



**Actuarial Speculative Fiction**  
**2001: An Actuarial Odyssey**  
**Version 4.0**

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Computer Science Section  
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**Actuarial Speculative Fiction**  
**2001: An Actuarial Odyssey**  
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## **Le Morte d'Arthur**

*by Walt Hearington*

"Welcome to E-ternity, Mr. Shaw," he said, offering his hand. I shook it briefly, then took the seat he indicated. "It's my pleasure to welcome you," he repeated.

"Thank you," I replied.

He hesitated, expecting me to continue, but I held my peace. Finally he asked, "Have you had an opportunity to look over the material that I sent you?"

"Yes."

"As I said, we are pleased to have you visit us, although we could have handled everything by cc'ing," he told me.

I said gravely, "I guess I'm just old-fashioned. I think there are still some things that need to be done in person."

"Oh? Did you have any questions?" Again I remained silent while he looked at me closely. I examined him at the same time. He was a stunningly handsome man - either genetically or surgically enhanced; no one looked that handsome naturally. He exuded confidence. He was, of course, used to negotiating from a position of strength. But like many salesmen, he couldn't handle silence, and when I remained quiet he slipped into his sales pitch.

"E-ternity," he declaimed, "is the oldest and most reputable firm in the market. It was started by Adonijah Caine over two centuries ago. Our list of clients includes many of the best-known names of the past 200 years." He smiled smugly. "The waiting list - even given the current level of technology - is quite long. And we are quite strong financially - in the fabulous fifty - so you need have no fears that ..."

I interrupted, "I would like to see Mr. Caine."

He paused, disconcerted, and finally asked, "Which one?"

"Adonijah Caine, the founder," I answered.

He paused again, then said with a hint of rebuke in his voice, "Mr. Caine is a very busy man."

I smiled. "I've no doubt he is very busy. But I need to see him."

"Mr. Shaw, I am well-acquainted with..."

"No offense, but I need to see Mr. Caine. If I can't..." I started to rise, but he waved me back to my

seat. "I'll see if he is available," he said sulkily. After a slight pause during which he consulted his innernet, he told me, "You are fortunate. Mr. Caine is available now, and will be with us shortly." "Thank you," I said, and we waited in silence. After a few minutes, the door opened and Adonijah Caine entered.

"Good morning, Mr. Shaw, I am Adonijah Caine," he said, offering his hand. I rose and shook it, saying, "Arthur Shaw." Mr. Caine turned to his assistant and said, "Thank you, Bob. You may go now." The salesman hesitated for a brief moment, then left. Mr. Caine laughed. "Bob is a good salesman, and a good man," he said, "but sometimes he seems so young." He turned to me again. "You asked to see me, Mr. Shaw?"

"Yes. Thank you for your time."

"I have all the time in the world," he said firmly, and for a moment we looked at each other.

"Do you know why I am here?" I asked.

"Why does anyone come to E-ternity?" he responded. "I reviewed your information on the way here, Mr. Shaw. So yes, I know why you are here."

"I'm only thirty-seven," I began, then broke off. I had not meant to sound so bitter.

"It's true that most of our applicants are older. And I know of your medical condition. I'm very sorry."

"So you know that I, at least, do not have all the time in the world."

"Yes." Again we waited, and then he prodded gently, "Do you have any questions I could answer?"

"Just now, you said you knew of my condition, and that you were sorry. What do you mean, sorry?"

He cocked his head, then sighed. He sat on the desk and clasped his knees. "Yes, I thought it might be something like this," he said. "Have you ever met an E-ternal before, Mr. Shaw?" "No."

"I thought not. So that is why you wanted to see me. And now that you have seen me, what is your impression?"

"I'm not sure," I answered frankly. "I've read about, well, about you, and E-ternity, and E-ternals, and I wasn't sure what to think. So I thought I'd come..."

"Come and see for yourself," he concluded for me. "Very wise. I always have time to spend with those who really want to know, who are not just vulgarly curious. And in any case you would appear to have a good reason for your curiosity." He smiled again. "You're an actuary, Mr. Shaw."

I would think you already knew about the subject. After all, annuities make exceptions of E-ternals."

"We study mortality, not immortality."

"I see. Well, why don't I talk while you watch and listen. I think, Mr. Shaw, that you will be satisfied."

He dropped his knees and leaned back. "Let's see, suppose I start with a little history. I was born almost 260 years ago, in a town in Nebraska. I entered the field of computer research. My partner Greg Jensen and I stumbled onto the secret of successfully constructing computers on an organic basis, quite different from the digital computers then in existence."

"Organic computers - not made from organisms - we're no Frankensteins, Mr. Shaw, regardless of what the rumors may say - but computers that could be grown, that could duplicate the structure and operation of the most wonderful creation in existence - the human brain."

"I quickly grasped the possibilities. For eons, men had tried to prolong life, to cheat death, but were never able to do so. Regardless of the heroic medical efforts, in the end death conquered all. But we had in our hands the means to finally defeat death."

"For what we proposed was simply this: to transfer a person's thoughts, memories, personality - that person in total - to an organically constructed brain that would live on after the original body had ceased to exist. Live forever. Eternal life, that was what we offered. And so we started the business that is now called E-ternity."

"The dream of eternal life. Mankind had always pursued it. Back then some tried to obtain it by having their bodies cryogenically frozen after death." He grimaced. "Some had only their heads frozen. A fruitless effort. Even today our science cannot freeze and revive higher animals. The tissue damage is simply too great."

"It is true that medical science has made tremendous strides in the last two centuries. Many diseases have been conquered, though unfortunately for you, not all. Lifespans over 100 years are relatively common. Need a new heart? A new kidney? Clone one from your own body so that there's no possibility of rejection. But you can't clone your brain. And it will eventually fail - regardless of what science can do. But we had the answer."

"At first we were dismissed as crackpots. But we persisted, and began to attract interest. And then the persecution began. Religious bigots howled that we were playing God - did you know that there are still countries that will not let E-ternals enter? Social liberals claimed we had an obligation to give our discovery away for free to anyone, rather than sell it to those who could afford it, regardless of the fact that the process was, and still is, very expensive. Naturalists screamed that we were going against nature - as though our entire culture, our medicine, were not created specifically to overcome nature."

"And those first E-ternals were dismissed as freaks, or machines. Our facilities were attacked several times. My partner Greg was almost killed in a bomb attack."

"But we persevered. And succeeded. Society as a whole came to accept us and the E-ternals. It was a landmark day over a century ago when the Supreme Court ruled that E-ternals were human, and entitled to the full protection of the law. And let me add that only our clients, as of this date, enjoy this full protection, regardless of what our competitors would have you believe."

"In the years since we began, we have catered to people of all races and creeds - we do not discriminate - even including some of those who were at one time some of our most bitter critics. It seemed," he said with irony, "that the approach of death had changed their minds - a deathbed conversion, as it were. And, since I'm satisfying your curiosity, Mr. Shaw, please indulge mine. I noticed that in your information that you claim to be an evangelical Christian. It's somewhat unusual for evangelicals to approach E-ternity; most seem to regard the matter as otherwise attended to."

"So why have I come?" I asked for him. "I'm not sure. My wife urged me to check it out, and, of course, I'm curious. I believe in the afterlife, in heaven. I do have faith, I do, but yet..."

"But yet you are here. Don't get me wrong, Mr. Shaw - may I call you Arthur, by the way? I'm not trying to criticize you. We welcome anyone at E-ternity."

"Anyone who can pay the price."

"Eternity always has a price, Arthur - whether it's your heaven, or the Muslim paradise, or some dimly conceived worker's utopia. We don't force anyone to come. You or anyone else are welcome to come - or to stay away, and try for your heaven. Our services are not cheap, but we provide good value for the money; not pie in the sky, but pie here on earth. And we do offer scholarships for deserving persons. The E-ternal foundation awards E-ternity free to five persons a year whom the foundation believes to be worthy."

"And you have never refused anyone?"

"Never," he stated incisively. "We thought about it - suppose Hitler, say, appeared at our door one day with the price of E-ternity in his hand? We finally decided that precisely because we did not want to play God that we would never judge, never turn anyone away from E-ternity."

"Have you, I'm not sure how to phrase it, have you had different models over the years?"

He laughed. "Aptly put. The organo-brain has changed relatively little over the years. The biggest changes have been in the android bodies. As a matter of fact, the first E-ternals were confined to support chambers. But over the years, advances in andrology have allowed us complete freedom. We mingle in society and no one can tell we are not like anyone else. For example, could you tell I was not organic, like yourself?"

"No," I admitted. "You look completely authentic."

He laughed again. "You have a unique way of phrasing things, Arthur. I like it. Now, as to the services we offer - there are no second class E-ternals. Every E-ternal gets a state-of-the-art organo-brain and android body in the style he or she desires. Yes, E-ternity fulfills the old Irish blessing that you 'remain forever young.'"

"What about accidents?" I asked. "Suppose you were on a plane that crashed? Wouldn't that be the end of the E-ternal?"

"We've made allowances for that. Periodically, the files on each E-ternal are refreshed, so that if the worst happened and the plane crashed, the E-ternal would be revived based on the most recent files."

"Like a back-up."

"Exactly. In point of fact, as soon as you sign with us, we would take an initial reading, in case something unfortunate were to happen. That reading would be updated - or replaced with new ones, rather - as time goes on. So, Arthur, have I answered all your questions? Are you satisfied?"

"I'm not sure," I replied. "My wife urged me to come, but I wonder how she would really feel to have an E-ternal husband. And speaking about husbands..."

"Let me assure you that your new body would function perfectly in that regard as well. Your wife would have no complaints on that score. And that is another advantage of being an E-ternal. I am never sick, never impotent, will never lose my hair, never grow old. Alzheimer's runs in my family, Arthur, but it will never touch me. Not now. And another advantage, one that an actuary might appreciate, is complete integration with the innernet, vastly superior to existing human interfaces like Bob has. I have instant access to anything on the 'net.'"

I considered him thoughtfully. He returned my stare unflinchingly, waiting patiently. I sorted through my racing thoughts, then asked, "What about your memory?"

"My memory is excellent - completely eidetic."

"I mean, do you have all your memories of before you became an E-ternal? Of course," I said pensively, "how would you know otherwise?"

"I can only tell you that I have never run across any gaps in my memory from before my conversion. And unlike before, when I was organic, I now remember everything that happens. I could repeat our conversation, word for word, in 10 years' time - or 1,000."

"Is your memory like mine - I mean, I can instantly remember scenes and events, without searching through, like a computer searching a data base. Can you do that?"

He hesitated for the first time. "I'm not sure how to answer that question, Arthur. I'm sure that, since you are an actuary, you have an excellent memory. But many people, I would say all people at times, have to search their memories for items, for things remembered. Since my memory is so complete, I may have to search a little more than you do, for example. After all," he concluded, "I am 259 years old. I have accumulated a lot of memories over those years. I should tell you, though, that I actually do have a gap in my memory, but it's one I chose to have."

"What do you mean?"

"My organic body terminated because of cancer. I had no wish to recall those final times, so my E-ternal self is based on myself shortly before my final illness. Why would I want to remember the pain, the sickness, the dying inch by inch? It's a decision that I would recommend that you make, should you choose to join us. I do not mean to cause you any pain, but you do not have attractive organic prospects."

I mulled this over. What he said was disquieting though I couldn't pin down the exact reason. I could see the rationale, but I wasn't sure I agreed with it. "So you do not remember dying?" I asked him.

"No E-ternal dies," he stated firmly. "The organic shell may pass, but the E-ternal lives on. The E-ternal self is of necessity a continuation of the person prior to organic termination. After all, if a person dies, he is beyond the reach of E-ternity."

"In eternity, but not in E-ternity," I murmured. I pondered some more then asked, "What about emotions, about feelings? Do you have those?"

"Yes. After all, what are emotions and feelings but responses chemicals and stimuli? I can control my emotions more easily now than I could when I was organic - but I imagine that is due more to age than my being an E-ternal. A person learns a lot in 259 years. And being an E-ternal does tend to give one a different view of things - but that's only to be expected."

"How many E-ternals are there?"

"That is privileged information. We respect and keep the privacy of our clients. We don't release our client list, though some volunteer to be used as references. And, of course, as you know, it eventually becomes evident who is and who is not E-ternal."

"I've read about some of your clients. You have a number of famous artists and authors among them. Have they created any works of art since becoming E-ternals?"

He hesitated again, and finally said, "I don't think that I can reveal that information to you, out of respect to my clients. Of course, once you become E-ternal, I would see no problem about giving you that information, but that doesn't answer your question now."

I thought about what he had said as we sat and regarded one other. Finally he asked again, "So, have I answered your questions?"



I sighed. "I'm not sure. I'm not really sure what the real question is. I guess, to use a meta-physical term, what about the soul? As a Christian, I regard the soul of paramount importance. How can the soul be in an E-ternal body, if it dies with the organic body? Are you Adonijah Caine, or a clever computer program?"

"I assure you that I am Adonijah Caine. If Adonijah Caine had a soul, it's still here with me. I feel, I think, I live. Anyone who knows me, who knew me before I became E-ternal will tell you that I am the same. And you'll find that true about all E-ternals."

"What about Greg Jensen, your original partner - does he notice any difference in you before and after?"

He paused again, then said softly, "Greg is not with us. He chose for reasons of his own not to become E-ternal. I tried to reason with him, but... In any case, Arthur, I am not just a computer, any more than you are just a computer. I am me, to put it inelegantly. Any differences, if there are any, are undetectable. To quote an old science fiction book, 'A difference that makes no difference is no difference.'"

I replied, "I remember reading another old sci-fi book. One of the characters is threatened with having his brain removed and he, naturally, is not in favor of this. He is assured that it can be replaced with an artificial brain so that no one could tell the difference. He insists that he would be able to tell the difference, but they assure him that he would not - he would be programmed not to. And I wonder - I wonder if that is the case with E-ternity."

"You have my assurances. You've read our material. You have met and talked with me. I can offer you no other proof. Your decision is up to you. I am who I am. If anything, I am enhanced - the next step in the evolution of the human species." He stood up and held out his hand. I stood too and we shook hands, and he said, "I hope, Arthur, that I see you again. E-ternity is a decision that no E-ternal has ever regretted."

"Goodbye, Mr. Caine," I said. "Thank you for your time. I will let you know."

# Lost Treasure

*by Jerry Situ*

In the year 3000, the planet Earth is in turmoil. Businesses, cars, planes, and progress have come to a halt. The elderly lived out their remaining years in the deteriorating streets of a once thriving planet. Financial markets, trade, and monetary units have all collapsed back to prehistoric times. The future of the planet is disappearing if not dead.

All this pain and suffering can be traced back to one specific period of history. In the middle of the second millennium, a period in which Humanity was at its best, aliens from a distant galaxy came to Earth for our best and brightest. Having achieved nuclear disarmament and worldwide peace, citizens of Earth had no means to fight off the technologically superior alien abductors. In no more than the boot-up time for Windows2500, every single actuary and the descendants of Tiger Woods were removed from the face of the planet.

At first, business was as usual (aside from the run away golf tournaments); but, everyone knew that chaos was looming. After a while, confusion started to set in the insurance industry. Companies didn't know what premiums to charge. Erring on the side of caution, companies started to charge higher and higher premiums. But, that was the beginning of the end. Insurance companies started to disappear, first the small ones, then the medium ones, and soon afterwards, the large ones. Luckily, the aliens left the economist behind and they were able to discover that the rising premiums were driving consumers away, which made it difficult for insurance companies to stay in business. However, because the economists were still in shock from the loss of their actuary friends, there discover came a little too late.

With the fall of the insurance companies, the fall of the planet shortly ensued. First people stopped driving in fear of an automobile accident since they did not have insurance. Transportation networks of every type broke down. Everyone had to either walk or swim from point A to point B. The additional travel time for workers resulted in less work-time, and consequently, fewer wage. Some had to quite their jobs because their workplace was just too far. With increasing unemployment, the poverty level skyrocketed. And, the shortage of workers made it very difficult for businesses to perform their routine daily tasks. Soon, the only means of survival was theft.

Little did we know that we were just adding fuel to the fire. With increased crime rates and no insurance coverage, people refused to leave their houses and possession to go to work in fear of becoming a victim of crime. As a result, the workforce dropped to almost zero; and, there was not an operating business in sight. It was every man for himself survival of the fittest. It is truly a wonder that mankind has survived 500 years in total anarchy. However, everyone knows the reason for the miracle. The only thing that keeps us going is the hope that one day our beloved actuaries, with their incredible intelligence and ingenuity, will find a way to escape the aliens and return to Earth. Upon their return to Earth, everyone believes that they will be able to restore the thriving paradise that existed before their abduction. Until then, we all pray for their safe return.

## **Preferred Best**

*by Randy Makin*

Jake had enjoyed the last few years as a product development actuary. The last of the term wars had died away, along with most of the reinsurers, who had suffered so heavily at the end. The three remaining ones had gone back to what they humorously called "reasonable" pricing, forcing all parties back up to a 1990's level. All parties had gone back to a two-year pricing cycle, and the leap-frogging was over. Jake had had time to do everything he couldn't do in the fury of the term wars. He could actually study experience. He could slice and dice all of the great material FIRST had accumulated over the years. He could design compensation programs that really reflected how agents were performing. Everyone was happily making money, and selling decent volumes of business.

Until Composite came along, that is. Starting from a moribund debit firm, a group of shrewd insurance experts had bought out the struggling little company, and turned the industry on its head, beginning a year ago. Within weeks, Composite had rocketed to the summit of every possible industry rate chart. And Jake now found his sales slipping between his fingers like sand. Agents began pressuring his president, his marketing officer, anyone who would listen. At first, Jake explained that difference was probably due to the product being sold by salaried officers, not agents. But he just knew there was something more. He lay awake one night, trying to outstare the streetlight just outside his window. A small difference he could explain. But twenty cents! He had never seen anything like it. Twenty cents for twenty years for their best class, at least well into the forties. He had seen the card. It was really printed there, it was really guaranteed for twenty years, and there wasn't even a policy fee to help. Minimum size \$ 500,000. He started to strain his brain to think about what could possibly make that work. What were the qualifications for the Preferred Best class that made it so very good? He tried to recite them, as if for an old test, and drifted off into a terrible night's sleep.

Morning did not find Jake in the best of humor. He was preparing for another day of savage phone calls from the field, demanding that his firm find a solution. His boss would come in and tell him very quietly that they had to find a solution, all the veins standing out on his neck meanwhile, and belying his outward calm. At least there was one saving grace--the agents really couldn't go anywhere else that was better, and Composite didn't use agents. Ow! He squinted at the mirror and tried to avoid scarring his face further with the razor. There had to be a solution. Logic told him that there had to be a solution. He was an actuary, a risk-manager. He had certainly learned enough about solving ill-defined problems to take on this one. He had studied the rate card for some hidden "catch." He had had the state insurance department send him a copy of their policy form. There, on the front, as if to mock him, had been the page showing \$ 200 a year for twenty years for the \$ 1,000,000 policy. He thought he saw a "Jake Doe" on the page. No, "John." He realized that he had been standing in the bathroom for several minutes on the verge of finishing his shave. Another draining day of harangue about Composite. He really could have done something else for a living.

By mid-morning, he had loaded Composite's application off of their meager Internet site. It was laughable. Aside from such absolute essentials as one's name, address, Social Security number,

beneficiary and the requisite question about replacement--nothing. Not a single question about his habits, his family. And it was true what everyone had said: There was not a single test to be done, not a drop of blood, not a drop of urine. For Pete's sake, he could be a stunt race car driver, weighing 300 pounds, both of whose parents had keeled over at 30 from simultaneous heart attacks. No questions on the application and no testing. The only hint on how they could accomplish this incredible feat was what his buddy Mark had told him, "They are convinced that they have perfected the personal history interview." So what did that mean? That was why you had to test, test, test--anyone who wants to can lie through their teeth to the agent, the company and any semi-trained ex-telemarketer. Well, okay, his callers were better than that, but they weren't that good. He looked over at the list of qualifications for preferred best, and they were not unreasonable. But they were unverifiable without testing. Jake stared glumly at the application that had more white space than words. A call came in, jolting him back to the harsh reality of the corporate world. Noel, from their West Coast office. It must be really bad for him to call at 8:00 a.m. PST. Jake gritted his teeth and prepared to hear himself called names he hadn't been called since fraternity days. At last it was over. He assured Noel, in between his finishing parries, that they were doing everything possible to look into it. He hung up the phone, exhausted by the forceful man's powerful anger. Swallowing hard, he went to the canteen for another coffee. When he returned, he found that, instead of his usual doodling, he had actually filled out his name and address on Composite's application. He stared at it, overwhelmed by the simple ingenuity of the thing. "Why not?" he thought. Go ahead and apply for, what, another \$ 500,000? It would be the best \$100 he had ever spent. Let's see how that personal history interview really works. He finished the application in a matter of seconds (no wonder insureds liked it), located an envelope and stamp in the depth of his desk drawer, and then realized that there was no address listed on the application. Odd. After a minute of confusion, Jake went back to the web site, and found that, instead of mailing in the application and waiting for the inevitable phone call, Composite had offices in every major city. You just filled out the application and walked in. Walk-in business! He picked up the list of requirements for Preferred Best. Hard to verify. Jake nodded his head. He would make it.

That afternoon, having easily located the nearest office, Jake seized his application, fairly jumped from his car and plunged through the front door. It was plain and utilitarian, to say the least. Not even a fake plant. A business-like young woman functioned as receptionist. Jake explained that he was applying for insurance, and handed over his application. After quickly perusing the application, "Have you any sort of identification?" Jake handed over his driver's license. "Good. Now, have you ever applied for insurance with us before?" He assured her that he hadn't. She extended a piece of paper for him to read and sign. It was an acknowledgement that the entire personal history interview would be taped and recorded by several cameras. It also acknowledged that he hadn't applied for insurance with Composite before. "You can only apply once?" "Yes," she replied in an off-handed way. So, this was it. Jake signed with a less-than-firm hand and returned the release. "Okay, step into room 4 down to the left."

Jake was never more surprised in his life. The room could have been created in Baroque times, for the ceiling was high, and decorated with a beautiful fresco, surrounded by gilt molding. The walls were of a dark wood, with several prints from the same era framed and hung about on them. The lights were somewhat low, and it was hard to detect exactly what the prints were, but he was sure he had seen them before, perhaps in a museum. But what really astonished Jake more than the rest of this was the table in the middle, which was covered with a sparkling white table cloth. In the

center were a small decoration and an unlit candle. Two chairs faced each other. As he stood in the middle of the room, taking in the opulence of Composite's interviewing room, another woman emerged from the wall (as it seemed) and came forward to introduce herself. A pair of deep blue eyes looked at him from amid a frame of jet-black hair. "Please sit down." Jake dropped into the chair nearest him, transfixed by the beauty of the woman interviewing him. "My name is Joanna." Jake, taken aback by everything that had gone on in the last few minutes, mumbled his name in return. Then he remembered his mission was to find out how Composite did the interview, and determined to trip them up in every way possible. His resolve was set, and he would not fall for any of their tricks.

