards to the other end of the tube. It drifts towards a guaranteed destination but within the cloud there are particles which attempt to retreat, which interfere with the forward progress of others and which seem, generally, to be opposed to the other particles.

Terro-arwah thought for a while then said; ‘There is much for me to ponder but alas I have a busy day ahead of me. I will think of all these things whenever I have time but when we next meet, tomorrow I trust, I want you to explain how it is that we, so far behind your Alliance in our thinking and technology, can be of the least assistance.’

The next day, Terro-arwah promptly reminded heris visitor of the agenda for the morning. Sallorna said that she had by no means forgotten. She began:

‘I have doubtless given you the strong impression that the Alliance is almighty but our power is still limited. There will have been massive advances since I left Earth but I have

no doubt that even with these we have to be careful how we proceed. The truth is that for all our progress, all of the Alliance planets have come close to disaster.'

'What kind of disaster?'

'Well, there's an object lesson in a planet very close to Earth, one we call Venus, which was once a seeming paradise where evolution made relatively rapid progress. Humans emerged much earlier than they did on Earth but alas they were unaware of the consequences of some of their actions. They produced too many damaging materials from their manufacturing processes, the planet began to heat up and very swiftly it was out of control, paradise turned into an inferno.'

'It seems impossible,' Terro-arwah said with a shudder, 'we are so puny compared to nature.'

'That's how it seemed to them,' Sallorna said, 'until it was too late. We almost suffered the same fate on Earth. The good news is that we discovered, just in time, a way of reversing the heating process. My own planet was saved and when I left it was being predicted that, thanks to a massive restoration project, within a few hundred years life on Venus would once more be possible.'

'So perhaps it is flourishing now, given all the time you spent on your journey?'

'I trust so,' Sallorna replied, 'but whether or not planets such as Venus can be restored, the fact is that millions of humans perished there under terrible circumstances. There are many other examples of disaster coming from incomplete knowledge. The Alliance decided, many, many years ago that a balance had to be struck between respecting the freedom of others and the prevention of unnecessary suffering.'

'Perhaps you mean that they, or I should say you, want to speed up the process of re-creating Alphoma?'

'Some, perhaps, but not most of us. Time becomes irrelevant when one can choose to live or die knowing that Alphoma is instantly attainable.'

'So,' Terro-arwah said after a long period of thought, 'the Alliance sent out people like you to contact people like me to help us to avoid disaster.'

'Yes, and to set up regional centres from which your successors can reach out so as to save others from needless suffering. As I left Earth we had not completely solved the problems of rapid travel and quick long-distance communication. Judging by the lack of other Alliance presence here on Gombran there must still be problems. Maybe they will never be solved, in which case the kind of task which I am performing will be the only way of communication until the universe begins to contract.'

'You think there might be human life on nearby planets?' Terro-arwah asked.

‘It is very likely, according to our predictions, though Gombran seemed the most promising. But certainly there are planets which, in maybe a few hundred years time, your successors could visit with an expectation of finding self-conscious beings.’

‘And how many ambassadors, if I may call you that, have been despatched by your alliance?’

‘Oh, thousands, literally thousands.’

‘More candles in the darkness?’

‘Perhaps.’

‘But why have you come alone? Surely it would have been all the better to have had some companions?’

‘There might have been advantages but we needed to conserve. Even with the most advanced technology available at the time I left, there were limitations. In any case, I am happy to be the sole ambassador to your lovely planet. And if I get lonely I have a wonderful simulator on my spacecraft which can take me, with almost total reality, back to my beloved Earth.’

‘Would that I could see this,’ Terro-arwah said.

Sallorna shrugged. ‘Alas my shuttle is designed for one but in any case the rules of my mission would not permit this.’

‘I guessed as much. But enough of aspirations, I need to know how things might be done. What are you proposing? I am close to the end of my life and you have already made it clear that you are not proposing to grant me a reprieve from natural death.’

Sallorna shook her head in a gesture of regret. ‘No. As I said, we have tried such tactics on other planets and direct action such as that has always created problems.’

‘Then what?’

‘We have prepared a well-tested strategy. The first thing will be for you to talk to others whom you trust. Of course there will be scepticism at first but when the time is right I will speak to them and prove that what you are saying is true.’

‘Then, when they are reconciled and agreed, I will arrange for information to be transferred to your brain and to theirs. You will have the basis, both in technical terms and in those of good governance, to move rapidly forward. Once that process has started I will leave you, because freedom is of the utmost value.’

‘You will leave to die?’

Sallorna smiled. 'Well, she said, 'I might linger for a while to see how you fare, then arrange another period of coma so that I can intervene again in a few hundred or thousand years time if need be but then, yes, once I am confident that things are moving in the right direction I will choose the re-birth into Alphoma where life will be untroubled and I can embrace all my loved ones.'

'And if I refuse to cooperate?'

