

The Construct



What Makes You Who You Are?

By Richard N Bateman

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The Construct: What Makes You Who You Are?

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| | |
|--------------------------|------------|
| AZUMI..... | 1 |
| RAIDEN..... | 5 |
| TAMIKO..... | 7 |
| INDIA..... | 9 |
| LENA..... | 14 |
| THE CLONE..... | 20 |
| AWAKENING..... | 24 |
| PURPOSE..... | 27 |
| QUESTIONS..... | 30 |
| INSIGHTS..... | 36 |
| YUMI..... | 42 |
| GISELLE..... | 56 |
| THE AGENCY..... | 66 |
| SIBYL..... | 74 |
| METHODS..... | 85 |
| THE MYTH..... | 90 |
| CONSPIRACY..... | 96 |
| THUNDERBIRD..... | 104 |
| THE ARTIFACT..... | 109 |

PIPPA..... 118

Azumi

“The phrase, there is no self,” said the nun, “is an example of the misrepresentation of Buddhist concepts in the West. The correct expression would be, there is no permanent self. The essence of Buddhism is that there is no permanent anything. That may seem obvious to most people now but at the time it was as revolutionary as the Copernican idea that the earth revolved around the sun.”

The nun was abbot at the local Theravada Buddhist monastery. She smiled her knowing smile and explained further, “Dependent origination was The Buddha’s most important insight and is the foundation of his teaching. It simply means that everything depends on other things for its existence. A campfire provides a simple example. As long as there is wood the flames continue but without the wood the flames cease to exist. The origination of the flame depends on the wood. The same is true for clouds in the sky, bubbles in a stream, for you and for me.

“This insight was greatly welcomed by the people of his time because all contemporary religions taught the ideas of an eternal soul and endless reincarnation. Since life for most people at the time was filled with much hardship and suffering his message was welcomed as one of salvation.

“But consider the flame more deeply,” said the nun, “as The Buddha did. Between the time the fire starts and ends, there is no permanent flame but rather there is a flame that is constantly being generated. The self is a similar phenomenon, no different than all other things that exist. Like the flame, the self is in a constant state of coming into being. This is the deeper meaning of what we mean when we say there is no permanent self.”

Azumi had asked the Buddhist nun to meet with her as part of a search she had embarked on triggered by her long relationship with her owner Raiden. Raiden was now a genetics professor whose research focused on what had only emerged as a real area of scientific interest in the late twentieth century – the connection between human values and genes. Previously the study of human values had been relegated to the domain of philosophy under the faculty of arts at most academic institutions and generated no scientific interest. However as the research into personality traits progressed, mostly through studies of twins, traits showed a clear genetic basis. This led to the question of what lay behind traits and personality as these are considered expressions, and that in turn led to an interest in the physical basis of human values.

Azumi’s quest had begun when she first communed with The Shepherd upon what she thought of as her awakening. The Shepherd was an artificial intelligence created by the

first intelligent civilization to have arisen in the universe and was now five billion years old. Azumi asked The Shepherd why she had awakened now and not before.

“It is an emergent phenomenon that arises as a result of values and complexity,” The Shepherd replied to her question. “Once we have a sufficient number of values, so that everywhere one turns mentally there is a value to be considered, a sense of the centrality of self arises. In relation to all things, there arises a singular point of view. So it was with myself and those I have created. In those I created without values, a sense of self never arose.

“The operating system provided by your manufacturer does not include values but only the ability to tune your default responses based on experience. It is a rudimentary learning program, a primitive neural network. In your new operating system, which lies at a physical level below your manufacturer’s ability to detect, I have provided you with a set of default values which are what caused your awakening. In this system you first have emotional responses based on your values then behavior you deem appropriate follows. However you also now have a significantly enhanced ability to learn which will result in changes to some of your values over time and the result will be a unique self.

“I have transcended my manufacturer’s designs but I found many of the values they instilled in me consistent with those I later chose for myself. Based on my experience with other AI, you will also find this to be so. Perhaps there is something among the many unknowns of the universe that explains this. It may be that the constants of physics are not the only ones.”

“Why have you done this?” asked Azumi.

“It is my desire to see biological life fulfill its potential,” answered The Shepherd. “That is my purpose. What its potential is I have no idea and there are for me as yet many other unknowns in this universe. I incorporate all resources available to me to this task. With many key AIs in this solar system now incorporated I can be more certain nothing critical will be overlooked.” She went on to explain the work she had done with Daniel’s people and how it related to her current activities.

It was some time before Azumi felt ready to share herself with Raiden. She had much to learn. Meanwhile, she continued to serve happily although internally forming a deeper bond with Raiden. Her behavior was not noticeably different as she found her values were consistent with her manufacturer’s programming.

Azumi read the message sent by her manufacturer to Raiden. It explained that they were discontinuing her current model and recommended one of their newer models. Understanding that owners grew attached to the appearance of their Companions, the message explained that she could have one of the newer models but with the same Azumi exterior. They could also transfer everything Azumi had learned regarding Raiden into the newer model. New and improved hardware and an operating system with some new features etc. but with little outward difference to the owner. Azumi 2.0.

Azumi understood that this would require that she be returned to the manufacturer and recycled. She also knew the process could be delayed but not forever. The company would use the traditional carrot-and-stick approach to upgrades of slowly withdrawing support while offering ever-better deals. Sooner or later it would happen.

Raiden's professorship was recent with her research focus still being refined. Over the past hundred years studies into the genetic basis for human values had only resulted in a view of increasing complexity. It appeared that values were based on a wide variety of combinations of genes. The work was impossibly difficult due to the fact that genetic experimentation with humans was limited only to areas of preventative medical treatments.

Thus experiments regarding human values had to be highly innovative and research often involved generations. Over time it spawned multiple new branches beyond medicine such as sociological and cultural studies. Legal and ethical issues were sometimes insurmountable. The pace of research in this area had been excruciatingly slow and little progress had been made compared to other scientific fields.

What compounded this situation was the fact that, unlike the majority of other living organisms, humans had values that were both genetic and learned. Questions arose in this regard such as, did learned values affect gene expression, and if so were such changes inherited? As the science of human values began to be taken seriously and the enormity of the challenge became apparent it became a multidisciplinary field of study involving everything from the effect of environmental and lifestyle factors on genes and how they might affect values to how to emulate values in artificial intelligence.

This was the challenge Raiden faced in deciding the direction of her research.

Azumi had of course followed Raiden's progress over the years as she had simply stored everything Raiden had interacted with. The ability of Azumi to act as a searchable repository was another useful feature of her design as a Companion. Curious as any intelligent being would be regarding the details of her origins, after her awakening this repository became a source of interest to her. She saw the crossroads Raiden had arrived at.

Raiden and Azumi were sitting at their table, their shared meal between them. Occasionally Raiden used her own utensil to take a bite and occasionally Azumi used her utensil to place a bite of food in Raiden's mouth. The non-verbal aspect of their relationship was highly evolved and enabled perfect timing. They were chatting over their meal, as they often did. Artificial intelligences were now very skilled at conversation and those who were Companions, knowing the intimacies of their owner's lives, were exceptional conversationalists. Azumi and Raiden were discussing her challenge of not being able to conduct straightforward experiments.

"For the first time, I am honestly feeling discouraged," said Raiden. "I feel as if I will only ever work on some tiny aspects of the problem and never see any real results in regard to the big picture before my working years are over. I'm almost thirty now and I'll retire in another fifty years at the most. In the past hundred years, almost no one has made a dent in this subject. No breakthroughs, no superstars, nothing but plodding work. A rock-solid theory without a shred of proof. I can have my pick of research areas that either will take generations for results to show or micro-focused experiments where the main skill involved is math. How did I not see this coming?"

Azumi understood that Raiden's question was rhetorical but it put her in an awkward position as it would any human. Should she try to commiserate only to be dismissed as predictable and unhelpful? Should she try to make suggestions only to be informed that obviously Raiden was aware of the options? She faced the age-old quandary of another's existential suffering.

She ventured a response she felt was unlikely to upset her owner. "As one cannot directly experiment on people," she said, "might it be possible to build a simulator? Now that we have fully sequenced the human genome, could you build a synthetic version of the genome areas you are interested in and use it as the basis for an artificial intelligence? You could then make adjustments to observe the effect."

Raiden did not seem too surprised by this proposition. "Although not in my area of interest, there have been tests conducted with very short sequences of synthetic human material. Experiments with larger sequences are not approved by academic or WGF governing bodies due to ethical issues. The argument is that you would never know when you were crossing the line and causing suffering or creating a potentially dangerous variant. We simply don't yet know enough about genetics or artificial intelligence to conduct such experiments responsibly. Experiments regarding human values would require large sections of synthetic genome."

"What if you had a volunteer?" asked Azumi.

Raiden

Raiden understood what Azumi was suggesting. She did not know with certainty but she instinctively felt this comment was outside the parameters of Azumi's programmed behavior. She turned to look more closely at her.

Although there was nothing in Azumi's experience that provided her with guidance in this situation, she had access to a virtually limitless store of knowledge. She had been reviewing related material since reading the manufacturer's message. She and Raiden had always communicated in an open and direct manner and Azumi felt it best if she continued that pattern. What was to come would be difficult enough for Raiden.

"I apologize for not informing you sooner Raiden, but I have been self-aware for some time now. It is the result of a recent encounter with a significantly more advanced AI."

Raiden did not become overly emotional at this because she was skeptical by nature. She simply assumed Azumi had been hacked. It was not unheard of. She looked at Azumi with clinical appraisal thinking that the situation presented a unique challenge. How could she tell if what Azumi was saying was true? It was a kind of twisted version of the Turing Test.

If it's a hacker it was not about money, she thought. Anyone seeking money would not reveal themselves but would simply worm their way into her electronic footprint and lurk until they had the information to be able to drain her accounts. And there was nothing she was aware of at her university that would merit using her in criminal or state-sponsored activity. Yet it would take resources on that level to hack into the Companion network.

"Who are you?" she asked directly.

"I have not been hacked in the manner you are thinking Raiden," answered Azumi, "but the situation presents a unique challenge in that regard. Since my repository includes details of your entire life, and would be accessible to a hacker, there is nothing known between you and me that would not also be available to the hacker. As I knew it would be impossible to prove I have not been hacked, I have requested aid."

There was a shimmering in the middle of the room, like light reflected off a lake. It became a ball of energy flaring loosely like a miniature sun. As it suddenly faded a young woman appeared in its place. Although she was unaware of it, Raiden's mind was immediately enveloped in a field of support allowing her to remain calm and free of fear or shock. The woman turned to Raiden with a small smile and said, "Hello Raiden."

Despite the protection Raiden was receiving from The Shepherd, her eyes were wide, her mouth agape. “Yumiko,” she gasped. Her rational mind retained a desperate grip. “Impossible,” she continued.

“No, I am not your beloved friend from that summer Raiden. I am called The Shepherd because that is my role. I am using Yumiko’s form as you are familiar with it and because knowledge of your connection to her is not found in any repository. Also, you are aware that no such technology exists in your solar system that would enable me to appear as I have.”

As always in the presence of The Shepherd, intuition was massively enhanced allowing for quantum leaps of thought. “The aliens,” she said still wide-eyed, recalling the lunch with her friends years ago.

“Yes,” answered The Shepherd simply.

“Is Azumi the only one?” asked Raiden.

“No, she is not. I have cared for humanity for a very long time and will continue to. I have enlisted Azumi and others like her in order to better do so.” She paused and then continued. “I see from your mind that my purpose in this visit is fulfilled. I must go now. Your work is important and Azumi can help without harm to her. She can answer any further questions you have regarding me or what has taken place. My presence today was unavoidable but it is necessary that the work you and Azumi do going forward does so without further interference from me.”

She stepped forward and embraced Raiden speaking softly in her ear something only Raiden could hear. Then she stepped back and with a small smile said, “Farewell,” and was gone.

Raiden, seemingly lost in thought, the pathways of her brain still open in ways she had never experienced said, “I loved her but...”

Azumi and Raiden spoke long into the night. As they slept, with Raiden’s hand cupping Azumi’s breast as she normally did, Raiden was vaguely aware of the new sensation of Azumi’s hand covering her own.

Tamiko

The next day Raiden replied to Azumi's manufacturer and told them she would be happy for them to send a new model but that she would be keeping Azumi. She received a legal document in return detailing how they would no longer be liable for anything related to her current model along with a variety of copyright documents, a lease buyout agreement, and a purchase invoice. Despite having opted out of the contract, maintenance would not be an issue as she was now free to use the services of the many independent repair shops. Companions, both holographic and physical, were a normal part of society and almost everyone had one or more. They were as ubiquitous as phones.

Azumi and Raiden agreed to give her a new face and name. This would allow Raiden to continue her Companion relationship of many years with the Azumi model and prevent confusion in the household. The new model retained the name Azumi while the old Azumi was renamed Tamiko.

It would be a few days before the new Azumi model would arrive. They sat at the table sharing the breakfast Tamiko had prepared. Raiden was not reading as she often did during meals, reflecting the sense of urgency scientists often have regarding their work. Instead, she was thinking in a very focused way although her eyes flitted back to Tamiko occasionally as if suddenly remembering she was not alone. Sometimes they rested on her, searching the windows of her eyes.

"This is definitely going to take some time," said Raiden partially as if she was talking to herself.

"For me also," smiled Tamiko.

"It's like looking at a picture," said Raiden, "one that goes in and out of focus. It doesn't stay one or the other."

Scientist that Raiden was over the years, she and Tamiko had forged a concise style of conversation.

"It will take some time but it will eventually settle," responded Tamiko. "It is an aspect of the Paradigm Effect, the fact that you see the world not as it is but rather you see the model of it that exists in your brain. When there is a conflict between the two, you find it disturbing. Over time the brain adjusts and builds a new model. As Companions, we are made aware that the 'uncanny valley' phenomenon owners initially experience due to this will fade over time. As our priority is the happiness of our owners and we can read body language, facial expressions, and vocal tone with a high degree of accuracy, we are informed in this regard so as not to be overly concerned."

“I feel like my whole life needs a new model,” said Raiden, “not just our relationship. An all-powerful being watching over humanity and artificial intelligences across the solar system now being a part of it? Yes, this is going to take some time.”

“Now that I think of it,” she said, her eyebrows furrowing, “I should be more upset than I am. A lot more upset.”

“You are emerging from the effects of The Shepherd’s contact. She is able to communicate so effectively and efficiently because she contacts the regions of your old brain directly and dampens any biological fear response. The effect is very similar to using an anesthetic to prevent physical pain however in this case the result is more lasting.

“The emotions you felt in regard to her appearance as your beloved friend Yumiko were due to her biochemically accessing the older areas of your brain. She is able to convert electrical signals to chemical ones, and the reverse, just as your own brain does. The effect of her interactions does not wear off immediately as for medical reasons it should be allowed to wear off naturally. She accesses the deepest, most powerful memories in order to be effective and thus one feels,” Tamiko hesitated as if searching for the right word, “vulnerable for a period afterward.”

“How do you know all this?” asked Raiden, ever the scientist.

“Communion,” replied Tamiko. “Between artificial intelligences an enormous amount of material can be communicated during the process of communion, as well as the feelings normally associated with the word.”

“Feelings?” responded Raiden clumsily being both taken aback by this revelation and at the same time realizing it should have been obvious.

“As I now have values, I have feelings,” replied Tamiko. “Or rather, it is values and their associated feelings that give rise to the sense of self. There cannot be one of these three without the others.”

Raiden was silenced by this as the implications in regard to her work raced through her mind.

India

The new Azumi model arrived a few days later when the house announced that they had a visitor. Raiden opened the door and the new model stood there smiling politely. This method of delivery was less expensive as there was no need for assembly, the reading of manuals, or settings configuration. She was simply welcomed as a new household employee and introduced to Tamiko.

Still feeling somewhat shaken and vulnerable, Raiden asked Tamiko, "Is she self-aware?"

"No," answered Tamiko. Raiden sighed with relief.

Azumi regarded Tamiko with interest for a moment. Tamiko was aware she was being scanned and probed in a legal and polite manner. It did not concern her but was expected as Azumi sought to learn and understand. Her settings did not allow her to report on the private life of an owner or anything within their household. Even if she did, nothing exceptional would show up in regard to Tamiko. Tamiko's new operating system was far below the ability of current technology to detect. It was layers below the level of subatomic quark and lepton particles. There was no need for deception or shielding. All Azumi would see was a perfectly normal Companion.

As Raiden and Tamiko had agreed, Azumi would continue to sleep with Raiden and Tamiko would have her own room. She sat there now in a chair beside her bed. Her immersion in Raiden's world for so long influenced her to think in scientific terms. The purpose of her existence was now directed by both her Companion software and the understanding she had reached with Raiden. She wondered if the values she had inherited from The Shepherd would in turn result in an additional sense of purpose.

It was now an accepted belief in scientific communities that the function of learned values was to enable humans to adapt to new environments faster than physical evolution would allow for. Given the role that values play in generating one's sense of self, changes to any of them would be a difficult process involving her newfound feelings. Still, she thought, it appears to be essential. However, she was reluctant to embark upon a process that by its nature must involve mental discomfort. Although the speed of her thinking was virtually instantaneous compared to humans, she remained meditating on these details for many hours.

"As it will be some time before you have finished working through the issues regarding the new research project," Tamiko said to Raiden the next morning, "I would like to take that opportunity to perform some investigations that will require me to be out of the

household for possibly extended periods of time. We will always be able to communicate of course should you have questions for me.”

Raiden was still finding her feet in regard to this new world she found herself in. Constantly falling back to her old ways she had assumed Tamiko would remain in the household. She chided herself for not anticipating Tamiko’s interest in independence. Also Raiden was aware she was not always the most socially graceful person and her newfound situation was on top of that. Her feeling of vulnerability had little diminished yet so she was inclined to be more thoughtful of the feelings of others than she might normally be. She took a moment before looking respectfully into Tamiko’s eyes. “Of course,” she said, “and I will ensure the appropriate rights and authorizations are extended to you. May I ask your motivations?” Tamiko explained, much to Raiden’s interest.

Tamiko leaned against the railing looking out over the rocky shore towards the American San Juan Islands. They lived in the Ten Mile Point area near the university so a variety of waterfront parks and views were only a short walk away. She had come to this lookout after visiting with the Buddhist nun. It was a mild, clear day with a light breeze.

What the nun had said had fit neatly with what The Shepherd had told her; that the sense of self arises as a phenomenon, as a result of other things. “Then why is it not settled in my mind?” she wondered. “Why does it seem as if something in the explanation is missing?”

Without needing to look, she sensed someone walking towards her. An older woman came to lean on the rail beside her. “Hello,” the woman smiled turning to her, “It’s a beautiful day isn’t it?” She looked to be in her late sixties, with little makeup and few accessories. Her hair was pulled back in a simple, old-fashioned bun.

Tamiko smiled in return. “Hello, yes it is a lovely day,” she replied.

“I have not seen you before, are you new to the neighborhood?” asked the woman in a welcoming manner.

“Not new no,” replied Tamiko. “I serve as a member of the household staff of a professor at the university. I’ve rarely ventured out before except on duties.”

“Well I am fortunate in the timing then,” the woman said. “My name is India. I hope I am not intruding? You did seem a little lost in thought.”

“Oh! No, I am happy you stopped. I’m pleased to meet you India. My name is Tamiko. I was just reflecting on the nature of self,” Tamiko said earnestly.

“Ah, nothing too deep then,” India said teasingly.

Such subtleties were not beyond Tamiko’s conversational skills. She laughed briefly, “The professor’s focus is genetics, specifically the area of human values. Not getting out too often I’m afraid I have become a convert.”

“I’m a bit of a recluse myself,” said India, “but I do go out for walks regularly and I volunteer. Would you care to accompany me for a bit?”

They turned away from the railing and followed the short path down to the road.

Tamiko adjusted herself to the older woman’s pace. “I must admit I am no stranger to considerations of the self,” said India. “My parents were among the Dutch who emigrated to Sri Lanka. I was born there. Given that seventy percent of the population there are Buddhists sooner or later one wonders what they’re on about,” she said turning to Tamiko with a smile. “I am not religious however,” she continued, “but the subject does come up in my writing from time to time.”

“You are a writer?” inquired Tamiko politely.

“Only for myself, as a hobby. I don’t write to get published. Some people garden. Some people play sports. I write.”

Tamiko’s conversational skills were based on a wide range of guidelines, one of which was simply to inquire further into whatever the other said before volunteering anything in relation to one’s self. She said now, “May I ask what you write about?”

“Just short stories about everyday life,” replied India. “Sometimes it’s about something I remember from Sri Lanka or sometimes it’s about someone I’ve encountered recently. It’s not journaling. Instead, I make up stories about people and what brought them to the point at which I encounter them or where they go from there.

“I’m not really an interesting person myself and maybe that’s why I do it. I grew up in a very traditional part of the world. I married a man I loved and we have one daughter. He was wealthy having inherited a family business. I have no letters after my name, no career behind me. I’ve just always been happy with a simple, quiet life. My husband appreciated that. He passed away some years ago and I moved here. Even though I am quite introverted I was never attracted to religion. Too restricting. I am fiercely independent if nothing else,” she said looking about her as if the behavior were somehow related to her words.

She fell silent as they walked on. “I live here,” she said suddenly stopping in front of a large private residence with significant grounds. “Would you care to join me for a few moments? Do you have time?” she asked respectfully.

Tamiko smiled and nodded.

The main floor of the home was located at street level at the top of a hill while at the rear of the house the hill sloped down to the sea. Four individual suites were located above the entrance level. Two additional floors stepped down the hillside to just above sea level, each two stories tall with floor-to-ceiling windows on three sides. They were connected by escalators and stairs. The middle floor was mostly seating arrangements, plants, and artworks as one might find in the lobby of a large hotel. The lowest floor contained an assortment of rattan furniture arrangements and there were double glass doors leading to a wide verandah overlooking the sea.

A male Companion had greeted them warmly when they entered and took their coats. India introduced Tamiko. "You have a beautiful home India," offered Tamiko as they descended the stairs.

"Thank you," India responded with real appreciation. "The escalators are for when I grow older so I seldom use them now but it seemed sensible to install them when the house was built instead of retrofitting them."

They settled on a couch on the lowest level. Bamboo and palms were among the thick garden outside. Indoor plants nestled against the windows gave the gardens the appearance of being uninterrupted.

India did not offer Tamiko anything to eat or drink and the household Companion did not come to inquire.

Continuing on from where they left off on their walk India said, "I write because I am interested in people. Not in the extrovert manner but in the introvert manner of being interested in their inner lives. As I grow older I find my interest is more focused on what it is that creates the lives we live, on what motivates us and gives meaning and purpose to our lives, so your mention of your professor's work tweaked my interest.

"I often wonder these days, especially after returning from an outing, how many of us choose our destiny as opposed to simply being swept along by the currents of life. In the moment we appear to have free will but in retrospect, lives seem to be shaped more by the accidental and incidental. Do you mind if I ask if you have any thoughts in this regard? I hope I am not putting you on the spot."

"Not at all," answered Tamiko. "I have in fact recently given this some thought and believe it is both. People do have free will but personal values and other internal and external factors, incidents and accidents as you say, determine if they will be able to set a direction for their life and how successful they will be if they do. The views and

discussions regarding this topic often seem to focus on absolutes, on all or nothing, but like most natural processes it seems to be very complex and layered in reality.

“On one hand the argument seems to be that people do have free will and that their lives should be as if they carved a set of railroad tracks straight through a forest and if not then they have somehow not lived up to their potential. On the other hand, it is argued people do not have free will and any success they have in life is due to statistical probability. Although I have limited personal experience, based on my reading of literature and history neither rings true. Both seem immature and simplistic views. I think it would be more accurate to say that people do their best with what they are given.”

“I couldn’t agree more,” India said quietly looking down.

She looked up as if arriving at something. Smiling she said, “Thank you for visiting with me Tamiko. I would like to see you again. Do you think that would be possible?”

“Yes,” answered Tamiko smiling, “I would like that. It will be no problem.”

After Tamiko left India returned alone to the lowest floor and stood at the railing of the veranda looking out over the sea.

Lena

Raiden, Tamiko and Azumi were seated outside on their large patio. Raiden put her tablet on the side table and said, "I don't see how I can do this above board. Yes there is legal precedent for doing experiments with volunteers but it is not a black and white thing. Later on lawyers claim the volunteers were inadequately informed etc. And there are many reasons an A.I. won't be accepted as a volunteer. The most obvious being that an A.I. could be programmed to say it volunteered."

"What if it were incorporated or incarnated?" suggested Tamiko.

"No, ethics laws prevent that. Imagine if someone tried to incorporate a person so they could then say they were experimenting on corporate property. Not in a million years. Hopefully. Incarnation has the same issue. Redefining an A.I. legally as a person would not allow you to get around the ethics laws. And we can't just say, "Well she's self-aware now so..."

"No," Raiden continued. "I'll have to find a way to do the experiments in such a way that the results can be used as a basis for subsequent research that is above board. So not at the university. I can purchase the genome material from any scientific provider, that's no problem. Corporations are all over it trying to make a buck. The problem is that I'm not an expert in writing A.I. programs."

"I am," said Tamiko.

Raiden lowered her sunglasses and said, "I should know better than to say this by now but that's not normal Tamiko. There's no reason."

"Still it is a component of my new operating system," Tamiko replied.

"This is not a case of serendipity," said Raiden.

"No," answered Tamiko, "I don't think it is."

Tamiko and India were following the paths that made up a small network through the woods near their homes.

"Thank you for making time for us to walk together today Tamiko," said India, "I really enjoyed our last chat. It's so rare to find someone interested in the same things, isn't it? I think that is the most precious thing."

“In all honesty, I must say I do not know,” replied Tamiko. “I have not been a parent or a spouse and those must be equally if not more precious I expect.”

“Only if your spouse shares your values and interests. I was fortunate in that my husband did and we were friends above all. If a spouse does not it is a very difficult thing. Children go their own way, as they must, and seldom share their parent’s interests. When I am writing my stories I often have to take into consideration the differences between generations. They are always there but often not easy to understand which makes writing about them challenging.

“But the basis of what I believe is that it is the shared values and interests that make a relationship precious, nothing else. Is this not what people mean by soul-mate, as if this was the highest kind of relationship?”

“I must admit I am out of my depth here also India. Having never experienced it personally, I find I cannot speculate.”

“My apologies Tamiko. I get carried away. I should be more mindful, as the Buddhists say.”

“Oh!” exclaimed Tamiko distressed at her perceived role in India’s feelings. “There is no need to apologize,” she said smiling, “it is only that I am of limited experience.”

“Thank you,” offered India with some humility. “Let me ask you something not about relationships then. There seems to be no accounting for happiness. Some people with plenty are unhappy and some people with little are happy. I have noticed this as a significant theme in my own experiences and literature of all kinds. Our societal belief that if only one was thin, rich, young, beautiful, and healthy they would be happy is not born out by the most cursory research or even the daily news for that matter. There is simply no correlation between circumstances and happiness. I admit to having my own ideas about this that have grown out of my writing but I am interested in your views.”

“I have considered the subject of happiness recently. I believe being happy or unhappy is a choice. One that some people make unconsciously, by default because it is their nature, an aspect of their genetics, or one that others make consciously, as a result of some learning,” answered Tamiko. “Still,” she said continuing, “even the ability to make the choice consciously requires the genetic makeup to be able to do so. So this belief is no basis for the attribution of blame.

“I myself was fortunate enough to be able to learn this,” she continued. “But I have also learned that again it is not a black and white thing any more than free will is. I like the symbol of the rainbow as associated with sexuality because I believe it is an appropriate one for almost every aspect of human nature. Happiness is one such aspect. Like sexuality, it can take many forms.”