But Jake was not ready for the next surprise. A waiter appeared, also materializing from the wall, lit the candle and handed each of them a menu. Joanna blithely remarked, "You are welcome to smoke, if you like. There are cigarettes and cigars in the humidor by that wall," indicating with her hand. What a stupid.... Did they seriously believe anyone would fall for that? "No thanks, I don't smoke," and he meant it. He opened the menu and began seriously perusing it. The appetizers looked good. Wait. "Who's paying for this?" "It's taken care of." Now he really didn't know how they did it. He returned to the business at hand, having now upped the ante to having an early dinner at Composite's expense. Then a thought surged into his mind. The cameras! They are probably watching everything! He tore his eyes away from the list of wines and riveted them on the main courses. "Would you like a glass of wine before dinner?" "No thanks, I don't drink." He lied, but it flowed off his tongue so smoothly. This was so easy. To prove what a good risk he was, when the waiter returned, and his lovely companion had turned in her order, he went for the salmon with vegetables, eschewing the blue cheese dressing he usually favored in exchange for a light vinaigrette.

Then the questions started, first inquiring about any dangerous sports. He was on his guard. No, he didn't do anything more dangerous than pick-up basketball on Wednesday nights. The next question, on the other hand, was not what he was braced for. "What city are you from?" He told her. "What was your favorite childhood memory?" He wanted to tell the woman that these were irrelevant questions, but her deep blue eyes continued to search his eyes, in fact, his whole face, and he knew that she thought the question important. So he babbled on for a while about the boy next-door and some of their adventures for several minutes, until he had quite run out of things to say. "Can I ask a question about your family?" Oh, here was family history at last. I knew they had to ask it sometime. "Yes." "What sort of work did your father do?" Jake was let down again. "He was an architect." "What firm was he with?" He named it. "Was it commercial or residential?" By this time the waiter had carefully placed their meal about on the table and retired past, or through, one of the walls. How did he do that? "Oh, commercial." "Did you ever see his blueprints?" Jake looked at her in disbelief, but her face was totally serious. "Yes." She had him go on to describe them. Jake sawed at his salmon methodically while he did so. The questions went on and on and on, but none were more meaningful to Jake than the first question she asked about sports. At one point she asked if she could ask about his driving habits, and he became hopeful again. "What kind of car do you drive?" Another dumb question. Where did he go to college? Had he been in a fraternity? Yes. No, he had not drunk liquor while in the fraternity. What was the most humorous incident from that time? Jake laughed. Surely it was the time they actually wrapped some of the seniors in some leftover wallpaper. Had he ever visited Mexico? What was his favorite Italian restaurant in town? What was his favorite baseball team? What was

his favorite prime time show? The woman was a wonderful conversationalist, and Jake found it easy to answer all of these ridiculous questions, as if he were on a date with her. The time flowed by into actual dinnertime, and then the woman announced quietly that the interview was over. She extended a piece of paper to him. On it were a telephone number and another series of numbers. "You will receive your policy by this time tomorrow. If you have any questions on the rating, call this 800 number and type in your ID," pointing them out to him. Jake found himself on the street, almost feeling like he had come out of a strange dream. But no, he could still taste the salmon on his breath, and there was the spot on his shirt where he had slobbered some of the dill sauce. As he drove home, he racked his brains, but could remember none of the questions that were asked him, save the first one.

When he came home from work the next day, after being harassed all day by angry sales staff, the proffered policy was waiting for him. He could hardly rip it from its protective envelope quickly enough. He looked at the premium on the front page. It was anything but \$ 100. "Standard Plus." So, he wasn't Preferred Best, or even Preferred. How could that be? He fell over onto the sofa and glared at the offer. Of course, there was no way that he could accept it. He hadn't done or said anything to deserve less than Preferred Best. He sat on the sofa seething until he had worked himself up into a fair rage over the unfairness of it all. Those cheats! He rushed to the phone and dialed the 800-number, then waited for the beep and firmly pressed in the code assigned to him.

Now the worst of the surprises hit him. The recording read off his name, and then began telling him all about himself. He was such and such a height, and weighed this amount. Well, that was right. How did they do that? Was the chair he was sitting in a dummy scale? Then it gave his cholesterol readings. The phone slipped from Jake's fingers, and he had to claw it back to his ear. Those readings! Jake hadn't been to a doctor in years, but had had his blood tested a couple of weeks ago at the neighborhood pharmacy, and the reading was almost identical. Two drinks a week on Fridays or Saturdays, but not both, three every once in a while, but he never drank while driving. Jake nodded, as the all-seeing machine recited his secret life back to him. He occasionally ran red lights, and even went through a stop sign within the past three months. Jake's mouth was dry and his tongue stuck to the roof of his mouth. The litany went on for about ten minutes, thanked him for his time and bid him, "Goodbye." He hung up the phone, dazed. Then he picked up his checkbook, and began writing.

## Death in Chaco Canyon

*by Jerry Levy*

Matt Kadoby looked out of his home office window at the shadows of the Sandia Mountains. The late afternoon sun created shadows that changed with the seasons and seemed to reflect his mood. "Maybe it's like a Rorschach," he said to Lola, who looked back at him with those engaging brown eyes that seemed feminine and feral at the same time. Those beautiful eyes and wagging tail got him up most mornings for an early walk in a nearby arroyo to chase rabbits and sniff the remains of coyote visits. In the rainy season they stuck to the desert trails. It was dangerous to walk in an arroyo when a flash flood could develop in minutes. Every year there were reports of fatalities that the locals attributed to alcohol or stupidity.

Matt retired after 30 years as an actuary advising large companies on the design and funding of their retirement programs. He left Chicago and settled in Placitas, New Mexico to escape the punishing winters and to pursue his new hobby of ceramic pottery. The feel of wet clay is quite seductive, particularly for someone whose occupation never produced anything tangible. Matt is particularly drawn to raku glazes of coppery blue, and a white glaze that cracks when fired, creating a timeless look. There is a certain amount of science to prepare raku, but the final result has a random quality that is an appealing counterpoint to his analytical disposition. He tells friends that it has something to do with raku being more a state of mind than a technique, but even Matt doesn't quite understand why he is so attracted to this ancient art.

Staring out the window, he idly tossed his Big Al dice. As a retirement gift, his colleagues had a large pair of red dice engraved with "Big" on one die and "Al" on the other in honor of Albert Einstein, one of Matt's personal heroes. He often quoted Einstein as saying, "God doesn't play dice," but everyone knew that Matt liked to shoot craps, liked even more to expound on the odds of various bets and often invoked the almighty for help before making a throw. Unfortunately, his luck was statistically worse than the odds might otherwise predict. "Not to worry," Matt would say, "it's just a hobby."

The numbers on the dice were of no interest today and even the offer of a friendly paw did nothing to improve Matt's mood. The too-calm voice on the answering machine was still on replay in his mind. Mike Javros had died in Chaco Canyon where he had gone on an impromptu camping trip by himself. At the time, Javros had said it was to hike in the mountains and photograph the ruins, but Matt had thought he was being evasive.

Dr. Javros was one of Matt's first friends after coming to New Mexico. They met at the university where Matt agreed to teach a graduate level course on retirement plans. Javros audited a lecture hoping to pick up a few pointers. He stayed after to ask Matt if he thought it was smart to buy an annuity once you lived to a certain age. After a late dinner and several margaritas, they decided to live forever or until the Cubs won the World Series-whichever came first. The waiter, a sardonic Chicago transplant, commented that neither was coming too soon and she was betting on forever.

Javros' specialty was number theory and the two mathematicians found they had a lot in common including long hours of research to develop a winning strategy at craps. Neither was the least bit

successful, but enthusiastically agreed that the research had to be carried on. They dubbed this the Monte Carlo project after a statistical method that requires a large number of random trials to determine the odds of having a success. Rolling dice, particularly with their luck, certainly seemed to be random enough. The large number part was strictly a matter of time and money. Now if they could just improve their odds of being successful, the Monte Carlo project could be transported to its namesake for some practical applications.

Matt dropped the Big Al dice. "Snake eyes," he said to Lola and thought of the rattlesnake that Lola had disturbed that morning in the arroyo. Shaking off the bad feeling, he remembered that the last time he saw Javros, they talked about his Erdős number of two. This meant Javros had co-authored a paper with a colleague who had an Erdős number of one by virtue of having personally collaborated with the eccentric mathematician on a paper. Matt had hoped to publish a paper with Javros since that would give him an Erdős number of three and he wanted the bragging rights that went along with it. They half-heartedly thought that the Monte Carlo project might yield some insight into a paper on game theory, but others suspected it was a not-so-subtle excuse to visit the many casinos run by Native Americans. "We have to give something back," Javros would say. In fact, they often gave back something in the name of mathematics.

Matt looked up from his desk and glanced at the mountain. The shadows elongated in the setting sun, reminding him of the stone walls that were reconstructed in Chaco Canyon, the remnants of a civilization that had thrived about 900 years ago. He was there a few months ago with Javros and the ruins had been mesmerizing. Matt made several sketches hoping to get some inspiration for raku designs. Javros kept cursing that he had forgotten his camera and vowed to return.

"Well, at least I remembered other essential provisions," he told Matt and that night they toasted the ancients' ingenuity. The appreciation continued for about an hour after sunset and eventually included hoot owls and millipedes, at which point they decided it was best to call it a night while they could still find the tent.

The next morning they ate leftover green chili stew that Javros had made in one pot the day before. "This will cure your hangover, arthritis and bad plumbing," he said. They broke camp and took a two-hour hike into the mountains. Walking around this peaceful setting even had a calming effect on Lola who no longer had to be on a leash to prevent her from chasing rabbits.

As they walked back, Javros became very animated and talked about his project to prove there was a pattern to prime numbers. For hundreds of years, mathematicians have searched for whole numbers that have a remainder when divided by any other whole number greater than one. The first prime number is two because dividing it by a larger number will always result in a fraction like  $\frac{2}{3}$ ,  $\frac{2}{4}$  and so on. Likewise, three is a prime number: dividing by a larger number will leave a fraction ( $\frac{3}{4}$ ,  $\frac{3}{5}$ , etc.) and it is not evenly divisible by two (three divided by two leaves a  $\frac{1}{2}$ ). The next number, four, is not prime, because two divides it evenly with nothing left over. Continuing this logic will show that 5, 7, 11, 13, 17, 19, 23 and 29 are all prime numbers. There is no apparent pattern to these numbers, so they are thought to occur at random.



"Erdős was very fond of prime numbers," Javros had said. "He had several elegant proofs about various properties of prime numbers, and I want to add my own." Matt kidded Javros that if he did find a pattern, he would have to spell his name with an "ö."

The phone rang and Matt was jarred from this memory by Pearl D'Allesluze. "I can't believe he's gone, Matt." Pearl, with the hazel eyes, olive skin and realistic figure was Javros' best friend and confidante. Her day job was counseling adolescent girls. The surge in population from the many companies that wanted to settle in Albuquerque's Silicon Valley brought the usual assortment of problems along with it. Pearl was very critical of the increasingly toxic culture that caused these girls to be unhappy about their bodies and to diet or worse. In the evening, Pearl took courses in astronomy-her dream job was to work in a New Mexico observatory. She fantasized about finding a new star and naming it Ophelia after a book by Mary Pipher who wrote about the difficulties facing adolescent girls in America.

"I know," Matt said. "I've been sitting at my desk all morning and most of the afternoon thinking about him. How did it happen?"

"I don't have any details yet, we'll have to wait for the autopsy."

"Is there anything I can do for you?"

"If you wouldn't mind, I have to clear out his office and could use some moral support. Can you pick me up tomorrow morning around ten?"

"I'll be there. Try to get some sleep and call me if you need anything or just want to talk again."

"Thanks. I'm going to wear an old pair of his sweats and try and remember that lop-sided grin. Good night Matt."

Matt took Lola for her evening walk, cleaned up the kitchen and went to bed with the latest copy of *The Actuary*. He couldn't concentrate on the discussion of social security proposals and his mind wandered to the last time he had spoken with Javros. They had bantered back and forth about the differences between pure and applied mathematics. Like Erdős, who thought all non-mathematicians were trivial beings, Javros could talk for hours about number theory. Matt did notice, however, that Javros managed to curb his attitude when around Pearl. A good day for Javros was one spent in search of the elusive pattern to prime numbers. Never mind that it may not be all that useful. The thrill was in the pursuit. Matt on the other hand had little use for theory, except as it would help solve an actual problem.

"Actuaries are solvers of practical problems," he had told Javros. "We pride ourselves on the ability to analyze data and to create models that make educated guesses about future events."

"Doesn't seem to work in the casinos all that well. Maybe you should switch to economics or weather forecasting."

"Maybe you should look for patterns in the state lottery, it has a bigger pay off than screwing around with prime numbers."

They both laughed. "Erdős would definitely not approve. He thought anyone who gave up serious math was dead."

Now Javros really was dead, Matt thought, and would never finish his project. Why had he gone to Chaco Canyon alone? Matt put *The Actuary* on the nightstand and switched off the light but left the radio on. Grace Slick of Jefferson Airplane was singing an oldie about logic and proportion falling dead. He looked out the bedroom window at the Sandia Mountains, back lit by a full moon. Lola curled up next to the bed and closed her eyes. Matt thought how different life had been in Chicago—no mountains, no hills, no mesas, and no arroyos. Lake Michigan was about the only interesting focal point unless you liked to look at tall buildings. The Chicago river had some appeal, but Matt often referred to it as a canal, particularly when they dyed it green for St. Patrick's day, a fact that caused his friend to laugh at the artificiality of life Matt took for granted and Javros thought was absurd. Yet, Javros was consumed by his project lately and seemed unmindful of the New Mexico terrain.

"New Mexico is a beautiful state."

"Numbers are beautiful."

"No, Pearl is beautiful, numbers are a tool. Why do you think numbers can have beauty?"

Erdős said it best, Matt, 'It's like asking why is Beethoven's Ninth Symphony beautiful. If you don't see why, someone can't tell you. I know numbers are beautiful. If they aren't beautiful, nothing is.'"

Lola raised her head and listened for coyotes. Satisfied that all was secure, she looked up at Matt as if to say, "I'm on watch." Matt got into his favorite sleep position, one pillow under the left arm and chest with the right side of his head flat on the sheet. Sleep came quickly as it usually did in the high, dry altitude. He dreamed it was night in Chaco Canyon. So dark that he needed a flashlight to find his way back from the latrine. The stars filled the sky, and Javros woke him to look at patterns in the sky. When Matt looked up he could not see anything in the random position of the stars and felt angry at being disturbed.

The next morning Lola reminded him that having a dog meant certain responsibilities, among them the pursuit of an appropriate place to mark her territory. "Ok, Lola, keep your collar on, I'm getting ready." Matt got out of bed and stretched, then put on a pair of jeans and a very faded T-shirt with a picture of stacked, brightly colored sombreros from a restaurant in Chicago. The restaurant had closed suddenly several years ago, taking Matt by surprise. It was a favorite lunch place for food he described as yuppie Southwest. The shirt seemed to fit New Mexico, but it got a lot of stares. He laced up Iowa hiking boots, his best investment prior to leaving Chicago. The sales staff had done an exceptional job of fitting him and explaining the proper method of lacing and to always wear thin wool socks when hiking. Those boots had made a world of difference when hiking a 100 miles from nowhere in Chaco Canyon.

"In New Mexico," Javros had said, "To enjoy life, you need good food, good beer, good boots and a daily bowel movement." He usually added "and a lively young woman," but never when Pearl was around. She would call him a macho so-and-so and punch his arm with a strong right cross that dad, USAF-retired, had taught her. On the way out the door he grabbed a leather jacket, the high today would probably be around 40 degrees. Matt had expected December in New Mexico to be warmer and was surprised to find that the temperature dropped well below freezing at night.

"Come on, Lola, let's go see Pearl." The dog scampered into the jeep and settled in the back seat behind Matt. There she could keep a lookout and alert Matt with a paw or low growl if she sensed danger, or more often, smelled fast food which was abundant in Bernalillo, where Pearl lived to be near her clients. She was waiting outside when Matt drove up.

Pearl was usually fashionably dressed, but today she wore a black warm-up suit and a sturdy pair of hiking shoes. Matt noticed she had cut her hair and a pair of brownish-green earrings hung just below the ear. They looked like small bits of broken pottery and Matt remembered that he needed more clay. Pearl rarely wore make-up but it wasn't immediately obvious, at least to most men. She had a vigorous look that often seemed lustrous, although it was dimmed several degrees and Matt guessed that she hadn't slept well. Despite being tired, Pearl's eyes still had a sparkle, accentuated by the dangling earrings. Pearl admitted to being in her late 40's. The New Mexico sun had left its imprint on her face, but the lines created an attractive pattern reflecting an inner resolve and independence. Matt thought she had one of the most interesting faces he had ever seen. A pair of work gloves stuck out of a pocket and she was sitting on several inches of collapsed boxes.

Matt got out of the jeep and gave her a brief hug. "New haircut?"

"I think it's too short." Matt's jacket was unzipped and Pearl raised an eyebrow. "Uh, Matt, I don't want to seem ungrateful, but don't you own any other T-shirts?"

"I like this one-don't you think it gives me a certain stylish look?"

"Yes I do, early Mariachi band. Well, let's get this over with." Matt opened the back of the jeep and they loaded the boxes. Pearl blew a kiss at Lola, "How's my brown-eyed girl today?"

Matt backed out of the driveway and they headed for Albuquerque. Lola whined when they passed a Taco Bell. "No tacos today, Lolacita, we've got business to take care of," Matt said. It was a short distance to the interstate and they headed south on I-25, which had more rush hour traffic than Matt would have guessed before coming to New Mexico. Except for the Sandia Mountains in the background, the drive reminded him of the Kennedy Expressway in Chicago, lots of billboards and the usual assortment of motorists looking angry, frustrated or blankly stoic.

Pearl stared out the window and noticed an ad for a local restaurant that featured a model in a tight T-shirt. "Hoot Owl Restaurant," she said. "Home of the Big Hoot Burger and big hooter waitresses. Everywhere young girls look, they see unrealistic body proportions and negative stereotypes. It's a real problem for girls who are just losing their baby fat and entering those awful pre-teen years. The damage to their confidence can be devastating and last through high school. I see several girls a month who are dieting at age ten. What kind of society puts that pressure on children?"

Matt listened but didn't say much. He felt ill equipped to comment, never having raised any kids, but he was always interested in hearing Pearl's insights. It seemed like growing up today was considerably more complicated than he remembered as a kid in the 50's and 60's.

Matt pulled into the faculty lot as Pearl hung a parking permit from the rearview mirror. Together they unloaded the boxes and entered the building after Matt cautioned Lola to be a good girl and not to gnaw on the leather steering wheel cover. Pearl led them to Javros' office on the second floor and unlocked the door. A large color poster of Albert Einstein looked at them with an expression that seemed to say, "What have you done today that is remarkable?" Matt had given Javros the poster with an inscription, "Don't play dice! - Big Al."

There were piles of paper everywhere. A few cork bulletin boards were haphazardly hung on walls that were stained from cigar smoke. They sagged under the weight of papers and letters that Javros had pinned on top of each other so that it was impossible to read most of them. His computer was on the corner of a desk that was surprisingly free of clutter, although the monitor was barely visible behind Post-it notes stuck all around the perimeter. A copy of a biography about Paul Erdős, "The Man Who Loved Only Numbers," was face down on the desk. Pearl picked up the book and read the underlined part aloud, "Property is a nuisance! I don't think Erdős would have approved of this office. For a man searching to find order in a random world of numbers, Mike did a hell of a good job in creating disorder in this world. Well, let's start boxing it up. It will take a while to sort through all this."

They worked for a couple hours, packing books and sorting papers into categories of correspondence, reference material, class work and "to be determined." One box was reserved for his work on prime numbers. Pearl closed the top of their last box and looked at Matt with a "my back hurts" expression. "Let's put his personal stuff and the computer in the jeep and have the university ship the rest."

They found a janitor who helped them load a dolly and take it down the service elevator to a shipping dock. Matt brought the jeep around and they were on their way in a matter of minutes. Matt gripped the leather steering wheel cover and then let go, rubbing his thumbs over his fingertips. "I see Lola had a morning snack. Well, I'm hungry myself. Pearl, how about some lunch at Howdy-Rudy's?"

"Now that you mention it, I didn't have breakfast and I am a little hungry. Sounds good, let's stop. How about you, Lola?" The dog perked her ears and licked Pearl's chin. Lola rarely turned down food unless it was the remains of something Matt considered cooking, and most people and dogs thought of otherwise.

They stopped for lunch and had trout and whole potatoes, both barbecued. Matt ordered a carryout hamburger for Lola. As they sat down to eat, Pearl shook her head in a disapproving way. "Did you notice all the tattoos on those young girls in front of us. I know it's a fashion statement, and many people our age have them, but I look at a young girl and wonder if she realizes how soon her tastes and opinions will change. I have a similar opinion of body piercing, but at least those holes can heal

over, or at least I think they can. I find a lot of destructive and threatening themes in these fashions and don't get me started on music."

"We dressed pretty strange when I was on campus and listened to hard rock that had the same effect on our parents. I guess every generation has to do something to distance itself from authority."

"Maybe, but there's a world of difference between the lyrics of your generation and the misogyny in a lot of rap songs."

They ate almost everything and took a small doggy bag with leftovers. Back in the jeep, Pearl fed Lola the burger and some potato. Energized by the hearty lunch, Matt drove Pearl home and helped unload the boxes. They put the computer in the sunroom off the kitchen and Matt connected the cables while Pearl unpacked some of the books and Lola explored the house. "Let's see if the computer gods are smiling," Matt said as he pushed the power button.

The desktop was soon visible along with several icons. Matt clicked on one called, Primes and a file named Find-it was displayed. He clicked on the file and the program asked for a password. Matt typed in Erdos, but that didn't work. He tried prime, Pearl and several other words, but they all failed. "We may never know if Javros was making progress unless we can open his files. Any idea what Mike might have used for a password, Pearl?"

"Try e-r-d-o-s."

"That was my first try."

"How about b-e-e-r."

Matt typed it in. "Doesn't work. Any particular brand?"

"Anything on sale. Try sluze as in D'Allesluze and no laughing."

"When did he call you that? Doesn't work."

"When he felt amorous and it didn't work on me either."