'Then I will seek someone else in another part of Gombran and continue searching until the seed is sown.'

'Surely you could coerce me, or even programme my brain.'

'Indeed we could, but that would be of no use. Remember will-power is the essential ingredient.'

Terro-arwah closed all four of her eyes and was silent for a long time. Shee then said; 'This is a dreadful responsibility which you put upon me.'

Sallorna agreed. 'Yet this is the way which we have found has the best chance of success. But, as I said, if you feel disinclined there will almost certainly be others who will take up the burden. I can even, if you so wish, erase all memory of our conversations from your mind. If someone else takes up the challenge and begins to speak of me you will be as sceptical as everyone else.'

The Gombranian thought for a long time. Sallorna was delighted that when shee spoke it was as though the offer of the memory-wipe had not been heard.

'Sallorna, what you have told me is monumental, so testing to the imagination but there is one major difficulty.'

Shee paused. Sallorna waited, as she had learned to do. Terro-arwah broke the silence.

'The big bang, the expansion and contraction, the emergence of consciousness, the gradual assumption of control; all of these things and others I can grasp but I struggle with this notion of mental energy. What does that mean? How can Alphoma exist?'

Sallorna nodded. 'It is difficult. To explain it I will need to tell you about more of our science.'

Terro-arwah smiled. 'Could you not just save me the labour and feed the information directly into my brain?' shee asked.

'Indeed, I could,' Sallorna replied with a jocular nod, 'but our strict policy is not to do any direct feeding until all the arguments have been presented and the chosen person has agreed to the entire scheme.'

‘I suppose that’s honourable.’ Terro-arwah said with a sigh. ‘So I’m going to have to work.’ Heris expression indicated humorous resignation.

‘I’ll make it as easy as I can,’ said Sallorna with a delighted laugh.

She then treated her distinguished pupil to an account of electro-magnetism and radiation. Fortunately the Itrakians were the Gombranian inventors of the compass so Terro-arwah was familiar with the principles of magnetism. There was also a level of understanding of natural electrical phenomena so the journey to understanding was not too arduous. Before too long Sallorna was able to say;

‘As energy becomes more organised, more physically complex, it generates a field of radiation around it. With material objects these fields are small although, for example, trees have forces around them which some humans can sense. But it is only when we move higher up the evolutionary path that the fields become really significant.’

‘And ultimately so in humans?’ suggested Terro-arwah, who was keenly listening.

‘Yes, precisely. The human brain is an electrical device with a power which we can measure. It produces a field which in some planetary civilisations is visible. Indeed, some Earthlings claim to be able to perceive auras but mostly we cannot. They are, however, detectable with instruments.’

Terro-arwah was nodding affirmatively. ‘There are Itrakians who say that we all have auras. Some allege that they can derive information from them.’

‘Probably with good reason,’ Sallorna responded. ‘We have evidence that the fields contain data and that when two of them come together, as when humans touch head to head, there is sometimes significant, largely unconscious, communication. There is also the phenomenon when people get together in large numbers at sports events or performances of drama or music whereby there is a kind of multiplier effect. Instead of being separate, as they usually are, the brain fields begin to merge and emotions become accordingly heightened. Alas the phenomenon has been used by demagogues and some religious leaders to very harmful effect.’

Terro-arwah nodded. ‘We know to our cost too!’ shee said and paused for a few moments of reflection before saying;

‘And these fields, I suppose you are about to tell me, are associated with conscious activity.’

‘Indeed. We know that there is energy movement within them and that these movements are particularly associated with efforts of will.’

‘Have you established a science of their operation?’

Sallorna smiled. 'That's the interesting aspect. Energy movements within the fields are not scientifically predictable. The only information we have about them is what people report of their conscious activity. We can detect brain changes which come about as a result of such activity but they are ephemeral and unquantifiable we cannot predict them. This is largely why we think of consciousness as inhering in the brain fields.'

Terro-arwah lapsed into one of heris long silences. At last shee said; 'It's hard to digest but it's also thrilling. I can't help thinking of juggling. The brain keeps the balls of consciousness in the air. When the brain stops, so does consciousness.'

Sallorna laughed outright. 'What a lovely analogy!' she declared, 'it'll stay in my mind.'

'Glad to have been of influence,' Terro-arwah said with a wry smile, 'but you are suggesting that the balls develop a life of their own, which indeed sometimes they seem to do.'

'Well,' said Sallorna, still smiling, 'it doesn't do to take analogies too far but I like the idea of our conscious selves as being your looping fruit.'

'Good,' said Terro-arwah, his face portraying a return to seriousness, 'but pray continue. I'm ready to take the next steps'

Sallorna composed herself before saying:

'So the activity in the brain creates a radiation field, a kind of globe. This alters the energy in the immediate vicinity.'

'Are the environmental changes permanent?'