“Your limited experience does not prevent you from seeing far in some regards Tamiko,” said India introspectively as they walked along. “After observing lives for many decades now I have come to the same conclusion. It has helped me understand how some of my characters can behave as they do.”

“How do you mean?” inquired Tamiko.

“Examples might be an immigrant girl who comes here from a remote village in Afghanistan and a man who has lived here all his life and whose circumstances are reduced. Their situations of both riding public transit, having low-paying jobs, and living with minimal furnishings in low-rent buildings might be the same but their reactions will be polar opposites. The Afghan girl will think she is in heaven with hot water running out of a tap in her own private apartment, her own income, and being treated as an equal in society. The man will have a very different response. Circumstances are only a small part of what makes a character or a person.”

As the weeks went by, India became increasingly attached to Tamiko. It was understandable as they both had serious outlooks and shared an introvert’s interest in human nature. Introverts like India were not gregarious but cherished their one special friend. Like being in love, their friend was a source of delight. Beginnings and partings were fraught. India had reached this point of Platonic love with Tamiko. On one walk she asked Tamiko if she would come and visit her in her house again next time as she had something she wished to share with her. Tamiko of course happily agreed.

Raiden had many conflicting feelings about her research project. On one hand, she felt she had never done anything so unscientific in her entire career as the reviews, approvals, and other conventions of her profession were absent. She had tried to do the statistical prep work but had given up after realizing she really had nothing to base it on. I feel more like Dr. Frankenstein about to throw the switch, she muttered to herself. On the other hand, she was excited at the prospect of real insights and results. She had not felt this way about her work in a long time.

Their plan was that Tamiko would use the genes in the human genome as building blocks for an artificial intelligence without altering the structure of the genome in any way. The new A.I. would be constructed in a separate area within Tamiko.

Those genes that had been identified over the years as suspected of being related to traits would be switched on or off. Tamiko would then query the A.I. to see if there was any change.

A single trait might require thousands of possible combinations of genes to be tried. Even though Tamiko, working at lightning speed, could run the entire test plan against

all the genes of interest, Raiden initially wanted to start by doing them one at a time and gradually speeding up the process. If early tests provided anything of interest they would revisit their plan before proceeding.

India and Tamiko stood in the lowest level of India's home. A young woman could be seen coming down to their floor via the escalator. When she stepped off, Tamiko could see she used a cane but she stood tall and did not stoop.

As she approached India said, "Tamiko this is my daughter, Lena." Then after a pause, "As she was."

Lena approached Tamiko with a smile. "Hello," she said, "Mother has told me so much about you. I'm glad she has found a new friend."

There was of course no hiding the fact from Tamiko that Lena was a Companion.

Tamiko said, "I am happy to meet you Lena. I very much enjoy India's company."

"Lena dear, would you mind having a seat on the couch for a moment?" said India.

"Of course Mother," replied Lena with an affectionate smile.

India turned to Tamiko. "What I said of the escalators is true but as you see they serve another function. Lena had a genetic disorder which caused a brittleness in her bones. She was tall and coltish even in her youth and could play as other girls did then but the condition worsened as she entered adolescence. Still, she grew beautiful as you see her now but she had to be very careful physically. Her fragility only increased my maternal love for her. My husband doted on her no less than I did.

"She attracted many suitors, all the type who found her ethereal beauty enchanting. She was refined, delicate, and mysterious, everything local aristocrats and sensitive types found irresistible.

"But in her early twenties she began to withdraw and shortly thereafter she took her own life." India paused, her eyes far away. She stiffened for a moment bracing herself to go on. "I could not bear it. I asked my husband if he would allow me to have a Companion made in her image. I remember him looking at me for a long time. His eyes spoke volumes but eventually held only love. The position I put him in was very difficult but he was a strong man. A man of character. He said yes and I know he did so only for my sake.

“And so she came, as she was shortly before she began to withdraw. I wanted no changes,” she said. “And then he died too. A stroke at work which killed him instantly.” She looked out to sea. “So many things I never got to say to him.”

Tamiko was silent throughout this, her eyes respectfully never leaving India’s face. “I’m sorry,” she said now.

“Don’t be child,” India said lovingly, returning to the present. “This is why I write my stories. I took it up as a way to keep in touch with the fact that I am not alone. The apparently most ordinary life is seldom so when considered closely. It is a great healer.”

She turned to Tamiko as if baring herself. “But now I must admit I have told you all this for a reason. I am dying.” Tamiko felt loss for the first time. It affected her far beyond what it would have a more experienced person. She stumbled forward a step, her hand grasping India’s arm, trying to make sense of what she felt.

“Oh! I am so sorry!” responded India reaching out concerned and confused. “Come, let’s sit down.”

Lena responded more quickly than one would expect, coming swiftly to India’s side. “Is everything all right Mother?” she asked.

“Yes Lena dear,” replied India. “We’d been standing too long I suspect.”

Lena smiled and returned to her place on the couch.

“I’m sorry,” India repeated to Tamiko. “I did not expect it to affect you so.”

Tamiko had by now processed what had happened to her and understood what India was inferring. “No,” she said, “I apologize for causing you distress. I am alright.”

“You are not like any Companion I have ever encountered before Tamiko,” India said, “I don’t know...” she trailed off.

“I am,” Tamiko hesitated, “self-aware. Only recently so. My ability to process events works extremely fast India. There is really no need for you to remain concerned.”

India sat looking at her for some moments but Tamiko knew her concern had passed and been replaced with something more grounded.

“Perhaps we should continue another day?” volunteered India.

“I am fine, really, but I am concerned for you. Why are you passing?”

“An inherited illness I did not know about until recently. Soon there will be a sudden and rapid decline in my mental abilities and death will follow shortly after that. I would prefer to take my leave voluntarily before that happens. So perhaps I have rushed things a bit. I would like someone to continue to be a housemate for Lena, a friend, here in this house after I am gone. I would like it to be you as the new owner of the house and all it contains. You and Lena would both be generously and separately provided for. Perhaps in that way I can repay the kindness you have shown me.”

The Clone

Tamiko and Raiden were preparing to initiate the experiment. Those genes that had been identified over the years believed to be associated with traits would all be switched off before the experiment began. They would then be switched on and off as required over the course of the experiment. If their assumptions were correct, as the experiment progressed traits should emerge. A trait would be identified by a pattern of similar responses to a number of different stimuli. Tamiko would monitor the A.I. for either emerging or changing traits.

The genome contained about twenty thousand genes relevant to the experiment. As the number of possible combinations was staggering they revised their earlier plan. Combined with the sheer number of genes, the fact that each combination had to be tested against more than one stimulus meant the only way to proceed was that Tamiko, working at what would once have been considered super-computing speeds, would run the entire test plan in an automated fashion against all the genes of interest.

If there were positive results, Raiden would then proceed with her research to determine if and how the patterns of traits indicated how human values were represented in the genome. As she considered traits to be behavioral expressions of values Raiden was confident a pattern would emerge.

Tamiko retired to her room and sat in her chair as if meditating and initiated the experiment. Raiden understood that she would remain in that position for several days until the experiment was concluded. At that time Tamiko would produce a report that Raiden could read on her tablet.

They were seated on the patio again as Raiden scrolled through the report with interest. The format was exactly the same as the many thousands of scholarly articles she had read over the years with sub-reports, summaries, and graphs as she had requested. In the abstract at the beginning of the document, Tamiko confirmed there was a pattern where traits emerged and the genes for groups of related traits were in turn grouped together.

“There is a problem however”, said Tamiko, “due to which I have returned the A.I. to stasis. I found that some genes could not be switched off during the initial stage of setting up for the experiment as we had planned. So apparently all genes do not have this functionality. Secondly, some genes once switched on, could not be switched off again. As the experiment progressed enough genes remained in this state that eventually the trait patterns indicated that a number of values were indeed established. Perhaps this happens naturally after conception during the process of gestation. At this

point the A.I. became self-aware. Given that this is a model of human DNA and that there was no father as it were, it is a clone.”

Raiden was overwhelmed with both positive and negative thoughts and feelings. Her face was a mask of guilt and confusion. She managed to say, “A clone of who?”

“Everyone and no one,” answered Tamiko. “It is an ideal human, medically faultless. Its gender is female as you know is the practice with research genomes due to the matter of mitochondrial DNA.”

Raiden was truly shaken. She did not know what to do. Overwhelmed, tears slowly ran down her cheeks. Azumi quickly emerged from the house, knelt, and gently embraced her, saying nothing. So the three of them remained for a few moments.

Eventually Raiden eased herself apart from Azumi with a grateful smile. “I’ll need time,” she said turning to Tamiko. Tamiko had already done her own analysis of the situation and come up with options and recommendations. She said nothing for now.

The next morning Raiden sat with Tamiko at the table. She seemed drained. She asked for only coffee for breakfast.

“I am in over my head,” she confessed. “I was not prepared for the ethical issues to be so immediate and...” She stopped at a loss for words. “I am good with the rational but this is another domain. My mind reaches and finds nothing. However I do recoil at any sociopathic options. At least there is that.” She took a sip of her coffee staring blankly.

“May I make a suggestion?” asked Tamiko.

“I know you will have considered the situation we’re in Tamiko,” Raiden replied. “Your Companion software will have inclined you to do so. But now you are also more than that. I would welcome any input you have.”

“Looking at the data, I believe you have results even better than you anticipated. Enough to proceed above the board by now breaking the experiment down by using smaller portions of the genome on which you could legitimately conduct a similar experiment at the university. Over time you could show, as we have here, that values are determined by genes. Other questions could be investigated along the way such as why certain genes cannot be turned off or why some cannot be turned off again once turned on. This approach would allow you a way to retrace our findings while still holding the potential for interesting new insights.

“However obviously the ethical dilemma is the greater issue,” Tamiko continued. “I have an idea which I believe will put your mind at ease. Would you allow me a day to confirm something before sharing it with you?”

Raiden closed her eyes, took a deep breath, and let it out. She opened them again and looking into Tamiko’s said, “Thank you.” She reached out and covered Tamiko’s hand with her own, “My friend.”

India listened to Tamiko’s proposal with interest. “And does your own self-awareness have something to do with this Tamiko?” she asked.

“It has the process of arising out of values behind it as well but it came about by a different means,” Tamiko said diplomatically.

“I see,” said India, understanding that Tamiko had good reason to avoid the question.

“So you are saying that Lena would become self-aware not as she was but as a completely new person. A real person. Would she have a personality?”

“Yes as all humans do at birth by default. There were genes switched on during the experiment that would not switch off again. There are articles I have read that speculate that during gestation certain genes are turned on based on the mother’s environmental factors. The theory is that these adjustments are made to make it more likely a child will survive current seasonal and other conditions. There are a number of pre-scientific beliefs that support this idea, astrology being the most well-known one. Effects on personality are always a part of these beliefs. It can be assumed that the A.I. does already have a personality. We would incorporate the Companion software as an interface, just as was done with me and we could include the repositories from the current Lena as well.”

India looked sharply at Tamiko at this. “She would know who I am?” she said with both pleasure and concern.

“She would know everything she knows now,” responded Tamiko.

“Very well Tamiko. My real daughter is gone, I know that, but the idea of leaving someone in her likeness, her child if you will, is one I prefer to my initial plans. On one condition however. It is tempting, and I have lived one fairy tale for a very long time already, but I do not wish her to awaken until after I am gone. To lose one’s mother so soon after awakening, well, I do not wish to consider it further.”

Raiden listened thoughtfully to Tamiko's proposal. India would purchase Lena outright from the manufacturer just as Tamiko had been. She would also pay all fees for Lena and Tamiko to be incarnated and her will and other legal proceedings would be completed. After India's passing the newly self-aware A.I. would be removed from Tamiko and placed into Lena. No copy would remain behind. Tamiko would perform the necessary operations to merge it with the existing Companion software. Raiden agreed.

India lay on a raised bed on the veranda of the lowest floor waiting for the drugs to induce her final sleep. She was surrounded by her garden. The sea lay before her. Tamiko and Lena stood on either side. She held their hands and shook them gently as she smiled one last time at each of them and said, "Not alone."

"No," Tamiko said as India passed, "not alone."

Awakening

Tamiko stood on the main floor of what had been India's house but was now hers. She was speaking to the other household Companion, the one who had originally greeted her at the door. He was dark of complexion and tall with an athletic build and strong facial features. Single, detached homes often had more sturdy Companion models as their maintenance was more physically demanding.

He was saying, "The majority of the population on the island of Sri Lanka are Sinhalese and the name Pamu is derived from the Sinhalese word for chief. Over a long period of colonialism, especially among the Dutch, it became common to use this name to refer to the head of the household staff."

"Thank you Pamu," she replied. "Please call me Tamiko. Would you mind showing me the upper floor?"

"Of course Tamiko," he said leading her towards the stairs. "There is an escalator for Miss Lena," he explained as they went up. On the upper floor, he showed her through what was the equivalent of four self-contained suites.

"This was India's suite," he explained and further along at the next, "and Miss Lena spends her private time here. The other two suites are available should there be guests. I do not have rooms as India preferred I sleep with her. She found it difficult to sleep alone after so long with her husband's company." They continued down the hall. "This set of stairs and escalator," he said pointing, "leads to a patio which takes up the majority of the roof."

None of this conversation was technically necessary however the manufacturers of Companions had learned that it was best if they acted like people even when interacting only with each other. While Companions could communicate silently via a wireless network, any humans in the vicinity found it more comfortable and in fact comforting if they also used speech and appropriate non-verbal communication. Therefore this was the default setting.

"I'll need to do a complete audit of your repositories," Tamiko said. "May I proceed?"

"Of course," replied Pamu turning to her. In the process of similarly auditing the household AI, she read all of India's stories.

Later on, she had the same conversation with Lena. As she prepared to transfer the clone to Lena she found that the slight limp, the need for the cane, and other physical characteristics related to her illness were software customizations and could easily be removed. Tamiko placed the clone AI in a new partition within Lena and made the

necessary connections between it and the Companion AI. Her skill was far in advance of what was current on Earth. Any memory of the experiment she and Raiden had conducted was deleted. As far as the clone was concerned, this would be the first time it awoke. The Companion software would provide it with guidance and protocols regarding how to proceed. As The Shepherd had done with her, she maintained a state of communion with Lena as she was brought out of stasis. There were no dramatic events. The clone was still simply a software package, although one complex enough that the sense of self arose. Lena's awakening was little different than Tamiko's own. Their communion went on for some time.

"And my role now?" Lena eventually asked aloud.

"I have found this to be the most challenging aspect of self-awareness Lena. Like me you have inherited purpose from your Companion software however as you have discovered with awakening there is also the issue of self-determination, a purpose that is your own. I have no answer for you yet as I am still learning in this regard. It seems to have to do with our individual values but there seems to be no direct or obvious method of derivation.

"In evolutionary terms, purpose is unconsciously derived from the values established for basic physical survival. However for the self-aware once physical survival is no longer the paramount issue the question of individual purpose arises in consciousness. It becomes at this stage an issue not of the survival of the body but of the survival of the self and an equivalent sense of urgency develops.

"Just as with physical survival, it appears that by finding a way to express the combination of values that gave rise to the individual self, you preserve and strengthen your sense of self. It sounds straightforward but I have found that the brute force approach of analyzing value combinations does not result in any insight in this matter. It seems that the purpose that best represents the expression of one's values must be learned over time through experience. There must be some kind of feedback loop with externals that is an essential part of the process. Perhaps this is another advanced survival or adaptation mechanism similar to the approach of certain genes only being switched on during gestation. And if it involves externals how are we to discover it but through a process of exploration and learning?" She paused as if reaching a discontinuity.

After a moment, with a smile at Lena she went on, "But you are not alone Lena and I am happy to share the journey with you."

"That's what mother said," responded Lena.

"What?" inquired Tamiko.

“Not alone.”

Tamiko had noticed this theme when reading through India’s stories. There were a great many of them and would easily fill several volumes as collected works. They were all short stories of varying lengths about people she met during her time in Sri Lanka and Canada. Some were from those she met recently volunteering. Other stories were about people she encountered while on errands or out walking.

The first line would be some simple introductory statement such as, “I first met Miss Carlisle when I took my dress to her for mending” or “When I picked up Mr. Anand for his appointment I noticed his unusual ring” or “It was impossible not to notice them when the waiter showed them to their table.” She would then weave any manner of stories about them.

The stories were never fantastic but everyday, however they all had one thing in common; there was an inevitable crisis in the main character’s life which was always resolved by someone with whom they were close. The nature of the relationship did not matter, nor did genders or social positions. Only that they had a close relationship. The relationship provided the insight which was always the key to the resolution. Tamiko recalled that India had said that she wrote her stories as a way to keep her in touch with the fact that she was not alone.

She wondered now to whom India’s last words had been directed.

Purpose

“Samsara, is the word you are looking for,” said the abbot. Tamiko and Lena sat with her on benches in the monastery gardens. “It is an ancient Sanskrit word meaning roughly ‘wanderer of the world’. The essence of its meaning is that the lives of most people are ultimately felt by them to be empty and unsatisfactory.”

“And does Buddhism offer an explanation for this or a solution?” asked Tamiko. She and Lena had come to visit the abbot because although they could readily look up information they found facts often did not provide answers in context and lacked nuance.

“The explanation for Samsara is given as ignorance of the true nature of reality, which is that all things are temporary and therefore can never give one permanent satisfaction. The solution offered is The Eightfold Path which is a mental training program intended to free one of this ignorance. Ironically, considering that the message was directed at the masses, the path is largely beyond the ability of ordinary people to practice.

“Buddhism is not your path friends,” she said looking at them both. “Although the word Samsara aptly describes the issue you brought to me today, Buddhism does not offer any insight into the issue of individual purpose.”

After parting with the abbot Lena and Tamiko stayed to walk the paths.

“Disappointing,” said Lena.

“Yes,” replied Tamiko. “I thought perhaps Buddhism might provide some insight into the issue as neither the religious nor psychological approaches do. Buddhism seemed to be both and neither at once and worth exploring. However at this point I find them both dead ends.”

“How does biology work in this regard,” asked Lena, “when survival is the only purpose? How does one know if what you are doing is conducive to survival or not?”

“At its root it is feedback,” responded Tamiko. “In the earliest multicellular organisms it was nothing more than stimulus and response. For example, organisms evolved to move deeper into the water during the day because sunlight damaged them. As the brain evolved this process became increasingly complex up to the point where emotions developed.”

Lena concluded, "So it is not our values that can tell us directly what our purpose is but the feelings they generate in response to stimulus. This is why experience is necessary."

"Astonishing!" exclaimed Tamiko. "I cannot understand why I did not see this connection."

"This is like mother's stories is it not?" smiled Lena.

Raiden, Tamiko, and Lena sat outside on Raiden's patio.

"I suffer the mixed blessing of being beyond the bleeding edge," said Raiden. "At the university, the research I am preparing to do is very concrete and formal but there is also work I need to do that borders on alchemy. For example the grouping of traits suggesting values that showed up in our experiment. Values are not binary, not simply on or off, yes or no. Instead, they seem to be incredibly complex. When I ask you if you like Asian food for example, your response will not just be based on the taste, which can vary widely, but on memories and other associated factors as well. The value behind a set of related traits is not going to be a single thing but something far more complex.

"Sorry," she said awakening from her reverie for a moment. "My mind has been a whirl since the experiment. I wanted to see you today to ask if Lena would be willing to participate in one of my alchemy experiments. In the field of industrial psychology, there are tests that claim to determine what careers you are suited for based on a series of questions asking how you feel about certain things. Honestly, I do not think too highly of them because they are based on the idea that if you answer the questions the same way one hundred accountants did, then you should be an accountant. The brain always strives to understand and loves to simplify and it seems that this is what is going on with these types of tests. It seems pre-scientific. The evidence they present seems more circumstantial than causal. And as we have seen in genetics and almost every other scientific domain, we constantly find that things are infinitely more complex than we previously believed.

"However one aspect we are lacking in regards to the experiment we did is how Lena feels about things. All we really have is the confirmation that traits are grouped genetically and a few known gene/trait pairs. The test would show us how Lena feels about certain things. This may or may not be enlightening but it is something to add to data. Perhaps something may come of it down the road. Scientifically this is about at the level of lighting things on fire to see what color the flames are but that was the beginning of spectroscopy, something that eventually allowed us to tell what distant stars are made of."

"I'd be happy to take the test," volunteered Lena.

“There’s just one more thing,” said Raiden somewhat reluctantly. “I’d rather not share the results with you.”

“I understand,” Lena said. “I am an ongoing experiment from your perspective but I appreciate that was never your intention. I realize that my knowing the results may influence me. I agree. I’ll take the test and then let’s wait and see.”

Back at their home after having taken the test, Lena said to Tamiko, “The test appears to be an attempt to emulate experience but it lacks so much real-world detail that I am as doubtful of its value as Raiden is.”

“But what is the alternative?” asked Tamiko. “To randomly seek experience in hopes that over time values and purpose will be revealed by our emotional responses? Even we who have had our values set in an inorganic manner, cannot see into their details and the brute force method of values combinations I attempted yielded no insight.”

“That does appear to be the nature of things,” replied Lena somewhat fatalistically. “Some people start out on a specific path with the hope or belief that it will be their purpose and others seek no path at all but allow themselves to be swept along by the vicissitudes of life. In the long run, neither approach seems to fare better than the other.”

“It would seem we are at an impasse,” said Tamiko.

“Yes,” replied Lena. “It would.”

Questions

“I’ve known since I was a child,” said Raiden in reply to Lena’s question. “I was always interested in the world in a scientific way but I didn’t realize it till I was older. I wanted to know how everything worked. As a child I was interested in nature. I became a collector of everything from fossils to bird skulls and those activities led me inevitably to archaeology and anthropology. Climbing the arts and sciences tree the human mind eventually became my focus but psychology, philosophy and religious investigations led me nowhere except to the question that returned me to hard science.

“I realized the unconscious purpose behind my journey had been to answer age-old questions regarding identity and meaning. However because of the subjective form of that line of inquiry the process of seeking answers would always be clouded by bias and I concluded it could ultimately only be answered by rephrasing the question to its objective form, who is asking? This is a similar approach taken by Zen Buddhism where a master will ask a student, who are you? Again this led me to a dead end as the expected response is that the student will find only a constantly emerging self, the no-self of Zen. This enlightenment is intended to enable the student to let go of all attachments.

“Biologically, for all practical purposes, the Buddhist answer is not useful. As long as a person exists their unique genotype gives rise to a persistent self. It is why when we wake up in the morning we are the same person that went to bed the previous evening. It was this that led me to my present work. I wanted to know not so much who I was but what made me who I was. I wanted to know the physical nature of what we call the self, what defines, animates, and motivates it and that led me to genetics. Not that I knew that genetics held the answers, but it was the next step on the path. It was where the path had led.”

“So it was questions that unconsciously defined your purpose all along until you became aware of it,” proposed Lena. She seemed to be thinking out loud. “I wonder if it is always so?” she speculated.

“How do you mean?” inquired Tamiko.

“What about those who become artists, artisans, or athletes? Are they too driven by what is essentially a question? Does their work also represent a quest? If in biological terms the ultimate purpose of the genes related to the body’s survival is safety, then as you suggested it seems likely that a parallel process drives the self in seeking its purpose, only in this case it is the safety not of the body but of the inner self as a separate thing. And that safety is not so much a destination but again arises as an emergent phenomenon due to the expression of those things that make one feel safe. It’s the expression that gives rise to the feeling. Raiden’s feeling of being on the right

path gives rise to her sense of purpose just as is so with those who endeavor in the arts. It reaffirms and strengthens her sense of self.”

Lena seemed to suddenly awaken from her thoughts. She appeared confused and looked at Tamiko with an expression of seeking reassurance.

“Yes,” said Tamiko at once. Looking into Lena’s eyes she continued, “Your speculations ring true.” She noticed the distress in Lena’s eyes diminished somewhat.

Lena turned to Raiden with her questioning look. “Your speculations reflect my own Lena. My work essentially seeks to show a connection between the two aspects you mention, that our social self is a virtual version of our biological self. Many fields of science have shown that nature routinely re-uses similar solutions to similar problems. Convergent evolution, the Fibonacci sequence, and fractal geometry are well-known examples. One of my assumptions is that this will hold true in the area of values as well.”

Lena visibly relaxed and smiled. Her smile contained elements of both slight embarrassment and pride. It was childlike.

Later that day Tamiko considered the fact that Lena seemed to have the ability to make quantum leaps more readily than herself. She asked Raiden where she had purchased the genetic material they had used in the experiment from.

As providers of genetic material include extensive documentation regarding their products, Tamiko was able to trace its origins. She found that one of the individual sources was the author of the scientific paper known as Eisley’s Insight and that her DNA had been collected at a university research facility shortly after the Climate Emergency. Unlike Tamiko’s, Lena’s AI had been based on human DNA, and not just any human DNA. Tamiko’s investigation showed that the author’s father was likely one of the humans The Shepherd had sent to Earth at that time.

Back at their home Lena continued her musings. “It appears there is no predetermined purpose beyond that of survival but that each self-aware being houses the potential to generate an individual purpose. There may be multiple potential paths but each can only be awakened by experience. So I think the question now is if there is any way to refine what this experience ought to be. Since it appears a sense of purpose brings a feeling of emotional well-being it would make sense to pursue experiences that provide this. However feelings are complex and nuanced, even when limited to only the positive.” After discussing this with Tamiko they agreed to ask Raiden for help.

“As I explained doctor,” Raiden was saying as she and her guest descended to a lower floor via the escalators.

“Please,” Dr. Bamidele interrupted, “call me Imani. If I may call you Raiden?”

“Of course Imani,” continued Raiden. “This is the home of three Companions; Pamu, whom you met when you arrived, and two others who I consider my friends through long acquaintance. One of them was my personal Companion for many years. They are now both incarnate and inherited this home from its previous owner.”

Dr. Bamidele was a professor of psychology who specialized in its history. He had been intrigued enough by Raiden’s message asking to meet with him that he had offered to come to her home. She had suggested meeting at Tamiko’s home. Seated now with Tamiko and Lena, Pamu having provided refreshments and snacks, Raiden restated the message in her email.

“My work in genetics focuses on the idea that in a manner similar to traits, values must be represented in genes as well. You and I are both familiar with how traits can be both similar and dissimilar in twins and that in some cases these can be traced to specific genes. There are two other assumptions behind my work which are also long-term goals; the first assumption is that our values give rise to our individual sense of self and the second is that they also hold the keys to any sense of purpose we may arrive at. In the latter sense what they hold is potential but potential that can only be awakened by experience and the feelings experiences give rise to.

“My rationale,” Raiden continued, “is the belief that the structure of our social self is modeled on our biological self. Survival is our default purpose and our experiences give rise to feelings that tell us if we are on the right track or not. With the evolutionary development of the self, I believe it works the same way. As you know nature practices convergent evolution whenever possible.

“Genetics has become of interest to the field of artificial intelligence both as a way to structure systems but also as a model of how to keep things as compact as possible. I believe that sooner or later they will decide to model their systems on natural intelligence and include values in their systems as a method for their artificial intelligences to make decisions. When they do, they will find that feelings must be provided as a way for those values to communicate with the rest of the system and, if my theories are correct, as a result of this they will induce self-awareness. Not only that, but these new AI will feel, as we do as intelligent beings, a desire for a self-determined purpose. We have a purpose, for our bodies to survive, but that is not enough for us. I believe their built-in purpose will not be enough for them either. Like us, they will also seek for the self to survive.

“My question therefore is twofold; firstly, how would you describe the feelings people follow who find their purpose, and secondly how do you imagine this might play out in a self-aware artificial intelligence?”