For the next hour they played word association, trying to find the password to open the file. Rubbing his hands, Matt finally said, "My fingers are getting tired, I think we should call it quits for today. Come on Lola, let's go make dinner." Pearl was sure it was her imagination but Lola seemed to look at her as if to ask for help. None came, so the dog got up and walked over to Pearl to say goodbye with a friendly wag of the tail.

"Tomorrow's New Year's Eve, Matt. The three of us, four counting Lola, were supposed to get together for dinner and fireworks. Do you still feel like keeping me company, I'd rather not be alone."

"Of course, what time? Should I bring my date?"

"Around 7:00 or so is fine, and yes, I love Lola, she's always welcome."

On the drive home Matt switched on the radio to the oldies station. Grace Slick was singing that same song, which is loosely based on Alice in Wonderland. "Hear that Lola, be careful when you chase rabbits." Grace sang about the hookah-smoking caterpillar and Matt thought of Javros waving a cigar in his hand as he talked about proving his prime number theory.

"Matt, I know I am close to finding a pattern. It will put me in the big leagues. I might be able to go on the lecture circuit for a while and drink imported beer."

"You only like domestic and I thought you once said lectures were for has-beens and consultants."

"This is true, present company excluded, maybe I can write a book, Pursuit of the Prime."

"Most people will think you're talking about steak joints."

Matt was lost in this memory and almost missed the exit to Placitas. He checked the mirror and turned off sharply. Now Grace was singing about knights talking backwards. "You think he'd do that, Lola?" Matt made a mental note to ask Pearl to try combinations of words written backwards.

His house seemed emptier than usual and Matt turned on the TV for background noise. Except for old movies and sports, Matt considered most TV shows to be mindless, a wasteland of sexual innuendo and sophomoric humor with little substance. He opened the TV guide and his eye was drawn to the prime time listings. The word prime leaped out at him and he thought of a conversation with Javros about the influence of television.

"If Moses had lived in our times, he would have handed out television sets instead of frogs and mice."

"I think that was frogs and lice. I didn't know you were religious."

"I'm not, I saw the movie on TV when I was a kid."

"And look how you turned out. I thought your hero disapproved of TV."

"Yes, Erdős thought television was something the Russians invented to destroy American education."

"He must have seen Gilligan's Island."

"That wasn't so bad, one of the characters was a professor."

The telephone rang and Matt politely told the person who was obviously reading a script that he did not need another credit card, long distance carrier, home repair, investment advice or anything else

that he would trust to a complete stranger on the phone. "Javros' bad attitude seems to have rubbed off on me, Lola. I used to at least hear them out before hanging up."

Matt made a quick dinner that required a can opener, a microwave and very little cleanup. Lola was polite and ate her share, but if dogs could talk, it's likely she would have asked for something off the menu rather than the evening special. Man and dog retired early-both to dream about chasing rabbits.

The next morning Lola allowed Matt to sleep in and it was 7:00 before she licked his face. "I know, I know, so many rabbits and so little time. Ok, I'm getting up." Matt poured a cup of coffee and let the first sip trickle down his throat. The Jefferson Airplane song was still with him and he thought of the ending lyric, feed your head. That's how Javros felt about coffee. He wouldn't take an aspirin, but coffee he consumed by the quart.

"It's an occupational hazard. All the great mathematicians drank coffee."

"I assume that included Erdős."

"Especially Erdős. He said a mathematician is a machine for turning coffee into theorems."

"Theorems, Lola. That's what Javros lived for. Let's go check out the arroyo and don't step in any coyote theorems." Matt laced up his boots and they set off for a hike in the cool morning.

"Tomorrow is January 1, 2001, the real millennium, Lola. Want to celebrate and watch fireworks with Pearl tonight?" Lola was not interested in the subtleties of the calendar or fireworks and strained at her leash. There were fresh scents to investigate and rabbits to chase. Matt chased rabbits, too, only his were imaginary and impossible to catch.

Matt spent the day firing a small-necked pot. He had purchased a second-hand raku kiln from a local artisan who was relocating and didn't want to pay the moving charge. Raku kilns are used outdoors, so Matt positioned it on the corner of a fenced-in patio.

Once the pot was red-hot, he put on special gloves as protection against the heat, which could exceed 1800 degrees. Using a long pair of tongs, Matt transferred the pot to a smaller container, added some sawdust and put the lid on. The sawdust caught fire and created a lot of smoke after most of the oxygen was depleted. As the glaze dried, it cracked and allowed the smoke to seep in giving it a weathered look. At least that's what is supposed to happen. Timing is critical. If you removed it too soon all you get is a pot covered with black soot. Leave it in too long and you get pieces. But with experience, removing the pot at exactly the right time will produce stunning colors and effects. You never knew quite what to expect. The combination of intense heat, smoke and depleted atmosphere allows "accidents" to happen. This is not a controlled process, instead spontaneity flourishes. The unpredictable results are what fascinated Matt and kept him experimenting with different glazes.

He checked Lola who was tied securely to a tree well away from the heat. Matt put the gloves back on and took the pot out of the container with the tongs, placing it in a pail of cool water to seal the

color. A geyser of hot water and steam shot up and he jumped backwards. "Still hotter'n hell, Lola. When it cools down we'll take a look."

Several hours later, Matt took the pot out of the pail and sat it on a rack to dry. It was lopsided like Javros' grin, Matt thought, and the glaze was bare in parts. Nonetheless, Matt considered this one of his better results. Lola sniffed the pot and walked away. Either she did not find any scent of interest or was making a critical statement. "Maybe some flowers will help. Well, let's get cleaned up."

Matt took a quick shower, grabbed the pot and whistled for Lola who was staring out the window at a lizard on the patio. "Don't even think about it. We're having dinner at Pearl's house." On the drive to Bernalillo, Matt made a stop and came back to the jeep with a small bouquet.

Pearl opened the door and Matt handed her the pot. "Thanks, the flowers are pretty, but that is the ugliest pot I've ever seen."

"That's what you said last time."

"I hadn't seen this one yet."

They ate dinner and talked about Javros and passwords. Pearl had tried spelling words backward to no avail. She served dessert and coffee in the sunroom and they tried more combinations of words and numbers. Nothing worked.

At 9:00, they took turns looking through Pearl's telescope at the fireworks in Albuquerque. "This is one powerful instrument," Matt said.

"Some day I'll work with a radio telescope and find my star."

"Speaking of finding things, have you heard where they found Javros?"

"The coroner's office pieced together what they think happened. You know that the entrance to Chaco Canyon is 16 miles of dirt road. About three miles in, there's an arroyo, the Escavada Wash, that's paved with cement where it crosses the road.

"I remember that crossing. There's a sign that says not to cross over if there's any running water in the wash. I guess it can be deceiving and there's no telling when a flash flood can come through in the rainy season."

"They think Mike got out of his SUV to check the water level. It was found with the engine running and the door wide open. When he was walking around in the water he must have slipped, it's very icy this time of year, and hit his head. Whatever happened, he was dead when the rangers found him." It wasn't alcohol or stupidity, Matt thought, just a random, senseless accident.

They were quiet for a while and Pearl switched on the TV so they could watch the countdown to the New Year. "Why do you think he went there by himself?" Matt asked.



"I've been asking myself the same question. A few days before leaving, Mike was in a jubilant mood. His work must have been going quite well. He wouldn't say anything specific, only that he had to go to Chaco to thank the ancients for inspiration and to cleanse his spirit."

"That's what he told me. Then, grinning from ear to ear, he made a crack about people who look for mathematical methods to produce random numbers being in a state of sin."

"I know that one-that's a quote from John von Neumann."

"I didn't know you read up on famous mathematicians."

"Not often, but von Neumann, like Erdős, was born in Budapest and Mike had a few of his books on game theory. He said it was research for the Monte Carlo Project. I wonder if von Neumann would have approved of his theories being used to win at craps."

"I think von Neumann was a realist about using mathematics in every day life. As I recall, he said something to the effect that mathematics is simple, it's life that is complicated. Besides, we rarely won. Have you read any other books about mathematics?"

"A few about Erdős, of course, and Matt read some of mine."

"Anything in particular?"

"I made him read Reviving Ophelia since that's the one that got me started working with adolescent girls."

"And that's what you want to name your star." Matt glanced at the computer. "You don't think Javros was that sentimental do you?"

"Not usually, but it's worth a try."

Matt sat down in front of the computer, clicked on the Primes directory and then the Find-it file. When the prompt for password came up, he typed in O-p-h-e-l-i-a. It didn't work. "Javros was not big on formalities, maybe he used all lower case letters." He reentered the letters, all in lower case. The program opened and they stared at the screen with open mouths, then each other, amazed and exhilarated that they had actually guessed Javros' password.

"Now what do we do, Matt?"

"The program is still loading, it must be huge." As they waited for the program, they turned to look at the TV. It was ten minutes to midnight. The local station was doing the obligatory sweep of trendy bars and restaurants. Boisterous patrons shouted and sang in the background, hopeful that the start of 2001 would prove to be an epic journey as promised by the Stanley Kubrick film. "It's finally loaded."

"Anything look familiar?"

"This column has prime numbers, see the 2, 3, 5, 7 and so on. Other than that, I haven't a clue."

"What's that button icon say?"

"It says quite simply, "print" and so we shall." Matt clicked on the icon and the printer came to life. "The printer is inching along, this will take a few minutes, looks like the graphic is very dense." The giant clock in the TV studio showed five minutes to 12:00 as the hosts discussed resolutions they had rehearsed before the show and would break the next day.

When the page fell in the tray, Matt picked it up. "This pattern looks familiar, but I can't make it out. What do you think it is?"

Pearl took the page. "Matt, this is a map!"

"It looks like an inkblot for a Rorschach test."

"Not an ordinary map, a map of the stars. Surely you recognize an image of the Milky Way galaxy. Why would Javros store that image in the program?"

Matt looked at the page, then the computer screen. Moving the mouse, he clicked on a few of the cells to look at the formulas. Pearl noticed his jaw muscles tighten and his face lost color. "It's not stored there, the program uses prime numbers to create the map."

Pearl blinked as she thought about Matt's statement. "Why that's marvelous. Javros actually found a pattern!" Then she caught herself and became somber. "Why didn't he say anything and why did he go off to Chaco Canyon?"

"We'll never know. Maybe he was humbled and a little frightened by what he accomplished. You know, Pearl, he did more than find a pattern." Matt gazed out the window at the dark mass of the Sandia Mountains and at the stars above the crest. "He proved Einstein was right. God didn't play dice with the universe."

In the silence they heard the countdown, "...3, 2, 1, Happy New Year!"

## **Proof**

*by Jerry Tuttle*

Economists named the first half decade of the new millennium "The Flood Years", referring to the Biblical story of Noah and the flood. Noah took two of each animal aboard his ark, and all the rest died in the flood. The early 2000's were flood years for insurance companies: a period of intense merger and acquisition in the insurance industry, culminating in only two surviving insurance animals. By 2005 the brokers, life insurers and property-casualty insurers put aside their differences and combined forces into two giant competing insurance organizations. Most of the organizations supporting the insurance industry - consultants, rating and statistical organizations, and so on - either were bought up or quietly died. The two remaining organizations handled all possible insurance needs with immense cost efficiencies. Finally, the Federal government warned that this is where the merger activity would stop; it would allow these two competing organizations, but it would not permit a final merger into a single monopolistic organization.

"Actuarial Unemployment Reaches 65%!" screamed the headline of the Society newsletter. By 2005 the CAS and SOA had also merged, not due to members' demand, but rather because the two mega-employers had become multi-line and balked at supporting two actuarial societies. With the massive downsizing of employees of the new insurance organizations, the new single actuarial society spent much of its time calculating and forecasting the new actuarial unemployment index.

The majority of Society educational efforts were about non-traditional actuarial careers. Thousands of actuaries clamored to get into fields which had previously been ignored by actuaries - sports bookmaking and airline pricing were two popular ones - anywhere where actuaries could use their actuarial skills to forecast the financial consequences of future contingent events.

My name is Andrea Morgan, and I am one of those 65% unemployed actuaries. I had an idea for a non-traditional application of my actuarial skills. But I knew I would need a partner. I searched my e-mail directory of colleagues and found the one person who had the skills, the personality and the deviousness I needed: Don Burnett.

I invited Don to have a coffee at The Mall at Short Hills and to ponder our future careers. Don is a computer expert in both hardware and software, who has an odd sense of humor. Don is the sort of person who once secretly hooked up a digital camera aimed at the company president's office waste paper basket, and then broadcast the results in real time over the company Intranet. He and I were among the unemployed, both divorced and in our late forties, and our careers had overlapped at several firms over the years. We were people-watching at the mall as we sipped our over-priced coffees.

The Mall at Short Hills (TMASH), in Short Hills, New Jersey, is an upscale mall; even its name shouts that it is upper-class. It has stores like Nordstrom's and Nieman Marcus. This is a mall you might go to if you were in the market for a fur coat. The last time I bought something here, I bought a gift certificate for a friend's wedding. I can't remember when I last bought something here for myself. A large portion of the people walking around are tanned and toned, and even in casual

clothes they are expensively dressed. Don and I looked out of place here among the beautiful people with their Gucci shopping bags, but we didn't seem to mind.

"Don, I have an idea for a business we could start that would combine your computer skills with my actuarial skills. I think we can make some decent money. Unfortunately, I'm not sure it is entirely legal."

Don perked up. He was clearly interested.

"This is an expensive mall where people buy expensive things," I began as I looked around at the stores. "If we could predict that a particular person was going to buy something today, I think that is useful information that a store manager might pay us for. Of course, I am only in the early stages of thinking about this."

Don was silent for a long time as he thought about this.

An attractive 30-year old woman walked by and Don watched her. "Did you see that woman?" Don asked me. "Suppose I had a way of knowing that she was married and her husband's birthday was coming up. With the right technology, I could find that out. Then would you be able to actuarially forecast what she might buy her husband?" he asked me.

Don had taken the beginning of my idea much further than I thought was possible. I didn't think I could forecast what someone might buy as a birthday present for her husband; the possibilities were limitless. But I was intrigued that Don thought he could acquire some basic facts about a random shopper. I asked him how he proposed to do that.

"Easy," he replied with a twinkle in his eye. "Suppose I had a scanning device at each mall entrance. I scan each person's wallet for their credit cards. I download the name and number off the credit card into a database. I match the name against another database of census information of marriage and birthday data, and I'm done. Or QED, as you actuaries like to say."

"Close your mouth, Andrea," Don said. I was shocked that such a thing was so easy. "In fact, I have a prototype of such a system at my front door now."

"Go on," I said.

"I really hate strangers who ring my doorbell, especially during dinner," Don explained, "so I installed a scanner on my front door. As soon as someone steps on my doormat, I scan his credit cards and display his name on my computer. If it's someone I don't already know, I'll assume it's someone asking for contributions and I'll just yell out the window, 'No thanks.' Of course the system isn't perfect - for some reason it didn't identify the girls selling Girl Scout cookies."

I was very impressed! "How legal do you think this is, Don?" I asked.

"Actually I did ask some lawyer friends about it. The lawyers were not in complete agreement. The laws have not caught up to technology. Although this sounds like it ought to be invasion of

privacy, it isn't. Plus the scanning is not physically harmful, and it's not like I'm taking someone's credit card information and selling it to a mailing list company."

My mind raced with the possibilities Don suggested.

"Suppose I was only interested in women who work and who earn salaries above \$150,000," I continued. "Suppose I could construct a mathematical model that will predict whether such a woman was likely to buy something today. Could you identify those women in the mall from scanning and matching them against the right databases?" I asked.

"Yes I could," Don replied. "I have a friend Paul at the Census Bureau who can get me Census and income tax data. I could also find out where someone worked. But every woman in this mall today is probably going to buy something. Maybe it's a cup of coffee, like you bought, or maybe it's a \$10,000 diamond ring. Are you going to make separate mathematical models for everything?"

Don had brought me back to earth. I didn't think I could model buying a cup of coffee. People buy their coffee with cash, so there would be no database history on that. Besides, what would a coffee shop do differently if I could model it? Now the diamond ring was different. People buy jewelry with credit cards. What if I had someone's jewelry purchase history? If I thought a particular person had an 80% probability of buying a diamond ring, I bet a salesman would pay good money for that information because he would give that customer plenty of extra attention.

Don and I talked about various things people buy at malls. We were searching for a high-ticket item with some homogeneity that people bought with some frequency. Jewelry wouldn't work - different kinds of jewelry were not homogeneous enough to model. Musical instruments, furniture, furs, and so on were bought too infrequently.

"What about women's clothes?" I asked. "Expensive clothes, not just T-shirts or jeans?"

This seemed plausible to both of us. Although the thought process in deciding to buy clothes is complicated, this seemed like something I could model if I put my mind to it.

"Oh really?" asked Don skeptically. "I have an idea. Let's pick some women and follow them around the mall. You predict for me in advance if you think they are in a buying mood," Don challenged me.

This was exactly the sort of off-the-wall idea Don would have, but it sounded good to me. We followed a number of women around. Interestingly, once a woman got into a shopping trance, we could be standing very close to her without her noticing us. I had a few theories on women's buying habits such as the better dressed someone is, or the more time she has spent in the mall without buying something, the more likely she is to buy, but none of my theories held. Plus, the enormous variety of women's clothing seemed overwhelming from a modeling viewpoint.

"Although I do enjoy following attractive women around, I don't think this is going to work," Don admitted.

"How about men's clothing?" I suggested.

We both liked this idea. Men's clothing, limited to suits, had more of a finite nature to it than women's clothing. We decided to limit the project to men buying men's clothing; women who buy a man's suit for a man struck us as impossible to model. We walked around the mall until we found a high class men's store. We peered at the window, not wanting to go in, until we caught the manager's eye and he came out to talk to us.

"Can I help you?" he asked politely, looking us up and down and no doubt making his own probabilistic judgment that we were dressed too shabbily to buy something from him.

I decided to level with him and explain our plan. He introduced himself to us as Sam Adamson, who was not merely the manager of the store but also the owner. He seemed mildly interested. We asked him some questions about how people buy men's suits. Sam seemed to think he could tell fairly quickly who was there to buy and who was there just to look. He looked at a man's watch, for example, to judge a customer's affluence, even though the customer was casually dressed. He would ask customers casual questions, and we knew Sam was good. But as we pressed on, we discovered that Sam could still be fooled. Some men will spend 45 minutes in his store trying various suits on, and walk away without buying. Sam explained that there are at least two kinds of male customers he never read correctly: recreational shoppers who consider trying on clothes a fun thing to do on a Saturday, and men who were simply killing time waiting for a wife or girlfriend to shop somewhere else.

"Suppose I could tell you how many suits a particular customer bought over the past five years, and when he bought his last one," I asked. "Would you pay for that information?"

Sam smiled at me. "I already know that," he replied. "As soon as I ask his name, we check our store database for exactly that point-of-sale information."

"Ah, but what if I could tell you that information for any store, not just yours?" Don countered. "And what if I already know his name without asking?"

Sam's eyes lit up. "Yes, that would be useful."

Don and Sam smiled at each other. I wondered if Sam shared Don's trait of deviousness. Sam struck me as the kind of person who would seize any opportunity to make a sale; he was just the client we needed.

Don and I took Sam's business card, and we told him we would get back to him in a few weeks.

Now Don and I had something to work on. We would create a men's suit scoring program, not unlike credit scoring, for use specifically at the Short Hills Mall. We would sell the output to a small number of men's clothing stores there. By the time each customer entered one of the stores, we would supply a one to ten score on the customer's buying probability. This would alert the staff to be sure to spend plenty of time with that customer, even perhaps to the exclusion of another

customer with a lower score. Of course, this would always be at the staff's option; the staff could overrule the score if necessary.

And so Don went to work on the hardware end. One of my questions had been how to install the scanning cameras in the mall without authority. Don explained that one of his philosophies is that people can do just about anything in public, no matter how outrageous, if they are appropriately dressed and act with seriousness of purpose. Somehow Don managed to get us some workers' uniforms. We returned to the mall one morning, and I held the ladder while Don calmly installed the cameras over each mall entrance. Nobody questioned us - we looked like we were supposed to be doing what we were doing. We got Sam's permission to install one at his store.

Meanwhile I went to work on the modeling. I began with a database of every male residing within a two-hundred mile radius of Short Hills who has a listed phone number. Don, with his Census Bureau friend Paul's help, showed me thousands of government databases that are either free or available to the public at nominal cost. Paul explained that the various departments of the Federal government never talk to each other, and never assume that their various databases would be merged together. Although I assumed that the credit card companies would guard their data, even if the government didn't, even they were willing to sell their data.

Soon for every male within two hundred miles we knew his salary, his occupation, his employer, and his credit card history for male clothing stores. We decided we needed to know each employer's policy on business casual and how often people wear suits even in a business casual office, so we hired some college students to make phone calls.

I now had lots of variables and lots of data to play with. What more can an actuary want? Don had to help me increase my computer power to handle all the data, especially since the databases were always being updated. It took me several months working nearly full-time to come up with my first attempt at the model. It took another month to test it and revise it.

We gave the model to Sam and his store for free while he helped us test and improve it. We made some hilarious errors, such as the time we scanned some up-and-coming rock musicians who had very little historical income or prior suit purchases. The model had scored them close to a zero, and Sam chuckled at me when they bought five or six suits each in preparation for a tour they were about to go on. I realized I had underestimated the potential of the self-employed variable. Eventually we tweaked the model into its final form, and we signed a contract with Sam.

Each person who entered the mall was scanned. We were not interested in women, and we were not interested in males without credit cards. Of the remaining men, either he was in our database, or he was not. If he was, we calculated his model score. Then if he entered Sam's store, we flashed the summary information and the score on Sam's computer. Sam of course could act on this information or not. But we did identify customers for Sam that were in a buying mood although Sam had guessed wrong, or that were not in a buying mood although Sam had guessed yes. Sam was happy with our model.

We then licensed the model to a few of Sam's competitors in the mall, and we installed scanners over their entrances. We had not told Sam we were doing this, but we hadn't told him we wouldn't,

either. This is the old consultant's trick: once you solve a problem for one client, you sell the solution again to another client.

As time went on, the model required a small amount of Don's and my time to update and tweak, but we moved on to other things. Specifically, we went on to other upscale malls to license our model there.

Don and I were doing OK financially. We weren't making a fortune, but we were collecting some license fees. I happily checked the box for "Non-traditional" when the annual Society survey asked for my employment status.

I was in a Los Angeles hotel room one night, getting ready to pitch the model to the South Coast Plaza (far too upscale to be called a mere 'mall') the next day. I was quite excited about this, as the income levels in Beverly Hills were a step up even for Short Hills. An item on the television news caught my eye. There had been a robbery and murder in Glassboro, New Jersey.