'Yes they are, though usually they are tiny and extremely difficult to detect. But they are also cumulative, energy is being changed all the time as a result of conscious activity.'

'But these brain fields must have mass, they are to some extent physical phenomena?'

'Yes, they do have very tiny mass'

'So that when someone dies, that mass dissipates.'

'Indeed, but bear in mind that most people shut down thought processes gradually as death approaches because that generally is the effect of illness but, yes, anyone coming to a sudden end has a swift loss of field.'

'This perhaps is where the idea of the departure of a soul comes from.'

'Very likely, but it is not an entity which floats off and exists elsewhere, it is an activity which ceases.'

‘So much is understood but I think you have also suggested, earlier in our discourse, that whilst they exist, these fields have a power of their own. They depend upon brains for existence but some of their driving force is self generated.’

Sallorna was delighted with this intervention and her expression conveyed pleasure. Terro-arwah looked at her and smiled. It seemed that both were aware of a surge of well-being. ‘Maybe our force fields merged a little,’ Terro-arwah said softly. Sallorna responded. ‘I’m sure they just did.’

She felt some confusion and asked the Gombranian to repeat the comment about self-generation. She then answered;

‘Yes, the exercise of will power, the processes of conscious thought, are power generators; they reverse the physical run-down of energy.’

‘Can this be proven?’

‘In the laboratory yes. There have been volunteers who have agreed to have all their data transferred to an inert, artificial brain. When this is subsequently activated we can measure the energy flows.

‘There was a much bigger experiment in the planning stage as I left on my journey,’ Sallorna continued. ‘Alliance scientist were working on what we call a pre-Alpha trial. The idea is to feed the personal data of many people into a highly efficient brain which will be contained in a sphere filled with an inert gas. It is predicted that after the initial charge to start the system the sustaining energy input from outside will drop dramatically. The sphere will be filled with mental activity which will feed into the brain.’

‘Real people?’ Terro-arwah asked in astonishment.

‘Yes, volunteers who are very willing to give the virtual life a try.’

‘And will they continue in the virtual world?’

‘No, the experiment is time-limited. Some of the volunteers will be restored to their natural lives, others will probably choose to die.’

‘But the need for external energy input will not disappear entirely?’ Terro-arwah asked, his scientific curiosity fully aroused.

‘No, but neither would we expect it to; that will happen only when all the energy of the universe is brought together in Alpha. Our calculations show that there is a critical point and this is why we need all of the available consciousness.’

Terro-arwah nodded as though an expectation had been confirmed.

'I'm sorry that you had to leave before the experiment could be conducted,' Terro-arwah said, 'I would give much to know the outcome.'

'Me too', Sallorna said, 'but Gombran was of higher priority.'

'For which I am truly grateful,' Terro-arwah replied. Shee indicated that there was a need for the customary thinking time and was silent for longer than usual.

'And yet,' shee said as though there had been no pause. 'I still find it almost impossible to imagine how the vastness of the universe, so much greater than we had imagined if what you tell me is correct, can be brought together in your Omega process.'

Sallorna nodded in acknowledgement of the weightiness of the question.

'We, all of us in the universe, will cooperate to create local centres modelled on the final state. Imagine, if you will, huge spheres of sparkling, glowing, almost weightless substance with a tiny core, the source of the gentle gravity which keeps the units together.'

'The clouds will merge, the organic computers with them. According to the designed pattern, the cores will congregate, ready for the final integration. At the moment of fusion, the mighty moment, a peaceful, glorious, joyous happening which will be the very antithesis of the cosmic explosion, the units will lock together and Alphoma will be formed. There will be a celestial glowing, the last physical display, and then there will be darkness.'

'But light within?'

'Light upon light, life upon life. Timeless bliss for all.'

'To be followed by the explosion?'

'No,' Sallorna said. 'It is necessary to change one's thinking. The account of the universe has to be self-contained. We still have strong instincts to see things linearly but the framework is once and for all, static and magnificent.'

Terro-arwah pondered further. Sallorna waited, feeling that the fate of her mission was in the balance. Of course there would be other possibilities but she knew that there were no other thinkers of the calibre of her chosen one.

'Sallorna,' shee said eventually, 'I have much to consider. Please indulge me with a night and a day of cogitation. For a change, visit me tomorrow evening when the air is cooler and the flowers will be treating us to their exotic scents. You will bring me more Earthly music and then will I tell you of my decision.'

The Earthling smiled serenely and said; 'So be it.'

There was a guideline for outreach agents that initially the use of technology should be kept to a minimum but already Sallorna had given herself permission to use a minute player which contained all the music known to the Alliance. Terro-arwah had specified something from her native planet. The obvious challenge was what she should choose.

She waved farewell and softly called *kalyeka*. Something in her host's demeanour spoke to her.

'Schubert' she said to herself decisively as she turned to walk away.