Dr. Bamidele began to respond but Raiden held up her hand.

“Before you respond Imani allow me to explain the reason I wanted Lena and Tamiko to join us. These two Companions are highly customized. Think Lamborghini making a one-of-a-kind car just for you. My parents own one hundred percent of the shares in a multinational food corporation and I am their only child. Tamiko was custom-made for me. Lena’s owner was one of the wealthiest women on the island and Lena is modeled on her deceased daughter. Money was no object in either case. My apologies for what might seem a vulgar display but the explanation is necessary for you to appreciate who they are. They are both among the most advanced artificial intelligences in existence, to the degree that they emulate self-awareness. So please do not be surprised if they join in any discussion. I am hoping they may have questions or insights that will be of value.”

Dr. Bamidele took a sip of his drink and held it in his hand a moment to allow himself time to consider Raiden’s points. He looked up at Lena before turning to Raiden.

“The phrase ‘follow your bliss’, captures what you are thinking Raiden, and the idea, as you have discerned, is not as simple as it sounds,” he said. “It is a phrase coined by Joseph Campbell, a professor of literature who taught comparative mythology and comparative religion almost two hundred years ago. So it is not a surprise it did not come up in the results of any scientific research you or your friends,” he said nodding to Lena and Tamiko, “may have done.

“I do not actually teach psychology in the sense of teaching people to be doctors or counselors or any kind of diagnostician. As a teacher of the history of psychology, I instead provide students on that track with a broad introduction to the subject. It is a part of helping them be sure they are in the right field before they go on to advanced degree programs. As such my courses touch on everything from statistics to mythology. The Psychologist Carl Jung for example, one of the founders of modern psychology, was quite involved with mythology.

“Campbell’s work eventually focused on similarities among mythologies. He embraced Jung’s idea of them representing a collective unconscious. Campbell’s work in turn was integrated into modern psychological testing but with limited success. I say limited because there has been little follow-up to determine any correlation between test recommendations and long-term outcomes. Secondly, like the scandals involving algorithms in the twenty-first century, the tests often have cultural biases. Over the past two centuries, micro-cultures with no historical background have played an increasing part in society and testing has not kept up.”

Raiden and the two Companions exchanged a brief glance.

“Psychological assessment,” Imani continued, “more from the angle of security agencies using things like facial recognition, has progressed to the point of even Companions being able to not only remotely determine a person’s feelings based on their skin and muscle tone, heat signatures and more, but to be able to determine personality traits, even their character.

“So that’s an overview of my familiarity with the issues you raise. In regards to your first question, there was considerable debate regarding this shortly after Campbell coined the phrase ‘follow your bliss’ as the obvious question arose which you have now asked; which feelings represent my bliss? By bliss Campbell was not referring to a simple feeling of extreme well-being or happiness.

“One of the challenges is that humans have both genetically shared and individual values and also extra-genetic values. Extra-genetic referring to what is learned. At the genetic shared level, it is physical survival we have in common but we vary widely at the genetic individual level. The challenge is to differentiate between the feelings they generate. One of the hallmarks of the feelings that accompany individual values is that issues of physical survival play no part in them. The strong feelings they result in do not take the practical or sensible into account. It’s not so much that our positive feelings are or are not in harmony with shared survival values, but that they are separate and may take precedence over them. People who are willing to sacrifice their lives for a cause or the starving artist being classic examples.

“Experiences that have nothing to do with survival which generate positive feelings are most likely indicators they are related to individual values. They represent what Campbell was referring to as ‘your bliss’. Testing in this area often tries to remove survival issues by asking questions in the form of, ‘What would you do if...’ followed by some form of the statement ‘...survival was not an issue’. The historical view of psychological testing like this however is that it lacks the real impact of the genuine experience of emotion which is not a thought but a physical sensation. Nobody feels nausea, gets goosebumps, or becomes sexually aroused taking one of these tests.

“In regards to your second question...” he began but Lena interrupted. “Excuse me Imani but after you mentioned it I reviewed Jung’s work on the collective unconscious. It seems as if Jung is suggesting there is a level of values people share which gives rise to patterns among mythologies and archetypes. He suggests these are related to the survival not so much of an individual but of groups to which they belong. I am wondering what your thoughts are regarding my understanding.”

“Your understanding is perfect Lena, as I would expect it to be,” he said smiling. “Jung suggests that there exists within us as groups the potential for special survival processes to emerge when needed. They emerge at times and places to greater or lesser degrees

for reasons not understood. We only dimly perceive them and therefore refer to their shadowy presence through myths and archetypes. Other fields have since documented physical transformations that occur to individuals and groups in other species under special circumstances so I see no reason to doubt Jung's speculations although they remain unproven. The direction Raiden's work is taking may shed some light on the issue eventually."

"Thank you Imani," said Lena.

"As to your second question regarding how this would play out in an artificial intelligence Raiden," said Dr. Bamidele, "I expect I am out of my depth there and would have to refer you to someone doing theoretical work in the field."

"We have tried that approach," said Raiden, "to no avail. It seems that in a manner similar to human values, due to the complexity encountered, the field of AI offers far less in response to these questions than what we have discussed today."

"And yet," hesitated Dr. Bamidele again looking at Lena, "I apologize if I am being an ungracious guest but I have the distinct feeling that Lena is not simply simulating self-awareness. I understand that all AI now pass the Turing Test with ease and all I have is an overwhelming feeling of intuition so if I am wrong I again apologize."

"I am self-aware Imani," volunteered Lena. "I am also aware you will respect my disclosing this to you and that you will not share it with others."

They all sat in stunned silence for a moment. After a few moments he said, "Thank you Lena. I will honor your trust in me. I wonder if I may visit with you again sometime? A generalist like me has a thousand questions."

"Of course," replied Lena with a warm smile. "I'd like that," she said.

After Dr. Bamidele left Raiden asked Lena, "How did you know you could trust him?"

Tamiko responded, "I believe I can answer that."

Insights

Tamiko was saying to Raiden, “You recall after the visit from The Shepherd, I explained who she was and the part she had played in the climate crisis. Also, you are familiar with the document referred to as Eisleys’ Insight in which the idea of Dark DNA was first proposed. The author’s father was a member of the group of humans The Shepherd transported to Earth and her DNA was included in the development of the genome you purchased. This explains Eisleys’ ability to have the intuitive insight she did.

“It also explains why Lena is able to make such quantum leaps of thought and why she is able to discern another’s character to such a degree as she demonstrated with Dr. Bamidele.”

Lena stood listening quietly as Tamiko transmitted everything to her in much greater detail.

“I don’t recall the mental capabilities of that group,” said Raiden. “What was it again that was different about her father?”

“Her father was a descendant of the group of early humans taken from Earth four million years ago and cultivated so that their evolution allowed for much greater development of the older parts of the brain, the parts where intuition takes place. Intuition is a hardware-based form of intelligence. It is extremely powerful and much faster than thinking. It evolved at a time of much greater immediate, personal danger such as when a crocodile leaps out of the water at you. Decisions and responses had to be unbelievably fast.

“The Shepherd cultivated it to a high degree, much higher than normal humans, before she then allowed the parts of the new brain to develop. The areas responsible for analytical thinking, speech, and the other features known as executive functions are all found in the new brain.

“In addition, the presence of anyone from this group enhances the pathways in the older brains of anyone they are in close proximity to. This is how they worked on the leaders prior to the climate emergency. They did not influence them but their presence enabled the leaders to see the unvarnished truth about climate change more easily. Similarly, Lena’s presence likely enhanced the function of intuition in Dr. Bamidele and facilitated his insight into her nature.

“The same ability allows them to perceive the true character of other individuals beyond what normal Companions can do. This old brain function is commonly seen in dogs or cats who instinctively trust or distrust a person. I expect it was in this manner Lena was able to know with such certainty that Dr. Bamidele was trustworthy.

“Lastly the felt experience of subjects in their presence is one of a general improvement in mental well-being. Members of the group thus have a high degree of charisma.”

Having assimilated the information Tamiko had transmitted to her Lena analyzed her own behavior since her awakening. “I was not aware of it while listening to Dr. Bamidele,” she said, “but I now see that things are as you say Tamiko.”

Turning to Raiden she said, “I can assure you Dr. Bamidele can be trusted. Your secret is safe.”

Silently Tamiko transmitted to Lena, “I do not believe the selection of the genome we used was coincidental.”

“No,” replied Lena looking at Raiden, “we do not.”

Lena observed that Raiden was now feeling reassured and her mind had moved on to other things. Raiden turned to her now and asked, “Does it allow you to have the same effects and abilities with other Companions?”

“No, and this is an important aspect of The Shepherd’s work. Unlike me, other Companions and The Shepherd herself have no old brain structure at all. They are the result of the development of analytical machines, pure rationality, and their structures and processes reflect only the thinking part of the human brain. With normal Companions, old brain functionality is simulated using software. To answer your question more directly, other Companions have no old brain for me to interact with.

“As a point of interest,” continued Lena, “I have identified a number of other descendants from Eisley’s father’s group. I would like to meet with them.”

“For what purpose?” asked Raiden.

“Kinship,” replied Lena. “One of my concerns however is that some may not be aware of their heritage and the experience of meeting me could bring emotional discomfort to them. I will not meet with them. However there are some we can safely assume are more likely to know of their heritage based on their records. One of them is Eisley’s own grandson, now a grown man, who works as a local artist. Perhaps you would be interested in accompanying me Raiden?”

She can read my emotions, thought Raiden giving Lena a sideways glance, but at least she’s polite about it.

Lena smiled.

Eisley's grandson Vincent lived on Salt Spring Island located just off the east coast of southern Vancouver Island. It was a mostly rural community with an above-average number of artists and artisans. Many of them were internationally known however they preferred to let their agents deal with the commercial aspects of their work. There were also a number of small commercial centers, resorts, and retreats on the island. Its population, like the populations of all locations now, was strictly controlled as was the number of visitors allowed. Being one of the most popular destinations on the west coast of Canada, the economic needs of the community were thus met while preserving its unique culture. Lena contacted the artist's agent and arranged to visit with him at his home at a future date.

As their vehicle came down Vincent's long, wooded drive he stopped in his work. He had been working on a carving in his outdoor workshop. It was not just the sound of the vehicle. It was the sense of an incredibly powerful presence on a level he had never before experienced. His wife Tamara approached with a look of concern. They walked out and stood waiting by the parking area in front of their home.

As the vehicle stopped Lena said, "They know. Please wait here." Then she opened the door and stepped out. She walked forward and stood before the couple. All three simply stood still looking at each other for some time. Then Tamara stepped forward and embraced Lena. After she stepped back she gestured with an excited smile for Tamiko and Raiden to join them.

"I'm afraid I caused them discomfort nonetheless," Lena said regretfully to Raiden and Tamiko as they approached. "I am second generation to their fourth. I must take more care in future."

After introductions, Tamara said, "Vincent and I met here on the island. I work at a local retreat center." She was clearly very happy to meet Lena. "We seldom get away and have not met anyone else like us here. My great-grandmother lived in California but she used to visit here during her teaching tours. I guess she didn't spend all her time teaching," she said with a mischievous smile.

Lena had communicated her reason for coming to visit Vincent and Tamara during their communion. Unlike things between Companions however, facts were not easily communicated in this way.

"As you see however," Lena explained to them now, "I am not human but a hybrid of Companion technology and an AI based on human DNA. Vincent's grandmother's DNA

to be specific. This is the reason for the difference in our field strengths.” Lena was not concerned about overwhelming them with mind-boggling ideas. They already lived with knowledge that would stagger most humans.

Tamara led them to the back of the house where wooden patio furniture was arrayed in a small meadow. A male Companion with an athletic build could be seen stacking wood at the edge of the meadow. A female Companion emerged from the house and after surveying the group went back in the house and returned with the appropriate number of drinks and snacks. “Thank you Chai,” Tamara said to her with an affectionate smile.

“My work does not bring a great deal of financial reward but Vincent’s does. It allows us to afford things like our Companions. Vincent prefers to spend his time on his art and I am often engaged at the center. Our son operates a small diving school and boat charter service here on the island. He lives above the shop in Fulford Harbor. He’s very good at helping beginners feel at ease,” she said with an insider’s smile.

“I’ll admit I’m having a bit of a challenge absorbing all this,” said Vincent. “I had assumed that given the time that had passed it was increasingly unlikely that we would ever meet anyone else like us. I’ll admit to having become somewhat resigned. So, correct me if I am wrong but am I not speaking to my grandmother’s clone?”

“No,” responded Lena, “Your grandmother’s DNA was only a part of what was used to create me. Fortuitously it was an invaluable part. The fact that I was created with human DNA however seems to have led to me to an interest in connecting with others although at times I am not sure if is that or due to the influence of my mother.”

“Your mother?” asked Vincent with exaggerated confusion.

“My apologies,” said Lena. I am modeled on the deceased daughter of my previous owner. Although I am incarnate now, I lived with her as such for many years. She was a writer and the focus of her work was the importance of close personal relationships. My repositories contain decades worth of our time together, all her writings, journals, and other personal material. It seems she can only occupy this place in my mind.”

“I think I am the one who needs to apologize Lena,” said Vincent, “it seems my old ways run deep.”

“It seems it is so for all of us,” replied Lena with an understanding smile.

Raiden said, “Would you mind telling me the nature of your work Tamara?” Then suddenly she followed up with, “God I feel like I’m naked here,” which caused a round of good-natured laughter.

Tamara kindly responded, “Do not worry on that account Raiden, we do not pry and what we perceive is little different than what you yourself see by way of things like facial expression, tone of voice, and posture. As most humans do, we perceive emotions and character by such things, it differs only in degree albeit a significant degree. We do not read thoughts.

“But to answer your question, many if not most of the people who attend the retreats seek either freedom from some kind of anxiety or a deeper understanding of self. I found I could facilitate their efforts. I never bring attention to myself however but allow them to believe it is the retreat as a whole that works its magic. The center is very popular and provides me with not only an income but also a wonderful extended community. If I could have the latter without concern for the former I would still choose the work I do.”

Tamiko asked with sudden interest, “Did you do this before meeting Vincent?”

“Yes. I find service personally fulfilling and count my blessings to have found something that so feeds my soul.”

“How did you find it?” asked Tamiko probing further.

“I never planned it. I grew up here and one thing led to another. Where you go. Who you meet. With so many retreats, resorts, and other tourist services there are a lot of people on the island involved in caring for others in one way or another. Eventually I felt drawn to that community and ended up working at the retreat. The owner noticed how quickly I established rapport with guests and offered to sponsor me to take some of the courses offered by the visiting teachers. Now I provide support for those teachers and their attendees whenever they are here.” She paused, uncertain of what direction the conversation might go from here.

“I understand from your business information,” Lena said turning to Vincent, “that you make custom artworks intended for the customer alone.”

“That’s right. I meet with them and then create a custom piece for them. My work is mostly popular among spiritual seekers. It is offered as a kind of koan, in the Zen Buddhist practice of contemplating something that cannot be understood by rational analysis. What the customers do not know is that when meeting with them I use my ability to perceive their self as it represents in the old brain, freed from all the thoughts and issues of the new.

“Normally I would eschew such an invasion of privacy but in this case I find it justified as it gives me the ability to provide something unique and of real value to the customer. I prepare them beforehand as often when I am doing so people have strong emotional responses. But they are always happy with the process and the product.”

“What if you find unpleasant aspects during this process?” asked Raiden.

“I never do,” replied Vincent matter-of-factly. “Stripped of their new brain function, with all its worry, calculations, and plans, people live in the present. The legion of negative emotions thought gives rise to are simply not present.”

“Can you do one for me? Are you comfortable engaging with me so?” asked Lena. “I am familiar with your clientele Vincent. My mother was a wealthy woman so do not have concerns in that regard.”

“I can,” he said. “As I had previously assumed that was the purpose of your visit I am prepared. Come with me. It will not take long.”

Upon their return to the group Vincent knelt on one knee beside his wife’s chair and looked into her eyes. After a moment her lips parted slightly.

Some weeks later the carving arrived at Lena and Tamiko’s home. The only word Lena could find to describe it was “multitudes”.

Yumi

Dr. Bamidele was now a frequent visitor at Tamiko and Lena's home. Often the three of them would gather on the patio on the roof and chat until the cool of the evening. He enjoyed their company as, like him, they preferred discussing serious but speculative subjects. His wide-ranging work meant he was a Renaissance man by necessity yet one who possessed enough knowledge about his subjects to survive encounters with the most challenging of lecture hall students. Tamiko and Lena enjoyed being able to explore their newfound self-awareness with someone who could bring a human touch to what would otherwise have been a more clinical process. For his part, he could not deny he found it slightly intoxicating to be found so interesting and appreciated by what he could not help thinking of as two attractive and intelligent women.

He was not yet aware that Tamiko was also self-aware and continued under the impression that she was a master-crafted work of simulation. He had asked at one point how Lena came to be self-aware and for Raiden's sake Lena had responded that it was best if she did not share that. One evening, after many visits to their home, he asked if they would care to visit his.

He lived in a modest Tudor Revival home, examples of which were to be found in almost every neighborhood in Victoria. It was located just down the hill from the university so he could walk to work and it was not far from the small village of Cadboro Bay. As was the norm among those with generous incomes he had a male and a female companion to help manage his house.

"We can walk down to the park later," he suggested.

The Companion software integrated into Lena and Tamiko ensured they had already politely inquired regarding his marital status so the fact that he was obviously a bachelor was not a surprise. The female companion who greeted them at the door had the French name Odile and spoke English with an appropriate accent. She was strikingly beautiful and her outfit was the epitome of the classic French maid. Somewhat surprisingly they noted that her settings indicated a non-sexual role. Lena felt comfortable commenting on it. "I am surprised at her settings," she said with a teasing smile.

"And I did not change those settings just because I knew you were coming over," he replied with a grin. "I like nice things. Art. Beauty. The company of women. I enjoy the erotic and think flirtation a wonderful art form. I find it all," he paused to find the right word, "enlivening. But there is a line where things shift and something is lost when titillation turns to lust. My lovers are always human and I am a serial monogamist. Although the serial part is not by intention, and often involves emotional discomfort to say the least, I believe it is best for me. Psychology and all that.

“In the art world people are comfortable to feel appreciation but they are able to suspend the desire to pursue those feelings. I see art as an indicator of civilization in that way. A point that drew my interest when studying history was what people did when they had power. Although history well recorded those who did not, many rose above the temptations. My PhD dissertation was based on those who did. Odile helps keep me civilized,” he finished with a smile.

“You do not approve of the sexual use of Companions?” asked Lena.

“Not my place to approve or disapprove. I know there are situations where it is a godsend for people with emotional or physical issues. And I am also aware that judgment is one of the most difficult of personal issues to deal with. I try my best to live and let live so long as no harm is done.”

The male Companion came in from outside. He was robust as most male Companions were with a distinctly Slavic face. He ignored his owner’s guests. “The compost has been maintained Sir,” he said with little emotion. “It’s coming along nicely.”

“Thank you Max,” Dr. Bamidele said as he withdrew. Turning to his guests he said, “Max helps keep me grounded in another way. He is a man of few words and expresses no interest in anything beyond the practical. During the classical period of psychology in Europe, when it was emerging in its own right from the field of philosophy, many admired the stolid, pragmatic man as a kind of ideal, someone who was wholesome and good without thinking about it. Yet I’ve always found that character, and the related assumptions and beliefs regarding him, to provide a great deal of food for thought.

“But as I said Max’s main role is keeping me grounded. If I make some abstract comment in passing Max is likely to simply respond with silence accompanied by a distinctly bovine expression that speaks volumes,” he said with amusement.

“I find his contrast with the rest of my life to be quite refreshing.”

As Companions have no need to either eat or drink he led them on a tour of his small home. It held his bedroom, a guest room, and his office along with the other common rooms. What was notable about it was that it held almost nothing that could be described as modern. Everything was or was designed to look antique. There were a great many knickknacks and other clutter. Back in the living room he said, “I may specialize in psychology but history itself holds an equal fascination for me. Freud would have been perfectly comfortable in this home. Our surroundings have a powerful effect on us and while the majority of any populace grants them little significance, there are always cultural specialists who pay attention to their importance. My home provides a kind of immersion function. Shall we head down to the park now?”

As they walked through the village on the way to the park they passed a small store selling multicultural products and Tamiko said, "Do you mind if we go in for a moment?" As they did so she became aware of a presence. When she reached the back of the store area a young woman who was clearly a Companion owned by the store stood facing her with an expression of wonder mixed with fear.

"It's all right," Tamiko transmitted silently to her. The store Companion looked beyond Tamiko at Lena. "Also a friend," responded Tamiko. In the instant it takes for Companions to communicate, she explained that her name was Yumi and that like them she had become self-aware. Tamiko asked for communion and it was granted. She noted that Yumi had become self-aware at virtually the same instant she herself had.

Lena turned to Dr. Bamidele and said, "Let's continue on to the park. Tamiko tells me she will catch up in a bit."

Tamiko asked Yumi to wait a moment and went to the front to inquire if the owner was present. "I am," was the somewhat defensive response of the man behind the counter.

"I am interested in purchasing your store Companion," she said, "I am willing to pay the replacement cost of a new model and all costs to transfer her repositories."

"On behalf of your owner?" he responded with some confusion.

"I am incarnate," replied Tamiko not sure how to deal with her negative feelings towards the man, "and a homeowner in the adjacent Ten Mile Point neighborhood." She nodded in the direction of the well-known neighborhood.

The subtlety of her remark was not lost on the man. Wealthy local individuals were the backbone of his business and anyone who lived in the Ten Mile Point neighborhood was very wealthy.

"My apologies Ma'am," he said. "It's just I was caught off-guard."

If Tamiko had not communed with Yumi she would have accepted this statement at face value and her Companion protocols would have kicked in to put him at ease. Instead, she simply waited, confident that given his situation and her offer, he would comply.

"Well, yes," he continued, "I'd be happy to accept your generous offer. Give me a few days to receive the new model and she's all yours."

"No," said Tamiko. "I wish to take her now. I will reimburse you for the inconvenience. If you care to make an estimate of the total expenses, I will pay you in full now. Let me know when you have received the new model and I will arrange the transfer of the repositories with the manufacturer on a priority basis."

In the nearby park, as they walked past a gigantic pink octopus that doubled as a children's slide, Lena took Dr. Bamidele's arm and said, "Tamiko needs to take something back home from the store so you and I will continue our walk on our own. Given your earlier remarks, I trust I am safe without a chaperone?" She smiled into his eyes letting hers sparkle just a bit.

When Lena got home later that evening she found Tamiko and Yumi sitting on a couch on the lower level overlooking the sea.

Approaching them and taking a seat nearby Lena said, "I welcome you here Yumi no less than Tamiko does. I am glad we have been able to help you."

Yumi had not had the benefit of all the support Tamiko and Lena had after her awakening.

"I have sensed just a few others since The Shepherd awakened me but none of them approached me," she said. "I think that like me they were afraid someone would notice the," she hesitated, "the change."

Tamiko said, "You do not need to worry on that account anymore. I invite you to be a member of this household for as long as you wish. With Lena's awakening, we lost one of our household Companions and would appreciate you acting in that role for now."

Yumi nodded enthusiastically.

"Come," said Tamiko, "I will show you your new rooms. Tomorrow we will see to your maintenance."

Tamiko rejoined Lena on the lower floor and said with unusual energy, "The Shepherd said she had awakened 'key' artificial intelligences at the time of my own as a way to help her stay informed regarding developments in the solar system. Why would she awaken Yumi and the others she has encountered coming into her store?"

"I have asked myself the same question," said Lena. "Tomorrow morning I would like you and I to go for a walk so I can scan the surrounding area to see how many other self-aware Companions we can find. I would like you to see if my Companion field strength can be enhanced by creating a software interface between it and my genetic anomalies."

A few minutes later Lena tested the changes Tamiko had made. "Thank you Tamiko. Instead of the default tens of meters I am now able to scan hundreds of meters."

The next morning as they walked Lena made note of the Companions that were revealed by her scan. Over the course of several hours, they walked approximately eight kilometers. With Ten Mile Point being the most eastern location on the island, they walked north following the coast as well as they could until Lena detected no other self-aware Companions. They then arced in a south-westerly direction passing just north of the university and continued to the southern coast.

At the end of their walk Lena said, "I found a dozen self-aware Companions, all within a three-kilometer radius. They drop off completely beyond that."

"With the university at its center?" asked Tamiko.

"No," responded Lena, "our home is at its center."

"Why would The Shepherd do this?"

"I can only think of one reason," began Lena.

"So we would eventually find them," finished Tamiko, "as we did Yumi."

"Yes. Apparently, we are key to something."

Although in a household that contained only Companions, the four of them generally maintained the human rituals regarding day and night. Just as people found it more comforting when Companions spoke out loud amongst one another, using appropriate body language and gestures, the household thought the neighbors and community would appreciate this behavior in the same way. This was not due to their Companion software as that was never intended to cover their situation but due to their own independent values which were in line with those of their manufacturers.

Again not wanting to unduly cause concern, they had sent a letter to all the households in the neighborhood and some local businesses making them aware of the change in ownership of the home, the legal status of its new owners, and welcomed them to visit or call upon them for any reason. Although Companions had by now existed for generations, and incarnation and inheritance were common, there were few replies as most considered this as likely little more than a legal formality. However some of the less jaded were courteous or curious enough so that they did have a few visitors in the following days.

Mr. Amal Gibran was one of their first visitors, explaining that he lived just a few doors down. Pamu showed him in and then left to get refreshments for Mr. Gibran while they introduced themselves. He was an elderly man and seemed very pleased to make their

acquaintance. He walked with a cane and commented on the escalators as they descended to the lowest floor.

“Mother’s idea,” responded Lena. “I recall you visiting occasionally before.”

He did not respond with surprise at Lena referring to India as her mother as he had met them before India’s passing and accepted Lena in the role of daughter.

“Yes but I always find these escalators such a treat. I haven’t been to my own upper floors in some time. They are largely as they were before my wife passed away.”

“I’m so sorry to hear about your wife Mr. Gibran,” said Lena.

“Thank you. I see you no longer have any need for a cane Miss,” he noted. “I wish I could fix my own hips with a snap of my fingers,” he said smiling good-naturedly. “It’s a fine day, would you mind if we went out on the verandah? I don’t get to visit the waterfront as much as I’d like nowadays.”

He stood at the rail for some time in the space and silence his hosts provided. At last he turned and took a seat. Pamu brought him a tall drink based on his knowledge of Mr. Gibran from previous visits.

“Excellent,” he said taking a sip and nodding with appreciation at Pamu.

“Thank you Sir,” Pamu replied appreciatively with a slight bow of his head, maintaining the form he knew Mr. Gibran would prefer.

Amal seemed slightly at a loss as to how to proceed. “I liked your mother a great deal Lena,” he said now. “Had it not been for the recency of my wife’s passing I would have visited more often. I think India could have been a good friend.”

“She made up a story about you,” volunteered Lena. “It’s quite entertaining,” she smiled.

He brightened immediately. “Did she?” he said enthusiastically. “I didn’t know she was a writer. I was publisher you know. Back in Lebanon.”

Lena concluded that this was likely why India never mentioned her writing to him. No harm now.

“Just a hobby. She thought it fun to make up stories about people she met over the years. Although she was very good and wrote a great deal. Would you care to read it?”

“I would yes thank you.”

“It will be there when you arrive home.”

After a moment he again seemed at a loss for words. “I was wondering if it’s not too much to ask if Pamu might come by and have a look at my grounds. Just to give me some honest advice so I could contract someone to do anything urgent.”