Glassboro is a small college town in the southwest corner of the state. There are plenty of murders in the news in New York City each year, or even in Newark, New Jersey, but I guessed there were not too many in Glassboro.

The murdered woman was Catherine Purvis. I did not know her, but I did recognize the last name as the same name of someone who had once been president of a little insurance company in Glassboro, some years ago when there were little insurance companies. For a moment I wondered if they had been related, but then I got back to planning tomorrow's meeting.

Over the next few months I earned plenty of frequent flier miles, as I pitched the model to some of the nicer malls in the country - Denver, Dallas, Atlanta, and Chicago. It was in my Chicago hotel room when I again saw something about the Purvis murder on television.

The news said that the police had arrested a suspect in the Purvis murder. His name was Larry Davis, and he had been a waiter at a catered party at the Purvis home several weeks before the murder. Apparently he had cased the house during the party, returned a few weeks later to rob it, unexpectedly found Catherine Purvis at home, and murdered her. His fingerprints were found on some household items, including the kitchen knife that she was stabbed with. He was arrested a few hours after the murder occurred, and the police seemed satisfied they had arrested the right person.

Davis's lawyer was on television in a press conference. The lawyer proclaimed his client was innocent because Davis was nowhere near the Purvis house at the time of the murder. Davis insisted he was Christmas shopping - at the Short Hills Mall!

I followed the case over the next few weeks over the Internet. The police investigated Davis's claim that he was at the mall by viewing the mall's security videotapes and by interviewing salespeople at the mall. Nobody remembered him, nobody could find him on the tape, and Davis could not come up with any credit card receipts.



A thought hit me like a lightning bolt. My model, and the scanned data underneath it, could provide proof of his alibi if he were telling the truth. We had to contact the police.

I called Don to tell him about this. Don told me that although there were backup tapes of each day's scanned data, the tapes were not saved indefinitely; this murder had occurred nearly six months ago. Further, he was not sure how much detail was on these backup dates anyway, especially at the individual customer level, because the majority of old data was saved at a summarized level. I told Don not to do anything with the tapes. I flew back to New Jersey to discuss this with Don in person.

Don and I met. He suggested that if we were going to examine the tape, that we do it in the presence of the police so that there is no question about us tampering with the tape. Even I knew it wouldn't take much effort to tamper with a tape and then adjust the date - all you had to do is turn back the computer clock - I have known how to do this since the days of DOS 1.0.

The bigger issue, Don explained, is that once the police know we have this kind of evidence, they would ask how we obtained it. Don was not entirely sure the whole scanning thing was legal.

"I thought we discussed this before we started, and you told me it was legal," I reminded him.

"Not exactly," Don replied. "In fact, I think I said the lawyers were not in complete agreement. I have actually spoken to a number of lawyers about this, anonymously over e-mail. Although many lawyers have told me what we do is criminal, other lawyers have had trouble finding a statute that fits this situation at all."

"What if we call the prosecutor's office, explain how we have this evidence, and ask for immunity in return for our testimony?" I asked.

"I don't think that will work," Don replied. "For one thing, prosecutors may grant immunity when the testimony helps their case. Our testimony would hurt their case. They have no incentive to offer us immunity."

"For another thing, we didn't just do the scanning one time and stop. It is an ongoing thing. This would mean the end of our business, and maybe some lawsuits."

"If Davis were telling the truth, why didn't the mall's security videotapes verify him?" I asked.

"Remember that this happened in December," Don reasoned. "Perhaps during the crowded Christmas shopping season he happened to slip in just behind someone so that the videocamera missed him."

"Then maybe our scanner missed him too?" I asked hopefully.

"Nope," replied Don confidently. "The technology is different. If he were there, we scanned him and he will be on the backup tape."

"Well, we can't let them convict an innocent person for murder. Let's do the right thing here, and let the chips fall where they may," I said reluctantly.

Don and I agreed to call the police and offer our evidence in the case. We called and learned that the prosecutor assigned to the case was Stacey Robbins, and the police investigator was John O'Connell. We made an appointment for us to talk with them in the county police station in Newark.

Just before we left for our appointment, it occurred to me that maybe we ought to have a lawyer with us. I didn't know any criminal lawyers, so I called the only lawyer I knew - George Robinson, an old friend who had been a lawyer in the legal department of one of the insurance companies I had worked for long ago. I quickly explained to George what was going on. George agreed to meet us in Newark.

The three of us met with Stacey and John. John began by asking us if we knew Larry or Catherine personally. We didn't know either of them, but I thought I had better admit that I might have met one of Catherine's relatives if she were part of the Purvis insurance family. But this slight connection would not affect the evidence we had.

Don and I explained how we might happen to have proof of Larry Davis having been at the mall on the day and time of the murder. Stacey was displeased that we were potentially going to blow her case against Larry. She threatened to have us arrested for our illegal scanning operation.

"You're kidding, right?" asked George. "It's true that there are several legal arguments you could make that Don and Andrea committed a crime. You could call the crime theft, no different than if they had physically stolen a wallet. Or you could even call it battery - unprivileged touching. But I think those arguments are pretty weak."

"Not that I'm looking to go to jail," I interrupted. But in the interest of full understanding I needed a question answered. "What about invasion of privacy?" I asked.

"First of all, that's a civil offense, not a criminal one," George replied. "Besides, people voluntarily give up their privacy rights all the time, without worrying about it. Do you have a supermarket checkout card?" George asked all of us.

Don shook his head no. I said that I did, actually several.

"Then even when you pay by cash, you're voluntarily telling the supermarket who you are. They are keeping tabs on everything you buy - you've seen how when you buy bread, they automatically print out a coupon for butter, for example. Plus they sell the data about you to the big food companies. The beer and pretzel companies know if you stocked up right before the Super Bowl, for example. Did you explicitly give your supermarket permission to do all this?"

That was a rhetorical question, so George didn't wait for an answer. "I don't suppose you actuaries study market research on your exams. You have no idea what goes on at supermarkets. And then there are department stores."

"Although the average consumer would not be happy to discover how much is known about his individual buying habits, in my opinion there is no law on the books that makes what the supermarkets do - or what you do - illegal," George concluded.

Stacey agreed with George - for now. The next step was to examine the backup tape.

Don called the service company that maintained our backup tapes. It turns out Don had ordered a six-month tape retention, and the tape for the particular day we needed still existed. The police got the tape and brought it back to us in Newark. Don wanted to load the tape on his computer where he had some sophisticated querying software, but the police wanted it on their computer, in front of their computer expert. So we loaded it on the police computer.

Don's tape was just a big dataset of numbers and letters. Don chuckled when he noticed that the police were several versions out of date with their database software. He ran a query on "Davis". There were many, so we queried "Larry Davis". There were no Larry's. We queried "Lawrence Davis", but we could still not find any. Finally we decided to query "L. Davis". There were none.

Maybe Larry Davis was not innocent. Or at least his alibi did not hold up.

Don and I were quite disappointed. We believed in our scanning system, and for some reason we believed Davis.

George made us explain for him in detail how our scanning system worked. He asked us several questions, so he was obviously trying to understand it. He was quiet for a moment. Then he asked John when the murder occurred and how the police came to suspect Davis.

John explained that the medical examiner placed the time of death at approximately 1 p.m. on December 19. A maid found the body and called the police. The murder weapon was a kitchen knife, with Davis's fingerprints on it. The police quickly found Davis and arrested him.

George asked John, "When you arrested Davis, was he carrying any credit cards? Can we see them?"

A policeman went to find Davis's belongings. He returned with a couple of credit cards. They looked like ordinary credit cards, and they did have Davis's name on them.

"So why isn't Larry's name in your database?" Stacey asked. She answered her own question. "Because he wasn't at the Short Hills Mall that day. Because he was in Glassboro, murdering Catherine Purvis."

That seemed logical, but there was something unsettling about it.

Don was examining the credit cards. He ran his fingers over the credit card numbers. He pulled out his own credit cards and compared them.

"Larry's cards are hardly used, even though they are not new according to the expiration dates," he decided. "Look at how the raised numbers on my cards are worn down."

That was interesting, I thought, but I didn't see that it was relevant.

Unless. "Read me one of his credit card numbers," I demanded excitedly. "Actually, read the numbers backwards."

Don suppressed a giggle. My use of the word "backwards" puzzled everyone in the room, but Don assumed it was one of those strange quirks about actuaries.

John read off a string of sixteen digits from one of Larry's cards. I started scribbling on a piece of paper. The arithmetic was pretty simple. I added the first digit, to two times the second digit, to the third digit, to two times the fourth digit, and so on. When a multiplication exceeded nine, I added the digits from the product. The result was 51.

"Read me another card number, also backwards, please."

John read the next string and I did the same calculation. The result was 68.

Everyone, even Don, thought I was a little crazy.

"These are not valid credit card numbers," I announced. "It's called Luhn's Formula, and the sum has to be a multiple of ten to be a valid credit card number. All the major credit card companies use it."

"Call the credit card companies, and see if anyone tried to use these cards on the day of the murder," Stacey told John.

"I still don't get it," Don whispered to me. "Why didn't our system scan Larry?"

While John was making the calls, I reminded Don that we only cared about males residing within two hundred miles of the mall with a listed phone number and a valid credit card. Anyone not fitting those criteria was certainly scanned, but we had nothing in the other databases to match against. Since I couldn't use the scoring program, we never recorded those people in our system.

For the same reason, I had decided to put in this Luhn's Formula as a check against invalid credit cards. If a card was invalid there would be no credit card history, so there would be no way to score that person either. That is why Larry never made it into our database that day.

John reported that those credit card numbers had indeed been called in by Short Hills Mall merchants on the day of the murder. Since they were not stolen cards, the store clerks had not been told to call the police to arrest the customer, merely to ask for another card or for cash.

The credit card companies had the times of day that the cards were used, and the times were right around the time of the murder. Glassboro and Short Hills are at least two hours away, so Larry

could have not been in both places. Since the cards were in Larry's possession at the time of his arrest, he was probably the one who had tried to use them, so he couldn't have been the murderer. John speculated that maybe Larry was involved not in murder but in phony credit cards.

I suggested that maybe Larry had found some legitimate credit cards, perhaps even from the time when he had been a waiter at the Purvis house. Rather than steal the cards, which would eventually get reported, he probably just wrote down the card numbers. Then he had some new cards made with his name and where the credit card number was off by one or two from the legitimate card number.

Of course Larry would not have known about Luhn's Formula. Only someone from a credit card company would know about it - or an actuary.

"Interesting," I concluded. "We thought we had proof Larry was at the mall from our scanning software, but it turns out we didn't have that proof at all. But instead we proved Larry was committing credit card fraud, and so we indirectly proved he could not have been the murderer."

## **Destined for Greatness?**

*by Jennifer Yanulavich*

Jack Carpenter sat at the bar waiting for the numbing effect of the scotch to take its hold over his senses. He had left work early, unable to focus on being a pension actuary after receiving the same bad news from the partnership review committee for the third year in a row. Life was supposed to be on automatic pilot after he had become a Fellow in the Society of Actuaries. However, the only item that had been automatic was his inability to make any significant impression on the people who mattered at work. Jack bitterly thought about updating his business card to Jack Carpenter, FSA - Destined for Nothing. Feeding his bitterness, he continued drinking his scotch. Unfortunately, not even his third drink could remove the echoing of the criticism he had received just sixty minutes ago.

"Jack, we don't think that you have enough of a view to the future to become a partner."

"Jack, you can't just go with the flow, you have to think outside of the box."

"Jack, what this company needs are not champions of the past, but the creators of tomorrow."

"Jack Carpenter?"

Jack was aroused from his mental stupor by a younger man he had never seen before. Based on the man's haircut and posture, he looked like a career military type. However his suit was perfectly tailored and obviously expensive. Jack thought that the man looked like he could have walked off the cover of GQ.

"Do I know you?"

"No, but I've been looking for you."

"It's not that type of a bar, pal."

The young man appears confused but continues speaking. "I am from the future."

"Look, I may be on my way to drunk but I haven't hit the exit ramp yet. So I don't know what your game is but take a hike."

"I don't have much time, but I'm not surprised that you don't believe me. So I will offer you three pieces of evidence that I'm telling you the truth. First, Bobby Cox is just moments from being thrown out of this game."

Jack turns his attention to the lone television in the bar where the Braves game is being shown. Kevin Millwood is pitching for the Braves and the count is 3 and 2. The next pitch cuts the plate in half, straight down the middle. However, the umpire calls ball four. Bobby Cox rushes out of the dugout to argue. Cox then says the magic words that every umpire loves to hear and is quickly ejected.

Jack mutters, "with how often Cox gets tossed, predicting him getting ejected is hardly a stretch." The stranger continues, "second, the Braves will come back and win this baseball game in thirteen innings. Tom Glavine will be used as a pinch runner in the last inning and he will score the winning run. Unfortunately his slide into home will tear up his Achilles tendon forcing him on the disabled list for the remainder of the season."

"Oh, let me put a call in to my bookie. Can you conjure something on the Tyson fight coming up?" The stranger does not respond to Jack's sarcasm. Instead the two men stare at the TV. The Mets score another run to put the score at 11-2.

"Hey Nostradamus, looks like you need a new crystal ball."

The man, once again befuddled by Jack's attitude, ignores the comment. He slips a sealed envelope to Jack. "I told you that I would give you three pieces of information. I have placed the third item in this envelope. Open it tomorrow morning at 7:47 am."

The stranger gets up off the barstool to leave.

"How do you know I won't open it the minute you leave?"

"Because, I believe that you are desperate to think outside the box."

The radio alarm blasts with an energy that Jack is lacking on a Thursday morning. After his strange encounter last night, he continued on the expressway to inebriation. Fortunately, a kindly patron saw to it that he arrived home safely. The pounding in his head was competing with the shrill sound of radio static.

Jack stumbles through his morning ritual. As his senses awaken in the shower, he realizes that he does not remember much of the prior night. Tempted to call in sick, he decides to force himself to go into the office. He doesn't want to give his boss the impression that he is sitting at home still stewing over yesterday's review.

Reaching the kitchen at 7:45, he flips on the television to Sportscenter. Not having enough time for a real breakfast, he grabs a glass from the cupboard for his daily dose of vitamin C and finds a half eaten chocolate bar on the counter. The juice glass slips from his hand, shattering on the floor. Stooping down to pick up the glass, his attention is diverted to the Sportscenter announcer recounting yesterday's baseball highlights. Not paying attention to the glass, a sharp shard cuts across his hand.

Cursing to himself, he runs the cut under cold water. Looking at the cut, it appears rather deep. He picks up the phone to call the office.

"Hi Janice. It's Jack. I'm going to be in late. I cut myself, and I think I better head to the emergency room."

Jack grabs his keys and briefcase, turning off the television as the anchor announces "it was a wild game in Atlanta last night."

The gash required ten stitches to close, although the worst part was the medical student picking out the small shards of glass embedded in Jack's hand. As Jack impatiently waits for the clerk to finish processing his bill, he glances at his watch - not happy that half of the morning has now past. As the clerk hands him the final paperwork, he hears a television in the background.

"Bad news for the Atlanta Braves. Tom Glavine is out for the remainder of the season due to the injury he sustained last night sliding into home plate. In the thirteenth inning of the tie ball game, Glavine was used as a pinch runner for Andres Gallaraga. He scored from second on a Javy Lopez double."

Flashes of the prior evening come back to Jack. He reaches into his pocket searching for the envelope that the stranger gave to him. Unable to find the envelope, he realizes that it must be back at his place.

Finalizing the paperwork, he leaves the hospital. Racing home, he leaves word with the office that he is still tied up at the hospital. Entering the front door, he searches for where he might have thrown his jacket last night. He finds it on top of a pile of clothes meant for the cleaners. He removes the envelope. Ripping it open two items fall out. A business card with no name, just a phone number and a note. Jack feels his heartbeat speed up as he reads the eight words printed on the cocktail napkin from the bar. "You should have someone look at your hand."

Jack sat at his desk, leaning back in his chair, oblivious to the large pile of work in his in-basket. Not sure what to make of the stranger from the bar, he raps the business card against the desk. He thought that this must all be some sort of practical joke, or perhaps he was even dreaming. Realizing his need to make a decision, he does the only rational thing that comes naturally, he takes a quarter out of his pocket.

"Heads, I call. Tails, I shred the card."

The coin flips in the air landing on tails.

"Best two out of three."

Against his better judgement, Jack was sitting in the same bar as he had been just twenty-four hours ago. Tonight, he opted for one of the smaller booths toward the back of the bar. He also thought it wise to choose a beverage less dulling to the nervous system. As the small hand of his watch clicked into place to indicate that the hour was seven, the stranger from the prior night entered the bar. The man walked over to where Jack was seated and sat down.

"Hello. I was glad to hear from you. I guess now would be a good time for a better introduction. My name is Alec."



Jack immediately cut to the chase.

"I'd like to know how you pulled off your crystal ball trick."

"As I told you last night, I'm from the future. The information that I gave you was very easy to obtain. I merely accessed some newspaper sports sections and took a look at your medical records."

"I take it that the medical privacy laws are never getting passed."

"Excuse me?"

"Nothing. So you want me to believe that you are a time traveler. I only took a few rudimentary physics classes, but I distinctly remember the impossibility of traveling through time."

"It is not easy to explain, but basically time is just another dimension, akin to an x-axis, a y-axis, and a z-axis. It is just a matter of traveling through that axis, or rather allowing that axis to travel through you. Through some applications of quantum physics and medicine, the atoms of the body are slowed down. This allows the past, or time to essentially catch up with the body. The science is actually quite ironic."

"How so?"

"The phrase 'the past will catch up with you' turns out to be true - in a manner of speaking."

"But if your body is slowing down and time is passing through it as you say, how does your body know when to stop slowing down?"

"The body does not stop slowing down, it actually is programmed to speed up again in order to realign itself with the speed of time. But, you are really starting to get out of my area of expertise. From my perspective, I'm treated with a dose of radiation, which the doctors swear is harmless, and then it wears off. At the time it wears off, I sync back up with time."

"This has to be the most outlandish thing I've ever heard."

"I know it sounds ridiculous, but try explaining three dimensions to something that understands only two dimensions or two dimensions to something one-dimensional. It is similar to the struggle that A. Square experiences in Abbott's Flatland."

"I wrote an essay on that book."

"I know. I read your essay. Very promising writing for an actuary."

"Assuming that time travel is possible, aren't you impacting the future?"

"Possibly, if I'm careless. My time and contact with anyone here must be brief. Each second that I delay my return further jeopardizes my world in many ways."

"Again, assuming that time travel is possible, why are you here?"

"Can we stop with the assuming and just say that you are skeptical?"

"That's fine. Back to the point, why are you here?"

"I need you to come back with me."

"Back where?"

"Back to the future."

"Why?"

"The future needs an actuary."

Jack begins to laugh, saying "your world needs an actuary. What do you have some numbers getting out of line."

"You don't understand, in forty years, it will be against the law to be an actuary."

"The majority of the population doesn't even know what an actuary does, so why would they outlaw the profession."

"Actually, during the first half of the 21st century, the profile of the actuary rises quite quickly and dramatically. Actuarial science plays a very significant role in the major events, or should I say uprisings of this century. Unfortunately, the mass public's ignorance of what an actuary really does remains, causing misconceptions regarding the field to grow exponentially. Historians have labeled the events of the 21st century as The Great Societal Decline or The Decline for short. The Decline is composed of two historical phenomena.

"The great market rally of the nineteen-nineties will soon give way to a dramatic stock market crash. Just as they led the market rallies, technology stocks are the first domino to fall. In fact, you are already seeing that. Economists of the future place the beginning of The Decline in the year 2000. Once the technology stocks drop, consumer panic begins to set in. Thanks to 401(k) plans everyone is a stockholder but not everyone is a financial analyst. People decide that a cash position is the way to go and stock prices continue to fall. The entire globe will be thrown into a financial tailspin.

"Corporations see a drying up of capital and are forced to cut costs in a feeble attempt to strengthen their bottom line, laying off workers, terminating pension plans in order to raid pension funds. Insurance companies will become insolvent, unable to pay health insurance claims, let alone life

insurance. The blue-collar worker is getting hit from every direction. Tensions escalate as workers lose more and more jobs and benefits. As this is going on, the unions begin to strengthen getting a stronghold not only in traditional factories and plants but also among other jobs such as computer programmers. It was incredible when the newspaper headlines exclaimed that Microsoft had been unionized. Somebody had to be blamed. The average person could not understand how so much personal security in terms of wealth could have been lost so quickly. That is why the unionization push started, workers struggled to move to a position of strength.

"Scapegoats were needed. Of course, management was an obvious target. They were viewed as the "haves" by the "have-nots". But another group fell under the media microscope. A little known journalist for the Wall Street Times began a series of columns which would bring the focus of everyone's attention on the actuary. "In a series of heated, biased, and downright libelous columns, the writer for the Times aligned herself with the "have-nots". She aimed her poison pen not only at the management of the failed companies but against a profession that no one has ever truly understood - the actuary. She began by just throwing their job title around, but then she made allegations of a sinister conspiracy among the financial giants and actuarial profession. Her viewpoints became more extreme as she began to rail against the Society of Actuaries claiming that they were actually a secret front for the mafia who was controlling the world markets or should I say the world black markets. Unfortunately, as is typical, the Society did not speak out in its defense, taking the all too exalted high road that is so often the treacherous path of the intellectual elite. Of course the Society presumed that the worse would soon pass."

"Wait, so far what you said is no different than any other recession. Why did everything take on such a dire slant?"

"The last generation to live through a depression was dead. No one remained who realized first hand what a depression was like. Society believed that it was too smart to have allowed such an economic disaster. Plus with the Internet, rumors and allegations were created and spread faster than they could be denied. The actuarial profession, which had throughout the 20th century held such a lofty standing, was being accused of working in tandem with the enemy of the common man - the executive class."

"Still, nothing that you have described to me would lead to actuaries being outlawed - unless the allegations were shown true."

"The actuarial profession was blamed for not being more diligent and conservative. Since actuaries drive the risk management of so many firms, they should have done a better job. However, the economic collapse is not what destroyed the profession. Although, it certainly did play a pivotal role. Companies that were on the brink of destruction began to reemphasize the brick and mortar side of business. At most corporations, intangible assets were declared worthless. Just as the workers had formed unions to operate from a wall of strength, corporations began to form large conglomerates - also trying to find their own wall to back up against. Companies hungry for any type of real asset were merging at a great pace. Industrial espionage became rampant as each company clawed for any crumb remaining. At first the espionage was the same traditional dirty tricks that have been practiced throughout time. But then the risks and potential rewards became elevated. Computer companies began financing hackers in order to destroy each other's software.

The worse came when large computer companies began to write their own viruses, attempting to infect the competitors computers. Every company's backbone depended on the computer. The computer was the nervous system. The Y2k scare of 1999, became reality.

"Due to fierce international competition, laws were ignored. If it was illegal in one country, find another country where it was legal. Communities started to breakdown, as workers fortunate to have jobs maintained allegiances with their corporations and not their neighbors. Corporations ever mindful of protecting their own interests began to hire the less savory of the unemployed, but instead of giving them honest jobs, they were formed into corporate armies. The world was on the verge of a war, but a war unlike any ever seen before. Companies were literally declaring war on each other. However this being a new version of war, the tactics and strategies were very different.

"Traditionally, wartime meant the destruction and demoralization of a people usually by destroying land and homes. However, no company wanted to use the weapons of mass destruction that had been developed. The noncivilian casualties became too high. The poisoning of the atmosphere and the water would be unintended aftereffects. So the various armies chose to fight each other with viruses. This is where the actuarial profession became accomplice to chaos and death.

"An actuary began to write a very famous series of articles. In these articles he applied the principles of actuarial science to the new viral warfare. He argued that the world was overpopulated and that the most efficient way to allocate resources was a population reduction. He argued that medicine had done the world a great disservice because there had been no great plague to reduce the population. In addition, he argued that the ultimate winner of the world, would be the company that most wisely used the viral menace to do the most damage to its enemies without causing collateral damage. This actuary was able to establish through mathematics, analytical thought, and projections the key to running a more effective war.

"Actuaries began to be employed by the armies in order to project the destruction that the viruses would cause. Assumptions regarding interest rates and salary scales were replaced by the mortality of microorganisms and the expected temperature at full breakout. Before the introduction of actuarial science, the cost of producing and developing the viruses lethal enough to kill, but not strong enough to survive without a living host were nearly prohibitive. The writer of these articles was an accomplice to the deaths of millions of people. Once order was eventually restored to society, society took steps to prevent such a monstrosity against humanity every being committed again. Many professions were outlawed including geneticists, viral engineers, and actuaries. No argument made by the actuarial profession did any good. By the opinion of the mass majority, the actuarial profession had failed society too many times."

"How can you have an insurance company without an actuary to price products? Was ERISA overturned, thus eliminating the need for pension actuaries?"

"The role of insurance and pension benefits was taken over by the government. Assumptions were not needed because if the government was short of money, it just raised taxes. But all of this brings to me to why I'm here. I am part of a ten-member consortium - sort of a think tank. Although my original background is as a historian. We have been put in charge of the allocation and distribution of resources. My world faces a bleak future as the globe faces the reality of a 10-year drought. In

addition, energy sources are on the verge of drying up. I need help in developing distribution models that maximize efficiency. I need someone to be able to design the models for the computer programmers to use. Each member of the consortium was assigned a candidate to bring to the future from the past. Where I come from, science and mathematics are now vilified due to the great destruction that they caused. As terrible as this sounds, we don't have the time or resources to find people in our own society who are up to the task. Plus, if my group can show the good that mathematics and science can do, perhaps we can enter the 22nd century in the same manner as the 21st century. It is my dream to wipe the 21st century clean from the slate.

"I'm sorry that I have talked so much. I am getting very tired now. Such long stretches are hard on me due to the aftereffects of the time travel. Even though my body may be in sync with this time, my mind still has come catching up to do. I want you to think very seriously about my request. I know that my story is beyond anything that you could have ever imagined. Here is the address of where I am staying. Please come by later and we can talk some more. I generally need only a few hours of sleep in order to recharge my batteries."

Alec began to get up to leave the table. Jack grabbed his arm.

"Wait. One last question. Why me? What makes me special?"

"You meet the two basic criteria of the mission. You are an actuary. You have experience working with mathematical models, scenario forecasting, and optimization."

"Any Fellow of the Society would likely meet that standard. What is the second criteria?"

Alec appears to be very uncomfortable as he thinks how to exactly phrase his words, "the other criteria is the impact on the future of removing the subject from the past." Alec then takes a breath and says "and I'm afraid that you are not destined for anything of great significance."

Jack lay down on his couch, contemplating the conversation with Alec. Alec's story could not be possible. Time travel belongs in the realm of science fiction, not reality. Although Jack had forgotten much from his beginning physics class, he did remember that time was a universal constant. Of course, was it not just a few months ago when a group of scientists in Europe had produced an experiment that showed that atomic particles could travel faster than the speed of light - thus contradicting Einstein?

Jack's rational mind could not allow him to believe Alec's story of time travel, economic ruin, and world decay. The future could not already be established. But Jack wanted the courage to believe. For once in his life, he wanted to take a chance.

The address that Alec had given Jack was for a small motel in the part of town that did not appear in the town's tourist guide but instead was often featured in the nightly news as the backdrop of drug busts or murder. Jack hesitated before knocking on the motel room door. Perhaps someone was setting him up. Perhaps Alec's entire story was nothing for than an exercise in science fiction to place Jack in front of this very motel room door. However, Jack could not walk away. He needed to know how the next chapter would play out.

Jack knocked twice on the door. There was no answer. He knocked again. Just as he was about to give up, the door opened. Alec was on the other side looking very groggy.

Jack apologized, "I'm sorry that I woke you. I can come back tomorrow."

"No. Come in. The alarm that I had set was about to go off anyway."

Alec opened the door to let Jack in. The motel room was very small and every color from the drapes to the bed sheets to the carpet screamed to be returned to the nineteen seventies. The bed took up the majority of the room. Alec hit the light switch. The lamp did very little to brighten the room, instead enhancing the dreary impact that the room had initially made on Jack. Alec stood there still wearing his suit pants from his earlier meeting with Jack. However his shirt was off and Jack stared at Alec's chest.

Jack's first impulse was to turn away. Alec's chest was encased in scar tissue. The scars exhibited a bizarre intricate pattern, almost as if they had some logic behind their placement. Realizing what the pattern appeared to be, Jack stared even more intently. He could actually see the outline of every bronchial tube extruding from the skin as if ready to explode in order to escape Alec's body. Alec noticed Jack staring at the scar tissue.

"I was exposed for less than a second."

The sound of Alec's voice snapped Jack's attention to the moment and he looked up.

"I remember feeling this great heat inside of my lungs. It was as if the heat were trying to explode outward from inside my chest cavity. I was three years old at the time. My father was a military officer and we, my parents and I, were living on an army base. I remember trying to open the refrigerator, because I wanted ice cream, when I heard this sound that was so loud and at such a high pitch that I covered my ears, trying to block it out. You see the delivery vessels for the viruses made this harsh piercing sound. My father knew what it was and he picked me up and put me in the freezer of the refrigerator. He must have known that this particular virus dies at temperatures below zero degrees Celsius. I was so scared and confused. He told me to sing my A, B, C's and that when I was done to push open the door. That is my last and only memory of my father.

"When I did push the door open, the increase in the external temperature shot through me. Even though the virus was now dormant, in the little time that it had been alive, it had made it into my lungs. Due to the quick increase in body temperature, the dead virus quickly expanded causing the scarring that you see."

"I minored in biology in college and I took a few classes on viruses, but I don't recall any type of virus that behaved in such a manner."

"The virus that did this to me is actually what is called a designer virus. The virus was created specifically to target civilians in dry hot climates. In fact the actuary who wrote the series of articles that I told you about was on the design team for this particular virus."

"I still don't understand how an actuary could be involved with designing viruses and encouraging their use."

"The man in question had no regard toward the majority of humanity. He became the ultimate extreme of a consultant. Maximize the benefits to your clients at all costs. If he had not published his articles, I don't think the world would have seen the destruction that it did. By creating more efficient armies, he reduced the cost of war. And by reducing war's cost, he extended the destruction at least twenty-fold."

"Yes, but weren't his publications just theories. He did not start the war."

"For any soul to be capable of imagining, let alone publishing, such viciousness to be exacted against a society should have been impossible. He showed the armies how to maximize the destruction of their enemies. He applied mathematical models, statistics, and probability toward the goal of mass murder. Yet, since he did not personally command the launch of any viral bomb, since he was not personally aligned with any one side, society did not know how to hold him accountable. That monster died of old age. Never tried nor convicted. Why can society execute a man who murders one person, but a man who is responsible for the deaths of tens of thousands is untouchable?"

I'm sorry. My personal feelings toward the past are not the issue here. Normally, I keep my personal feelings in check a little more, must be the time travel. You haven't known jetlag until you have traveled backwards a few decades. Would you like to see a picture of them?"

"Who?"

"My parents." Alec went over to his coat and took out a picture. The picture was very worn and covered in creases. "They met in college. This was taken on their wedding day."

"They are a beautiful couple."

"Yes, they were. If you don't mind, I'd like to take a quick shower. If I don't hit the shower after waking up, I always feel like I'm still half asleep."

"Sure go ahead."

As Jack waited for Alec to return, he saw a manila folder lying below Alec's jacket. Curiosity getting the better of him, Jack took out the folder. He was startled at what he found. In side, was a picture of Jack, but he looked to be in his late forties. On the other side of the picture was a list of his physical characteristics. Behind the picture was a report. The report read like a biography. Jack began to read the words and panic began to overwhelm him. The report was a detailed history of Jack's life. The first few pages outlined his early childhood, including where he had gone to school what his grades were, the names of his best friends. Hearing Alec turning the shower off, Jack quickly returned the report to the folder, unable to finish scouring its contents. As he moved the

jacket back to where he had found it, he felt something heavy in the front pocket. He looked inside and saw a gun. Alec returned to the room drying himself off.

"Alec, I still don't understand why you need me to go with you. With all of the technology that your time must have, an actuary cannot make a difference."

"A computer does not replace the analytical capability of a man. At the very least the computer can only learn from the man. Many of the greatest minds of two generations have been lost to war. Think of the speed of innovation that took place during the 20th century. Now imagine what the world was like only 100 years earlier. Compare that to the previous century and the previous century. The world I know is collapsing upon itself like a black hole. I realize that you must think about this offer. I don't want you to make a hasty decision. This is the address of the place of our departure."

Jack looked at the address. "This is an alley behind the old downtown Rich's location."

"Yes I know. Can you believe that it will go untouched for the next century."  
Jack looked puzzled.

Alec explained, "you see, one of the important nuances when traveling along the time axis is your position in the three dimensional world. Our exit point must be somewhere that will go largely undisturbed by not only man, but also time. We will actually be in an old World War II bomb shelter below the alleyway."

"You don't honestly expect that no one is going to find two bodies in an alley way for the next forty years?"

"The bomb shelter is about six feet under the alley. I used the same area to travel to this time. Trust me it is safe. If nothing happened by traveling from the future to the past, then nothing can happen traveling from the past to the future. We have to leave at exactly ten thirty tomorrow night. That gives you just less than a day to make your final decision. If you are going to come, please meet me there at ten."

"If I decide not to come, do you want me to come tell you."

"Jack, I trust you will make the right decision."

As Jack gets up to leave, he pauses before opening the door.

"Alec, one last thing. Why do you have a gun? I found it when I was moving your clothes so I could sit down. Seems to me that if you are going to avoid altering the past, you shouldn't be carrying a weapon."

"Don't worry about it. It is just a precautionary measure."

Once again, Jack found himself staring at the ceiling of his loft, desperately needing to know how



everything was going to end. He wasn't sure if he could trust Alec. Alec claimed to be a historian, but his actions were too precise, his dress and manner too perfect. Something else was gnawing at Jack's subconscious, but whatever it was, it refused to rise to his conscious. Pacing the length of his living room, Jack desperately wanted to take the plunge. Once he made a decision, his pacing stopped. With a resolved stride, he walked over to the mantle. He stared at the clock that his heart had been ticking in time to. He lifted the clock off the mantle and found the key. Taking the key and replacing the clock, Jack went to the bedroom upstairs. Opening the closet door, he found the safe behind the row of suits forgotten with the dawning of casual days at the office. Alec was not the only one taking precautionary measures.

Jack cautiously approached the alley. He was early, but Alec was already there. From a distance, Jack silently watched Alec. Alec was partially turned away from Jack, but Jack could tell that Alec was looking at some object - as if he was inspecting it. Alec then placed the item in his front jacket pocket. Jack entered the alley, expecting to startle Alec. However, Alec turned very calmly toward Jack.

Jack confronted Alec, "I'm him, aren't I. I'm the 21st century monster. Don't look so surprised. I'm not sure how I figured it out. Maybe it was because of the military dossier that I found at your place. Why else would you have my full medical records if I was really some insignificant person of no consequence? Plus, when you talked about him, you kept looking at me as if I should have already known of these terrible things to come. You don't want to save the future; you want to prevent it. If I'm really the seed or the spark that leads to all the chaos and destruction, why allow me to live? The future you describe is so much worse than the present. You want to rewrite your history, by rewriting my future."

Alec looks at Jack, unblinking. "Do you realize how much you are going to be reviled? Every time your name is mentioned it is spit out as a profanity? I am here to save you from your own immortality - from your own immorality. If you are a man of conscience, then what I am going to do is right. If you are not a man of conscience, then I'm still creating justice. You have to die."

"Why didn't you just kill me from the beginning?"

"I was supposed to. But I'm not a killer. I wanted to look you square in the eye to see evil. I thought that if I saw evil, I would then have the courage to destroy it. But I haven't seen it. History promised me that I would be looking upon pure evil, but you are just a man, like all the other men that I have known."

"That's right. I'm just a man. We can still change the future. I can go with you, then I can never cause the chaos that you have accused me of."

"No. Only one of us goes back. There was never a way to bring you to the future. I don't want to kill you. The thought of murder sickens me. I was supposed to be a historian documenting history, not an assassin to it. But your future leaves me no choice but to destroy my past. You have to be stopped."

Alec begins to reach into his front jacket pocket. Before he can withdraw his arm, Jack lifts his own concealed weapon emptying the gun into Alec.

The alleyway fills with a blinding light. Jack looks into the light, seeing the outline of a police cruiser.

"Drop your weapon and put your hands up."

Jack drops the weapon and places his hands into the air. The officer then instructs Jack to drop to his knees and place his hands behind his head. The officer quickly places handcuffs on Jack.

"It was self defense, that man was going to shoot me."

The first officer instructs the other officer to search Alec.

"Does he have a weapon on him?"

"No."

Jack becomes panic stricken. "Yes he does, he was reaching for a gun in his front pocket. I saw him put it there."

The officer reaches into the front pocket and takes out an item. He holds it up to the light.

"Nothing here but a photograph."

## **Planning for a New World**

*by Caroline Baumann*

It had taken me longer than I expected to reach the restaurant. Somehow with all of society's other improvements, traffic problems only seemed to get worse. While the nationwide push to embrace flexible working arrangements had generally succeeded, it still only slightly eased the burden on the infrastructure of most big cities.

I had just rounded up a 2-day conference with the folks at Traditional Life. They were in need of some help on their product strategy, now that they'd decided to exit the individual whole life market. I felt I'd pointed them in the right direction, but I felt torn. History has shown that when a company changes its core business, for whatever reason, it usually does not succeed as hoped in its new endeavors.

Nevertheless, my official consulting business being taken care of, I had a few extra days to myself in paradise before having to fly back to Boston. Tonight I was meeting an old friend for drinks before heading back to the hotel. An old friend who just happened to now be a billionaire, having made a fortune developing artificial intelligence software. My personal favorite was this nifty little program that would read your e-mail, research it based on everything it could gather from your activity profile, and then present its findings for you. What a time saver for many of the busy executives I often met with.

Darren had seemed like he was withholding something over the phone, so I was expecting he might be wanting to run something by me, to see if I would give it the "sniff test."

At last, the cab pulled up to the Screaming Parrot. I paid the driver and as I was exiting the cab, I saw Darren wave to me from out on the patio.

"Hey, Travis, how's life in the insurance consulting business?" Darren inquired.

"Oh, about the same," I replied with a sigh and took a seat next to him at the bar.

"Haven't yet found that special niche with your name on it, have you?"

"You know me," I smiled wryly in reply. Darren and I went way back. He knew that I was always on the lookout for something out-of-the-ordinary.

"Well, that's why I wanted to meet with you tonight." Darren leaned back in his chair with his margarita and looked at me sideways. "How would you like to work on a project that is anything but typical actuarial stuff?"

Hmm, I wondered what this could be? While I expected he had something specific on his mind to discuss with me, I thought my involvement would be more passive. "Now what could a consulting actuary do for a billion-dollar AI software developer?" I asked.

Darren chuckled, "Well, it's not for me specifically, but..." he paused. "I'm hoping you'll be as interested as I am in such an opportunity."

"Well, what is it?" I asked. Darren wasn't usually this cagey.

He smiled and leaned forward. "I want you to use your actuarial expertise in evaluating the potential costs, alternatives, and benefits of a series of manned missions to Mars."

I knew Darren had taken a more active involvement in the Mars Society lately, but it came as a surprise that he was looking to bring me back into it. While I, too, had once been a member, I dropped out when it seemed it was a lot of talk and only a little action.

Darren continued. "The Mars Society, as you know, has been gearing up for what it sees as an imperative - to establish a permanent colony of human beings on the Red Planet, and to work towards terraforming it. Since our inception in 1998, our hope has been to one day make this dream a reality. We have been working with NASA, and have gained agreement that the time has come to move forward with the first missions."

A million questions seemed to be floating around in my head. I knew that Mars was our best bet at colonizing another planetary body. The days were almost of the same length as those on earth, and there was an ample supply of frozen water, meaning plants could probably be coaxed to grow there. It was generally thought that the few negatives that could stand in the way, such as low gravity and the Martian year being twice as long as earth's year, could be easily overcome. Other Martian resources could be exploited for fuel. Many studies had shown that terraforming Mars, at least to the point of changing the atmospheric pressure and temperature to something more human-friendly, could be attained within a relatively short 300 years. "What is it exactly that you think I could contribute?" I asked. I hoped I didn't sound ungrateful.

"Since the idea of planning a series of manned missions to Mars involves a longer time span than NASA is used to dealing with, will undoubtedly cost untold oodles of money, and countless things could go wrong, I figured who better than an actuary to make sense of it all?!"

I'd often wondered what other types of work I could find that would utilize my skills. Yet I was skeptical. "Don't they already have a team of experts doing that kind of analysis? I mean, they've already done, what, almost a dozen unmanned missions there, plus all the trips to the International Space Station. I would think that they already have developed their own procedures for planning such things."

"Well, they have a team, yes, but no one really possesses the long range financial and risk analysis know-how like an actuary has. At this stage there are a lot of ideas being tossed around, and I think an actuary's perspective would be very beneficial," Darren explained. I could tell he had given this some thought. "I was in a meeting a few weeks ago with several members of the Mars Society and some scientists from NASA. A few tough questions were put forth - questions like, 'what sort of back-up plans would be most feasible in case of problems with a given mission,' 'when might we expect the various benefits from these missions to start becoming financially material,' and 'how is the private sector's share of the cost expected to change over time.' While the NASA folks had

some answers for us, I felt they were rather vague, and I expect the major corporations, who will be providing a good and no doubt increasing portion of the funding for these missions, will want something more substantial, with numbers. I mean, we're talking about establishing a new civilization here, not a pleasure cruise."

I considered this for a moment. In spite of my break from the Mars Society, I had kept up on recent discoveries about the planet. I knew that having a base on Mars could have numerous and varied benefits. Mining, study, and tourism (eventually) were just a few. And who knows what unforeseen treasures might be discovered if we were to make a base there? Some insightful information about our own planet could be gained. Such an endeavor could really serve to bring different cultures on earth together, especially if there were various entities sharing the cost of funding the missions. And I could see that answering the questions about what is a reasonable back-up plan for a particular mission would be difficult, encompassing both financial aspects and also the chance of loss of life.

"Let's say, for the sake of argument, that I did ponder these questions for awhile and came up with some good answers, reasonable scenarios. How do you know I'd be taken seriously?" I asked.

"Well, my goal is to have you become one of those representatives of NASA's team. I have already pointed out to them that they could use someone with your skills." Noting my raised eyebrow, he added, "I think you're just what the team needs to fill the void of financial and statistical know-how that I was speaking of. Coupled with your interest in scientific matters, I think you're the best one for the job."

I smiled. "And what do you hope to gain from this whole endeavor?" I asked.

"Are you kidding?!" Darren exclaimed. "I think this is the opportunity of a lifetime. Heck, more than that. I want to be in the history books for centuries to come, as one of Mars' founders. What better investment could I think of to pour my billions into and devote such a large part of my time to? I may have no children biologically, but I feel that the future generations of the human race are all my children, and I want to provide for their continued existence. I think working to put a colony on Mars is the best way to do that."

I sat gazing at my bottle of City Light for a moment, drumming my fingers on the table. "Well," I said, "I don't know what O'Neil and Company will have to say about my working on this unusual project, but it sure sounds interesting to me. I would like to learn a bit more about this, though."

"You have a couple of days left in Florida, right?" Darren questioned. "If you can spare some time away from the beach, there's someone I'd like you to meet. Her name is Dr. Sue Long, she's an astrophysicist who's been working over at the Hubble Complex on the new docking station for the International Space Station, among other things. She has a good deal of general knowledge of space travel, and has been instrumental in coming up with the initial plans for the missions to Mars. If you have the time, she can give you a really good overview of the proposed project."

"I also have a few files here on the financial aspects - the players involved, initial projected outlays, things of that sort." He pulled a couple of disks from his briefcase and handed them to me. "Sue's

number is on the first disk, in a file called 'contacts'. She can meet with you tomorrow afternoon, if you are available."

I sighed. Well, so much for having a couple of days off, I thought. But, I wasn't really that disappointed. It sounded like just the sort of work I had been looking for.

Later that evening, as I enjoyed the comforts of an invigorating massage-bath, I requested some Audio Q&D's - another of Darren's contributions to society - of the files contained on the disks which my old friend had given me. The files were organized in 4 sections. The first section was an overview of the proposed missions to Mars, the second discussed the benefits of colonizing Mars, the third was a survey of all the parties expected to be involved in funding the missions, and the fourth was a rundown of the expected costs through 2037. Only 10 years ahead from the proposed first trip... Obviously the benefits and costs would continue past that, but I imagined that things quickly became much harder to predict with any reliability. I suspected I would run into this problem in a lot of respects.

I requested a 5-minute summary on the first section.

The grand opening of the missions would be signified by an unmanned craft called a MAP/FMF being launched for a 6 month voyage to the planet. Its purpose would be twofold - most importantly, it would manufacture fuel for the first human craft's return to earth (hence the name Fuel Manufacturing Facility). It would also bring a machine called a Martian Atmosphere Processor, or MAP, that would begin work to terraform the planet by making and releasing super-greenhouse gases into the atmosphere. It is thought that hundreds of these machines in operation all over the surface of Mars would sufficiently warm the planet so that the polar ice caps would begin to melt. As the solid ice melted, more carbon dioxide would be released, thus leading to a sort of chain reaction in which a thicker, warmer atmosphere rich in carbon dioxide and other greenhouse gases would eventually result. It was expected that a MAP/FMF craft would be launched every 2 years.