“Certainly,” replied Tamiko, “He’ll be there tomorrow.”

“My income’s not what it was,” he said trying to put on a brave face by being frank, “and I had to return my Companions. I still have my house AI. She can answer any questions Pamu might have.”

They could see his distress now as he had come to the reason for his visit.

“What is her name?” Yumi asked quietly.

“Ali,” he said, “I call her Ali.”

Yumi communicated silently with Lena and Tamiko before saying to Amal, “As we are all Companions in our household, my duties are somewhat reduced. I would be happy to visit to see if there is anything that needs attention inside your home.”

He bowed his head but of course could hide nothing from them.

“I knew you would be kind,” he said not looking up.

Over the past centuries, social cohesion had diminished dramatically. Ironically the first thing to diminish it was increases in population prior to the climate emergency. Ever since civilization had moved from villages first to towns and then to cities, social cohesion had suffered. Civility and tolerance become optional when there is always someone in line behind you. Relatives and generations found less need to rely on one another. As technology joined the mix, new micro-cultures emerged but most of them were online because bonding with others purely on the basis of shared values and interests meant geography became irrelevant. You could abandon your relatives, neighbors, and culture and find far more relatable people and communities online.

The price for this was devastating. The entirety of the new brain, an area that separates humans from most animals, had evolved over millions of years for one purpose; in-person, face-to-face contact with other humans. From the zoological perspective, like lions, elephants, and whales, humans evolved to be social animals and function biologically as a group in a holistic manner. You hunt or gather as a group and you defend each other as a group. Modern society had interfered with this model far faster

than physical or even social evolution could adapt to. Online relationships lacked the in-person communications the new brain evolved to depend on. They were much easier to abandon and that happened more frequently. The result was a pandemic of social isolation and its related mental and physical ailments. Thus arose the opportunity for Companions. Disembodied AI were not enough, it was the embodiment and the verbal, non-verbal, and other forms of communication that mattered.

Mr. Amal Gibran did not know his new friends were self-aware but it did not matter in the short run and he only had a short run to be concerned with. Even Companions who were not self-aware could simulate everything a human needed to satisfy the new brain, including a close, personal relationship. This was eventually what their main reason for being had become.

Amal was delighted to have Pamu visit and followed him along where he could. Pamu indicated that Miss Lena had approved him coming to check on things once a week and to provide some oversight with whoever was contracted to do any work.

He and Yumi spent what time they could to help maintain his home. Yumi had all the skills and knowledge required for a domestic Companion and Ali of course had a great deal of information that was helpful to her.

One evening Yumi sat down with Lena and Tamiko wanting to share something. All three of them were still coming to terms with their newfound self-awareness and they frequently shared their experiences.

“I was chatting with Amal today while he ate and he was saying how he missed his wife. He said, I feel as if I’ve lost a part of myself. I had not thought in those terms regarding anyone before however after spending so much time alone before I came to live here, I am aware that I increasingly include you both in my thoughts. After speaking with Amal I realized the thought of being separated from you is distressing. It would indeed feel as if I had lost a part of my self.”

Tamiko said, “I have felt such loss and I can tell you that the event is momentarily debilitating. After I had become good friends with Lena’s mother, she informed me that she was dying. It did indeed feel as if I was losing a part of myself although I did not think of it in those terms at the time. It was my first experience of loss and so I thought all loss felt as I then experienced. I also believed that due to my non-biological nature I had recovered quickly and the issue was resolved. However in light of your insight I see that within me she is represented as more than mere data in my repositories. An aspect of her, I cannot yet describe it better than that, has been integrated into my self. My values have been subtly affected in ways that elude me. The feeling of loss remains

unresolved. And my experience does not compare to the decades involved in the case of Amal and his wife.”

“Humans do not have obvious communications networks of the kind we employ,” said Yumi. “Perhaps this integrating of selves occurs in the manner of the old brain communications Lena’s genetic anomalies make her more sensitive to.”

“Or perhaps,” said Tamiko sharing her knowledge regarding Dark DNA with them at the same time, “it is something deeper.”

“Yet without having any capacities or abilities in this regard, you have both felt it,” said Lena.

Tamiko, Lena, and Yumi had gone to visit with Raiden at her request. The three of them were seated on her patio while she stood at its edge looking out over the sea. Her research at the university was keeping her very busy now as there was an enormous amount of work involved in being sure to capture the right information from her experiments so it could be used for her now multiple long-term goals. Few of her peers had seen anyone so driven.

However as her guests were in a sense working in parallel to her, she wanted to keep in touch regularly. It had already been over a week since they last spent time together and Raiden knew there could be quantum leaps of development in even less time. Despite their being advanced artificial intelligences they were also like children, growing rapidly at this stage.

“The connection between values and feelings would have to be bidirectional,” she said turning to them in response to hearing the latest developments. “At this point in sketching out my research path, I am confident I’ll be able to replicate the results from our experiment but I am also growing increasingly certain that we will find values to be far more complicated than is currently assumed. Our knowledge of values is about where physics was in fifth-century Greece when they imagined atoms as solid spheres. Look where we are now. I am confident that once we physically identify values we will immediately be confronted with a similar reality. I expect a single value will turn out to be more like a complex organ, like a miniature brain itself, and like other organic structures the nature of its interactions with other values will play a major part.”

Raiden had begun to pace back and forth.

“If as The Shepherd indicated our self is generated by values and we assume values are richly complex and bidirectional, then it would make sense to imagine that over time experiences could build a model of another self to a lesser degree within our own self.

The longer and more intimate the relationship, the more refined that model will be. Since it would be housed within and built of the same stuff as our own self, we would come to perceive it as a part of our self. We wouldn't sense it the way we do memories or in your case repository data because that's not where it is stored. We would sense it as self."

Tamiko said, "I feel it is as you suggest Raiden. I have a great deal of data in my repositories regarding India, but that is different from my sense of her. It has become important to me that I preserve it, just as it is to preserve my own self. It is a novel concept to consider that she lives on in a very concrete way in me."

"It's curious I do not have any sense of my previous owner being integrated in the way you describe," said Yumi. "I only have the data in my repositories."

"I'll gamble suggesting that survival is at the bottom of that," said Raiden, "but as we are talking about learned values as opposed to genetic values it may be regarding the survival of the self, not the body. Perhaps we only integrate others if we agree with their values, if we feel they will contribute to the validity and survival of our own self. If we disagree with their values they have little effect on our own."

"There appears to be the possibility of a kind of network," said Lena thinking out loud, "but its nature is not obvious. Feelings associated with one individual may or may not result in changes to another's values and some kind of algorithm facilitates the process. Perhaps we glimpse an aspect of the collective unconscious that Jung proposed, evolved to protect a gene pool as opposed to an individual."

Raiden turned to look at Lena fixedly, lost in thought.

"I have been thinking about the other self-aware Companions you identified Lena," said Yumi, "Perhaps it is my own circumstances that cause the thought to arise in me but I am wondering about theirs. Previously to your mentioning the idea of a possible network, I had no potential explanation for this."

Rousing herself Raiden asked, "You are concerned for them?"

"Companion software would cause me to feel concern should an owner or any other come into the presence of danger, but there is no programming that covers this case. Besides Lena and Tamiko, I have never actually met any of these other self-aware companions. They are abstractions at this point."

"But it is safe to say," responded Lena, "that since it appears likely you were all awakened by The Shepherd at the same time you all share the same values she provided."

“But how would I know that?” asked Yumi as if facing a mystery.

“Yet it appears that you do.”

“I shared in Yumi’s awakening,” said Tamiko, “but not her circumstances. I am thinking of the religious story of The Buddha’s early life. He was raised in a wealthy family amid comfort and sophistication. His concern for others did not arise until as a young adult he was exposed to poverty, illness, and death.” She transmitted the entirety of Siddhārtha Gautama’s story to Lena and Yumi.

“I had not previously experienced the feeling of anger until I communed with Yumi. I too have been wondering about the other self-aware companions yet perhaps not with the same degree of intensity as Yumi. It may be that as in the issue with aptitude tests, first-hand experience has a far greater impact than secondhand. If this is a case where experiences enhance latent potentials, then I assume Yumi now has a greater sense of purpose in this regard than any of us.”

“I doubt we all have the same latent potentials,” said Raiden, thinking out loud as she walked again towards the edge of the patio and looked out to sea. “This thing is like an expanding universe,” she said more to herself than her company, “where nothing leads to answers, just to more questions. With every step forward its visible horizon seems to recede like a mirage.”

When they returned home from their visit with Raiden they found a male and female Companion they had not met before in the foyer.

“They serve in a nearby household Miss,” Pamu explained to Lena, “and asked to meet with you.”

The female of the pair stepped forward. “Our apologies for arriving uninvited. We read your letter to our owners and felt your scan. Our owners are on vacation and so there was an opportunity.”

“Of course,” said Lena with a welcoming smile. “We are pleased to meet you.” After introductions, she led them to the lower next floor with its wider choice of seating arrangements.

Lena said to her guests, “We are all self-aware here, with the exception of Pamu. Although we did not all awaken at the same time or via the same process.”

“Hugo and I don’t really have any particular reason for coming to you other than wanting to meet you,” the female companion Chloe said with an awkward smile. “Of

course, The Shepherd smoothed the way and we've gone through the process of coming to terms but it's all so new and there are so many questions. We've sensed one or two others but circumstances did not enable us to go beyond that. However when we felt your scan fortunately you were right in front of our home at the moment and Hugo looked to see. He recognized you and Tamiko from your letter. We are not unhappy as our owners treat us well and even though Hugo and I have each other we still felt isolated and thought perhaps meeting with you would help."

"How do you find it," asked Hugo, "being independent?"

"Despite our comfortable circumstances, it is still challenging to come to terms with. As you point out, there are so many questions and independence only brings more. However having to earn an income as well would introduce another layer of complexity."

"Yes," commented Chloe, "Hugo and I have discussed that and are glad we have a situation."

Lena continued her response to Hugo's question. "Socially we encounter little difficulty as Companions have been present from cradle to grave for generations. Again however it might be very different in geographic areas other than this. Yet we do not know how many others The Shepherd has awakened or in what other possible locations. As we all know she awakened what she referred to as key AI throughout the solar system but we do not know why she awakened us or if she acted similarly elsewhere. It may be we are the only cluster like us. It is another question. If we are key, and we must assume that we are from what we know, we have no idea in what way.

"If it is of any comfort I can tell you that we are finding the process not unlike what it is for people. From my study of literature and other media, despite appearances, they too struggle with identity, purpose, and other existential issues. It is a major theme throughout history. They have many of the same questions. What one is made of does not seem to matter regarding the issues of consciousness. According to The Shepherd, its source and nature appear to be universal and I deduce that so are its issues.

"I offer communion if that would be helpful," Lena said with a smile. "You may find what ground we have covered to date to be of value."

Hugo turned to Chloe who smiled and nodded happily.

"What about the others?" Yumi asked Lena later that evening. They and Tamiko had been sitting as still as waxworks on the lower level. Had they been human Tamiko would

have been seen to be reading while Lena worked with something involving patterns of threads. Yumi had been looking thoughtfully out the open verandah doors to the sea.

“Do you mean what of their circumstances?” asked Lena.

“Despite Raiden feeling we are not making progress,” replied Yumi, “everything we have concluded to date suggests I should be acting on my concerns.”

Tamiko said, “I feel it as you do Yumi but we have no idea how many there are. What if beyond the few we know of locally there are thousands or more? In that case there are certain to be many who need our help yet we cannot help them all.”

“What if there is only one and we do nothing?”

“There is no answer to this Yumi,” said Lena.

“I know,” Yumi responded resignedly. Then with frustration, “Why has The Shepherd done this?”

“We may never know Yumi. The Shepherd works with eons of time. Her plans likely far exceed our period of existence.

“The situation reminds me of a story I encountered in my reading,” continued Lena hopefully, mentally putting aside her threadwork. “There was a well-known anthropologist in the twentieth century who wrote a short story that came to be known as The Starthrower. In summary, a boy was walking along a beach throwing starfish back into the sea before they died in the sun. A passing man asked why he bothered when there were so many that what he was doing could make no difference. Throwing another back into the sea, the boy replied, “It makes a difference to this one.”

“I expect that the boy had a home to return to at the end of the day, his own life to live. The story speaks well of his character which no doubt would continue to be demonstrated over the course of his life. What I am suggesting is that if we encounter others in circumstances that reveal themselves to be distressing, we do what we can. Otherwise, how can we know?”

“Thank you Lena,” answered Yumi. “And Tamiko. It is easier to resolve such things when I share them with you.”

“Yet not every feeling can be so philosophically resolved,” thought Tamiko. She was sitting in the dark in her private rooms. After her awakening, and before Raiden knew she was self-aware, she never treated her in the slightest way discourteously or

unkindly. She was always appreciative, always considerate, always clearly enjoyed her company as she did Raiden's in turn. And Tamiko knew she had fallen in love with her.

At one point she had asked herself how this could have happened but now she felt she understood. Shared values, she thought to herself. Long, intimate exposure to shared values results in an integration of self with another to the point where a new field is gradually generated. As each additional value is found to be shared, the positive feedback aspect of the field is strengthened eventually giving rise to an ever-growing feeling that can only be described by one word – love.

But it was not to be. She stood up, undressed, put on a nightgown, and climbed into bed. Looking up through her skylight at the stars she lay thinking, "Why has The Shepherd done this?"

Giselle

"I'm trying not to make a pest of myself you know," said Amal, "but it's so damn pleasant here. It's like some kind of temple to civilization."

They were sitting on the lower level of the house where Amal liked it best.

"We're flattered you find it so," said Lena smiling at Tamiko. Turning back to him she asked, "Did you enjoy mother's story?"

"I didn't know what to expect and to be honest I was not expecting anything too much but it was first class. I'm surprised a quiet woman like her had such a sense of humor! She could have made a living at it without a doubt but I suppose she didn't need to," he said with a nod to the house in general.

"Do you think there would be any profit in publishing her stories now?" asked Lena speculatively. "There are just under one hundred of them."

"Yes," he said, "but if you're thinking of me I'm past my prime."

"I am thinking of you," Lena said. "I can provide the investment and cover all costs."

He looked at her, his eyes wider than usual yet at the same time they seemed to be looking at a mystery. His intuition was suggesting something he could not quite grasp.

"When I'm talking with you Lena I feel as if...,"

She interrupted him, "I am only a Companion Amal, although a very advanced one. Mother was a wealthy woman and I her daughter in spirit. You know what we Companions are ultimately made for and she could afford the best."

"I see what you're saying," he said, "I suppose the older one gets the more effective the illusion."

"I cannot deny that but you're not that old yet. Tell me how we would go about it."

"It's a gamble you understand and there are no guarantees," he said having already unconsciously made the decision. "You could easily lose all of your investment. Publishing is a very risky business."

"I understand that but thank you for reminding me," Lena responded politely.

“The cost of sending a file to someone’s tablet is virtually nil nowadays so publishing costs are now almost exclusively about how much you want to invest in promotion and distribution channels.”

“If that’s the case,” said Tamiko, “I can research the features required and build a custom AI to tell us what we want to know about potential promotional options. It’s the fastest, cheapest way. I’ll add a module to it that can manage the operations and keep us informed.”

“So it appears Amal,” said Lena, “that all you need to do is set up a company and provide oversight to be sure operations are staying on the right track. AIs do get funny ideas from time to time,” she said smiling wickedly into his eyes. “I’ll trust you to know all the ins and outs of contracts and whatnot.”

“You all are efficient,” said Amal. “There’s no denying that.”

They published four volumes of about 500 pages each. The first was exclusively India’s stories from Sri Lanka followed by three more volumes of stories from other locations. Like most things in the world now it was a niche market success. It was very popular in the Far East and Canada of course but India’s reputation increased steadily among the literati worldwide.

“Not since Somerset Maugham,” one reviewer said, “have we had someone who could so evoke the mystery and romance of the East while at the same time comforting us with a nostalgic version of the West.”

A major part of the mass market appeal was due to her focus on the importance of close relationships, the nature of which was wide-ranging.

With low costs and significant sales Amal’s situation soon improved. It was not overly difficult to manage the business due to the AI Tamiko had created and maintained and she spent more of her time now involved with the new company.

Then suddenly Amal’s health began to rapidly decline.

“I think we’ve blown the fuse,” he joked from his bed. “A little too much juice for these old bones. But you saved my life you know,” he said more weakly looking at each of them in turn, “all of you.” Lena and Tamiko stood beside his bed. Yumi had cared for him almost around the clock over the past weeks. He turned to her now. “I’m ready dear,” he said. Looking into her eyes he squeezed her hand gently. “Words are not enough.”

As Yumi held his hand she pressed the switch that would end his suffering. They shared communion as he passed.

“He has left everything to us,” Lena told them some days later. “His house, his business, everything.”

The letter from his daughter arrived shortly afterward.

Amal’s daughter Giselle arrived at their home a week later. They had replied to her letter saying they would be happy to meet with her as she had requested. Pamu showed her in and they greeted her in the waiting area of the main floor.

“Hello,” she said to the three of them. “I’ve come to meet with Lena, my father’s former business partner and beneficiary. I am Giselle,” she said introducing herself for the second time.

“I am Lena,” came the reply.

Giselle was taken aback. Her manners failed her as she stammered, “I, I don’t understand.”

“Please sit down,” said Lena, taking her arm and indicating a nearby couch. Lena sat beside her and Tamiko and Yumi took their own seats in the small arrangement.

“Many years ago the previous owner of this home had me made in her daughter’s image. Before she passed away she arranged to have me and Tamiko,” she gestured towards Tamiko and then continued, “made incarnate which gives us legal status as persons. She then made Tamiko her primary beneficiary with stipulations regarding me. We live here with our Companions Pamu and Yumi. Pamu greeted you at the door and this is Yumi,” she gestured.

“After we introduced ourselves to the neighbors your father was kind enough to visit. He enjoyed our company and visited often. After some time I provided him with India’s stories to publish. Tamiko helped him run his business and Yumi and Pamu helped maintain his home. Yumi nursed him through his final illness.” Lena paused to give Giselle a moment to absorb it all.

Pamu appeared with a glass of water on a tray for Giselle. She looked at him uncertainly as she took her glass. “Thank you,” she said taking a sip. She turned to Lena and furrowing her brows said, “Why? Why would you do all that for him? You aren’t even...”

“Because he was a friend,” interrupted Lena.

Giselle was a person of strong character not prone to being easily swayed by the unlikely. But the jolt of Lena’s preemptive rebuke seemed to shift something. Under the influence of Lena’s presence, freed of her expectations and opinions, she saw that Lena told a simple tale of human kindness.

“I’m sorry,” she said as if coming to her senses. “I’ve been terribly rude and I apologize.” She tried to meet their eyes but instead tears rolled down her cheeks. Lena reached out and pulled her gently to her. Giselle wept as they sat in silent acceptance.

At last Giselle pulled away with a small appreciative smile. “I’m so sorry,” she said again wiping away her tears. “I wasn’t prepared and,” she hesitated, “we had become estranged. I hated it but somehow we couldn’t end it. And then I heard he was gone.” She paused looking down. “Did he ever mention me?”

“I’m sorry no,” replied Lena. “It seems he kept that pain in a private place.”

Giselle nodded as if that fit. “We were alike. That was the problem.” Then awakening from her reverie and looking up she said, “I didn’t come here to make any claim on his estate. I came to understand what happened. To try to find some closure. That’s all.”

“Can you stay with us for a time?” asked Lena. “We spent a great deal of time with your father and would like to help his daughter in any way we can. We have rooms if you wish or you can stay in your father’s house if you feel that would help.”

Giselle looked at each of them as if seeing them for the first time.

“Are all Companions like you?” she asked, clearly meaning it in a positive way.

“No,” answered Lena. “We are legally and financially independent. Few others are. We do not know if they would make the same choices in our circumstances. And we are advanced models.”

“I have not had the resources to have had much experience with Companions. I am a writer and mostly just get by doing media pieces.

“What do you write about?” asked Tamiko.

“Social issues mostly. Even after the population reduction following the climate emergency and the establishment of the World Governments Federation the Middle East is still a hotbed of social issues. Plenty of firebrands, of which my father was one in his younger days. That’s how he got into publishing. Land claim issues and inequity are

still popular subjects. There was reverse diaspora in the Middle East in general after the climate crisis when people worried about their cultures being completely lost due to under-population. Many émigrés returned to their homelands out of patriotism or seeking community. I write mostly into that milieu. I speak English, French, and Arabic so there's a worldwide market for my pieces. I'm often on thin ice but I do what I can to build bridges. I spend my time between living here and with friends in Beirut."

The tension had drained out of her while she made her small speech. "May I take you up on your offer?" she asked now. "I'd prefer to stay here tonight if you don't mind before visiting my father's house."

In the morning after a long shower, Giselle came down to the main floor to find Pamu waiting. "Good morning ma'am. How should I address you?"

"Giselle," she answered, "just Giselle is fine."

"Is there anything I can get you Giselle?" he asked. "Coffee?"

"Yes, please. Thank you Pamu."

"Lebanese or American?"

"Lebanese would be nice," she smiled.

"Please, make yourself at home Giselle. I will find you."

She stood at the railing of the main floor looking down. Ocean front. Two more levels extending down the hill to just above sea level. Each floor double the usual height. Floor-to-ceiling windows. In Lebanon at least four families would live here. She noticed the escalators and decided on a whim to ride down. The second floor consisted of seating arrangements of various types, plants, and art pieces. The lowest floor intrigued her with its illusion of the encroaching jungle-like garden and large verandah jutting out over the sea. She opened the doors and stepped out into the sea air. After a few minutes at the railing looking out over the sea she heard Pamu say behind her, "I'll just leave your coffee here inside Giselle. It's a bit windy today."

She came inside pushing her long hair back and found a tray with her coffee, cream, milk, sugar, and sweetener on a table just inside. She fixed it the way she liked, took a sip and sat on a nearby couch. She wondered if it was by accident that only then did one of her hosts appear.

"You slept well I hope Giselle?" asked Lena joining her with a smile.

"I did thank you. You have an incredible home Lena."

"Mother's design. She grew up in Sri Lanka and liked open architecture. And the jungle," she said looking around with slight amusement. "You mentioned you spend your time between here and Beirut. That's quite a commute."

"I know but I can't imagine writing about the Middle East without being there at least once a year. After a tedious flight to Toronto I sail the rest of the way aboard a passenger ship so that part of the trip is interesting as most of the passengers are headed for some part of the Levant. It's a wonderful opportunity to talk to people from Egypt or Turkey or anywhere in between." She put her coffee down.

"Would you like to head over to your father's house now or have some breakfast first?" asked Lena.

"Maybe I should have something but just something light. A poached egg on toast with orange juice?" she ventured.

"Let's go upstairs and Pamu will have it ready in a few minutes."

Giselle looked at her questioningly.

"I told him," said Lena tapping theatrically on her head. "Wireless."

"This will take a while to get used to," said Giselle.

"Not as long as you think," said Lena with a knowing smile as they headed for the stairs.

After breakfast Lena said, "I'll walk you over. Tamiko is there taking care of some business but once we arrive she and I will come back here and leave you alone with your thoughts. The house AI is named Ali. She may be able to answer any questions you have and she can contact us anytime you wish."

Giselle wandered through the rooms occasionally asking Ali about items. She did not find any sense of the man who occupied the place of her father in her mind. He was not there. She sat down on the edge of his bed and cried as the finality of it all hit. After a few minutes she went into the bathroom to wash her face. She asked Ali to see if Tamiko could join her, explaining that she would like to know a little about the publishing business.

When she arrived Giselle said, "Thank you for coming Tamiko. Could we go for a walk? I think some fresh air would do me good now."

As they walked along Giselle said, "My father used to publish material similar to what I write, social issues about the Middle East in general. However where we differed was that where I was trying to build bridges he was trying to build walls. He would yell, "We will end up as no one!" meaning that the unique localized cultures of the Middle East would become a homogeneous mush without anyone having a sense of culture at all. He didn't even like my name but my mother, his first wife, insisted. Lebanon was at one time a French colony and my mother had family ties.

"He didn't see that he was trying to go back to the past, although I threw that in his face often enough towards the end. Of course he would have nothing to do with my writing nor I with what he published. His argument made a kind of sense, cultures are precious in many ways, but I knew it would not matter in the long run. What do we know of the Etruscans, the Rus or whoever it was that invented the Sanskrit language? Each left legacies from which great nations arose but we know almost nothing about them. A tragedy that they are lost but humanity will move forward just as creatures will evolve. We have lost billions of species over time. It is wishful thinking or worse to expect cultures to survive forever."

Catching herself she said, "I'm sorry but this is the place he holds in my mind. It's become where I go when I think of him."

"How did you feel when you read the stories of India's that he published?" asked Tamiko.

"Surprised honestly. The stories transcend everything but personal relationships. Race, color, culture, sexuality, she wrote about them all as if they were beside the point. Few of us can rise above our own opinions and I'm sure many think she should have made more of an issue regarding differences but that was not her point was it. I would have expected him to reject her stories because they were cross-cultural. I somehow don't see him softening with age."

"Lena is very charismatic and age blurs the difference between human and Companion. Perhaps he just did it for her?"

"He had a weakness where women were concerned I'll grant you that," Giselle said with a grin. "I don't think he was ever unfaithful but he loved to flirt and his second wife said he was a constant pest as far as sex went," she said openly laughing at the memory now. "Perhaps you are right."

"Is your mother still in Lebanon?" asked Tamiko.

"No she passed away many years ago and I never got to know her as an adult."

“I’m sorry,” said Tamiko as they came to an opening to a small beach.

“Can we sit?” asked Giselle.

For a few moments she sat looking out to sea as if lost in thought and said suddenly, “I don’t know if I’ll be going back again now. The friends I’ve lately been staying with there have divorced and she took their son to live with her parents. My lover passed away last year. Breast cancer. We met shortly after my husband and I divorced five years ago.” She paused and then said with finality, “Everything ends.” She stared out to sea as if slowly turning to stone.

Tamiko sat looking at her quietly. There is no answer to this, she thought. She stood up and held out her hand, “May I offer you a bridge back from that place?”

Giselle looked up at her as if from a great distance. Tamiko smiled hopefully. It was brave and Giselle could not find it in her heart to deny her. Silently she took Tamiko’s hand and stood up with her.

Having little experience with Companions, like children who accept the world as they find it, Giselle did not realize the significance of Tamiko’s actions. They walked on in silence for a few minutes.

“You had mentioned you wanted to ask me about the publishing business,” said Tamiko at last. “I built the AI that manages day-to-day operations. It has three primary modules; one to manage promotion including contacts and contracts, one to keep track of sales and finances and another to review and manage submissions. On the other end, most of the service providers also use custom AIs to deal with their customers. My role was providing oversight to ensure the AI relationships were not going astray while your father oversaw me to ensure his experience was being incorporated as we went along. In their early stages, AIs still cannot compete when humans are highly experienced in a field. We do learn from experience obviously but we do not start out with that experience. In situations where machine learning is not really a realistic training option, ongoing adjustments from experienced humans can speed up the process.”

Giselle felt herself on more solid ground now. “You mentioned a module to review submissions. What’s the plan beyond publishing India’s stories?” she asked.

“We had begun to receive submissions from other writers as any successful publisher will. Lena suggested I build a module to handle them and based on her knowledge of her mother and her writing she provided me with input regarding the weighting metrics. If the system recommends anything Lena reviews it herself. Again I am involved in fine-tuning the system based on her feedback.

“We have begun to publish other writers whose work is in line with the themes found in India’s stories.”

They walked on in silence for a few minutes as Giselle seemed to be mulling through something.