The idea of hundreds of these MAPs being launched one at a time seemed a bit less than efficient to me. "Alternatives?" I inquired. Hearing that the potential existed for either launching multiple MAPs at once, eventually setting up a manufacturing facility to make them on Mars, or using solar sails to reflect increased sunlight and thus warming the planet in a different way, made me a little less skeptical.

Two years after the release of the first MAP/FMF craft, the first manned spacecraft would depart from earth, in tandem with another MAP/FMF vehicle. This would be repeated: every 2 years, 2 spacecrafts - one manned, one unmanned MAP/FMF - would head for the planet. The 2-year cycle was necessary because the earth's rotation would be relied on for an extra boost, so that we could reach Mars on a reasonable amount of fuel. This was only possible when the planets were in such an alignment which only happened every 2 years. This also meant that the astronauts who would land on Mars would be staying there for 2 years, and thus would be away from earth a total of 3 years.

"Stop. Q&D, Partners?" I requested information on section 3. The US government, through NASA, was leading the push for the missions and was expected to be a key player in paying for them for some time. Private corporations also were prominent, and it was expected that they would shoulder an increasing proportion of the costs as time progressed. Such cost sharing had become more common since its first use in 2000 on the ISS. Other non-US governments that were members of the International Space Consortium also were expected to pick up an increasing portion of the tab. There were some grants and other donations as well, but these would not amount to a significant portion of the total cost.

The total amount of funding necessary over the next 10 years was staggering in nominal terms, though in comparison to the Moon missions back in the 20th century and the cost of the ISS, it was not too unreasonable. Each release of a MAP/FMF vehicle was expected to cost \$3 billion. The manned craft would run about twice that. There was also the cost of payload, such as the materials for the dome-like structures which would be assembled after landing to serve as housing. I found myself wondering vaguely what life and accident insurance might cost someday for people traveling on these missions, and what additional health problems might become common. Obviously, the time when these voyages would be so commonplace was a long way off.

I asked for a summary on section 2. The benefits to be reaped from establishing a presence on Mars were numerous and varied. Various organizations would love the chance to use Mars for research and experimentation purposes. Mining would also be important, and not just on the planet itself - Mars' proximity to the asteroid belt meant that someday it could be feasible to mine those mineral-rich bodies as well. Perhaps most intriguing to me was thinking about the value to corporations of being involved on this most important project. I could see why it was expected that their share of the total cost would increase over time. What potential, to be one of the first industry names associated with this new world! I wondered how much that would be worth as time progressed. And, of course, I wondered how I could predict this. I thought of going back and looking at what history might teach about previous colonizing of other new worlds. There were probably many lessons to learn there.

I would call Sue in the morning. I was hooked.

After a good night's rest, and a 3 hour drive, I arrived at the Hubble Complex shortly after lunch. Subsequent to a thorough security check-in, I was told that I could find Dr. Long in the Module Testing Site, where final preparations were being made on some parts that would be going on the space shuttle Aspire next month. The equipment would become part of the new docking station for the International Space Station.

I entered a small room where several technicians stood intently watching a bank of monitors depicting various statistics. One of them turned and saw me. "You must be Mr. Copeland?" She inquired.

"Yes," I nodded.

"Great, I've been expecting you." She extended her hand and said, "I'm Sue Long."

"Travis Copeland. But, you already knew that, I'm sure."

She smiled. "Darren Hicks speaks highly of you. I have to admit, I'm not all that familiar with the type of work you normally do, but Darren said you would be able to help in planning the proposed colonization of Mars."

"Yes, he feels my analytical and planning skills would be beneficial in finding the most optimal ways to tackle this most challenging project."

"Did you practice that on the way over here, Mr. Copeland?" Sue chided.

I smiled. "No, but something tells me I've been working with too many words and not enough numbers lately. And please, call me Travis."

Remembering what she was doing when I arrived, Sue explained. "We're re-testing one of the arms which will be used to anchor a ship in place in the new ISS docking station. It looks like we're in good shape here - the specs are all within the acceptable range. We had to modify the design a little to ensure it would work on the MEC as well as our shuttles."

"The 'MEC?'" I questioned.

"Mars-Earth Commuter. It's designed to hold less fuel and thus more payload than the shuttle, plus would be better suited to the takeoffs and landings we expect on Mars. It is expected that the MEC will journey to the surface of Mars and back, but will not actually return to earth; instead it will stop at the ISS. There it will undergo a rigorous check-up, trade its cargo and astronauts, fuel up, and then head back for Mars a year later. In the long run, this should cut down on the costs of our missions."

"How's that? It seems like it would be easier to go ahead and just land on earth."

Sue shook her head. "The amount of fuel needed to take off from earth's orbit is much greater than what is needed to travel through space and/or leave Mars, which has about a third of earth's gravity. By dividing the voyage in this way, we can forego some extra fuel and instead carry much larger payloads, which is almost an imperative for such a long journey. Also, you may have heard about a new type of shuttle scheduled to undergo trials next year. The craft would piggy-back on an airplane, and once reaching about 30,000 feet, the shuttle would take off and rendezvous with the ISS. This scenario also would cost significantly less than a regular space shuttle takeoff, plus this craft would be totally reusable."

"And the two combined - the new reusable shuttle and the MEC - would cost less than just using the Aspire?"

"Well, maybe not right away, but for the long term, that is the general consensus. But, I think that's one of the places that you would come in, isn't it? Analyzing the costs involved so as to find the most optimal solution?"



I smiled. "Yes, that sounds like a general definition of what many actuaries do on a regular basis, though we don't usually work on such profoundly impactful projects."

"Well, I think your expertise would be very beneficial to our folks here at NASA." Sue motioned me towards the door. "The proposal is for both the MAP/FMF vehicle and the MEC to be assembled here. Why don't I show you around the facility a bit, and then we can discuss in more detail the contributions that you could make to this project?"

"Sounds good to me," I replied.

And, so the day went. Sue showed me around the complex and introduced me to various people who would be involved in the project. Later we discussed anticipated costs and the different entities who would be paying them. I learned that there was a detailed database containing many statistics on all missions within the last 30 years. I expected that this would help greatly in my analysis of potential back-up plans for the missions.

I was excited. Darren and I had always joked that we'd be famous physicists someday. Who knew if that would ever happen, but this sure would be the perfect compromise. This was gonna be great.

## **On the Other Hand**

*by Jason Berkey*

Waking up was always easy to do in the autumn mornings. Just about the time that school kids all over the state were getting a two week hiatus from school to pick millions of potatoes on the farms, the mornings are crisp. It was a nice relief from the summer heat. Instead of twisting and turning over sheetless beds during the sultry days of August, one got an amazingly restful night of sleep in the foliage days of September. Yes, fall was the start of so many things.

Parker opened his eyes five minutes before the time that his alarm was set. He took one quick lungful of fresh Maine air and was out of bed. He shivered once out of the warm womb of his bed, and quickly put on a T-shirt. His wife was still sleeping, and probably would be for two more hours. She enjoyed her mornings to herself, so he learned a long time ago to let her be alone during the early morning. He dressed in his usual flannel and jeans, pulled on his boots and proceeded out to the wraparound porch. He would have to wait for coffee this morning; all the appliances were scheduled to turn on after his alarm went off. He would take a few moments to himself for some quiet solitude. He was blissfully unaware that a chance meeting this afternoon would mark the beginning of a chain of event that would alter his life forever.

Parker strolled out the front door onto the porch. The mist on the pond down was still looming like an energy aura above a Wireless Transmission Grid out in the deserts of the West. Parker thought about the client he had a few years ago that was responsible for building some of the first grids. It was a simple Captive feasibility study, a couple of lines; but then the client wanted more for their fee. His employees ended up doing everything, save getting the CEO coffee in the morning. Parker counted back the years in his head... jeez, that was almost ten years ago. The thought of coffee made him remember the appliances that now should be on.

When he walked into the house, the Argospace heater had turned on to take away the chill for when Lisa and the kids woke up. Parker walked up to the coffee maker and took his cup from under the dual-bay apparatus. At just the right temperature and fixings, he was happy to get his morning fix. Lisa's cup would be waiting under her bay when she awoke.

With the warmth of his coffee now with him, Parker returned outside get some chores done. He made a mental note that he would have to start chopping wood soon for the winter. He didn't heat the entire house with it, but it certainly cut down on the money that he paid to SolarCorp every month. He enjoyed this annual burden; it gave him some excitement in his mundane life. The heat from the sleek metallic Argo heaters was cheap and efficient, but they made Parker yearn for the burning of fossil fuels.

Parker realized quite a long time ago that his life was boring, but he was happy nonetheless. There might be a few things he would change, but he firmly believed that each person had a responsibility to make his life as he saw fit. That is why he moved back up to Maine after he had asserted himself firmly in the CAS. There has been some tough days when Lisa was basically raising the kids alone, and he spent every free minute with his nose in some actuarial book cramming for those god-awful tests. He had paid his dues and now he worked and lived like a king. He made his own hours,

picked his own projects, and only occasionally had to drive to Portland or Boston for some meetings or on-site work.

He often wondered if he had to do it over again, would he follow the same path. It is not like he was financially troubled, so it wasn't that he needed the money that he was making now. He was tired of money; he had more than enough. What would his life be like if he had pursued his first love of woodworking? Would he have been a poor bachelor hardly eking out a living? What would his life be like if he hadn't studied all those hours...months...years? Would everything have been all right, if he only passed say five tests?

Waking up was hard for Mike to do in the autumn mornings. Mike hated waking up more than life itself, especially in the fall. Summer was over. Golf was becoming more rare, and work was starting to build up for the winter hibernation. Like the leaves turning color, Mike saw his life turning to one more dreary winter. Even on this September Tuesday morning, the heated air was passing through the filtered vents. And he supposed wearing jackets was just around the corner. All he could piece together from the night before was an ever-disappearing summer night at a North End pub conspicuously named Strange Brew. A much too young blond who was lying next to him naked, and his aching body still not recovered from the night before. Yes, fall was the end of so many things.

After telling his alarm three times that he needed an extra ten minutes, Florence followed the subroutine Mike had programmed for just such an occurrence, and began her morning duties. Coffee was being made; the InterNews was scanned for breaking news and pertinent Actuary briefs; the day's schedule was received from the office server; and most importantly, all the lights were turned on and the air turned down in the bedroom to wake Mike. Florence was not required to wake the guest, so when Mike arose to get his coffee, Florence resumed energy saver mode. Florence registered a sigh and religious proclamation from the bedroom in an unknown female voice. Mike liked to spend the first few minutes by himself to collect his thoughts, and usually his memory, from the night before. Last night had been a rough bender. The coffee felt good on his sore, dehydrated throat.

With a single command, the painting on the wall broke into two segments and opened to reveal a plasma screen on which Mike reviewed Florence's findings. It was the same old news. Florence was a good filter, but there still were a lot of useless stories in her search results. The last thing that Mike wanted to know this early in the morning was that some punk got partially vaped in West Roxbury.

The UN was still trying to work out the details of this Kress Embargo Act. It seemed harmless enough, but sometimes there needs to be a war out there, Mike thought to himself. That was the nature of man, this guy Kress was a little off the mark, but he had good intentions.

In the news, there was another merger of two Canary Island domiciled captives. Mike thought about how they needed to be careful, or the same thing that Bermuda went through could happen. Some people just don't know when to leave a good thing alone. All that people are interested in is how to maximize the profit in the present, and then sell it off. Out of sight, out of mind. That was

fine with Mike; if a client told him what they wanted, then he was going to come pretty damn close to that, if not better. Mike absolutely loved the words "judgmentally selected".

Mike was about to order breakfast, when he heard some rumbling in the bathroom. While he waited for her, he desperately tried to remember her name. He hoped Florence would take care of him again. Florence had gotten her name off of the last girl's prescription contacts case. Very clever for a machine he thought. Florence was no such help with this one, and Mike had to wing it. He ordered their food into the air and twenty minutes later the complex staff was ringing the doorbell. They ate, and Mike adeptly managed to never need to use her name before she departed.

He adjourned to the deck that overlooked Back Bay. Back when he bought this condominium, it was state of the art and had the best residential view in town. Now, he had to do most of the network updates himself, and the neighborhoods around had plummeted down the precipice that most cities had fallen down. Most people had moved away from the cities in hopes of a fabricated, surreal experience. Mike laughed; people were so phony; at least he was willing to admit his fallacies. He hated his life. It was not that it was boring, in fact it was quite exciting by most people's standards, but he always wanted to be someone that he was not, or something more.

He was an actuary who could write his own paycheck, who scored women at his leisure, some even half his age, and yet he hated himself for doing the very thing that he did just last night. But Mike loved doing it with models. He hated cheating on his wife, but she stopped being fun years ago. He hardly knew his children, and when he did see them he had no clue how to act around them. He felt the awkwardness that he knew his father felt, when he would come home from high school talking about those "new-fangled computers". His kids enjoyed spending his money, and in exchange they stayed out of his hair when need be.

He often wondered if he had to do over again, would he change anything. It is not like he was burdened down by the constraints of time. Mike was tired of life; he had more than enough. He had all the time in the world, but the money that he made allowed him to make decisions that he didn't necessarily enjoy. If he hadn't had the drive to pass all those tests, most of these Pandorian doors of opportunity would never have opened and maybe he would have made "better" decisions. He knew plenty of people that were happy in life and they had one-sixth his salary. Sometimes the world is just not right, but who has the power to change it.

By the time that Lisa got up, Parker was typing away at his computer in his office. She came in with her cup of steaming, aromatic coffee. She sipped it as she reviewed the daily news on the leather couch. When she was done, she looked at her husband. They had long since passed the need to address each other every morning. She took a risk marrying him so many years ago, and twenty years later she didn't regret anything about it. Sometimes she did not enjoy her life stuck up here in the woods, but more often than not she loved it. Maine was one of the last few places in the country that was still pure. When most states allowed massive telecommuting communities to overtake the forests and beautiful places, states like Maine had fought fiercely to keep the most amount of land natural. The only other states that offered such solitude were Alaska and the former Canadian provinces, but who wanted to live in the near Arctic.

"Did you have a good sleep last night?" Parker asked more out of habit than actual interest, still staring at his screen. He was finishing up a narrative for a report that needed to be sent this afternoon.

"Fine." She hated the stupid questions he asked, and he hated the way she always answered in the same way, the same monotony, and the same tired one-word answers.

She looked at him, typing away, serious as can be. He always seemed to look happy no matter what he did. Maybe he was. She knew that when she did look at him in this state it made her think that everything was all right. It brought comfort to her feminine side that she liked to keep locked away so tightly.

"How much work do you have today?" Lisa was used to Parker only working a few hours a day. It allowed her to have fun with her lifelong companion. They had many activities they enjoyed doing together. Whether it be canoeing, fishing, biking; Lisa thought of it as early retirement. And sometimes she even put up with doing things that only Parker liked, like Riemann tennis.

"Should be a few hours. Do you have anything in mind?"

"I kind of wanted to go out on the boat and see if the bass are still running."

Parker loved his wife. When he had decided to marry her, he knew that as long as she could want to go fishing on a chilly morning, she was the one for him. Parker believed the qualities that made a person attractive to the opposite sex were those qualities opposite of one's gender. Men liked women that liked sports and drank beer. Women liked men that hugged randomly and spent hours shopping for no reason other than to shop. He and Lisa both fit this generalization well enough.

"Sure. Just give me a few to finish this report." Lisa left the room. She knew better than to ask what he was doing. Parker worked in the analytical world of numbers. She was not the usual math-phobic person, but anything beyond the "daily-use mathematics" for banking and crediting was not of any interest to her. He thought in ways she could only pretend to understand. It was amazing how he could break down a totally new problem that he knew nothing about previously, and come pretty damn close to the right answer. When he got involved in a problem, he could spend hours staring at the VidScreen and not so much as move an inch.

So she left Parker to his work and his figures.

Mike was not in the office for thirty seconds when the phone rang, transferred in from his assistant. He could only expect one person to call him this early in the morning. He didn't even bother to pick up the phone. When he touched the speakerphone the monotonous voice of his wife was on the other end. He felt like she knew exactly when he was in the office and wanted to know even more of what he was doing. The truth was he avoided her calls at the condo earlier this morning. She was in the country house, and she was droning on about how she had had a lonely night. Mike thought, with a smirk, about how his night wasn't lonely.

It was not like he didn't love his wife, but he hated the way she always checked up on him while he was gone. One time he was in San Francisco and she must have called a dozen times in one day. He didn't need that stress. He enjoyed his time away from her. She seemed to never want him to leave. He wanted to be the man that he was. She wanted him to be someone else. If there was changing in his lifestyle, the last person that he was going to listen to was his wife.

"When are you coming home?" She finally got to the point. She wanted Mike to be home. Mike thought a perfectly good substitute for himself would be 'A Virtual Night with Tom Jones'. She thought otherwise, and refused to try it.

"I don't know. There is a lot of work built up here."

"What does that mean?"

"It means that I am probably going to have to spend a couple days here." A sigh came from the other end of the speaker.

"You are going to be home for the weekend, right?"

"It's hard to say, I will know better in a couple of days." This was just putting her off, but he would rather deal with her later. He added, "I have to go; I have a meeting soon."

There was a momentary pause on the other end. "Bye." Then, finally, there was a slight click.

Mike sat in his seat for a good ten minutes without so much as swiveling. In truth, he only had a couple of day's work, but by telling her that there was an unknown amount of work he could stay the weekend if he felt the urge come Friday. Mike thought about when he lost his passion for his job. He usually needed a change in his life every so often, and he had not had such a change for a good fifteen years.

Mike snapped out of his lamenting mode. He had a meeting in about fifteen minutes and he had to start preparing. He had a reputation as a hard nose and would like to keep it that way. Clients were usually intimidated enough by his technical jargon to forget about their special requests. They often had the gall to come in and tell Mike their opinion on his numbers. Usually bean counters or Franklin-pinchers, these guys had been in the field for a whopping five years, not long enough to know better. Mike had seen it before and there was no way he was going to let some Ivy League accountant tell him that the numbers should be a little higher. Usually he felt like telling these people their chances of getting into a car wreck while driving home after the meeting. Mike could be reasonable. If they were willing to pay for say a few hundred more billable hours, then perhaps he could try some different methods, possibly shifting the numbers slightly, making the numbers change by millions, perhaps even billions for the larger clients. What they did with that difference was none of his business, but he knew part of it was funding several vacation homes in the Congo. He knew that much because after such adjustments, he had been cordially invited to stay in the steaming tropical, tourist trap. He knew better than that, though. There was no way he would get caught up in that web. He knew that his ass was always covered if he only took his billable rates, and he would prefer to keep it that way.

As he approached the conference room, he began to frown, and put on the game face.

"Hello," Parker answered the phone. He chose to do without some modern amenities. He liked the old phone hand set, and he figured that when he began to get sick of holding it to his ear the conversation needed to be over soon. He admitted that since he did most of his work by telecommuting, that a phone was a necessary evil. But there was no way he would install a VC link. If he wanted to be afforded the luxury of being able to work in his underwear, even if he never used it.

"Hi, I have Cody Kretchmer on the line from Red Canary. Do you want to talk with him?" It was his assistant. It reminded Parker that her birthday was coming up and he needed to do something. Maybe an impersonal Vid-Card.

"Do you know what he wants? I am trying to finish the Rand-McNally feasibility study."

"He said that he needed to discuss some numbers on the report." Parker thought that this client was a prick. But he had to talk to him. His one consolation was that Cody would probably be pissed off at not being able to use his VC link.

"Okay, I'll take it."

Click. "Cody, how're doin'?" Parker sounded sweet enough.

"Hey, do you have a minute to talk about some numbers here? Good. I was wondering..." Parker was half-listening. It seemed fitting since Cody only knew half of what he was talking about. Parker took his time, slowly and methodically explaining the process that he used to get his numbers. He gently eased over the linear algebraic formulas, dumbing it down a few levels. Cody was a smart risk manager, but he was not ready to handle loss reserving, and probably never would be.

After a half an hour, Parker's ear began to hurt and he looked for a way out of this drabness. There was a brief interjection period and Parker jumped at it. He started into the whole Kress Embargo Act proposal making it's way through the UN. As with most people of the day, Cody knew little of it, and wanted to talk about the historical moment even less. Within a few minutes the phone was placed in the cradle and the conversation was over. Parker thought he was particularly successful at both getting Cody off the phone and calming his nerves. Parker knew that Cody wasn't happy with the numbers, but that was the way the Pentium crumbled.

The interruption would cost him some time on his current project, which meant Lisa would have to wait until after lunch for fishing. She would understand. He heard some classic David Grey in the background and knew she was happy enough. He rushed to get the edits done.

Coming out of the VC conference room, Mike felt tired. He negotiated with clients, but took his losses personally. This time it was one of the other consultants that took him aside and told him that some of the numbers did look a little too high. Mike wondered if he was sincere, or if he was

getting a cut of the difference. You never could be sure. At other companies that he worked for, skimming and payoffs were ubiquitous. Around here there was a pretty straight group, but you never could be sure. He knew that he questioned their methods with constructive criticism, and so the natural order of things said that they should be able to do the same.

It wasn't even noon and Mike wanted a Scotch. Or perhaps a Port. He liked brandy, but not straight. He preferred the compromise of a port engrained with a good Chilean vintage wine. When Mike got to his office he cleared his mind. He had to stop thinking about sweet, precious alcohol. He could not help it; it was his soma, his ambrosia. Mike's firm was unique in that they had an open bar, to help stimulate creativity, but creativity was not the order of the day. The open bar concept had spawned not only unparalleled actuarial creativity, but also better client relationships. His firm was now known to have actuaries with personality, a commodity more scarce than a combustion engine.

He pressed a button on his console and some news briefs came to life on the screen on his wall. More people being partially vaped. More embargo news. He would have to run an updated filter on Florence pretty soon, before she became an ineffective monitoring device. He tapped the button again and the imaging was gone.

Enough procrastinating. Another couple of hours here and he had a tee time in Cranvers. That should let off some built up stress. There would be only a couple more round of golf before the real cold set in, and he wanted to make the best of them.

Mike got a call an hour later from a client that he had talked to yesterday. If there was one thing he hated more than anything, it was explaining something twice. During yesterday's conversation he had painstakingly went through all of the clients concerns. Now the client was asking the same questions, as if hinting at something.

"What is it that you want?" Mike growled. He was on VidScreen, so he couldn't hide his emotions.

"I was just unsure about these numbers being accurate. Our own preliminary studies showed a much more conservative reserve estimate."

"If your study showed something else...perhaps something more agreeable to you... than maybe you should go right ahead and use your study instead of mine. I was paid for my opinion, and I gave it. As far as I am concerned this issue is over. If there is another concern, please let me know." Mike was stern and to the point, and the client wisely backed off appropriately.

"Ahhh...no thanks, I was just wondering. Sorry to bother you." He was very curt. Mike wondered if he had lost yet another client. It didn't matter, there was vast ocean out there and his firm would always have revenue coming in. Plus, the annual billing to this client was only pocket change.

One hour later Mike was teeing off at the first hole, and four hours later he was having a drink with the clients he had just annihilated in the round of golf. It seems that one of them cared a great deal about client-consultant relationships. So Mike wined and dined him. How polar opposite this was from the rudeness that Mike had just put another client through earlier that day. This client was a



golden goose though, his firm billed them large amounts every year, and he was not going to be responsible for ending the gravy train.

Walking out into the parking lot, Mike did not notice the small metallic object underneath his car. He also did not realize that his voicemail had been hacked into while he was on the golf course. If he had checked his voice mail, he would have heard a message from the militant extremists that were showing the world their opposition of the Kress Embargo Act, through senseless violence and destruction. Their activities had intensified after the failure of last night's U.N. negotiations. Their acts were random, so it might have only been fitting that an actuary was the victim of their hatred of humanity. Mike's last thought before he turned the key of his car was that of his job.

Parker got the call just before noon. He needed to be in the office until late this afternoon for a personnel meeting. That was unique enough these days. Apparently Dakota Sapp had left the firm Friday and didn't bother to tell anyone until a well-timed voicemail to be heard on Monday morning. The consultants were breaking up her generous workload and there seemed to be a lot of work ahead for the next few weeks. Parker was never one to put his job on the back burner for his wife, and he knew she would be disappointed about the fishing. He told the office that he couldn't be there until tomorrow morning, but of course that did not go over well. Apparently Dakota's biggest client was quite upset that all this was taking place, and wanted to talk with the next guy in line for their projects. Parker murmured something about being there in about four hours and promptly hung up.

He walked into the living room with his usual, dull expressionless façade. Lisa looked up at him. "Let me guess, we are not going fishing." She knew all too well.

He began to explain, thinking she would relate seeing how Dakota was one of the consultants that Lisa liked, but she was not listening. He told her that he had to leave now and he did not know when he would be back. Perhaps by the end of the week. He grabbed his briefcase and kissed her goodbye. There were only empty, cold lips on the other end of the kiss.

He started the car and began his long commute. The radio buzzed about the start of U.N. negotiations tonight on the Kress Embargo Act. As he sped down the dirt driveway, a cloud of rich Maine dust flew up behind his car and followed him on his journey southward. As he passed the mailbox that read 'Michael and Lisa Parker', he wondered if there was anything happening tonight in the North End. He dialed into Florence, and had her check on tonight's events in the North End.

## **The First Actuary**

*by Marilyn Dunstan*

Sarah climbed up on her father's lap from the picnic table bench. David was studying for actuarial exams by the light of a Coleman lantern and an almost full moon. To her left, was the family tent, up above was the night sky, brimming with constellations of stars. Mountains and scotch pine surrounded them. The jagged peaks of the mountains were outlined against the black sky and illuminated by the full moon rising above an ice-covered, craggy pinnacle. An image of a wolf cascaded into Sarah's mind, hidden in the scotch pine, baying at the moon. She shuddered and looked back at the sky, focusing on the familiar big dipper.

"Dad, I have a question."

"What is it?"

"Why are the stars so bright?"

"We're away from the city....out in the forest."

"Who made the stars?"

"God made the stars. Sarah, I have to study for exams!"

"Dad, who made the first actuary?"

"Sarah!"

"Please. You're always studying. You never have time for me!"

"I don't remember. They didn't tell us that in the study material from the Society."

"Dad. I want a story. You promised." She twisted on his lap, reached over and curled up the edges of his study notes.

"Okay. Let me think"

And he thought and he thought and he thought.

"Once upon a time, many, many years ago in a universe preceding ours, God created the first actuary out of a whirling cloud of cosmic dust and debris. Althazar was a timeless being, unbound by the usual constraints of mortality.

"Is that why actuaries are dry as dust?"

"Sarah! Althazar was created because God didn't know whether the universe was going to contract into the size of a cosmic egg and launch the next Big Bang."

"So Althazar could know something God couldn't?"

"Althazar used actuarial techniques to predict the next Big Bang."

"But why didn't God use the physicists?"

"Their predictions had already failed and God decided to try an actuary instead. Althazar got right to work and brought into existence a team of actuaries to perform the calculations. God had given them seven days and seven nights to determine the fate of the universe and come up with the appropriate adjustments God could make to the universe model so that it would remain stable over many years to come."

"Stable?"

"Neither contracting nor expanding, getting bigger. God wanted a stable; long lasting universe and this was a critical point in time that adjustments could be made to ensure this. God sensed the universe was contracting and there was only a certain window in time that the adjustments could be made before contraction was inevitable."

"What adjustments could God make?"

"Mostly decreasing the density of the dark matter between stars and planets. The dark matter was too dense, too much mass, and the gravitational attraction ensured that the whole universe would contract."

"How did God do that? Isn't it a big job? You can't just bring in bulldozers and dump trucks!"

David smiled. "God works in mysterious ways."

"So what did the actuaries have to do?"

"The actuaries had to figure out how much dark matter to remove from between the planets and stars and project that forward many, many years."

"So did the actuaries get their work done in six days and rest on the seventh?"

"As it so happens, they didn't. They weren't God. Neither were they the timeless being that Althazar was. In fact they took all seven days to get done and gave Althazar the results of their work at the stroke of midnight."

"Didn't they even sleep?"

"They got some sleep, they mostly took shifts and were sustained by nightly pizza deliveries".

"What kind of pizza, dad? I'm hungry"

"Uh, mostly Hawaiian, sometimes pepperoni and cheese."

"So they were regular, space age actuaries."

"Oh, but dry as dust."

Sarah looked up at the stars in the night sky. "So what happened to them after they turned in their report?"

"Althazar was done with them. They were put in cryo-storage and programmed to awake many years in the future."

"When?"

"For just before the universe was to have collapsed into the cosmic egg under the original prediction. Althazar wanted to make sure they saw the effect of their work in practice."

"Wow. So if they were wrong ....."

"They'd get crushed and get to witness the error of their projections."

"That's cruel, Dad....."

"It's life. "

"So how were they stored while they were asleep.?"

"Althazar packaged them up in self serving cryo-units. The team, numbering 8, were all stored together in one module. With a cosmic sense of humor, Althazar made the module the shape of an egg, even stenciling "cosmic egg" on the outside.

"So what happened when they woke up?"

"They gained awareness inside their cocoons. They were aware that they were hot, and they could sense a crushing gravity."

"But they couldn't see anything!"

"Actually they could. Althazar had mounted sensors on the outside of the egg and miniature TV screens inside their units for when they awoke."

"What did they see?"

"They saw swirling black clouds, thicker and denser than anything they had seen before. Their senses felt distorted, crushed like the feeling of gravity. There appeared to be a great wind outside that was hurling boulders and trees and buildings about. Lightning crackled in the distance, lighting the sky."

"But they remained unharmed?"

"Yes. As the crushing gravity increased, they felt a tunneling effect. Outside, their monitors showed streaking lights and the appearance of strange objects."

"Like what?"

"One man saw all his past wives, scolding him. One was shaking a rolling pin at him. Another was dressed in the outfit of a witch and riding on a broomstick!" Another woman saw mounds and mounds of study notes for past actuarial exams, piled before her. A third man saw all his past auto accidents pass before his eyes."

"These are all bad things. Didn't anyone see anything good?"

"No. In the crushing gravity of the tunnel, everyone saw their past nightmares pass before them."

"But didn't it get better?"

"As a matter of fact it did. The gravity decreased, and the tunnel opened up ahead of them into pure whiteness. They were propelled towards the mouth of what appeared to be a giant funnel."

"What were they in, Dad?"

"They had been in a black hole and now they were in a white hole. They had failed to predict how much black matter that God could remove to assure a stable universe, but they had succeeded in predicting exactly where to be when the universe did contract."

"So did they escape."

"Yes! They were propelled out the funnel of the white hole in the safety of their cosmic egg. The whirling forces surrounding the white hole succeeded in breaking up the egg and hurling the crew of eight out into the new universe."

"Did they die?"

"No, they were safe inside their cocoons."

"What happened to them."

"Well, they were hurled off at different rates, so that each one ended up in a different location and a different point of time."

"Where did they land?"

"Well, seven of them ended up in different planets on far galaxies."

"What did they do there?"

"They either started the field of actuarial science, or a similar field based on prediction, or inserted themselves into an existing field. Where they entered an existing field, the field took a quantum leap after their entry."

"Quantum leap?"

"Yes, a large increase in knowledge that resulted in a significant improvement for the entire world. You see the cosmic radiation they were exposed to on their journey affected their DNA and gave them new talents."

"And the eighth? What happened to her?"

"Him. He's here on earth."

"Wow. How do you know that?"

"I have my ways."

"What is this actuary here to do?"

"Insinuate his way into an insurance company."

"And then what?"

"Once he's in a position of power, launch the next stage of human development."

"But doesn't he already have power? Why does he have to work his way up to get power?"

"Because he's a mole."

"A mole?"

"A plant. He doesn't want to show his powers until he needs to."

"What kind of powers does he have?"

"I can't tell you that. "

"It's just a story Dad, you can tell me. Please?" She climbed off his knees and walked over towards the tent. Another image came into her mind, sudden and unbidden. A wolf and five cubs. Another wolf, stalking. Stalking who?"

"Sarah, I can't tell you. Someday you will know."

"I can't wait. You have to finish the story. You can't leave it like this!"

"There is a gift, Sarah. A gift."

"What kind of gift?"

"You will know when you're ready, my daughter!"

Sarah reluctantly gave up and started walking towards the rest rooms. They were 100 yards away, and it was dark. She turned on her flashlight, but it gave a dim glow with the waning power of the batteries. She could sense a presence around her. She picked up her pace, looking around. But she could see nothing inside the blackness of the surrounding forest. Once she thought she could see red glowing eyes, but when she turned back again, they were gone. Thoughts streamed into her mind. Cougars, Bears entered in, but were chased away by the single image of the wolf howling, the wolf stalking her. She got closer to the restrooms and heard it...a long, baying, howling sound. She turned around to its source and saw him. His plaintive song transfixed her. He stopped, the fur stood up on his arched back, his ears pinned back, bared his teeth and growled. She walked backwards towards the restroom, keeping him in her sights. He pounced.

A thought streamed into her consciousness. She put her hand up and said, gently, "Go in peace". The wolf stopped dead in his tracks, came up to her slowly, licked her hand, and walked slowly away.

## **NuVision**

*by Bret Roush*

They've removed the gag order on me, now that the class-action market conduct trial for NuVision is over. So now I can tell the "inside story" I guess everyone has been waiting for. I reviewed a few media accounts of the trial from the past few months, holing up in a library and reading Time and The Journal. Both did a decent job, though I still find the latter unnecessarily cold. The Journal in particular tracked down a number of the various companies Billy worked for in his busy past. Despite reporters' assiduous research, though, with all the key parties under gag orders numerous details remain unrevealed.

Until now, of course. Before beginning, I suppose I should inform you of a few items. I am receiving no remuneration for this account. The data related herein has been verified by me, as I collected it myself. And though the results are unsavory, I have no reason to believe they are inappropriate.

Surely you know the background--Reginald Freeman v. Northern Vermont Insurance Company and the massive anti-technology campaign waged by NV's unanticipated supporters, the HUMANS (Helping Undo Man's Anti-Nature Society). I'll briefly summarize the case and focus on the lesser-known details of what happened inside our little company that found itself in the national spotlight.

Reginald Freeman was a typical insured, a 72-year-old retired accountant with one of NV's Protector life annuities. In 1999 he suffered a massive stroke and entered a coma, in which he remained for the next 5 years. Throughout his comatose period NV continued paying his annuity without contention, sending payments directly to Central Vermont Hospital after discussing payment options with his children. In March of 2004 things became more interesting.

With no recovery likely, his elder son and legal representative requested Reginald's body be frozen. His lungs no longer inflated. His heart no longer pumped. His veins no longer carried blood. His temperature descended to a tissue-preserving 250 degrees below zero. Reginald would remain this way indefinitely, until the medical profession determined how to revive people from comas; at that point some technician would refill his body with human fluids and flip on the heat lamp.

Northern Vermont stopped its monthly \$1500 payments, stating Reginald was no longer alive. His son sued NV.

What began as a local trial captured the media's interest, facilitating a lively public debate. As the public's interest was piqued--causing more media coverage--a positive feedback loop resulted in NV consistently making the front page of nationwide newspapers. Such widespread attention caused Judge Jansen to proceed at a dirge-like pace which he called "due diligence" (or, as they say in the medical industry, "defensive medicine"). As the trial dragged on, what kept the public's interest was the increasingly vocal protest launched by the anti-technology New Age community, the HUMANS. They supported us in our defense that Reginald could no longer be considered alive. Though not extremists in general, HUMANS featured by the media were its sign-waving,



bullhorn-toting, chanting members. They established camp outside the Montpelier courthouse and welcomed hundreds to their contingency daily.

For whatever reason, the debate on whether a man in suspended animation should be considered alive for the purposes of an annuity payment had become a symbol of technology's dominance of modern life. Sometimes the situation seems absurd, but then it makes sense. Insurance focuses on things like life, health, and protecting our homes--it deals with the fundamentals of man's existence.

William "Billy" O'Keefe, Northern Vermont's CEO, was concerned with the fundamentals of his company's existence. "What are our BCAR and RBC Ratios if we settle?" His stentorian voice easily carried through his closed door. Loren's muffled reply did not, but the particular numbers didn't interest me. It was common knowledge throughout our company that Northern Vermont didn't have much surplus to throw around. "Aren't those numbers supposed to be over 100%?" I raised my eyebrows and focused on my New Jersey PPO filing.

At lunch we discussed that morning's conversation. "We," I should explain, are Loren Wainwright (Corporate), Elise Banninger-Silverstein (Life and Annuity), and myself, Rob Shutter (Health).

"You're not including punitive damages, are you?" I asked.

"Are you assuming a perpetuity?" Elise added. "What real interest rate are you using?"

"Woah--give me a minute." Loren ticked off answers. "No on the punitive, at least not in the settlement scenario. Yes, it's a perpetuity, and I'm assuming real investment returns of 1.5%." Loren paused for Elise to discount that interest rate's validity but she was unusually silent. "The biggest problem isn't the valuation of the settlement. It's these ongoing legal fees--and the potential liability if others start using cryogenics. We don't have much cushion."

"Aren't we refileing to exclude this from happening again in all of our policies," I asked Elise, knowing that she was currently swamped with such a project. "How's that going?"

She turned her bloodshot green eyes towards me. "You know the paperwork involved. The filings are ready, the cover letters are basically done--the problem is waiting to see how long it will take debating with states on whether this can be inserted into existing policies or just used going forward. I don't have high hopes." Elise poked absently at her lasagna.

Loren indicating we didn't have much of a cushion didn't worry me much. We could have \$100 million of surplus on ten bucks of RBC and Loren would assemble some kind of dire predictions accompanied by color pie charts. But Elise's negative words and her defeated tone filled me with uneasiness. With equal disinterest I poked at my lunch.

Billy was not an insurance man. He had come to NV as CEO from a management position at a role-playing game manufacturer. And before that he had worked in every level of management for virtually every two-digit SIC code grouping. He was not an insurance man, but he was a businessman, and he was a leader. The next morning a podium was set up in the cafeteria with a sign posted on it stating "Billy at noon."

"OK. We've all got a lot on our minds, we've all got a lot to do, and after I'm done we'll all have a lot more to do. So I'll get to the point." Billy didn't receive an introduction; he didn't wait for people to stop talking. He just stood up a few minutes before noon and started bellowing into the microphone. Immediately the 350 of us who packed the cafeteria ceased gossiping to listen. A few stragglers froze like frightened rabbits, then sank swiftly to against the wall.

"Northern Vermont has a tremendous opportunity. I've debated on whether to start with the reasons and build up to the conclusions or just present the conclusions." He paused to give us time to consider the options, then narrowed his eyes behind those purple bags he perpetually carried. "I'm going to give the conclusions, because they're too exciting to conceal any longer."

"First, Northern Vermont is changing its name to NuVision. That's one word-- N-U-V instead of N-E-W-V, capital on the N and V. NuVision. Note that we don't have to change our stationery." He paused for polite chuckles.

"Second, we're changing our product line and target market." He held up last Sunday's Perspective section from the Vermont Tribune. Its front page featured a gigantic photograph of the crowds outside the courthouse and the headline screamed "Is a Frozen Man Alive? HUMANS vs. the World."

"This is our target market, and our products must cater to these people." He swished the paper back and forth. "This is a group of people that rails against technology, against society's dependence on the cold 'anti-nature' of computers. They've revolted by embracing ancient ideas and ideals. So NuVision will do the same." He dropped the section and it landed face-down in a crumble. "I think their beliefs are, for the most part, ludicrous. But I think NuVision would be equally ludicrous to ignore the opportunity of selling to this ready-made market that basically has spent the last few months chanting and protesting on our behalf."

"Annuities." Billy held up a single magisterial finger. "Paying for a claimant who is arguably dead precipitated this whole mess. Rather than fight it let's embrace the idea of extended life. Members of HUMANS nearly universally believe in some form of reincarnation, so our annuity will acknowledge this. We'll pay a soul rather than a physical body. When a person 'dies' we cease payments, but when that soul returns to this plane of existence we resume payments." Elise and I looked at each other for support. I barely managed to contain my snickering to a quiet snorting noise--hearing our CEO using phrases like "plane of existence" with his straight-laced intensity overcame my better judgment. Elise was more composed, though I knew she struggled to remain silent.

A second finger joined Billy's first. "Life. Since they believe in reincarnation, it seems inappropriate to insure against death. Therefore we're eliminating the Lifestyle and Lifestyle Enhancer products." A feeble gasp came from some Claims and Underwriting personnel who worked exclusively on those lines.

"Health. To sum this one up, everything that's included--hospital stays, MRIs, transplants, blood tests, prescription drugs--is now excluded. The technology pervading our medical system disgusts

the HUMANS. Conversely, everything that's currently excluded is now included. Chiropractors, herbal medicine, faith healing are all covered."

"Third, we're remaking our image. Besides being called NuVision we must present ourselves with a new vision. We must strip technology from the workplace. We'll remove the automated phone answering system and replace it with a friendly human operator. All policyholder communication will be typewritten rather than laser printed. By the end of today I want our website inaccessible to the public." A snicker greeted this demand--www.nvins.com hid in some unmapped corner of cyberspace where it adroitly prevented outsiders from viewing it. Billy ignored this and plunged forward. "All of our sales staff will now be deployed in face-to-face selling encounters. No more genetic testing of applicants--we're going back to the days of flying blind with nothing more than questionnaires. Use the telephone sparsely. No faxes to our customers. We need new promotional material, eliminating the presence of high-tech devices besides explaining our new products."

"The Freeman case is nearly settled. We'll delay it a little longer but it should be over within a few weeks from the media's perspective. We're going to come out losers in the court but winners in the marketplace. But only if we move immediately, because our captive market will shrink exponentially. We have a tremendous amount to accomplish--rewriting and refileing policies, removing technology, revising our underwriting and claims practices. We measure time in minutes for the foreseeable future."

"I want to see the planning committee in my office. I want to see everyone not on the planning committee implementing NuVision. Thank you." Billy walked from the podium as Elise, Loren, myself, and the other planning committee members hastened to his office.

"Can our target audience shrink at an exponential rate?" I joked to Elise, retreating to levity to deal with my shock. "Shouldn't it be logarithmic since the audience would have to level out at an asymptote?"

The brainteaser fiend was ahead of me as usual. "I was pondering that myself. I think exponential shrinkage is just exponential growth with an exponent between 0 and 1."

We gathered chairs in a semi-circle facing Billy's desk. The full dozen of the planning committee were present: myself, Elise, Loren; Gerry and Natasha (Underwriting), Susan (Claims), Debbie (Premium), Douglas (IS), Emil and Vince (Sales), and Kimchee (Legal). And Billy, of course.

"The refileing of all this policy language will be . . . monumental," Kimchee began. "And paying for a reincarnated soul--that's unprecedented! How am I supposed to submit something like that to a state insurance department?"

"And how are we supposed to price these things? We don't have any kind of reliable data to work with."

"At least you only have to deal with reincarnation," I pointed out to Elise. "I have to reverse every standard clause in health insurance."

"That's easy--just take every denied claim and pretend it was approved and vice-versa. You're done."

"It's not that easy and you know it."

Billy halted our bickering with a pointed "HEY." He appeared ready for battle that day. Always a fan of solid colors, he had chosen a midnight black shirt and pants. Glinting silver buttons and a gleaming silver belt buckle were the only source of light. Such darkness against his pallid Northeastern face created an almost mime-like presence. Looking at the purple bags beneath his eyes I had to believe some sort of makeup had been applied to accentuate them. I wasn't sure why he would do this, other than to impress people with the intensity and drive required to cause such havoc to his body.

"I could sit here nurturing each of you, playing off your strengths and guiding you through your weaknesses. But we don't have time for that. It boils down to this: I've been on the phone with insurance departments in the mid-Atlantic seaboard and most of New England--including New York--and explained our situation. They're receptive to what I've presented and understand that we need to move quickly. So if we don't have every 'i' dotted and every 't' crossed we can still be up and running, and work out the kinks later. So the filing aspect is started. Now, stripping technology from NuVision. Would anything delay that?"

Doug shrugged his narrow shoulders. "Just unplug a few things, delete a few pointers. The hardest part is who's going to staff the phones and do all the manual work once we power down the systems?"

"We'll have some extra staff at first since we're dumping the Life coverages, at least until we can hire dedicated operators and find better things for the underwriters to do. I don't want to pay an underwriter to be an operator for long, but it would be stupid to lay them off for a month and then need them back once we start selling new products."

Elise cut off Kimchee's next words. "So what is the pricing objective here, Billy? You say you want everything in a month or so,"

"Less than."

"which isn't nearly enough time to design and price such drastic changes, much less get the forms and ratings approved. Are we just supposed to throw professionalism and attention to detail out the door or what?"