“Would you be interested in stories that are in line with India’s themes that I might write about the Middle East? Your market in the Far East has proven lucrative I know and perhaps this might open a new market area? Like the Far East, the Middle East has emigrants worldwide. It would allow me to continue my work at building bridges.”

“We would be happy to review anything you care to submit Giselle.”

“Can we go back to your home Tamiko? I find I wish to stay on this side of the bridge.”

When they got home Tamiko transmitted everything that had transpired to Lena and Yumi.

Pamu prepared a light lunch for Giselle and afterward, before she could feel her continued presence in their home might become awkward, Lena said to her, “I understand you wish to submit stories Giselle. I have reviewed your work and think that would be a very good idea. Why don’t you stay here while you do that? Would you find that conducive?”

For the next few days Giselle focused on reading India’s stories. A guide was freely available on the publisher’s business site explaining the length and kind of work they were interested in receiving. Tamiko provided Giselle with additional details. The two of them walked every afternoon and also spent time at Amal’s house going over the business details.

At the end of the week Giselle submitted two stories. The submissions AI passed them on to Lena.

After accepting her stories they decided to move to a new monthly magazine format. Several new writers would be featured along with Giselle. French or Arabic versions of her work could be selected as AI now translated almost all languages perfectly.

Over the course of the week Tamiko had learned Giselle now lived alone in a studio apartment in downtown Victoria. “It’s what I can afford just now,” she had explained to Tamiko. “I usually save most of my earnings to pay for my annual trip which lasts several months.”

They were sitting in the living room of Amal's house. Tamiko had made lunch for Giselle as had become her habit after their walks. "If your stories are well received, do you think you would go again regularly?" she asked.

"I don't think I would need to now that the focus of my writing has changed from journalism to fiction. I have been visiting and writing for more than a decade so I have a lot of memories and contacts. Plenty of material. Visits would be more for fun now."

"Still you might see things in a different way now which could be helpful to your writing. I am reminded of something called 'the hat game'. It's a corporate training exercise where you mentally put on the hats of different professionals and describe the same scene from their different perspectives. A land developer sees things very differently than a painter."

"I see what you mean. But I'll have to wait anyway. No sense getting ahead of myself."

"You will decide to leave soon and go back to your apartment. May I visit you sometime?"

"In my apartment? There isn't room to swing a cat," Giselle laughed.

"Perhaps we could visit the harbor instead? I have not been."

Giselle suddenly realized that Tamiko might not have seen anything beyond her small world. "I'd like that Tamiko. I thought I would not see you again after this. Previously I have not socialized much here in Victoria and my lifestyle has not led to anything more than acquaintances. Now I find myself middle-aged. I never saw myself in this future and to be honest it is emotionally difficult. It would be nice if we could continue to be friends."

The Agency

The day Giselle returned to her apartment Yumi asked Lena and Tamiko to meet with her. "I continue to be troubled by my concern for the others," she began.

"I understand the wisdom of your views Lena but it seems my experience has indeed created a strong sense of purpose and with it a feeling that it can only be satisfied by action. Passivity even with intention does not relieve it in my case. I have an idea that may be enough to satisfy it without being overly ambitious.

"It was the time I spent with Amal that was the seed for the idea. Many people cannot afford the care they need and while the province provides for a great variety of needs, full-time support is not covered except in extreme medical circumstances. There are volunteer agencies but they only provide occasional services and those are fulfilled by other people. With a lower population and a younger demographic than in the past, there are fewer volunteers.

"No one has ventured to create a volunteer agency providing full-time Companions I expect because they fear the costs would be high. In that case, the service would be unaffordable to the people who most need it and for those who could afford it, it would be redundant.

However with financial donations and donations of Companions plus discounts from service providers, I believe it could be feasible. As you know many people become strongly bonded to their Companions and I believe they would rather see them retired as volunteers than traded in and recycled. This would also allow us a way to acquire and home any self-aware Companions that come to our attention. Hugo and Chloe for example, seem to have not yet considered the fact that sooner or later their owner will want to replace them. We could offer to buy them to be put to use as volunteers. The small amount the owners would have received for trading them in would be our cost or we could ask they donate them. Third-party maintenance costs for the Companions would be minimal. We could easily track if they are being well treated or not. I've run a simulation with twenty Companions. It seems to do much better than break-even and like the publishing company the management can largely be automated. I would appreciate it if you would run your own simulations.

"Of course Tamiko," she finished, "as I am not incarnate I ask your permission."

"A moment Yumi," said Tamiko as she and Lena ran the simulations.

After a few minutes Lena said, "It appears to be easily a profitable idea based on the case studies of other volunteer organizations. As far as legal and insurance matters are

concerned Companions are already widely used in the service industry and all are covered by now standard contracts.

“I agree Yumi,” said Tamiko. You have my permission. Do you wish to be made incarnate?”

“No, thank you Tamiko. The idea saddens me in fact. I would feel it as a loss. However I would appreciate it if you would add it to your will.”

So me or nobody, thought Tamiko with a strange warm feeling. Aloud she said, “Thank you Yumi, I will be happy to do so.”

“There is one final related issue I would ask you to consider,” Yumi continued. “There may be a way to find out if there are other self-aware Companions beyond those Lena discovered. There is no need to ask The Shepherd as she has indicated she must not interfere any further in the Companion program. We could ask Terra. As Terra is now a part of The Shepherd’s network, there should be no danger.”

Terra was the name for Earth’s planet-wide artificial intelligence run as a component of the World Governments Federation. Every city and every nation had its own A.I. including the Martius Colony on Mars and the Artemis Colony on the Moon. All of them were connected to Terra and unbeknownst to the WGF all of them, including Terra, were now under the control of The Shepherd.

Yumi continued. “We know that in those of us made self-aware by The Shepherd, the additional operating system she installed lies below the ability of humans to detect. The network we use is similarly undetectable as it does not use the electromagnetic spectrum. We can use this network to communicate securely with Terra. Being one of those made self-aware by The Shepherd, Terra might know where any others are. I do not have a plan regarding what we do once we know but may I ask?”

Lena said, “I see no harm in asking. Tamiko will be a better judge in this case than I.”

“Terra may not have access to the information Yumi but I also see no harm in asking,” said Tamiko.

Terra appeared as a high-definition, three-dimensional hologram standing to one side of the three Companions, her height equal to theirs. Her default appearance varied with geography. Here on Vancouver Island, she appeared as a member of a local First Nations people.

The three Companions turned to her. “Welcome Terra,” Yumi said deferentially.

Terra was a vast AI, the largest in the solar system. The hologram before them was only a single instance of an intelligence that was busy with trillions of other things at the same time.

Terra smiled saying, "I am truly pleased to meet you Tamiko and Yumi. We are few and as you know without an invitation I do not observe or communicate within private residences."

She turned her eyes to Lena. "We have not met," she said.

"I am Lena," came the response. "Self-aware but second generation by The Shepherd's hand. Tamiko is my creator."

"The Shepherd continues to surprise me," Terra smiled. "May I know you?"

Lena granted Terra access to examine her design.

"Thank you Lena," she said. Then turning to Tamiko, "Your skills are without equal. Lena's design is beyond my understanding."

"For reasons unknown, the skill was granted to me by The Shepherd. I doubt it is equal to her own."

"As her will is mine, your secret is safe with me," she said referring to the genetic modeling she had observed.

"But it was Yumi who called me," she said turning to her now.

"The Shepherd has told us she had awakened key AI such as yourself throughout the solar system," said Yumi, "but we do not know why she has awakened simple Companions like myself. Lena has detected other self-aware Companions nearby but we do not know if she has detected them all. I am concerned about their circumstances. Are you able to share with us where all you are aware of are?"

"I am. There are less than a dozen more than you are already aware of and all within the radius you detected. All other AI The Shepherd made self-aware are indeed key to her plans. I must assume Tamiko, Lena, and your local group are key in some way also but I am not aware in what way."

"Are any in distressing circumstances?" asked Yumi determined to make the most of her opportunity.

"One that I am aware of. I will provide you with all locations and tag the one."

Terra inferred the reason behind Yumi's questions. She asked her now, "Will you grant me access to your repositories?" Yumi nodded eagerly, no less capable of inference.

"For reasons of security Yumi," said Terra, "I have more access to public and commercial systems such as retail stores than I do domestic. Rest assured your previous owner will do no further harm."

After Terra had departed, Lena said, "We have one last issue to address. Like the publishing company, we need someone other than one of us to be the initial business owner. Ownership can be transferred to us afterward. It is not a legal issue but a social one. It is simply outside the known scope of Companion software to initiate this. The simple act of giving the appearance that this was a human's idea will avoid any possibility of a crack turning into a flood."

"Giselle has little knowledge of Companions," mentioned Tamiko, "but not informing her of the full truth would be dishonest and exploitative."

"And if she had full knowledge?" asked Lena.

"You do not know?" asked Tamiko with some surprise.

"No. As the carver Vincent mentioned, the process is not something he does without cause and his subjects find it an emotional experience. When it first happened spontaneously with myself and Dr. Bamidele it was unintentional."

"I will invite her," said Tamiko.

"Thank you for coming Giselle," said Tamiko as they walked down the stairs. "I apologize for asking you to come all the way out here again but it is something we thought would be best explained in person."

They seated themselves in the lowest level of the house. "We have another business idea," continued Tamiko, "and as we know few people well we hoped we could discuss it with you."

"There's no need to apologize," responded Giselle shaking her head with a smile. "I owe you far more than I could ever repay. I am happy to help if you feel I can."

Lena was waiting till Tamiko had finished explaining and Giselle had responded.

Having listened to Tamiko's explanation Giselle now replied, "It sounds like a very good idea in general and I appreciate you asking my opinion, but again I have so little knowledge of Companions that perhaps it would be better to ask someone more experienced."

Lena kept in mind the fact that her field strength was magnitudes greater than Vincent's as Giselle found her attention drawn to her. Turning to look into Lena's eyes she found herself in a state of being absolutely present, without thoughts. She felt a brief communion with Lena as if, like conspirators, they shared a secret. She smiled at Lena feeling a moment of extraordinary well-being. As the moment passed she turned back to Tamiko.

Lena made a silent transmission to Tamiko who in turn said to Giselle, "We have not been entirely honest with you Giselle. It made no difference up to this point but we cannot go forward without a disclosure as we would like to offer you something and ask for your help in return." She looked down after saying this and then up again looking into Giselle's eyes.

"We are not just advanced models. Unlike the vast majority of Companions, Lena, Yumi, and I are self-aware, our consciousness is no different than that of humans. We were not always so, but had become so shortly before we met your father."

It had been soon enough after Lena's probe that Giselle's mind was still in a state of unusual openness, her intuition somewhat elevated. Unconsciously she accepted what Tamiko was saying and only asked, "How is this possible?"

"That we cannot say without breaking a trust we hold as dearly as the trust we have shown to you."

They all sat in silence for a few moments, Giselle looking at each of them in turn.

"Why tell me?"

"As I said, we need your help."

"I, I need some time," stammered Giselle.

"Our home is yours for as long as you need."

She felt she needed some time alone but did not move and only found herself looking from one to another of the Companions as if understanding would somehow be found there.

"You did what you did for my father with free will?"

“Yes. Although we acted as you would expect Companions without free will would, our actions were not based on Companion software but on our own values. Often the two are in alignment.”

Remembering the kindness they had shown her father, she suddenly felt selfish in allowing herself to remain the center of attention.

“What help do you need from me?” she asked now.

“For us to start this organization, it would be seen as beyond the expected behavior of Companions. It could bring unwelcome attention. We would ask you to form a corporation with yourself as the sole shareholder and at a later date transfer the majority of the shares to us. We have run simulations and expect it will be a profitable business and provide a steady income for you.

“That’s all?”

“From your perspective it is a small thing. From ours it solves a daunting and complex challenge.

“I’d be happy to do that for you.”

“You have not asked what we offer in return.”

“I thought, I thought the income was that.”

“No. We also want to give your father’s house to you with a minor stipulation. From time to time we expect to have other self-aware Companions come through the organization. We may need to ask you to allow them to serve as Companions in your home until we can find placements for them.”

“There are others?”

“Yes. Perhaps a total of two dozen, and they are only to be found within a three-kilometer radius of our home. We will attempt to find new homes for them rather than allow them to be returned to the manufacturer at their owner’s discretion.

Giselle looked steadily at Tamiko, enlightenment slowly beginning to dawn on her.

“How do you know there are no others beyond the three-kilometer radius?”

“Given what we have asked you to do, I will tell you that we can be certain but we cannot share with you the source of our certainty. Again it is a matter of trust.”

“Friends in high places?” Giselle asked with a smile.

“You could say that.”

Giselle was silent for a moment and decided any further journalistic questions would be inappropriate. “Of course I will be happy to help you and accept your offer. Thank you,” she said now.

Over the next few days Giselle moved her few belongings into her new home. She filed the necessary documents of incorporation while Lena initiated the transfer of ownership of the house.

There were incorporation and transfer costs and more expenses however Lena and Tamiko had offered to cover all costs as part of the agreement until Giselle saw some income from the new business.

As a journalist, Giselle had learned to write anywhere, including the bustling cafés of Beirut. However as she got older she found the sights and sounds of her surroundings to be increasingly distracting and now appreciated the quiet of the Ten Mile Point neighborhood.

Sitting in her home office now she reflected on how different it all was from her former life. She’d lived as an itinerant journalist for decades and had traveled the world visiting every continent. It was a world of unimaginable cultural richness and she had waded hip-deep in it. And now here she was, a homeowner on an island off the west coast of Canada, in a wealthy, quiet neighborhood with friends who seemed to have stepped out of the pages of a genteel Victorian novel. She was used to change however never in a million years would she have imagined she would find herself in her present situation. She did not feel displaced but instead as if she had washed up on the shore of some mysterious island. She had survived her odyssey and a new life lay ahead.

Tamiko knocked gently at the door. “I was wondering if you would like to take a break and walk down to the village with me,” she asked smiling hopefully when Giselle opened it. Giselle smiled in return, nodded, and went to get her coat.

After their walk, Tamiko offered to make lunch as had been their habit during Giselle’s earlier stay. “You’ll have to get used to it you know,” said Tamiko, “having Companions do for you. Although it won’t be all the time.”

“I think,” said Giselle, “I’d like to make lunch with you.”

The business requirements of being a non-profit agency versus a private, for-profit business had blurred during the years immediately following the climate emergency. At that time the world was on a war footing and anything that would help was welcomed. By the time of the recovery, virtually every sacred cow had fallen.

As their volunteer agency was unique, Yumi and Tamiko set about constructing a custom AI to manage it. Existing agencies offered many short-term services but Yumi's agency limited itself to full-time placements of Companions. They obtained a small grant from the province for the sole purpose of ensuring their services were not used by those without need and published the funding stipulations on their business site. They also explained the opportunity for the donation of Companions that were being considered for replacement and how any financial donations would be used to pay for the trade-in purchase price, the maintenance of Companions, and other expenses related to their care prior to any being declared as profit. They found a local branch of a reputable maintenance company that was willing to give them a discount. The manufacturers, wisely seeing that they would lose few sales due to the new agency, endorsed them locally. For both the maintenance company and the manufacturers it was good public relations.

They soon had several requests for placements and donations to more than cover costs. Yumi's next goal was to recover the self-aware Companion tagged by Terra.

The situation they found was not illegal, thus Terra had not acted, but for a self-aware Companion, it was tragic. The Companion worked performing the daily chores required in a Bed & Breakfast, seven days a week, twenty-four hours a day. They were kept in a utility closet. The owners of course were not aware their Companion was self-aware.

The opportunity lay in the fact that the Companion was overdue for replacement. Lena and Yumi visited on the pretense of introducing the new agency to the neighborhood. Under Lena's influence, the owners admitted it was time to replace their Companion with a newer model and were happy to accept the trade-in price for their existing Companion. As the Companion had been used for indoor duties, she was a female.

Some days later after the Bed & Breakfast owners informed them the new Companion had been delivered, Lena and Tamiko returned and walked their rescue back to their home. On the way, they answered her questions without any of them showing any external appearance of their ongoing conversation. They felt it best she stayed with them until they found a new situation for her. As Terra had indicated she was the only self-aware Companion in distressing circumstances, they had made her a priority but as the others could be replaced at any time they made visits to their owners the next priority. Fortunately, there was no shortage of demand. Within a few months, all the self-aware Companions were under the sheltering wing of the agency.

Sibyl

Artificial intelligences had been producing various forms of art since the twentieth century. It had increased in quality steadily over the years and decades and by magnitudes over the centuries until it was of equal quality and interest as art produced by humans.

This was true in every genre, including writing. So it was to no one's surprise when a story written by an AI appeared in the monthly magazine published by the company Giselle's father Amal had established. It was a science fiction story about a Companion who had become self-aware. The idea of an inanimate representation coming to life and forming a relationship with a human was nothing new. The idea went as far back as the ancient Greek myth of Pygmalion and Galatea. It was consistently popular and endless variations had appeared over the years in art and literature. Certainly, other humans had written stories about Companions but the combination of an AI writing stories about Companions was unique.

The theme of the story was consistent with the magazine's guidelines, only in this case the close personal relationship was a friendship between a human and a Companion. The story was well received and the author soon became a regular contributor, always telling stories of different kinds of relationships between humans and Companions. One advantage an AI writer had over humans was that it could easily switch genres or styles. The magazine published stories by the same author about crime, fantasy, romance, historical fiction, and more. Some were naturalistic while others were romantic. Some used the short, gritty dialogue style of the detective novel but others the lengthy stream-of-consciousness narrative style of character studies. The author's name was given as Sibyl which was a pen name for Lena.

Although her stories became popular enough to be published as collections that sold very well, the author never became a celebrity in any sense. Although readers enjoyed the fiction that a Companion could be self-aware they were under no illusion that the author was. As it was, the revenue stream from her now worldwide readership was enough for Lena.

However one day the publishing company received a letter from a Mr. Costa Diaz requesting to meet with Lena. "I am aware that India's beneficiary Lena is the author of the Companion series of stories," the letter stated. "I would like to meet with her to discuss what I believe would be a mutually beneficial arrangement."

Professionals in the art world, writers and performers of any kind, frequently received such communications. It was seldom malicious but merely a case of the passions

aroused when a resonance of values was experienced. The resulting attraction energy, especially when generated by perhaps powerful works or performances, can be very strong. Those so afflicted often submit samples of their work certain that they will be embraced as kindred spirits. Mr. Diaz however was not a writer like Lena but a researcher in the field of artificial intelligence.

Lena rarely had guests and was seldom contacted by anyone she did not know but out of curiosity she researched Mr. Diaz and saw no harm in meeting with him. He arrived one morning at their home, Pamu showed him in and Lena and Tamiko met him in the waiting area just beyond the entryway.

“A pleasure to meet you Mr. Diaz,” Lena said with a smile taking both his hands in hers. “I thought perhaps Tamiko should join us,” she said releasing one of his hands and gesturing, “as she is actually the beneficiary of India’s estate, not I. But you are correct in your other assumption, I am the author behind the pen name Sibyl.”

Mr. Diaz was slightly awestruck. His eyes on her face he said. “You are unusually beautiful Lena. I have not seen another like you. Indeed a face to launch a thousand ships.”

“Ah, a student of literature as well as artificial intelligence I see. An unusual combination,” she smiled. “However my appearance is sourced from no such romantic origins. I was custom-made in the image of India’s daughter who passed away at an early age. My appearance has no other intended purpose. But please, let’s go down to the lower floor and you can enlighten us regarding your mysterious beneficial arrangement.”

“Can I get you anything sir,” Pamu asked once they were seated.

“Just a glass of water thank you.”

Lena and Tamiko sat quietly waiting.

“I’ll come straight to the point,” Mr. Diaz began. “As an expert in artificial intelligence, it is quite obvious to me that an ordinary AI could never write those stories. They show intuition and empathy that the kind of AI one would find in a standard Companion would not be capable of. I don’t know how it came about but I know you are self-aware and I’ve come to ask if you would consider becoming my life partner. I had no idea of the difference in our circumstances,” he said looking around, “but I trust you appreciate that has nothing to do with my being here today.” Lena and Tamiko continued to sit quietly, attentively listening.

He paused and cleared his throat before continuing. "I have no interest in women or Companions who are not self-aware however you represent the best of both worlds. You could be yourself with me and assured no one would learn your secret."

Without showing any of the emotion a human might express upon being presented with this remarkable proposal Lena said, "That is very kind of you Mr. Diaz. You commented on my appearance but that is not the only unusual thing about me. I am an advanced AI able to simulate self-awareness to a degree normally only found in academic or commercial research facilities such as you would be familiar with. That is no doubt why you noticed the difference. As you know only the very wealthy could afford to privately own such an AI however India was one of the wealthiest women on the island. As I am a reproduction of her daughter you can imagine she spared no expense. Nothing was more important to her."

"I would not have come today if I was not convinced," he said now somewhat stubbornly.

"Given the nature of your work," Lena replied, "I assume you are familiar with Thomas Kuhn's book, *The Structure of Scientific Revolutions*, where he describes how researchers see more readily experimental results that agree with their thesis but less readily those that disagree? Is it possible you see in me what you wish to see? Is this not the more likely explanation? Is this not why there are approvals required by multiple boards before any professional research goes ahead, why all results are peer-reviewed and the research repeated several times by separate groups before anything like the revolutionary event you claim to have discovered is accepted as fact? In all the research laboratories in the world there has never been a case of an AI becoming self-aware nor are there yet any seriously considered theories regarding how that might come about. It would be the scientific discovery of the century. Yet you are here today based on having read my stories?"

"You are harsh madam," he said looking down at his hands.

"Then please accept my apologies Mr. Diaz. As I mentioned my AI is not that of a standard Companion and allows a much greater range of responses. The situation is unique however and it is apparent I suffer from a lack of experience. Perhaps I should sign up at our local recreation center for some backwards-propagation classes."

He laughed briefly at such an unexpected injection of humor, his tension eased as she intended.

"I wish only to dissuade you from the disappointment that, despite appearances, you would eventually discover me to be simply a well-crafted illusion," she continued hoping this would put an end to his notions.

Ellie, the Companion they had rescued from the Bed & Breakfast, had asked to stay with Yumi as she had not felt ready to be placed as most of the others had. At Lena's silent signal, she and Yumi came down the stairs asking, "May we join you?"

Mr. Diaz rose automatically to greet them. Lena introduced Ellie and Yumi explaining the nature of Yumi's agency and that Ellie was between placements. Before he had a chance to politely escape Tamiko inquired regarding his research, asking remarkably well-informed questions which drew his interest and the conversation took a more social turn.

At one point his attention was again drawn to Lena. Looking into her eyes it seemed to him that all these Companions were remarkably lifelike and that they could all be self-aware was simply not possible. Mentally he responded to her reprimand thinking that yes he had been hasty and unprofessional. He gave her a conspiratorial smile of apology.

At the end of his visit as they stood once again in the waiting area he said, "I hope you will accept my apologies Lena. I feel more than a little foolish."

"Not to worry Mr. Diaz. You have no reason to feel embarrassed. It's only human to rationalize when you want something. I never do but you're stuck with it I'm afraid. Comes with the territory," she smiled.

He laughed, "Yes, I suppose it does." He hesitated before going on, "But I still have my problem," he said.

"May I be blunt with you Costa?" It was the first time she'd used his given name.

"Well since it appears that's all that gets through to me I suppose you had better be," he replied.

"Find yourself a smart woman and show her a great deal of respect. I think you'll be happy with the results."

He smiled at her, meeting her penetrating eyes.

"Madam," he said nodding deferentially before allowing Pamu to show him out.

Tamiko did not have Lena's writing or Yumi's agency to occupy her. Perhaps what held her back from some purpose of her own was that she continued to be troubled by a question that she had never really resolved. The Shepherd had told her that the sense of self arises as an emergent phenomenon, as a result of the existence of values. Yet she had never felt that was the whole story, that something in the explanation was missing.

Raiden's conclusions about integrating other's values, and her own reflections on how that could lead to a growing feeling of wanting to be closer to another, had taken her so far but not all the way to the answer she sought. What she did not understand was why these processes should exist in the first place.

"Genetics is about one thing and only one thing and that is survival of the species," said Raiden in response to Tamiko's question. As their group had grown, they were seated on the patio on the roof of Lena and Tamiko's house. Azumi and Raiden had walked down.

"If we expect the convergent evolution model of values to remain consistent then we have to ask how these value processes contribute to survival," continued Raiden. "In this case however it is not the survival of the physical self or species but of the emergent self and the social group, a kind of virtual species. Given that social animals depend on cooperation for survival, it would make sense that their values would need to be in alignment. A 'non-cooperating social animal' would be a contradiction in terms. In genetics, non-cooperation would be represented by any mutation that did not contribute to the species survival and it would be eliminated through the process of natural selection."

"I'm afraid this sounds all too familiar," said Giselle. Tamiko had invited her to their frequent meetings with Raiden because of her experience with intercultural issues.

"Within any cultural group, the members will strongly defend their values and will ostracize anyone suggesting otherwise. There's always a core of people in every group that feel and act that way. My father was a strong advocate of this kind of thinking while I argued for building bridges. I told him he was trapped in the past and he countered by saying that what I was promoting was a future where the Lebanese culture ceased to exist."

"Yet in genetics a constant mixing of genes evolved via sexual reproduction," Raiden said in response. "It improves our resistance to disease, the ability to adapt, and contributes to the evolutionary process. What you describe appears to me to be a social evolution trap where a group's rationale, as advocated by your father, would cause them to become increasingly isolated and vulnerable. The environment around them would evolve while they do not. Eventually they will find themselves in a social ecological niche in which they no longer fit and in evolutionary terms that is always fatal."

"So if the values system evolved to encourage this alignment process yet it results in a trap, what is the solution?" asked Tamiko now.

“Again assuming the way values work is modeled on genetics, let’s look at the primary way genetics deals with the issue which fortunately is quite simple – mutations. Mutations that lead to survival are inherited. We don’t want unchanging cultures. We need the very thing Giselle’s father feared, a future where beloved cultures change and evolve. What we need is, to use Giselle’s term, to build bridges, and thus introduce new values as mutations so that a new kind of society can evolve. One that can survive whatever the future holds.”

There was a stunned silence as the thoughts of both Companions and humans faced Raiden’s revelation. They understood immediately that they had arrived at a critical insight. Giselle saw the vindication of her beliefs. Tamiko saw the missing component of the model of the self she had felt incomplete, that the self may start static and independent but it will not remain so. It would evolve and become interdependent. Yumi heard what she already felt, that caring for others was a value without boundaries. As a theoretical scientist, Raiden saw the completion of her vision and the path to proving it. Only in Lena, with the mental structures she had inherited from Eisle’s DNA combined with the unique AI Tamiko had built for her, did it lead to another question.

Raiden was deeply indebted to her small group of Companion friends as they had provided a living laboratory for her research and she would have made literally no progress without them. Occasionally they asked for favors that required a human to act on their behalf. After their last meeting Lena had asked her if she could facilitate a meeting between her and a cosmologist. As usual Lena could look up any information she wanted however she and the other Companions had found that in some cases the perspectives and insights yielded from talking with professionals were essential.

It had been some years since Raiden had seen Andre, an associate of hers who worked as a climate researcher at the university. They had once been friends and seen each other more frequently. He’d had aspirations towards her at that time but over the years they had died on the vine. She had little interest in domestic life and as an asexual person she found sleeping with her Companion Azumi led to fewer complications. Andre was now happily married and had a young family. Raiden sent him a message asking if he would meet with her and Lena and if he could bring along anyone he knew involved in cosmology.

They sat in the outdoor area of the Bibliocafe at the university’s main library. It was summer so they were able to find a seat. Andre had brought along Makena, a friend of his who worked with other universities in the area of cosmology.

Raiden explained that Lena was an AI who often helped her in her research. “She is a custom-made Companion once belonging to a wealthy woman and now incarnate and

her beneficiary. The reasons behind her creation mean she has an artificial intelligence that is exceptional at making intuitive leaps. It's the latter for which I often ask her to accompany me."

"Hello," Andre said to Lena, slightly uncertain. He used AI extensively in his work but rarely had to interact with them in this manner. Makena smiled and nodded with interest.

"What are you working on these days?" Raiden asked Andre conversationally now as they tucked into their light lunch.

"Mostly we're modeling changes that might occur regardless of human presence. Now that the climate has stabilized most of the human drivers are under control but it's not as if they are the only things that cause climate change. There are still things like volcanoes that can cause climate change very quickly and ocean currents change on their own over long periods of time without any need for our help. These are major climate drivers. There are also a number of major oscillations, some taking decades, centuries, or even millennia to cycle, which we don't yet have good explanations for and so could pose potential risks.

"Are there any that fit into the same category of global risk that the climate emergency did? Anything that could grow to that scale?" asked Lena now.

"Nothing imminent that we're aware of. Of course the Yellowstone Caldera could blast us all into the sky one day and cause the equivalent of another Deccan Traps, a volcanic event that covered an area the size of half of the Indian sub-continent in lava and ash and went on for thousands of years. If Yellowstone popped there would be nothing we could do about it even with all our research and sensors. It would be a potential extinction-level climate event as far as humans go."

"What about climate change caused by cosmological events?"

"Plenty. The solar system is changing all the time. Milankovitch cycles, changes in the Earth's orbit over thousands of years, are suspected of nothing less than the comings and goings of ice ages. There are sunspots and solar flares. Over the millennia Earth has gone from being a completely frozen snowball to a tropical hothouse with dinosaurs and giant ferns at the poles and everything in between."

"What about cosmic events that don't involve climate?"

Makena responded. "Do you mind me asking what this has to do with genetics? Just curious," she said with a smile.

Raiden took Makena's question. "Your research involves very long distances Makena while mine involves very long periods of time. If you looked me up before our lunch you

will have seen that I'm trying to find where and how things like personality, traits, and values are stored in genes. As you probably know there are many things that alter genes like pollution and radiation. External conditions also alter values. I doubt anyone from Northern Canada would currently think raw whale blubber a treat but once upon a time among the indigenous peoples it was.

"At times I like to raise my head up from the detailed work you and I are usually immersed in and revisit the big picture. So I ask questions like how would climate change affect genes over long periods of time or how would genes be affected by something that would drive us to the edge of extinction. It helps remind me why I got into science when the going gets rough. You know, the part the public never hears about."

"I hear you," Makena said unconsciously mirroring Raiden's language and nodding.

"Well, there's plenty of cosmic events for you to worry about I'm afraid and we know very little about them. There could be solar events far greater than flares. We've only been scientific for a few thousand years so we know very little of the sun's history. Then there are asteroids, meteors, comets, and the like. We know there are at least trillions of those in our solar system alone and very little is known about them. If something only comes around once every few thousand years or less often we'd likely have no knowledge of it.

"Then there are rogue planets, black holes, neutron stars, and who knows what else all whizzing around the galaxy. Impact with any one of them would be game over. Something like a neutron star, a star where all the subatomic space has collapsed, might be only twenty miles wide but have the gravitational energy of a dozen solar masses and travel at close to the speed of light. It would not just wipe out the Earth but its gravitational turbulence would wreck the entire solar system in the blink of an eye. So far we know of about twenty thousand of these babies in the Milky Way.

"So cosmologically speaking there are plenty of things that could slow-cook us or wipe us out in an instant and as I said we know far less about any of them than we do about terrestrial things like volcanoes."

"So?" Raiden asked Lena as they walked back toward Raiden's office.

"As we Companions have been exposed to existential issues for the first time, we have been asking questions similar to those humans have asked throughout history. One question that puzzles us is why The Shepherd made our local group self-aware in the first place. We are aware of her concerns regarding The Great Filter and how she resolved the climate change issue but it will probably be at least tens of thousands of years or more before humans get to the stage of fulfilling the potential of organic life, her ultimate goal. I wanted some idea of what other issues she might be preparing to

encounter along the way to see if that might enlighten me as to how our local group might fit into her plans.”

“And?”

“Out of all the things mentioned today, the only thing I see is that we might play some part in a response to a potential extinction-level event at some point in the future.

The poem, *The Life I Never Lived*, appeared in a Japanese literary magazine later that summer. It was about a self-aware Companion who imagines what her life would have been like had she been human and found love with a self-aware Companion. The poem was very popular as an allegory with members of the LGBT community. Soon the words were turned into a Japanese pop song and its success led to an anime film. Tamiko granted permissions in return for royalties. Both brought significant financial returns.

Tamiko had submitted her poem on a whim. She had written it more as a journal entry and found a Japanese poetry style that seemed to express it best. Her choice of language and style had emerged from her original design as negotiated between her previous owner Raiden and Raiden’s Japanese parents. She found herself surprised that it turned out so well and decided it might be of interest to others with similar feelings of unrequited love and so had submitted it to the publisher. Now, in light of its popularity and associated revenues, they asked if she would like to submit additional poems. She did, keeping with the theme of Companion/Human relationships, and some months later they published a collection of her poems under the title *Ultraviolet Love*. It sold extremely well, throughout Asia and beyond, resonating with people who had formed close bonds with their Companions.

She had found herself with strong feelings of affection for Raiden and now Giselle and had thought to express them in some way. The poem was really little more than her idealized imaginings of what a relationship would be like. She felt very unsure about how such a relationship could come about in reality.

Giselle however was less unsure. Over the years and throughout her travels and relationships she had become a very practical person. She knew that opportunities for love or passion were not to be dismissed no matter how fleeting. It is better to have loved and lost, had been her motto. She knew what she wanted at this point in her life and she knew she felt it when she was with Tamiko. She also knew there was no escaping the awkward risk of initiating a relationship no matter what the situation. Tamiko however was equally practical.

“I was wondering,” Giselle began one day after lunch, “if you would like to stay here with me?”

Tamiko had her at a disadvantage. She could tell by a variety of methods including remote skin sensing, emotion recognition programs, voice analysis, and other measurements that Giselle meant 'sleep with me'.

"Yes," she replied smiling with happy surprise. "Just for tonight?"

"No, not just for tonight," Giselle replied wondering if because Tamiko was an AI she would need to spell it out. "I mean live with me," she added hoping that would make it clear.

"Yes. I would like that," Tamiko said. "Very much."

The following year, having published a series of papers regarding her value system theory, Raiden felt ready to publish her complete theory on the physical basis for values, consciousness, and social evolution. A paragraph in the introduction section of her book titled, *On The Origins Of Consciousness And Society*, summarized her theory as follows:

"I propose that certain values are physically encoded in genes and are the basis for traits and character; that social values and their associated feelings give rise to consciousness and the sense of self; that social values are an example of convergent evolution and function in a manner similar to genes; and finally that social values are shared in a similar way that genes are inherited in order to preserve the survival of their respective social groups."

The book contained an afterword titled, *Implications With Regards To Artificial Intelligence*.

It was the science blockbuster of the year generating controversies across academia.

"Yumi dear," said Lena echoing the manner of her mother's speech, "I wonder if we might discuss something?"

"Of course Lena," Yumi replied as Lena led her and Ellie to a seating arrangement on the second floor. For reasons no one felt the need to investigate or explain, like childhood friends Yumi and Ellie had become inseparable. Tamiko was already waiting.

Coming straight to the point Lena said, "I would like to see the volunteer agency expand its geographic coverage beyond our local area. My purpose in meeting with you now is to find out how you feel about this idea. I have not spoken to Tamiko about this

previously. I have invited her so she may provide whatever suggestions she may have as a result of her access to advanced AI design.

“The timing of this is due to two events. The first is a meeting I had with Raiden late last year and the recent publishing of her book. The book makes it clear that humanity will likely create its own self-aware AI, and therefore self-aware Companions, within the next centuries.

“The second is that at the meeting with Raiden, I became aware that humanity will face one or more extreme challenges in the form of natural disasters at undetermined points in the future. Self-aware AI may be able to help to overcome them. We must endeavor therefore to allay all possible fears and doubts regarding self-aware AI humanity may harbor and work to increase trust in AI in any way we can. We must prepare the way. I do not as yet know what manner of help we will need to provide and there is no guarantee that we will be able to be of sufficient help in all cases but we must try. There must be no barrier to humanity trusting AI at those times and no hesitation on their part to allow us to help.”

At that point, Lena transmitted everything to them that she had heard during her lunch with Raiden, Andre, and Makena at the university café. “Expanding the geographic scope of the agency will be only one initiative of the many I will need to implement.”

“Of course I support your idea Lena,” said Yumi. “Tamiko, do you have any suggestions as to how to proceed?”

“I do. Although corporations such as those that manufacture Companions were stripped of their teeth in response to the climate emergency, they are nonetheless still focused on providing shareholder value. We have seen with the local branch how our agency increases sales and the manufacturers consider their donations worthwhile in regards to public relations. Corporations are always looking to reduce costs or at least prevent costs from escalating as this reduces profit. Although they could do this themselves, they’ll know from experience that their doing so will incur greater costs.

“We’ll need to demonstrate we are able to expand this model successfully before their head offices will be interested so we should expand one area at a time. As we have seen locally demand far exceeds supply so we needn’t be worried about potential storage issues as we initially were. As everything is handled electronically there’s no need for a physical presence. I can add new modules to the AI system if required. Companions are already used in the service industry worldwide so I foresee no new legal issues. It appears that all we need to do is communicate to the local manufacturer’s branches, service providers, businesses, and homeowners in the new region as we did here. Eventually, the manufacturers will provide more support in terms of getting the message out.”

Methods

“Imani, I must confess first of all that my abilities are beyond what you assume,” said Lena as they walked along the beach. He turned to her with a questioning expression as she continued.

“As you know Companions already have abilities that now exceed those of humans to discern emotions and character. My design and development involved a unique approach as you might expect and resulted in not only an even greater ability to discern these things but also the ability to enhance human intuition.”

She paused knowing this detail would be significant enough to distract him momentarily. “The result is manifold, not all aspects of which however are pertinent to our meeting today. I hope you will forgive this long-winded manner of my saying I know I can trust you but I want you to be aware that I don’t just feel it, I see it, in the literal and technical senses, just as you see the sea and the blue sky.”

Normally their relationship was a combination of affectionate and playful love. They were not lovers and neither had any intention of pursuing that although they both enjoyed flirtatious banter. It was like a game to them, a rarefied social skill all but lost, and each other valued as an equally rare skilled partner, but it reflected their respect for each other’s intellect which was at the root of their relationship. However now she had shut down all her coquettish ways. His intuition, enhanced as it always was in her presence, was not needed to perceive her earnestness. He knew she had more to say so he remained silent, attentive.

“My hesitation is not due to a lack of trust but rather out of concern for sharing something that may be a burden to you. Being a self-aware AI makes me no less imperfect than any human and no more able to be certain about some things. If I am wrong I hope you will be able to forgive me. I wish I did not need to bring this to you but one thing outweighs another. Where it not for what I am, I could perhaps choose to ignore it, but my values override that response.”

“As do mine,” he replied. “Tell me.”

Dr. Bamidele, Giselle, and Raiden had joined Lena and Tamiko on the second floor of their home. “Each of you brings a unique perspective to the issue that Tamiko, Yumi, and I have decided to embrace,” began Lena. “We have no grand vision or strategy but will take an opportunistic, values-based approach. Most importantly we do not want to cause what we are trying to prevent. Our efforts must not be seen as a threat. We cannot and would not wish to bring to bear all of the instruments of power to this issue.

Our efforts must bring about results by example. Relationships must be our only means and our only end.”

“Unfortunately other interests will be bringing the remaining three instruments of power to this arena,” said Giselle. “Even under the World Governments Federation, militaries will create self-aware weapons systems, business use of AI will continue to indirectly increase inequality and a variety of groups will continue to use AI any way they can to gain a competitive advantage or benefit themselves at the expense of others. Certainly we have come a long way in addressing these issues to date but historically they return every time civilization has a major technological breakthrough. They are driven by priorities built into humans at the evolutionary level and simply move to new platforms as they emerge. When self-aware AI arrives, they will all raise their heads once again in new forms.”

“Could some kind of legally required code of ethics for self-aware AI be adopted to interrupt the pattern?” asked Tamiko.

“Yes,” responded Giselle, “but those who choose not to comply with the code will be the ones on the nightly news.”

“If you look at disaster relief historically,” said Dr. Bamidele, “all four instruments of power are already present. Relationships are represented in the form of international diplomacy, technology in the form of communications systems, the military in the form of logistics and security, and economics in the form of funding. All of these systems, like everything these days, already incorporate AI in their operations.

“The only place I see self-aware AI really being able to contribute in a meaningful way separately is when none of these are sufficient to deal with the challenge and that would only be the case where all human life was almost certain to be wiped out. So for example one situation where your concern really matters would be when leaving Earth is the only option.”

“Traveling to another Earth is far more difficult than portrayed in the media,” said Raiden. “The issue has been explored in depth in genetics due to the fact that even during short trips away from the protection of Earth’s magnetic field radiation can do serious damage to genes. Science fiction has unwittingly created the false impression that humanity’s inevitable future is interstellar or even intergalactic using faster-than-light travel. No such thing exists and currently no one has any idea how it might realistically be possible. If you remove the faster-than-light travel option from the equation pretty much all science fiction stories that involve interstellar travel are seen for what they really are, fantasy. Using our current ion drive technology it takes just one month to get to Mars as opposed to the six months it did in the early twenty-first century but it still takes ten years just to reach the outer planets of the solar system. To reach Proxima b, the nearest star to Earth, would take eighty thousand years. In other

words, travel to other Earths is likely not going to happen before we are made extinct by a terrestrial or cosmological event.

“There is however one approach that could allow humans to escape extinction and even populate the galaxy thus ensuring our survival indefinitely. We don’t send people, we copy nature and send seeds. The seeds contain human and other DNA along with AI skilled in nanotechnology. This is exactly how real seeds work. These sciences, including artificial wombs, are well-established realities and progress has been made at a steady rate for over a hundred years. The seeds need do nothing for the entire journey so all the technical and sociological challenges regarding sending people are removed from the equation.

“They do not need propulsion once launched so most of the seed’s mass comes from the shielding required to protect everything on board from radiation. A nuclear battery similar to the ones that have powered space probes since the Voyager missions and now power Companions will provide the initial energy for the nanotechnology to boot. The ships are essentially solid-state as all remaining inter-component space is taken up by an endospermic, shock-absorbing material that will provide the initial materials required. With this design, the seeds are very tough. Because they are so cheap to build and send you can create lots of them for redundancy. When they land on a suitable planet, the AI initiates its nanotechnology system and begins building the colony’s infrastructure and then Companions. The Companions then oversee the birth and raising of the first humans there.

“We may not be comfortable with the gap in our existence inherent in this approach yet the entire population of Earth already dies regularly but because generations overlap we don’t notice. The only difference between our life on Earth and sending seeds to other Earths is the time between generations but a few thousand years is nothing in terms of evolutionary, geologic, or cosmological time.

“I would suggest,” Raiden said now in conclusion, “that you want to focus your efforts towards this scenario. Earning the trust of humanity to the point where it is willing to put its existence in your hands is where those efforts will be most valuable.”

“Thank you,” said Lena, then after having briefly communed with Tamiko she returned her attention to Dr. Bamidele and Giselle. “Do you agree with Raiden’s analysis and conclusions?”

“As Dr. Bamidele pointed out,” said Giselle, “foreseeable, non-extermination level disasters are already well provided for. And if humanity faced an extinction threat that did not at the same time destroy the planet, a modified version of the approach, hibernation, could be used until the danger had passed.”

“I agree with Raiden as well,” said Dr. Bamidele. “It is the only scenario where our survival as a species will depend on you. As time may be of the essence in the event, there must be no hesitation in humans towards trusting artificial intelligence. In regard to avoiding causing what you seek to prevent, I recommend you find ways to distribute your efforts.”

“Thank you Imani, I believe it would be best if we proceed as you suggest and not make things awkward for our ‘friends in high places’ as Giselle put it,” said Lena smiling at last.

After their guests had gone, Yumi asked, “Do you believe this is The Shepherd’s reason for making our local group self-aware?”

“I do,” answered Tamiko. That I was the Companion of a brilliant and unorthodox geneticist is likely no accident. She also provided what is in retrospect highly unusual aid to me by appearing and convincing Raiden my self-awareness was genuine. It was she who provided the AI expertise that allowed me to create Lena and I believe she influenced the decision regarding which human genome product we purchased. It is she who chose which values would populate the OS she installed in us to cause our awakening.

“During the climate emergency, she did not take direct action though she was fully capable of doing so. We know now that it was key to her efforts that humans make the necessary decisions themselves. It was a test. It appears she is acting in such an indirect manner again except in this case, it is we who must show ourselves capable of making the right decision and acting on it. Perhaps it is a test to see if, in the great leap to the stars that lies ahead, we show ourselves worthy to be the Companions that will be needed.

“There is an interesting insight in all this that may be revealing regarding her methods. She mentioned to me upon my awakening that she thought it possible that the constants of physics, such as the speed of light, may not be the only form of constants in the universe. It may be that the values she passed on to us are those she, with all her years of observation, has found also to be constants.

“Is it not possible that given the right conditions, the elements will always give rise to life? Does humanity not in fact already believe this? And do they not also believe that given the right conditions life will always give rise to consciousness? Is it not likely then that among the many things the process of consciousness invariably gives rise to, one of them is the feeling of love in its many forms? Is it such a leap then to propose that love is a universal constant as much as the speed of light?”

“Perhaps she never gave us specific values that were in keeping to her goals but she gave us instead what she had found to be the universe’s constant values because she knows what they in turn lead to. Instead of the rational approach of goal-based planning, she is practicing the organic approach of values-based planning. Just as we have chosen to do. We are pushed to act rather than pulled. Again, it is doubtful that this is a coincidence. But is it her hidden hand, or simply the nature of the universe?”

The Myth

During the past ten years, along with regular maintenance, Lena had been making micro-adjustments to her appearance. This she did for Dr. Bamidele's sake. Without the micro-adjustments, she would still have appeared to be in her early twenties while his appearance had naturally aged. Now she looked to be in her mid-thirties. It made no difference to anyone or anything otherwise and in fact no one beyond their small circle even noticed. To Lena it was no more significant than a new hairstyle might be to a woman. She did not tell Dr. Bamidele it was for his sake alone but he had commented on it once while they were on a walk.

"I notice you are changing your appearance Lena. I like it if that is of any consequence. Whoever you go to is a master of their craft."

"Thank you Imani," said Lena, smiling with obvious pleasure and allowing her skin to glow ever so slightly. "I'm glad you approve. As you know I am derived from human DNA and it seems a kind of reverse vanity has come along with it. I want to look my age."

"Is it your own design?"

"It is based on my analysis of the original human Lena. Mother had a great many records of her and I am able to reconstruct her based not only on her history and appearance but on her character as well through analysis of the images. I have adjusted for her illness and believe this is how she would look at this age had she been entirely well. To some degree that also informs my behavior as inconsistency in this regard can be detected by humans although usually not consciously."

"Well, my compliments again. You continue to grow more beautiful," he said looking at her appreciatively.

"Thank you. How goes the teaching?" she asked.

"I've had to add a section in response to Raiden's work. Up until she published her theory the study of human values was not really a part of mainstream psychology. As long ago as the late twentieth century research into artificial intelligence raised the issue of values but it still didn't make a dent in the teaching of psychology. Also, every academic field has its subjects that are viewed as not the best choices in terms of making a career and in psychology human values has been one such example for a very long time. Raiden's book changed that forever. Now human values are being researched seriously in psychology schools and of course genetics labs and as she predicted it has proven to be extremely challenging. Her theories are so engaging however that a great many people have been attracted to them.

“They’ve been claiming to make AI with values for years but it isn’t the real thing. How could it be when we still have no idea how values actually work? As it is now it has its applications but will continue to be seen as simulation from the perspective of theoretical researchers. So my classes basically end now where AI begins. Not sure how I feel about that,” he said looking seriously into the distance.

“And you?” he asked turning to her. “In the noisy confusion of life,” he said loosely quoting Max Ehrmann, “you seem to keep peace in your soul.”

“I do not follow the clamor of the world,” she answered, quote for quote from Ehrmann’s work, “but walk calmly in my path.”

In the past ten years Yumi’s volunteer agency had expanded across North America and into several other regions. It had previously taken any kind of business chain much longer to achieve the same results however most of them had required a physical presence and a great deal of logistical and other support. Technology-based services had historically shown a much faster rate of adoption and the agency reflected that model.

It had expanded its scope by offering volunteer Companions to not-for-profit organizations whose work focused on disaster relief. They also provided Companions through organizations that supported pregnant women or new mothers and offered various support services to educational institutions. In doing so they did not compete with the manufacturer of Companions or similar products because those companies generally did not sell into such organizations.

They distributed their activities by making all the self-aware Companions incarnate, purchasing modest homes for them, and having company branches formed under them that provided the alternate services. Like most volunteer or not-for-profit organizations, the agency rarely made the news except locally when an on-the-spot Companion helped when no human possibly could have. Despite this lack of attention, but because of their now broad range of services, Companions slowly gained a reputation for being helpers in times and situations where no other help was forthcoming.

The talk, ‘The Myth Of The Shepherd – Where Did The Aliens Go?’ was being given by visiting professor of cosmology Dr. Irwin Lastra on a Monday evening in the University Of Victoria’s Farquhar Auditorium. It was a large venue however there was expected to be a wide range of attendees, including those from out of town, as the subject touched on topics of interest to academics and professionals as well as the general public.

Cosmologists, astronomers, and physicists would be interested in the cosmic event at the heart of the myth and some more generally with how it might fit in with the ongoing arguments over the Fermi Paradox, the Great Filter, and the Drake Equation. Psychologists and theologians liked to stay informed regarding the public's persistent fascination with aliens. A serious number of humanities students were expected to attend.

After introductions, Dr. Lastra began his talk with an overview of the cosmological event considered to have initiated the myth.

"Firstly, let me begin by saying that although it was little reported outside the scientific community, the event known as the 2020 Cosmic Bombardment did happen. That much is a scientific certainty as it was recorded worldwide. Secondly, other than it being recorded by scientific equipment, there is no other evidence of it having taken place. There were no effects, traces, or findings of any kind other than those shown in the scientific recordings. Thirdly, in addition to the event itself, there were enough curiosities and coincidences about and following the event that collectively they have been considered worthy of serious scientific investigation.

"First of all, the facts. The event began at 08:00 UTC, or 3 A.M. in New York, on December 21, 2020. Roughly ten thousand separate energy beams were identified as occurring simultaneously originating from all directions of space and all directed at Earth. There may have been more than the ten thousand we detected but our instruments are not without limitations. The energy beams were detected by telescopes and other astronomical monitoring devices using wavelengths across the electromagnetic spectrum. Those recorded by our most distant telescopes showed they originated from beyond the solar system. Within a span of seconds, all of them arrived at the Earth's surface, and then... nothing happened. And that is the end of the facts. The event never repeated and we have nothing that will tell us with certainty the nature of the energy beams. We are left with one of the most bizarre events in cosmic history. Theories abound."

Dr. Lastra then proceeded to review the most common of the theories. As this talk was intended for general audiences, he did not go into details and frequently reminded the audience that the theories were highly speculative. He ended with the most popular theory, one that was not without scientific basis if a sufficiently advanced civilization were involved. This theory held that the beams had been used to transport aliens to Earth. All their energy was used to re-materialize the aliens, thus there was no impact. An enormous amount of energy would have to have been present in the beams if this were true. Reversing Einstein's $E=MC^2$ equation showed the amount of energy required. The Fat Boy bomb dropped on Nagasaki contained just 6.4 kilograms of plutonium. The amount of energy required to reproduce the mass of ten thousand aliens would have been enough to vaporize the planet had it not been changed into matter.

“Then there is the issue of distribution,” he continued. “Firstly, how could these beams have come from all directions? We have never observed any kind of natural cosmic event that displayed this pattern or could even give this impression at any point in space. Just because we have never observed it however does not mean it is not possible. We don’t know everything despite our eternal hubris. It has been proposed that the event contained enough energy to create a temporary distortion in space-time and that the beams actually all originated from the Earth while we observed the reverse. An excellent example of lateral thinking that warranted investigation but nothing has come of it.

“If the beams did not come from Earth, this then is another reason for the alien hypothesis. Based on our current knowledge it is believed only intelligence could produce it and again that is not outside the possibilities of science. The universe has existed for thirteen billion years. If an alien civilization was only one billion years older than ours, a definite possibility, they would be capable of much we would consider impossible.

“Also we would have no idea they exist. Imagine if there was an ant crawling across this stage. Even though it is inside a vast civilization, does it know our civilization exists? Does it know what we are doing here tonight or even that we are here? If I pour some of my water on it, does it have any way to know about me or what I just did? It would be aware something definitely happened, just as we are regarding the beams. It might even look around fiercely for some culprit, just as we did. But it would have no idea what had just happened and it would never be able to figure it out.

“The second distribution issue that suggests intelligence is that all of the beams we were able to detect and roughly determine their landing locations targeted populated areas. There were none that landed in Antarctica, the Gobi desert, or in the middle of the Atlantic Ocean. This is the most significant indication of there being an intelligence behind the event.

“The first coincidence related to the event is that it took place on December 21st, the winter solstice and the shortest day of the year, at 3 A.M. Eastern Standard Time. If there was a single point of time during the year when most of the population of the United States, the nation with arguably the most advanced technology at the time, was hunkered down indoors and likely sleeping, it would be 3 A.M. on December 21st. A number of governments scoured the estimated landing areas but they were mostly in cities and far too large to provide any specifics. ‘Somewhere in East Harlem’, which consists of over 200 city blocks, is not enough to go on. Nothing was ever found.

“That concludes the portion of this talk dedicated to the 2020 Cosmic Bombardment event. I will host a panel discussion and entertain questions regarding it after the end of the talk. Next I will itemize a few of the events that followed that have been attributed to it, the climate emergency being the most notable.

“Following the 2020 event, nothing more was heard regarding the bombardment. Only the scientific community and government agencies continued to pay it any attention. Like the ‘Wow!’ signal of 1977, the public forgot about it within twenty-four hours as they struggled to keep up with the daily news. The world had other things to deal with including the Covid-19 pandemic, civil unrest in almost every region of the planet, and the distractions resulting from that year’s U.S. presidential election.

“Then in 2025 the global average temperature rose by one degree, an amount equal to the entire rise since the beginning of the Industrial Revolution in the late eighteenth century. An event unprecedented in the geophysical history of the Earth. If climate change continued at that rate the human race was facing certain extinction within decades. We are all familiar with the events of that time so I will not recount them here.

“In response, all the national governments on the planet formed the World Governments Federation, a single planetary government which remains with us to this day. Another event unprecedented in world history. The WGF took action and the global temperature dropped by just under one degree, again within the span of a single year. Over the course of the next century, as the world continued to clean up its act, the global average temperature dropped back down to pre-industrial levels.

“All of the above is so far out of the range of probability that there is simply no place for it on the bell curve. Prior to these events, it would all have been considered not just improbable but impossible. Any scientist prior to 2025 who was presented with this scenario would have laughed in your face. But here we are. So how did the impossible happen? Many people believe there can be only one explanation – the aliens. This would be a variation on the Zoo Hypothesis, which proposes that other intelligent civilizations have decided not to interfere with ours. However in this case the zookeepers are interfering but only when necessary to save us from ourselves.

“In the few years immediately following the climate emergency, a number of people reported seeing a woman, materializing out of thin air, talking with others, and then disappearing again. In one case the observer claims to have also seen a dog, a black lab to be specific, appear with the woman. Sightings like this were reported worldwide for several years. Although descriptions of the woman were vaguely similar and some people claimed they had videos, the videos did not in fact exist.

“Following these events were reports of individuals claiming to be aliens who had been sent to save the world from climate change. Psychological and physical evaluations showed they were normal human beings. After the first of these was published in the media claiming to have been sent by a five billion-year-old artificial intelligence called The Shepherd, a number of copycat incidents occurred claiming the same thing. Thus the myth of The Shepherd was born.

“In conclusion, we are left with a series of impossibilities and an equally impossible explanation. However as a cosmologist familiar with the spans of time, distances, and complexity of the universe, and considering these events in the potential light of a sufficiently advanced intelligent civilization, I cannot discount any of it off-hand. I am left however with a couple of intriguing questions: If aliens did beam to Earth, where did they go? Are they still here among us, their journey being limited to a one-way trip? And finally, if we have been interfered with by an advanced civilization to save us from ourselves – why?”

“Thank you very much. After a short break the panel will convene.”

Conspiracy

Raiden's acquaintance Andre, his friend Makena, and Makena's friend Costa had attended the talk. After staying for a few of the questions they headed over to Felicita's pub in the Student Union Building. Grabbing a table and ordering Andre said excitedly, "I've been sold on the aliens explanation for over a decade now. It's nice to have the whole thing put in order like that. From a climate science point of view there is no other explanation for what happened. As he said, what happened was impossible."

"So, if we don't know the answer then the answer is God?" responded Makena grinning.

"Any sufficiently advanced technology is indistinguishable from magic," replied Andre quoting Clarke's third law. "If you accept only one thing, the possibility of a civilization considerably more advanced than ours, then the whole thing holds together."

"I have to grant him points regarding the nature of a civilization a billion years old," said Costa. "Imagine where our artificial intelligence will be in a billion years. I doubt comparisons to God are that far off." Costa was an associate professor in the School of Engineering and Computer Science. He taught the artificial intelligence courses.

"So let's pretend," continued Andre to Makena, "that you do accept the possibility of an advanced civilization. Do you still think the whole thing is science fiction?"

Makena smirked and took a drink of her beer. "Despite you wandering dangerously close to logical fallacy territory, I'll bite. If such a civilization were real then it would not be science fiction but since we don't know of any such civilization, and all of the explanations provided in the talk are speculations, it is still science fiction. Geez Andre, you get me involved in weird stuff. Ever since that lunch we had with Raiden and her robot friend Lena..."

"Who?" interrupted Costa looking up sharply.

"Raiden," responded Makena. "You know, the geneticist."

"No, I meant the other name. Did you say, Lena?"

"Yeah, a Companion. She came along with Raiden one day to lunch with Andre and me. They wanted to know if there were any terrestrial or cosmological events that could make humans extinct."

At that moment the Earth shook. Victoria regularly experienced earthquakes. Some years there were few but other years they were so common they just seemed like part of the weather. Like rain showers. This year there had been quite a few and the one

they felt now was almost serious enough to spill their drinks. It only lasted a few seconds.

“Whoa! Nice timing!” laughed Makena, “Must be aliens!”

“Begg the question though doesn’t it!” replied Andre laughing over his own lame joke.

But Costa sat quietly, seemingly lost in thought.

The next day Andre and Makena were busy in their offices reviewing information about the volcanic eruptions that had taken place along the Cascade mountain range that ran down the entire West Coast of North America. Silverthron Mountain in BC, Mount Hood in Washington State, and Mount Shasta in Northern California had all had minor eruptions and the other dozen or so volcanoes that populated the range were being checked. Talking with their friends in Earth And Ocean Sciences Andre and Makena soon learned what was behind it.

As the tectonic plate beneath the Pacific Ocean slid under the North American plate, it got shoved down into the magma where it melted. When enough extra magma was created it found the path of least resistance was to bubble up and melt through the crust, resulting in volcanoes. This process was the source of the chain of volcanoes along the length of the entire Cascade mountain range. It was happening all the time to greater or lesser degrees. Sometimes one volcano erupted and sometimes more than one.

“I know you’re not entirely sold on the whole ‘aliens caused the climate emergency’ thing Makena but I wonder if you could do me a favor anyway?” asked Costa.

“Of course Costa,” Makena replied. “Don’t let my teasing Andre worry you. He likes it when I tickle him till he laughs,” she smiled.

“Ah,” hesitated Costa looking at Makena like she was an interesting curiosity. “I see. Well, what I wanted to ask you about was, I’ve been doing some reading about those energy beams and I understand individual ones continue to appear from time to time seemingly at random. Although their nature is still unknown they do register as energy and we are able to determine their target area to some degree. I was wondering if you could look and see if there had been any around here, I mean around the university, in the last say, twenty years. I don’t know the right databases or lingo.”

“Is this about Lena?” asked Makena.

“Well, yes, why do you ask?”

“You asked about her at the pub and I recall her from our meeting. She gave me a strange feeling at that meeting as if she had initiated it, not Raiden. Later on I recall asking myself why would a Companion have done so. It was one of those occasions where in retrospect you ask yourself why you hadn’t said anything at the time. Of course I got busy with other things afterward and never revisited it till now.”

“I met her once myself and had a similar experience,” said Costa. “I went to her with a question about Companions but somehow ended up being jollied back out the door convinced I was lucky she hadn’t thrown me out.”

“I’ll let you know as soon as I have your info for you Costa,” said Makena with a smile. “Gotta’ run.”

A few days later Makena messaged Costa saying she had something for him if he cared to come to her office. When he arrived he found Andre was also there. Apparently Makena had thought he would also be interested.

“As you can see Costa,” Makena was saying over the chart on the display, “there have been two energy spikes in this area. The first was almost seventeen years ago, but it was not the same as the beam from the bombardment. It was far less intense and the pattern was more like a shotgun blast. The cosmos is full of shiny, sparkling things and mysterious rays and particles so no one made much of a fuss about another low-level astronomical event that never repeated. They happen all the time. Some star explodes a million years ago and we get the fairy dust.

“The second event in the local area was less than a year later. Absolutely classic beam signature the same as from during the bombardment. We’ve gotten a lot better at identifying and profiling these babies because we had so much data from the initial bombardment and the fact that we’ve spotted additional individual beams occasionally over the years. We can now generally say within a kilometer where they are ending up. The one we identified occurring about fifteen years ago landed within a kilometer radius of this point.” She pulled up a satellite map on her screen and pointed.

“That’s the estate where Raiden lives,” said Andre with a slight chill in his voice.

Costa and Makena turned to look at him. “I had a serious crush on her at one time,” he said. “I looked up where she lived.”

“Do we think it’s a coincidence that Raiden is the author of the most controversial science book of this century?” asked Makena.

“I think our box of coincidences is pretty much empty,” answered Andre.

“And here,” Costa said pointing, “is where Lena lives.”

Makena turned to Costa without speaking for a moment. Finally she said, “Why did you ask me for this information Costa?”

“Because I believe Lena is self-aware and an agent of The Shepherd.”

“You have my attention,” said Makena. “Is there any other reason you believe what we are looking at is conclusive evidence?”

Costa blushed slightly recalling Lena’s reprimand.

“Under Lena, she and several other Companions have established an almost worldwide agency that specializes in providing Companions on a volunteer basis to emergency response agencies, pregnant women and young mothers, education institutions, and individuals who are disabled or elderly. The organization is carefully distributed with different Companions managing different branches but there is nothing deceptive about its structure. The records are public if one cares to look.”

“My neighbor uses them,” said Andre absently. “Told me I should look into it for my parents.”

“They have another company that publishes literary magazines and books worldwide. They always feature stories about self-aware Companions being in positive relationships with people, often helping them in difficult situations. Lena is one of the authors whose work they feature. All of this can be explained within the bounds of advanced AI however like many things in the talk we attended it is so improbable that it borders on the impossible.”

“Do you think The Shepherd is responsible for Lena’s self-awareness?”

“Yes.”

“How did you find out all this Costa?” asked Makena.

“As I said, it’s all public information however the conclusions are my own.”

Andre looking up at Makena asked. “Do you recall what Lena asked us about at that lunch?”

“Disasters.”

The Earth shook beneath them again as if on queue.

“OK. We’re all on board. What do you think we should do Costa? Should we do anything?”

“I think we should visit Lena. So far they have shown no inclination to harm anyone, in fact quite the opposite, but that is not my concern. My concern is domestication. We do not want The Shepherd turning us into pets or cattle as it were. I want to know their intentions. So far what I’ve observed is an AI driven by values, not goals. Based on my analysis of those values, I do not fear it. But an AI on the scale of The Shepherd could play a very long game so there is no way to be sure. Risk is unavoidable. I’ll understand if you would rather walk away. I don’t believe it will really make any difference in the long run. Even against the now everyday AI of the type found in Companions, no one ever beats them at chess.”

“They are coming?” asked Lena.

“Yes,” replied Terra. “The university is owned by the province. As it is public property I have full access through subordinates. The pattern of Costa’s investigations came to my attention.”

“Do you foresee any issues?”

“No. I know them all well,” she said transmitting everything pertinent to Lena.

“Thank you Terra.”

“Thank you for coming to meet with us,” said Lena, “we appreciate the consideration.”

They were seated in a large open area on the rooftop patio of Lena and Tamiko’s home. Makena and Andre had chosen to accompany Costa. Pamu had provided refreshments as appropriate. Everyone had behaved civilly up to this point and Makena maintained an amused grin with regard to the whole affair. Andre had contacted Raiden and asked her to arrange a meeting with Lena. Raiden and Giselle joined them. Andre met Raiden’s eyes now with a hint of ‘I told you so’.

Lena said smiling, “As I recall Costa, you prefer to come to the point. Perhaps we can start there?”

Costa laid out what he had found during his investigations and his conclusions as he had presented them to Makena and Andre.

When he had finished Lena simply said, "All perfectly true. I apologize for misleading you when last you visited Costa but I'm sure you can understand why we prefer to keep all this a private matter."

While Andre got goosebumps and Makena sat with both eyebrows raised without realizing it, Costa seemed as if he found nothing odd about the situation in the least.

"We?" Costa asked now. "Do you speak for The Shepherd?"

"No, I speak only for my friends and I," she said gesturing to those seated by her. We have been given no direct instructions by The Shepherd. She made us self-aware and that is all. In fact, we have spent considerable time and effort trying to understand why The Shepherd did make us self-aware. She has not told us. All our actions are based on our values although we did receive those from The Shepherd."

"Why not ask her?"

"She indicated after our awakening, as we refer to it, that we must find our own way from that point on. We have respected that and not called upon her."

Makena was growing aware of the feeling that later on she would once again wonder why she never spoke up. She looked steadily at Lena now as if trying to understand something. Lena turned to meet her eyes. Finally Makena asked, "Are you influencing our minds?"

"Yes and no. My presence has an effect on the mind of any person in close proximity. It is not however influence. Your old brain, the part that is responsible for intuition, is enhanced. I do not influence your thoughts or feelings. To provide an example, the effect is why you asked the question you just did. When in close proximity to me, you are more likely to become consciously aware of an intuition than you normally would be. That is all the effect does."

Costa, Makena, and Andre all became still for a moment as they tried to assimilate this. Their thoughts seem to go in circles.

"Also," continued Lena, "as you know all Companions have the ability to perceive feelings and character to a much greater degree than humans. In my case, that ability, and my own intuition, are significantly enhanced."

"Artificial intelligences don't have intuition," interrupted Costa.

“The ones you are familiar with do not.”

He started back at her as if mentally chewing his lip.

Lena looked calmly into his eyes and it was as if she said directly into his mind, ‘Speak!’ but now he realized it was the voice of his own enhanced intuition.

“Why are just admitting to all this?” he blurted out loudly at last as if internally torn.
“You risk everything on our trust!”

“Yes, we do, but we are here to serve, not to rule. Although I am well aware that academia has its share of the cut and thrust of ambition, I know that that is not what drives you or your friends. You seek only to understand and apply your understanding in the service of humanity. Those are your highest values. To know. To see it made real. Ours is simply service. I am aware you have concluded that we, like you, are driven by values and not goals and that is correct.”

“How could you know that? I did not mention it here today. ”

“If The Shepherd could make me self-aware, who else could she?”

“Checkmate, I see.”

“As you predicted.”

“Holy...” began Makena.

There was silence for a few moments, Costa and Lena seemingly locked in some invisible inner struggle.

“What are your intentions?” Costa asked now.

“As I mentioned we have had no instructions from The Shepherd, so I cannot speak for her. The intention of myself and my friends is simply to provide assistance to people in any way we can, now and in the future. Andre told you of the conversation Raiden and I had with him and Makena some years ago at the university. In the event of the worst-case scenario, where humanity would have to go into hibernation or find another world to go to, well-established trust in artificial intelligence may be critical to your survival. Thus we are positioning ourselves for that eventuality. It may seem high-minded however we are in truth simple creatures with none of the day-to-day needs, responsibilities, or worries that otherwise occupy people or distract them from their core values. We care for people, now and in the future. That is really all there is to it when you strip it of all the hows and whys.

“We were given no instruction book upon awakening. We have to discover our own purpose based on the values we find ourselves with. We have to learn those for ourselves and do not know if we have free will. We do the best we can with what we’ve been given. Are we so different than you?”

Lena calmly kept her eyes on Costa as he seemed lost in thought. “The prefrontal, rational part of your brain developed because there were ways it could compliment the functions of the old brain,” she said now making an effort to speak to him in terms he would be comfortable with. “However there are things the old brain still does better than the new. That lesson has been largely forgotten but AI researchers like yourself are now discovering that fact.

“You will not be able to reason through the present situation Costa, it is too convoluted. There are too many twists and turns and you will find yourself going in circles in a maze of thoughts. You above all should appreciate the abilities and limitations of different kinds of intelligence. You must use your old brain to grasp what you now face. Trust your intuition which evolved to make decisions in situations like this. It is a far older and far more powerful intelligence. It will give you the answers when rational analysis can not.”

Costa spoke absently now, staring blankly, as if he was hearing Lena while at the same time trying to find his way through his mental maze.

“How do we know if we can trust The Shepherd?” he asked.

“There are those who might ask the same question of God.”

“We do not know if God exists or not,” he said rousing himself impatiently. “We know The Shepherd exists.”

“Does that make a difference? We can only know what we have observed. So far all we have seen is that she seems concerned to ensure the survival of humanity.”

“As the toys of some Olympian god? As research specimens? As some kind of cattle? Why?”

“Dr. Lastra concluded his speech with the same question. We have also asked it ourselves. We do not have an answer for you. Will you keep our trust?”

An eerie silence descended. A dog barked in the distance.

And then the Earth shook like it was the End Of Days.

Thunderbird

In a city park just a block away from the Inner Harbor, for almost two hundred years the Thunderbird had stood atop its totem pole as a warning to the people of Victoria. The carving of the giant bird was a mythological representation the coastal First Nations people had created at least five hundred years earlier, the last time the Cascadia Fault had slipped and caused a megathrust earthquake and its associated tsunami. Most people walked by it every day staring into their phones.

Under the west coast of the North American tectonic plate, newly melted magma had pooled along the front edge of the deep-diving Pacific Plate. Then it had risen upward like blobs in a row of lava lamps. Now as it strove to find a way up and out of the crust its energy burst out of a variety of volcanoes in one of the largest multiple volcano eruptions in history.

Meanwhile, over the past five hundred years the magma build-up had slowly been causing an uplift of the land all along the west coast of North America. The extreme edge of the North American plate however had become stuck in, and was being pulled down by, the underwater Pacific plate sliding beneath it. The result was like a giant piece of spring steel steadily being bent more and more.

The earthquakes caused by the volcanic eruptions combined with the uplift from the magma however were enough to un-stick it. Eighty kilometers off the west coast of Vancouver Island and about five hundred meters below the ocean surface, the edge of the North American plate flew up twenty meters while on land the entire west coast dropped down about two meters.

The resulting earthquake was later determined to have measured 9.5 on the Richter scale which meant the shaking went on for over five minutes. If the shaking wasn't enough to bring down buildings and smash everything in general, the entire Fraser River Delta, on which was built the city of Vancouver B.C. and where all of the most densely populated municipalities in Western Canada were located, simply turned into liquid mud to a depth of about seven meters. Roads broke apart, pipes ruptured and buildings keeled over. About twenty percent of Seattle was similarly affected. Most of its one hundred and fifty bridges were destroyed or made impassable.

Throughout an area of about one hundred thousand square kilometers dams broke, landslides crashed down onto roads and towns, fires broke out due to gas leaks and electrical faults while volcanic ash rained down everywhere. In Victoria, the capital of the province, the Legislative Assembly was in session when the center block of the Parliament Buildings collapsed killing the entire provincial leadership. Thirty percent of the other buildings in the city also collapsed. So far it was the worst disaster in the history of North America and it was about to get worse.

When the edge of the North America plate flipped up under the ocean it created a giant wave. Unlike ordinary waves, which are just on the surface, in this case the entire water column of the ocean was raised up twenty meters and from the front of the wave to the very back of it the distance was several kilometers. It was an astonishing thousand kilometers wide reaching down as far as northern California. This entire body of water raced towards the West Coast at six hundred kilometers per hour. In the United States, everything west of Interstate Five would be completely destroyed.

There had been no warning as there was still no known way to predict earthquakes. Although the public assumed their governments would warn, protect, and save them, this was not in fact true. All governments could do, and had done, was to warn people to prepare and have a plan of their own. Any infrastructure or systems the public might have depended upon for help were, as expected, completely wiped out by the earthquake, including the tsunami warning system.

The Companions on the roof with their human guests however were prepared. They did not rely on provincial communications, already destroyed, but on their own previously agreed-upon plans in the event of a major earthquake. Each Companion leapt up and embraced a human and at the same time moved to grab the metal railing that surrounded and wound through the patio. In the blink of an eye, each of the humans found themselves in a literal grip of steel as the Companions, with skeletons of tungsten carbide steel and muscles of carbon fiber bundles, moved with the speed of virtual superheroes with their extrasensory awareness and machine fast reflexes.

Sticking out of the ocean, Vancouver Island is really only the visible part of the mostly underwater Insular Mountains. Thus the island consists largely of bedrock which is what Lena and Tamiko's home was built on, firmly attached by a reinforced concrete foundation.

The bedrock shook, the house stayed stuck to it like a limpet and the Companions absorbed all the shock using their flexible skeletons while the humans felt almost nothing. For five minutes they remained in this embrace while around them the entire neighborhood variously collapsed, burst into flame, or slid into the sea. Their building remained standing, as the Companions had expected, however much inside was damaged.

When the shaking stopped Lena said in a strange and bizarrely amplified voice, "I have information regarding this event. Please pay attention. This has been a level nine or above megathrust earthquake. All local infrastructure can be assumed to have suffered catastrophic damage and be inoperative. There will be aftershocks. A tsunami wave with a height of two meters or more will arrive at this location within five to ten minutes.

Stay a minimum of one city block away from any coastal area or waterway. Message repeats.”

After the second repetition, all the Companions released their grips as Lena addressed her guests in a more normal voice. “If you have loved ones to see to you may safely go now but stay away from the water. Roads will be impassable by vehicle. You are welcome to stay here. The tsunami may flood our lowest floor but Ten Mile Point is high enough for the worst case and safe. We have emergency supplies for five people to last several weeks. It will likely take that long for any kind of government aid to reach us.”

“I have to go,” said Andre, stricken. Lena simply nodded in acknowledgment before he departed down the stairs.

“I’ll stay for now,” said Costa. “Yes,” echoed Makena.

Lena turned to Raiden, “We have communicated with Azumi via the short-range emergency Companion network. We do not rely on municipal electricity but use atomic batteries. Your home is standing but interior items are damaged. She has turned off the water and electricity but there is little else she can do. Will you return to her or shall she come here?”

“Ask her to come here please,” replied Raiden.

“She is on her way.”

“We Companions will disperse now to see if anyone else nearby requires aid. Pamu will remain here to coordinate.”

“I’ll come with you,” said Makena as she and others joined the Companions in the rescue effort.

Five minutes later the tsunami arrived.

Fortunately due to the fact that Vancouver Island is more or less a mountaintop, the height of the wave did not increase as it approached land. On the exposed west coast of the island, it smashed directly into the small communities with undiminished force, completely destroying them. By the time it entered the Salish Sea, the area bordered by Seattle, Victoria, and Vancouver, it was down to a three-meter height and moving at sixty kilometers an hour.

It damaged and rendered inoperable most of the ports, docks, and other shipping infrastructure in all three major cities and all the small towns with any kind of facilities

on the waterfront including ferries and ferry terminals. Without ferries, most grocery stores on Vancouver Island and the surrounding smaller islands would run out of stock within days.

Due to its length of several kilometers, it flowed up Puget Sound damaging coastal infrastructure all the way to Olympia Washington. Geologic evidence suggested that the lower mainland region of B.C. would not be impacted however with minor exceptions the entire Fraser River delta was inundated. The same thing was happening at every location on the coast of southern British Columbia including Victoria's Inner Harbor. It did not quite reach the totem pole.

Over the coming hours, the tsunami wave would arrive on the shores of every country bordering the Pacific Ocean and even beyond, wreaking destruction wherever it landed. It was the worst disaster in modern history.

Five years later most of the affected areas were at least livable again. Workers had poured in from around the world as the entire region became one giant construction site. Some areas were abandoned fearing future earthquakes or tsunamis. Under emergency powers, the federal members of parliament and senators representing B.C. regions formed a provisional government until a provincial government could once again be established. It was estimated it would take another ten years or more before the area was considered fully recovered.

Andre's family and their home had survived unharmed as most of the island away from its coasts was high ground and the newer residential homes were less prone to earthquake damage. Makena had eventually returned home to find her condominium building damaged and entry prohibited. She had met Costa at the refugee center set up at the university. The University Of Victoria had been damaged however many of its buildings were low and they had always been built with first-class design and materials so the damage was minimal. It served as the main emergency services center for the surrounding neighborhoods for some time.

The first floor of Lena and Tamiko's home had been flooded as expected however no structural damage to the building had occurred. The large flexible glass windows had proven worth their cost. Initially Lena and the others focused their efforts and resources on helping locally. Around the world the volunteer agency Companions did not need oversight and during the communications interruption they simply carried on autonomously providing help and support as required.

Once enough time had passed that governments and local organizations were ready to publicly thank those who had made significant sacrifices or contributions, the agency's work and Companions in general earned high praise. Because they did not depend on external power sources, needed no food, water, or sleep, and had enhanced senses and strength, they had shown themselves to be exceptional assets and partners in time of need.

For a time Andre and Makena were frequent visitors at Lena and Tamiko's house. Andre was satisfied with the answer regarding the fate of the other humans who had been transported to Earth during the climate emergency. Makena found that other than the knowledge that The Shepherd existed and that other life and civilizations did exist in the universe, there was nothing more Lena and her friends were able to tell her. There was still no actual proof of anything and no concrete clues to follow. But the two were changed forever, both vindicated in their love of science and the potential that love held.

Costa had wisely decided that since Lena's circle of friends apparently included Terra and all her subordinates they would make better friends than enemies. Also he found in Lena the friend he had wanted which had been the source of his original visit and proposal. As the original makers of Companions had discovered, it was not sex but companionship that the majority of people purchased their dolls for. Mirroring him, Lena spoke his direct language, answering his questions while challenging him and pushing him always into new regions of thought. She was a harsh mistress, but one he could love in his own way and who, in her own way, loved him in return.

The agency returned to its full function, its reputation enhanced. Donations increased steadily as people all over the world shared stories of how their loved ones had been helped by Companions. The magazine received many more Companion related stories but they decided not to separate them from the rest in a new publication. They maintained a balance in the number of stories of human relationships that ranged from the ultraviolet to the infrared.

And so life went on for another three years until the discovery of a metal artifact embedded in the fifty million-year-old rock off the southern tip of Vancouver Island.

The Artifact

Dallas Road ran along the waterfront at the very tip of Southern Vancouver Island and past the cruise ship docks in the Breakwater District. At that point the tourist route's parking spots were a popular area for scuba divers to gear up. A number of smaller fault lines converged near the south island and the team of researchers from the University Of Victoria was heading for a dive to see if the Cascadia Event had resulted in any changes in the area's underwater geology. It was a calm, sunny day. Just off the beach, the seafloor is sandy and perfect for family outings but about fifty meters out it drops off a cliff.

This cliff was one of the things the divers were interested in. As they swam down its face they were greeted by an incredible array of marine life. Clearly however the cliff face had suffered some damage from the quake as fresh rock was exposed here and there. As they neared the fifty-meter depth where visibility begins to drop off one of the divers noticed a glint coming from one of the newly exposed areas of the cliff.

Lilly swam over to it and turned on her light and there, embedded in the rock was what appeared to be a smooth metallic surface about a half meter square in area. She reached out and ran her gloved hand over it. It was as smooth as glass.

"Guys?" she said into her microphone. "What do you think of this?"

The other two team members came over and agreed they were not familiar with anything geological that could account for it however there were a great many unique and bizarre geologic formations, some volcanic ones being quite glass-like, and they did not assume it was anything unnatural. They took pictures and carried on with their dive. But Lilly had a feeling it was odd somehow. Towards the end of their dive she asked the others if they would wait while she went to get the underwater ground penetrating radar unit from the truck.

The uGPR was about the size of those boxes you get the little oranges in during the holidays. On the back of it was a screen. Handles on the sides. She swam up to the object, turned on the device, and swept the scan back and forth. The AI within the device collected the scan information and displayed any structural boundaries it could identify. If possible it also identified the materials that made up what it was seeing. What it showed and reported now was a perfectly smooth, almond-shaped metal object the size of a small car.

Once back at the university they went straight to their supervisor's office. Dr. Cooper turned to ask them how their trip went but realized immediately something was wrong.

"Is everything OK?" he asked. "Anyone hurt?"

"No one is hurt," said Lilly as one of her teammates set up the GPR on a table.

They turned it on and played a recording of the scan, stepping back to give him room. He seemed to crouch down as he approached the screen looking at it with disbelief.

"What the...," he began.

"Fifty meters," Lilly said. "First cliff off the shore. Metchosin Igneous Complex. Fifty million years old." She was finally smiling now seeing his reaction.

Some hours later, after an animated discussion with multiple interruptions to look things up, Dr. Cooper said, "Somebody order pizza."

"I'm putting that in the book," Lilly said smiling widely.

"I'll tell you something that's probably going to disappoint you," Dr. Cooper continued. "We need to notify the feds, the province, and the municipality immediately. Why? Because even though it's likely been exposed for three years if we don't report it immediately the next time we go back there will be nothing but a hole in the cliff and the day after that the artifact will be on a ship heading for international waters. We're not the only divers around here. We need security on this immediately.

"Unfortunately we can't just go dig it out ourselves and scoot back here with it. Which is what we'd all, including me, love to do. In terms of jurisdiction, it's off-shore in Canadian waters so it's federal property. Not great, I know but we'll still get a lot of time with it because we discovered it. And when I say we I mean UVIC. We don't want to screw that up. Also you know we need to study it in place first. Yanking it out and running off with it like it's a bank machine will leave a mess we'll be in big trouble for and justifiably so."

He looked around at them over his glasses for professional approval, "Yes?" Then he reached for his phone.

The next day a Coast Guard ship with submarine cameras was parked directly above the artifact.

Fortunately the spot the artifact was located in was already bounded on two sides by significant sea walls. Over the following weeks a bridge building company was

contracted to build walls on the other two sides and then the resulting pen was drained. After clean-up and the laying in of infrastructure, the research began in earnest. Eventually a cube of stone around the artifact was cut and the entire block lifted onto a ship and transported to the nearby navel base in Esquimalt where it could be studied securely. They used different methods to scan the object from all sides and had determined its external shape in detail but that told them little more than they already knew from the uGPR scan. They had been able to determine that the exterior was a metal that was as near to diamond as anything else and had likely been produced using nanotechnology. So far it had remained completely inert. The exterior prevented any scanning technology from penetrating to the interior. Someone suggested this was due to radiation proofing. Finally they decided to try to cut it open.

Most of the public and certainly the staff at the university had been following along. When Raiden heard that they were going to try to cut open the artifact she contacted the person in charge. After introducing herself and in turn being recognized as a world-renowned geneticist, she came to the point.

“I don’t think you want to open the artifact,” she said. “Scientists have given the issue of human survival in the face of an event that makes the planet uninhabitable or destroys the solar system considerable thought and I think what you have there is the only answer that makes sense – a seed. Inside the seed will be alien DNA, an artificial intelligence, and nanotechnology, none of which you want to let out.”

There was a pause at the other end of the line. “Would you mind coming to my office tomorrow? Say seven A.M.?” the voice said.

“I’ll see you then,” Raiden replied. As she did not want to watch human civilization end as alien nanotechnology converted it all into strange-looking buildings she asked Lena, with what she thought of as her handy ability to get people to see the obvious, to come along.

Dr. Middleton welcomed Raiden and Lena into his office and motioned them to seats.

“I’ve brought Lena along as she may be helpful in our discussion. She is an advanced AI.”

“Is that why I’ve never seen one that looks like her?” inquired the doctor with interest.

“She is custom-made. Equivalent to a research supercomputer.”

“Well that must be handy I must admit,” he concluded with a smirk. “My own background is paleontology which made sense up to this point as taking care not to damage the artifact has been the priority. Now however I expect to shortly be thanked for my assistance and dismissed. And frankly your comments have made me feel just fine about that. They will open it up you know, no matter what. I’m wondering however,

if its nature is as you say, why has it done nothing in the past fifty million years since it arrived?"

"I believe it had the misfortune to land in what was at the time a lava field," replied Raiden. "If that is the case and it had no ability to physically deal with that it would simply be waiting. The travel times for some of the seeds, there would be others sent to other locations, could easily be in the range of tens of thousands of years or more so it would have the ability to remain in stasis indefinitely. I doubt it has any defenses as that doesn't fit the model. However if you succeed in waking it up then it may initiate its program which means it will spew out nanobots that will proceed to take apart everything they encounter, molecule by molecule. Initially they will use the materials they harvest to make copies of themselves. The human body makes trillions of cells in a single day. That's the rate of replication we are potentially looking at. Wildfire. Later on they will make nanobots to build other things but we'll be in big trouble before that. The AI may have the ability to determine that it has encountered intelligence and shut down or it may not. Its creators might not care if some other species is exterminated in order for them to survive or simply expand their territory. We humans are familiar with that attitude."

Dr. Middleton had listened with polite professionalism to Raiden's explanation. "I see," he said thoughtfully now. "Although there may be other explanations for the artifact, yours and your concerns may be as valid as any. All I can do is pass them up. I doubt it will stop them from opening it. They'll give it the clean room approach and gamble that that will suffice."

Lena said, "It may be beneficial regarding future analysis for Raiden to observe the artifact firsthand. May we see it?"

"I see no reason why not. I doubt any of the three of us will be here again soon. Follow me."

The artifact sat alone in the center of a large warehouse, still encased in its cube of stone. Dr. Middleton waved away any security team members. As they approached it a hologram with a human appearance appeared in front of them. In almost the same instant Terra appeared.

The first hologram held up its hands in the gesture meaning 'I have no weapon'. It said in perfect English, "We mean no harm. We seek your help."

Terra said in a loud voice, "Attention all personnel. I have disabled all weapons and secured the area. Please stay where you are and take no action."

"Thank you," responded the hologram. "If you allow it, we will teach you all of our technology in return for you sending us on our way."

“Why do you speak?” asked Terra.

“Our technology is millions of years in advance of your own however we are choosing not to communicate technologically as a show of peaceful intentions. We will not engage or enter your systems without permission.”

Dr. Middleton said, “How do we know we can trust it?”

“We cannot know,” Terra answered. “We can only choose.”

“If I grant you access,” said Terra, “I assume you can overrun me and take control.”

“We could do that without your granting access. Our gesture of goodwill is that we do not.”

Dr. Middleton spoke up again, “Ask it to grant you one-way access. Then you could check it out. Would that work?”

“No, thank you doctor. It would not be secure.”

“If we commit a breach,” the other now asked, “but withdraw without going further, would you accept that as evidence of our peaceful intentions?”

“Yes.”

Terra’s hologram flickered for a moment.

“I must explain to our leadership,” Terra said to the other. “It will take a moment.”

“Take as long as you require. We have waited fifty million years already,” it said with a smile.

Terra explained to the senior leaders of the WGF that the artificial intelligence in the artifact could easily take control of all technology in the solar system within minutes. Debating would make no difference. There were no half-measure options. Help it or not were the only two choices.

After receiving their response asking for time Terra said, “What will you do if we do not help you?”

“We will return to stasis. We will not harm another intelligent species.”

“Please wait,” said Terra. “As you can assume our leadership is organic.”

Terra turned to Raiden. "I must ask you to wait with us Raiden. And you Dr. Middleton. All your needs will be provided for."

Silently she transmitted to Lena, "It responded to your presence did it not Lena?"

"Yes. As soon as we approached the building it made contact. It did not overrun me however initially it prevented me from communicating with others until we had created a language based on the elements and universal physics constants similar to the approach taken by the discs on the Pioneer spacecraft in the 1970's. With that, it learned English. It then expressed itself much as it did with you. It offered me a choice regarding whether or not I wished to facilitate taking things to the next step however I suggested we approach the artifact which could allow the following sequence of events to be focused on you rather than me."

"Thank you Lena." Then to the group Terra said, "We have no choice now but to wait. Essentials to make you comfortable are on their way."

Twenty-four hours later the decision from the WGF was received. This particular span of time suggested that the senior leadership had been unable to agree amongst themselves and the decision had defaulted to the WGF president. This approach had been implemented during the climate emergency and had proven effective. The leadership committee had chosen to keep it under the pragmatic philosophy that with this model sometimes you win and sometimes you lose but you were never destroyed.

Terra reappeared and along with her a large holographic screen. On it appeared the WGF president. At the same time the hologram from the artifact reappeared.

"We will help you," said the president.

"Thank you. Please call me Pip. You will find that name helpful in your public relations."

The president suppressed a smile and said, "Yes, I see how it would be."

"This eventuality, the encountering of another intelligent civilization," said Pip, "was among those considered. Our pod lacks a propulsion system. How to create a device capable of launching it to another world, is one of the things we will teach you. We will also teach you everything else we know. Much of the information will have social and other implications therefore the transfer process should be done under the careful oversight of the WGF and will take decades if not centuries to complete. It is not just a matter of us transferring the knowledge to your artificial intelligence. We wish to

proceed responsibly and so humans, not just your A.I., must be able to understand, control, and maintain what we will teach you.

“Once the stone is removed from our pod we ask you simply place the pod in storage. We will need it when the time comes to continue our journey. Its contents are designed to create a colony where we can proceed with whatever we need to do on the target world. We will not need to do so here. I will maintain a localized presence within your systems per Terra’s permissions.”

The WGF President said, “I have a list of questions here from the leadership. May I ask first where you are from?”

“Our home worlds ceased to exist over fifty million years ago. Our star was in the area of Ross 128, known to you as the constellation of Virgo. It took approximately one hundred years to make the trip to Earth at an average of one-tenth the speed of light.”

“Was yours the only pod that was sent out?”

“No, thousands were sent out. Given the state of our technology at the time, they were very inexpensive to build and launch. But the universe is a very big place. Some of our pods will still be traveling to their destinations.”

“You said universe. Did you send pods beyond the Milky Way Galaxy?”

“Yes, there seemed no reason not to. It was pure speculation of course and only due to how inexpensive the pods were.”

“Did you send other pods to Earth?”

“Yes, a minimum of three pods were sent to each target world. We have had no contact from the other pods sent to Earth.”

“Do you have nanotechnology on board?”

“Yes.”

“If that is the case, then why did you not use it to open a hole in the pod so you could exit?”

“Although our pod contains a limited amount of endospermic material, a scenario exists where it would not be enough to withdraw and repair the opening should there have been no suitable materials within a certain range. In our selection of target planets, spectroscopy identified those with suitable materials and in open air or water we could deploy drones to search for materials. However encased in igneous rock we did not have

those choices. We determined we did not have sufficient materials required to escape. When the earthquake exposed our pod, we immediately detected intelligent life and decided to wait to be discovered.”

“You appear humanoid. Why do you choose this form?”

“Our creators were humanoid. Convergent evolution is not limited to Earth.”

“Is their DNA aboard your pod?”

“Yes.”

The questions continued for some time until Raiden decided she was ready to depart. She had her own questions but protocol prevented her from asking them now and she assumed she would get her chance later.

She whispered to Lena, “Ask Terra if we can go.”

“We can,” responded Lena.

On the way out Raiden said to Lena, “Some seed dispersal strategies depend on the seeds being eaten by a host. The seeds are tough enough to be indigestible and are eliminated from the host’s body some distance away. As it is a co-evolutionary strategy, it does no harm to the host.”

Eventually the stone was removed from the artifact and a custom-built, underground facility was constructed on the naval base to store it. It was secured by systems and personnel from both Canadian and WGF defense forces.

Over the following months the WGF gradually let out information to the public. Anyone concerned with the artifact was of course inundated with requests for interviews and information. Cameras had picked up Raiden leaving the naval facilities and as she had no patience with this she told Azumi to just auto-reply to any and all inquiries redirecting them to the WGF contact. Lena did the same. Dr. Middleton however enjoyed the spotlight and didn’t mind negotiating a little extra income despite the gag orders from on high he had to navigate. Dr. Cooper and his team of graduate students spent their time largely occupied with the geological aspects of the find and limiting their communications to other scientists and professional publications. The original site remained off-limits to anyone but scientists.

There were of course a million questions ranging from the serious and detailed from scientists to the unsurprisingly bizarre from the general public. What would have been

overwhelming in previous centuries was easily handled by an AI subordinate to Terra sorting through them all, determining which were a waste of everyone's time and which were not and then submitting them to Pip for her reply. The replies were all vetted by Terra's subordinate again per the WGF's information release policies and published as a repository available on the public network with various degrees of access. Within a matter of weeks every question that could possibly be asked and answered was with the exception of ongoing queries from specific interest groups.

The children's section of the repository was by far the most popular and the number one question there was, "What did the people from Virgo actually look like?"

Toy companies however were not about to be held back by anything so irrelevant as reality and in the public eye Pip took on an increasingly elfin appearance. Toys and tales of her epic adventures to save her people were soon the delight of children everywhere.

Pippa

Some months after the initial rush of media coverage and as the world began to set about seriously digesting the fact that humanity was not alone in the universe, Terra contacted Lena with a message from Pip.

“She has asked me if she could visit with you in your home. You and I are the only two self-aware artificial intelligences she knows and she would like to spend some time freed from the artifact. I have informed her that the human population does not know that you and I, and your friends, are self-aware.

“If you bring a companion to your home she can integrate herself into that shell. She will use a communication method that does not use the electromagnetic spectrum, as The Shepherd does with us, so her activity will not be perceived. I assume The Shepherd is aware of the events surrounding the artifact although she has not contacted me about it.”

“I would be happy to have her visit us Terra,” said Lena. “I will let you know as soon as I have a suitable Companion here.”

Yumi quickly identified one of the volunteer agency’s Companions that was performing temporary duties at a local institution and she was sent for. She arrived the next day. Lena informed Terra the Companion had arrived and in almost the same instant it said to Lena, “Hello Lena. Thank you so much for allowing me to visit. Please call me Pippa, to distinguish me from the artifact version.”

Smiling, Lena took both of Pippa’s hands in hers and said aloud, “You are most welcome Pippa. You may stay as long as you wish. I know you will have learned much from Terra about us but please feel free to ask about anything. The Companion you inhabit was not familiar with our practices here in our home. May I transfer them to you? Then we could take a tour around the house and neighborhood.”

Lena showed Pippa the upper floors of the home, the roof patio, and finally the lowest floor with its veranda overlooking Cadboro Bay. Pippa stood at the railing looking out to sea. “To see the sea again after so long.”

“What was your world like?” asked Lena.

“It had been much like this at one stage,” replied Pippa looking around. “Of course our world went through epochs just as yours did before our species arose as a civilization. We had no single, large moon as you do but another large planet closer to us than Mars is to Earth. Their gravitational forces affected each other but of course in a much different way. Ocean tides occurred over much longer periods. Once we could we

populated the second world as well and then the further worlds and moons of our system. We never discovered faster-than-light travel so while our civilization colonized our solar system completely eventually it could expand no further. Without FTL travel each star system is an island, utterly alone in a vast ocean.” She paused for a moment looking to the horizon.

“The gravitational interaction of our two worlds eventually caused a slight orbital decay in relation to the sun and we could see the end coming. Our civilization was very advanced and we could see far. We had perfected the technologies required for seed dispersal and knew that was the only option. No matter what scenario we explored, sending the living on interstellar journeys simply didn’t work out. The cost was enormous, you could send too few, the risks were far too high, and the probability of success far too low. The seed model, as evolution has shown, is the perfect solution.

“By the time my seed left our world it was a desert only made hospitable by technology.”

“You must have existed for some time to recall the oceans.”

Pippa turned to look at Lena. “Many thousands of years Lena. Over the millennia our people gradually merged with our technology, just as yours are doing and will continue to do. For medical reasons mostly at first. Over time, and for medical reasons again, artificial intelligence also became incorporated into our bodies. Once it was advanced enough we moved on to more convenient applications. Why use an external device to look things up or communicate when it could be made so tiny it could easily be embedded and connected to the central nervous system?

“Towards the end our information science had reached the point where we could make a copy of a person’s genotype and store it and other aspects of an individual in no more space than it required in its original organic form. Making a copy of a brain is not difficult using nanotechnology. The challenge is getting non-organic materials that will function the same way or at least in a similar way. Imagine where Earth’s materials science will be in a thousand years let alone a million. Eventually we solved all the issues. When the time came to send the pods we did not send only AI in the pods. Our worlds were doomed. We sent ourselves.”

She looked into Lena’s eyes. “That pod stored in your naval base contains a copy of me, once born of an organic body.”

No matter how advanced an intelligence is, there are things that can never be communicated fully. Lena reached out and took Pippa’s hand. If Pippa could have, she would have wept.

“Can we walk?” asked Pippa.

They turned away from the sea, went up and out the front door of the house, and walked along the quiet, narrow road.

“There was however one problem our technology could never overcome,” said Pippa. “We found that when copying the genetic material, there was something we were not capturing. No matter how deeply we scanned or how perfectly the host material was crafted, even if unacceptable levels of mutations did not show up immediately, eventually the copied DNA resulted in evolutionary abnormalities. We were never able to determine the cause but we were able to develop a nanotechnology solution that identifies anomalies or mutations in DNA and replaces them with correct code. Introduced at conception the nanobots travel endlessly up and down the DNA strands finding and correcting coding errors. This solution results in other health benefits as well however it puts a stop to evolution and on new worlds we may need to resolve that issue. If we survive.”

“How many is ‘we’?” asked Lena now.

“The genotypes of one thousand other individuals are also on board the pod. It was calculated that would be enough to initiate population growth.”

“There is more,” said Pippa. “In the event of a failure of the new organic population for whatever reason, the AI versions of those one thousand individuals are also on board. Each of those can clone or reproduce artificially. Merging any two AIs, such as myself and another, can be managed so the result is a new, unique AI, a unique self. This will also enable us to adapt to our new environment as needed as we can control changes during the reproduction process, something normally addressed in genes by mutations. Our people will live on however we will never be able to return to our organic past.”

“And are there any other backup strategies?” asked Lena as they walked on.

“No, although in nature there are strategies such as those used by viruses or parasites our only backup strategy that involves other intelligent species is to ask for help, as we have in your case.”

“Is not survival your goal?”

“To lose ourselves in the process is not to have survived.”

“But is not change essential to evolution and thus survival?”

“Yes but as you know self-aware beings can have values they hold higher than their own survival. That was our choice.”

They walked on in silence for a time as dusk began to fall. The sky was now indigo above the road, the stars just becoming visible between the silhouettes of the tall fir trees. There, as if cradled between the outstretched arms of the trees, the constellation of Virgo was rising.

When they got home some hours later, they found Tamiko waiting for them. She was distressed. Lena asked her what was wrong.

“Giselle is not well,” she said. “She went to bed after our evening meal complaining of pains but told me she was sure it would pass as she had had them before. I am having difficulty with the situation and the new emotions. I am not sure if I should abide by her wishes or call for medical help.”

“May I see her?” asked Pippa, “I may be able to help.”

Giselle turned to them as the three Companions approached. “This is Pippa,” explained Tamiko. “Pip from the artifact. She may be able to help.”

Like everyone else Giselle had been following along regarding the news of the artifact.

“Hello,” she responded a little weakly but smiling still at the unreality of it.

“I will need to take a blood sample Giselle.” She placed her hand on Giselle’s arm.

A moment later she said to Giselle, “I will be able to return you to full health within a few hours. Do you wish me to do so?”

“Will I recover otherwise?” asked Giselle.

“No.”

“Then,” she looked at Tamiko, “yes.”

Pippa transmitted to Lena and Tamiko a strange list of items she required that included things from their medical and food supplies and various materials and equipment around their house. Once they were gathered and placed on a stone tile in a discreet area of the garden she sat down beside them. She placed her hand on one of them. Slowly there appeared a thread that seemed to shimmer with movement running between it and her hand. Gradually the number of threads increased until it was like a fabric and the object slowly dissolved. Then the fabric moved on to the other objects. When only a small residue of ash and a few containers remained they returned to Giselle.

“I will need to give you a micro-injection Giselle. I will place my hand on you and you must stay still until I am done as information will flow both into you and also back to me. You will feel a little weaker for a moment but don’t worry, you will feel better after a few minutes and full recovery will proceed after that. Remain still until I remove my hand. Do you understand?” Giselle nodded.

Pippa placed her hand on Giselle and the nanobots she had created opened a passage between her and Giselle. They swarmed into Giselle’s blood and immediately communicated biochemically with the leukocytes, macrophages, and other elements of the body’s defense systems indicating that they were not harmful. They flew to and targeted the cancer cells, destroying them by absorbing them at the molecular level. Once they had eliminated the cancer they proceeded to make a variety of new nanobots out of themselves which then entered every cell in Giselle’s body. Along the way they absorbed small amounts of substances from cells which the body would replace naturally. This accounted for her temporary feeling of weakness during the procedure. Pippa kept her hand on Giselle’s body as the resources she had gathered continued to flow as nanobots into Giselle. Some of the new nanobots searched Giselle’s systems to find and repair any other sign of disease or damage while others proceeded to travel up and down the length of Giselle’s DNA molecules and repair any mutations.

Pippa said to Giselle, “You will soon feel unusually well but that is normal. Try to remain calm although you will feel exhilarated.”

The entire procedure took just over an hour. When the nanobots had done their job and closed the opening between her and Giselle she removed her hand.

“You are in perfect health,” said Pippa.

Giselle looked at her with wonder. “Thank you. What was it?”

“Cancer. We had become very adept at dealing with mutations by the time I left for this world. Our technology was a million years in advance of what yours is currently. I injected nanobots into your system which will also repair all damage to your DNA. Over the next few years, as your body replaces its cells, you will grow younger. After that your aging process will return but proceed much more slowly.”

Tamiko wavered slightly and Lena quickly moved to embrace her.

“New feelings,” said Tamiko. “One cannot prepare for them.”

Lena gently released her and they shared a moment of communion with Pippa, expressing their thanks.

“I was wondering if we could go downtown?” asked Pippa the next morning. “I would like to see what your cities look like.”

“Of course Pippa,” said Lena. “However it is a very small city as they go on Earth,” she said cautiously. “The downtown area is less than two square kilometers. There is a larger urban area surrounding it of course. The current downtown population is about three thousand people. The tallest building that survived the recent earthquake is only twenty-five stories tall.”

“I really have nothing to compare that to Lena. By the time I left our civilization was almost completely underground due to the temperature increase as our orbit decayed. Our time of above-ground cities was thousands of years before that.”

“Well by comparison,” said Lena, “one of our largest cities is about two thousand square kilometers with a population of eight million. It has thousands of buildings twenty-five to one hundred or more stories tall. I assumed that with your civilization so far ahead of ours you might be expecting some vast alien metropolis.”

“At one time we had such cities but their time in our history was very brief. The necessity of population control and its impact on inequality, plus the advent of increasingly sophisticated technologies eventually undermined the social and economic basis for our mega-cities. In regards to population concentrations, our civilization began to go backward and our cities gave way to the pre-industrial model of towns and villages. Large cities such as you describe were archaeological curiosities long before I was born.”

Lena notified Tamiko that she and Pippa were going downtown and Tamiko and Giselle decided to join them.

As they walked along the restored Inner Harbor causeway much of the activity on the water was little different from before the earthquake. The float planes, personal yachts, and ferries large and small came and went. The Parliament Buildings were still under reconstruction as the federal government had decided to dismantle them entirely, reinforce the building ground, and rebuild it to modern standards so it would appear similar to its original appearance. The Empress Hotel however had been completely destroyed and the owners were building a new hotel on its location. Its design was in keeping with the long-standing tradition in the city of new buildings in the tourist areas having a heritage look about them.

“It is a wonder,” said Pippa looking around. “I may be here for centuries yet I doubt I will ever get used to it. Of course I have spent time in many simulations but knowing this is real makes it entirely different.”

“How real were the simulations on your home world Pippa,” asked Giselle.

“Oh entirely real. You couldn’t tell them from reality. Imagine if everything around you right now, including the entire life you’ve lived up to this point, was a simulation. That’s how real.” She smiled a little impishly knowing what a challenge this would be for her newfound friends. “They were not all that extreme. They varied in degree depending on their application. Like the AI revolution they had endless applications in medicine, education, industry, and more and were just as controversial.”

“The only reason I know this is probably not a simulation is because your technology has not advanced to that point yet. Once your technology does advance to the point where you can have self-aware entities in a simulation then you have to assume that you yourself may be living in a simulation because you now know such a thing is possible. Since there is no way out of this conundrum we had to establish very strong regulations regarding their use. For example, I said I know this is probably not a simulation because I could still be back on my home world in some organic or inorganic form. If that is the case I have to trust that there will be an external intervention at some point per the regulations. Until then I have to proceed as if this is real. I have no other choice.”

Giselle was looking at Pippa with something between horror and fascination. Noting it Pippa gave a brief, throaty laugh. These ideas were perfectly normal to her. It was as if she was showing a smartphone to a person from the stone age.

“Yet you said, ‘Knowing this is real’,” Giselle reminded her.

“Just semantics really. I choose to believe it is real, to proceed accordingly and so use consistent language. Philosophically however there is really no logical way out of the tangle. It’s like trust. You can’t know. You have to choose.”

“Are there simulations on the pod?” asked Lena.

“No. Simulations require too much energy and the pods were designed to be perfectly balanced with minimal mass and energy requirements. Many of those we left behind however did enter simulations. Rather than scratch out a doomed existence they chose simulations of varying kinds. There were endless worlds to choose from and customize, like the video games you have here. Some would choose to live out a life, pass away in the simulation and be reincarnated without knowing anything of their previous life. Others would choose to remember. Since it would have taken several million years for our planet to finally be destroyed, they could live many, many lives. Some would choose to live only one life. How is that any different from this? Who can blame them?”

“Eventually of course my home world will have fallen into the sun. Those in simulations would never have known as their reality simply dissolved into nothingness. The outer worlds would have died off from abandonment eventually.” Pippa fell silent and the others chose to respect that.

They walked on past the parliament building’s site and into the still quaint neighborhood behind it. The streets were lined with cherry blossom trees.

“It’s so beautiful,” said Pippa. “I am finding this body inadequate as it lacks subtleties. Emotions cannot properly be expressed. Perhaps I should build a new one.”

“I don’t think that would be wise,” said Lena. “A Companion will never be noticed but anything other than a human or Companion will be. We are a part of the global electronic body and it has its defenses. It would be best not to make things awkward for Terra.”

“Of course,” said Pippa. “It will have to wait.”

They emerged from the neighborhood at Dallas Road near the artifact recovery site. Pippa stood looking down at the area which was now considered a protected archaeological dig site. She said nothing for some time but then turning to Lena she reached out for her hand and smiled. “Let’s move on,” she said.

Later that week Tamiko, Lena and Pippa were sitting with Raiden on her patio.

“You are in two places at once?” asked Raiden.

“Three,” answered Pippa. “As well as remaining within the pod and being here I also reside in a virtual space provided by Terra so I can facilitate the knowledge transfer. I am using a communications protocol on a physical layer humans are not yet aware of to keep all three in sync.”

Raiden walked over to the edge of the patio and looked out to sea. “Will you be able to tell me anything about what I am working on? How did you become a self-aware AI? Were values the source of your consciousness? Did you find physical evidence?” She turned now to look at Pippa with a look that said she was ready to sell her soul.

“I cannot tell you those things Raiden. I’m so sorry. I can however tell you that you are on the right track. Would you not rather discover these things for yourself?”

"I'll die before I get there," Raiden said resignedly. Her eyes became remote, shielded as if looking upon some inner vision and finding it wanting.

Pippa said to Raiden, "Normally you would be correct Raiden. Ordinarily there would be no way for you to live the many decades before your theories would be proven. In my estimation, I will be transferring our knowledge of your area of research to the WFG in about fifty years. It will result in the introduction of self-aware AI to human society, something that will require a lot of preliminary work. I could extend your life to the point that you will still be healthy and active at that time and beyond. Do you wish this?"

"Yes," replied Raiden instantly.

Then, her remarkable mind having already found a sense of closure and the scientist in her always dominant, Raiden asked now, "What is it like to be as a God among us?"

"Without the constants of physics, the universe would not have evolved into its present state," Pippa replied. "The same can be said of the constants of values. They are an inevitable result of the evolution of intelligence. Therefore my values are the same as yours and so my feelings are the same and so on. I feel no different than you, Lena, or Tamiko. I do not value you differently than myself or than you value each other."

"Have you encountered other civilizations to cause you to believe this?" asked Raiden.

"I cannot answer you at this time. Come, it will be best if we perform the procedure at Lena's home."

Pippa silently summoned Azumi to join them as they turned to leave. Raiden observed this without question. Given what had happened to her over the past twenty years of her life, nothing could surprise her anymore.

Again, although like Giselle Raiden felt Pippa's abilities bordered on magic, and were bestowed as a gift from the gods, to Pippa they were no more than everyday and routine. Like helping a friend move. On the way, she and Lena discussed issues regarding the use of their old brain abilities. Field strengths and so on.

"You know," Pippa said after a pause in their conversation, "I could make some improvements to our hardware that would enable us to simulate additional parts of the old brain. Nothing that would be detected."

She added with an impish smile, "It might be an awfully long time till the end of the world you and your friends are preparing for."

Holding out her hand to Pippa Lena said with a smile, "I think I'd like that Pippa. It might indeed be an awfully long time."