"Less than a month," he repeated. "We can't delay the trial much longer, if for no other reason than the legal fees." He turned his gaze on Kimchee as though she were responsible for the exorbitant charges throughout the legal community. Those accusatory eyes shifted to Loren and continued to Vince and Emil. "We're barely solvent, so we need profitable sales ASAP and some reinsurance for surplus relief before Annual Statement." Billy's tour of accusation finally focused on me and Elise. "And to sell the product, we need it designed and priced quickly. That's your job. If you can't do it you should take your craft elsewhere and I'll take care of it."

I quietly imagined the results of Billy becoming the actuarial department; Elise appeared ready to furnish a scathing retort but fortunately Kimchee wrapped things up for us. "I'll need to know the states and contacts you've spoken with at each DOI and what the last communication was--are they waiting for something from us; are we waiting for a call back?"

For once Billy appeared slightly embarrassed. "I'll give you a list of states. We're waiting for calls back from all of them--so far I've just explained what we're doing."

"So they said they'd consider it but just haven't gotten back?"

"They haven't really said anything--I just left messages." She closed her eyes and crumbled in silent acceptance of her plight. "Nobody's said 'no' though." We dispersed, any enthusiasm effectively quashed, leaving Kimchee as the first casualty upon the battlefield.

Elise and I have very different work styles. I enjoy a solitary morning, getting in some reading and a sunrise breakfast followed by a good stroll on the Merrimac Trail system as long as the weather isn't trying too hard to kill me that day. During winters I tend to substitute more reading, or perhaps a bit of restocking of the wood for the fireplace. I arrive between 9:30 and 10:30, work through the day, take an early-evening break to for some fresh air and dinner, then return to my desk and finish up. Finishing up always includes plans to straighten my desk but that noble goal is rarely realized. Elise arrives sometime between 7:58 and 8:01 (at least that's what I've been told) and leaves at 4:00, her desk organized for the next day's tasks. Don't think the exactitude of her schedule implies she ignores the uneven flow of her job's demands--I can't recall the last time I saw her leave without her laptop strapped to her right shoulder. It's just that she has two sons to pick up at school and a family to dine with. Heck, if I had a family waiting at home I'd bust out of the office to get home too.

That October and into November, though, Elise and I worked identically. Our desks teetered under fire-hazard quantities of paper and pizza boxes which we shuffled and reshuffled through about 24 hours a day. My hands trembled whenever they were away from a keyboard. My face developed a slight tan from the computer screen's incessant glow. And I can say with fair certainty that when Daylight Savings Time ended we worked through the night and fit 25 hours of productivity into a single day.

It was a shame, as some of my favorite Merrimac Woods walks are during those mid-autumn days, even though the tourists tend to leave ample remnants of their visits. I must admit, though, those weeks of focus and intensity were invigorating. The quality of our work did not meet our typical standards, but Elise and I (with tremendous assistance from our staffs, I should add--we were by no means solely responsible for our divisions) generated sufficient quantity for the November 5 launch of NuVision. At the time I was proud of our accomplishment, in contrast to Elise's anger.

"I sent out the last of my filings," I proclaimed one evening. "We should have NuCure up and running in more than 20 states, whenever they get around to approving."

"You heard what Billy's doing?"

"Yeah--about our pictures for the brochure."

"Pictures? No--what's that?"

"He wants shots of employees doing office work--I was one of the people who had to 'pose,' and he made me clear off my telephone and computer and sit there hunched over papers gripping a number two pencil. I asked him if he wanted me to dig out my abacus and slide rule--I don't think he realized I was joking. This whole 'stripped of technology' image we're projecting . . ."

"Unethical?" I nodded in agreement. "I keep hearing that word echo in my mind. So far I've buried it, but it's a shallow burial so it keeps resurfacing."

We shared a moment of private reflection before she continued. "But yeah--did you hear about what Billy's doing about the filings?" I hadn't. "I finished mine up earlier this week. All we did was modify the claims procedure on the existing policies to require proof of a claimant's soul via an interview with a claims examiner before payments resume. I'd hoped we'd have a few months of delay while everything slogged through the approval process, and during that delay I could actually spend some time on the pricing and illustration materials."

"But Billy's had Kimchee bugging the DOIs to let us file and use, claiming the products are targeted to an under-served market with an immediate need. And he's been badgering the departments himself, of course. What's scary is that they might give in. And I don't want this," she gestured broadly at her desk, "this crap to be out there."

"Don't say that, Elise. You do good work-- and you've really applied yourself here."

"I know I do good work. And I know this is crap--but it's not my work. The ReNuity is Billy's work and I just put it on paper." Her pronunciation of the product's name vilified it. "I haven't had time to review sales projections, our entire expense structure is changed since we have no Internet sales anymore, our claims payments are manual rather than direct deposit, I have no idea how to deal with this whole reincarnation thing Billy wants. How many claims will be reopened? How long until that happens? Do I project these things as perpetuities?" Her whip-like words ceased as she buried her face in her hands.

Similarly debilitating despair had been my own unwelcome visitor as I printed off pages of "final" output and dropped packages in the mail containing my signature of actuarial certification. Such vast assumptions and had been required, without time to truly consider them. "Come on. We need a break. You want to order something?"

"Yeah. A break would be nice." She rose slowly. It hurt to see Elise, typically such a towering and formidable presence, with shoulders slumped so much she seemed to lose her 4 inch advantage over me. "Let me just print this off." She leaned over her keyboard and sent the document to the laser printer.

"What are you working on?"

"It's a memo to myself, and to Billy. My Luther memo." I raised a quizzical eyebrow. "Martin Luther had his list of grievances against the church. This is my list of grievances regarding my recent work--why I don't think it should be used on a marketed product, where more research needs to be done. It's a combination of a to-do list once things calm down around here and a warning to anyone who looks back on my work and wonders what the hell I was doing."

"Didn't Luther only have about a hundred? It looks like you outdid him."

She smiled grimly and picked up a few of the pages as the printer continued spitting them out. "I'm gonna need a long nail for Billy's door."

There's that famous advice related to every equation or numerical result in a published work cutting the reading audience in half. So I'll refrain from presenting pages of tabular data and summarize NuVision's sales over the next few months with words.

Enormous.

Not enormous words. Enormous sales. Stupendous, energizing, and ultimately terrifying sales. Billy, as was his wont, was right on all counts. Vermont permitted file and use, allowing us to capitalize on the media focus and swelled ranks of the HUMANS. As he predicted we invaded a ready-made market that not only had been under-served by our industry but turned their purchase of NuCare and ReNuity into a grassroots movement in support of NuVision. Once such rabid demand manifested itself other states fell over themselves to allow us to sell there. And to top it off, reinsurers begged us to get a piece, just so they could advertise themselves as being part of the HUMANS movement.

We realized similarly enormous profits, at first. Again I'm tempted to use hard numbers to describe them. We were in a monopoly position from both the sales and reinsurance perspectives, with profit margins and ceding commissions that were not ashamed to acknowledge this. That year-end we simply tried to keep up with all the filings, policy issuance, and reinsurance treaties. And we were taking guesses at how large our profits would be, with each subsequent month's data revealing our last estimate had been conservative.

By October of the following year things had calmed down somewhat. NuVision was offering NuCare and ReNuity in all 50 states and selling strongly everywhere. Each time technology made the news our sales surged, as more people became disgusted with the invasion of technology into their lives. Florida retirement homes requiring life expectancy estimation through gene testing. The elimination of bus drivers in favor of computer-based "route coordinators" in Los Angeles. The replacement of milk with nutrient pills in school cafeterias. Each resulted in a sales blip, followed by a resumption of the steady upward trend.

The HUMANS no longer staged demonstrations specifically on our behalf, but NuVision and its marketers were always a presence at any rally they happened to be staging. I'm ashamed to admit the picture of me and my number two pencil was distributed to countless pairs of eyes. Even in elementary school I didn't use a number two, preferring the cool feel of a mechanical one.

"Refreshingly brisk, right?" Elise wrapped her shawl closer around her shoulders and rotated slightly to ensure absorption of every available ray of noon sunlight.

"Two months from now if it were this warm you'd put on shorts and start skipping outside in glee."

I swallowed a spoonful of bean soup, reveling in the warm glow as it descended into my stomach. "So how's ReNuity looking this quarter?"

"Good enough. The mortality gain offset the investment losses. I still feel like I'm treading in dangerous, uncharted waters. But it's been kind of fun working with Natasha setting up the underwriting guidelines for the HUMANS. Our application asks about organic foods, meditative practices, incense and candle usage,"

"Incense use?" I interrupted.

"These people aren't really smokers, but some of them burn so much incense and candles that we're rating them as smokers."

"I'll buy that."

"How about NuCare? You should have a pretty good idea whether we're making any money on that one."

"Definitely. Target is 68% and we're running at 24% paid, estimated 42% incurred. It's amazing how much cheaper medicine is when you don't have hospitals but rather physicians working out of independent offices or even their homes. That 42% is completely conservative--we're practically tripling lag factors due to the elimination of electronic submissions and the fact that most of these insureds are unfamiliar with the whole claims submission process. That's just on NuCare. It's too early to tell anything on NuCare Plus but I feel it will be even more successful."

Early in the year, once the initial filing frenzy had calmed down, I'd suggested to Billy that we develop a network of alternative care physicians for a NuCare Plus product. The network construction ended up being pretty fun. I had a chance to learn a lot about all the different beliefs HUMANS had adopted and get a better sense of the types of covered treatments--massage and dance movement therapies, acupuncture, rolfing. Whether the network ended up with significant discounts and whether the coverage scope was appropriate had yet to be seen, but it seemed promising. And the cross sales NuVision realized were spectacular. Many of the physicians we approached ended up not only joining the network but using the opportunity to purchase coverage for themselves.

"How much of those profits do we keep, though, after reinsurance?"

I shrugged. "Enough. Who cares--we're making so much on the expense allowances."

"Enough for Billy?"



"I hope. I'm suggesting we come down on the premiums. I feel we're violating the 'benefits reasonable in relation to the premium' ideology and I don't want states to have to tell us to change our pricing."

"Sounds pretty good overall."

"I'm going to be meeting with Sarah in Claims later this afternoon to discuss any unusual lags or large claims she's seen, but yeah. Who would've thought?"

I grinned at our success. Elise just nodded pensively, again shrugging deeper into her shawl as a chill breeze ruffled our hair.

"Well, I know why our claims are so low." My pale face and grim tones distracted the planning committee from their side conversations to listen in on my words with Elise as we waited for Billy. "You won't believe what's been going on. This claimant-- Matthew Henrik--had a heart attack in public and was picked up by an ambulance, which revived him with electroshock treatment. Once he had recovered enough he explained he belonged in an alternative care facility and demanded release from the hospital. But NuVision denied the entire claim, not just the hospital portion." I removed a smudged purple piece of paper from the stack in my lap. "This puppy explains the entire claim is denied because NuVision considers Matthew's revival to be an 'artificial avoidance of death, with subsequent health and health claims issues to be directly linked to the technology employed.' I can't believe he hasn't sued us--he must've suffered a fatal attack upon receiving this." A few incriminating looks landed on Sarah. She stared fixedly at the floor.

"I'm not liking this," Doug said. "What I'd been doing before seemed borderline wrong, but this totally crosses the line."

"What were you doing?"

"Well, Billy freaked when he saw the expenses of issuing manually typewritten EOBs. So he had me dig up some old dot matrix printers and feed through purple carbon paper with our computers sending a typewriter font to the printers. He's even got somebody putting white-out on random forms to look like there've been manual corrections."

He fell into embarrassed silence. I resumed exhibiting the evidence in my lap. "Denied because a chemical rather than organic-based disinfectant was used. Denied because the blood vial was made of plastic rather than glass. Denied because"

"Look, Billy wrote half those things himself. I was going to approve them--he came poking his nose in and asked what kind of claims I was seeing and started swearing about them. 'We're allowing this? It's anti-HUMANS!' He's so judgmental of them--he act like he's their moral leader just so we can deny claims."

"Whose leader am I?" Billy asked as he entered the office and seated himself.

"Leader of the damned."

"Well, we've got some impressive morale this afternoon," he grinned easily at Elise but she only stared back blankly. Billy continued unfazed. "These last 12 months NuVision was reborn, recreating its annuity and major medical products. In the next 12 months NuVision is going to invade and take over every product market. We can't be limited to life and health coverages anymore--I want us offering auto, homeowner's, liability, and commercial policies. I've already got some reinsurers lined up--we can act as a fronting company and take a tidy profit for the administration on most of this stuff. They're too scared to try competing with us in the direct market so they have to work through us." His triumphant glee evidenced itself with a sardonic laugh. "Unbelievable," he chuckled, clenching his fists. "We've got the HUMANS market locked up."

For the next hour Billy outlined his scheme of expansion and we listened attentively. There were some frighteningly callous aspects--Billy seemed positively Machiavellian. But he was our leader so we passively absorbed his plans and responsibly jotted down notes. The details are unimportant here, as NuVision collapsed before any of those plans were realized. If you contact me, though, I can share some additional information.

As everyone dispersed to digest their new tasks Billy called out to Elise and myself. "You two--stay after." We returned to our chairs remained standing --Elise looked agitated and I suspect she wanted to maintain her height advantage.

"I was talking with Vince and Emil. We're going to bring back the genetic testing by January first so you guys need to price that into our policies."

"Won't that seem . . . odd . . . to the HUMANS when we request a blood sample?"

"Yeah, that was the problem." He flashed his triumphant, lupine grin again. "But there's a few strategies our sales staff can use. With the whole face-to-face meeting, they can poke around the bathroom looking for some blood samples. Maybe grab a toothbrush for some gum scrapings. And if worse becomes worst the salesman can approach the client to offer a pen and fake a stumble, crashing into him. We're filing down the clips on our pens to have sharp edges that will hopefully cause some bleeding, which the agent can apologetically wipe up with special tissues." I waited for a punch-line but Elise had no such intentions. "That's disgusting--tell me you're kidding."

He spread his hands plaintively. "Do you have any idea how much information we're missing out on since we eliminated the genetic testing? You know how much every other life and health insurer depends on it."

"It's damned duplicitous, Billy," Elise spat.

"It's business."

"It's one thing to promote ourselves as anti-technology and still use computers, but to attack our customers and secretly gather genetic information!"

"Look, Elise. My job is to run this company profitably, and your job is to implement my decisions. If you don't think my decisions are right you're welcome to find another leader to follow. But if I recall correctly I was the only leader you could follow."

"I know you think I owe you, Billy. So you handed me this job when I dropped out of grad school and had no idea what I was doing--I appreciate that, but I've paid you back. I got my FSA without ever wasting the company's money by failing a sitting. I repriced our annuity and life policies to get a few more years out of them. I went along with this whole ReNuity concept. I don't owe you anymore."

"I'm not saying you do. I just think it's my duty to remind you that my side is the winning one."

Biting off further retorts Elise stomped out. I hurried to keep up with her angry strides, reaching out to grab her elbow. "Elise."

At my touch she whirled upon me. "I suppose I misspoke. I do owe him." Her tone was viciously sarcastic. "But I don't owe favors."

By the time I arrived the next morning Elise's typically clean desk was sterile. I guessed what happened and the grapevine quickly confirmed that she'd quit that morning with icy diplomacy. I found a handwritten note on my chair: "What's your role in this? Call me."

I set the note down on top of my monitor and pondered the words while the computer booted up. Elise's actions seemed drastic. I thought about Matthew Heinrik, glancing at the stack of similarly shocking claim denials, then her actions seemed appropriate. I leafed through them while I dialed Elise's home number. With all the bombshells Billy had dropped on us yesterday I hadn't had a chance to confront him about NuVision's claim administration practices.

"Hello?"

"Elise? This is Rob."

"Oh, hi Rob. I take it you got my note."

"Yeah."

"I've got a lot to do, so let me be brief. Either of us continuing to work for NuVision is an insult to our profession. It's crossed the line from being unethical and being positively criminal." An image filled my mind of an agent stumbling towards a potential client, his James Bondesque pen glinting evilly in the sunlight. "I don't know what your plans are, if you want to just pack up and go somewhere else or if you want to do like me and take some time off to consider where you're at. But you can't stay there. If you want to"

The muted ring of my second line interrupted. "I need to get this--I've been waiting for this call," I apologized after checking the caller-ID. "I'll give you a call later?"

"Sure."

I flipped to the other line. "Group Health, Rob." I pulled up my spreadsheets on the three-tiered drug card I was developing while Dr. Myrminski and I discussed alternatives for seeds, dried herbs, and processed herbal remedies.

Lost in copay differentials for the rest of the day I didn't try Elise until that evening. Her line was busy. The next few days I placed numerous calls from both my home and the office, but constantly received the annoying double-toned busy signal. I fell back into an intense work routine and promised myself I'd call her back and reconsider whether I wanted to remain at NuVision once things calmed down.

There's not much else you need me to tell you, since most of the remainder of the story is public information. Elise had grabbed databases listing all of our insureds and began calling each individual. To everyone who'd been denied a claim she explained what was going on and convinced them they had been treated unethically. Without the Internet as a viable means of communication with the HUMANS Elise's efficiency was somewhat hampered, but she glued herself to the phone. By the time she was done the DOIs, department of justice, state's attorneys, and thousands of HUMANS all had NuVision in their crosshairs.

So even as the class action lawsuit on NuVision's sales and claims practices commenced, the company began collapsing under the burden of reversed claims and refunded premiums. The trial we just completed merely confirmed that neither Billy nor NuVision would ever infect the marketplace again.

Now my story continues--I have to answer for my own actions and lack of actions, and it's pretty much a given that I'll be stripped of my credentials. I regret not having Elise's anger, her broad vision, to see how disgusting my participation was in NuVision.

I want you see my inertia as stupidity rather than villainy, at least, so that the hating can stop. I accept the professional reprimands, but I don't know how much longer I can handle each day being filled with the HUMANS' angry protesting from the nearby park. It's the hating that gets me, the chanting that makes me want to seek refuge in my quiet morning routine and disappear into Merrimac Woods.

## **Bernard Oulli's Retirement Party**

*by Harish Pawagi*

Thank you, Mr. Martin, for a fine introduction and thank you, ladies and gentlemen for indulging an old man at his own retirement dinner. When I was first asked if I wanted to speak at my own retirement I thought, 'Omigawd, I really am at the end of my career.' To tell you the truth, I'm really quite an unassuming individual and never wanted to be in the spotlight.

The incidents that have marked my career are well known to many of you. Indeed, the data is available for examination in almost every publication and has probably been discussed to death. I therefore thought it might be interesting to let you in on some of the stories that you may not have heard about but that nevertheless shaped all the achievements associated with my name.

My zero was back in the twentieth century in what was then the Middle East. I was born in a small apartment in the tiny nation of Jordan. My parents were craftspeople as were their parents before them. My parents fervently wished that I would become a great table maker as had several generations of Oulli's before them. However, as I grew up, it became clear that I would never be able to differentiate between the good woods for construction and the not-so-good woods that were only used for battening down the table legs. I could make a basic table or chair but that was the limit of my ability. What were my parents to do?

It wasn't until 1983 that my transformation began. My pensioner grandmother who was living on the Cartesian Plains along the Dead Sea came to visit and noticed that although I wasn't a great table maker, I did have a well rounded physique. Grandma was the first to notice my athletic legs and exclaim 'Nice gams! Ever consider modeling?' She went straight to my dad and told him, 'Bernie's wasting his time on table construction. He should be in modeling!' And before I knew it I was whisked off to London (where my uncle Dick had a photo studio) to start a dynamic career in modeling.

But where was the math? I have to admit, I wasn't big on mathematics. Modeling was a dream come true. But the strange world of modeling had even more surprises in store. The catwalks of EU are a pretty rough place. The advice I got from Uncle Dick was, 'Bernie my boy, if you want to survive in the modeling business you have to know one thing, timing is everything. If you're not out there when you're supposed to be out there, you're finished.' I took his advice to heart and made sure my appearances went smoothly. It was during an especially excruciating stop in the dead of winter that it struck me that the whole catwalk business could be timed a lot better.

I started working on the timing aspects and found the whole problem fascinating. You can have hundreds of models in one really big show and if the timing isn't right the critics and the people waiting - the people paying your bills - give up on you. I developed the superior function that now bears my name that allows timing of complex events to go smoothly. Alas, by the time I came up with the function, my years of mathematical rigour had left me in a sorry state. My nice curves were gone. Physically, I was done in the modeling business.

Mentally, however, my modeling had just begun.

Dick introduced me to some of his cohorts from NA, including Harry Brown and Fred Morse. They convinced me to pursue a career in mathematics. 'NA can always use another acutician - and you obviously can handle self study - give it a whirl.' It didn't seem so bad. With the new exam requirements I really only had to write three exams. The only trouble was they were fifteen hours long. I eventually got through and became a FAT - Fellow of the Acutician Team. I don't know who picked that name - probably the same people who decided CRAP was a good acronym for a political party. Of course, I don't know if it's any better now that I'm a Fellow of the Acutician Retirees Team.

Back to the story. I was now a full fledged acutician and only 55 years old! I could do anything. So I did what I've always done. I modeled! I modeled and modeled and modeled and modeled. It was a noble cause that netted me a Nobel prize. I modeled the future. I modeled the past. I modeled big government. I modeled small government. I even modeled no government but the grant people got nervous so nobody ever heard about that.

By the time I was 105, I had developed all the functions that still bear my name. There was the timing one of course. The exam one was a hit with the students. The government one was eventually given the green light. And the economics one - well - nobody's ever done that one right. In any case my fame and fortune eventually brought me to the Presidency over all acuticians. At the time the five year term seemed pretty long but it really is a drop in the bucket compared to the E-X now. I see the term is now being bumped to ten years.

Where was I. I was going to tell you some more secret stories. Actually, now that I think about it, other than growing up, there aren't any. The damn press is everywhere now. I think people know more about me than I do myself. I mean really what with the 3D cameras, the infrared cameras, the night vision cameras and the mikes - don't get me started on the mikes - I remember back in '45 when my snoring hit the front block - what an uproar. I think people have seen more of my backside than I've even seen and, quite frankly, I think I'm better off.

Anyway, enough of my tirade. When I left the Presidency, I continued my mathematical pursuits. I faced many risks, suffered some losses, even went off on a bizarre tangent - the one you all must have seen about the emu - whoops, wasn't going to mention that. But through it all there was the math. I really do like it. Math is everywhere you look.

The circumstances of my retirement, rather abrupt it must seem, had a lot to do with the recent trials. Although I was not directly called on, my work was used by both sides. The trials went on and on and on and my work was scrutinized a hundred times over. Let me tell you one thing folks, Bernard Oulli doesn't have time for trials. I wanted to do math! New math preferably - not rehashing stuff I had mastered decades before. But the trials have left me exhausted. My colleagues all saw it and finally I admitted it to myself. Bernard Oulli was ready to retire, relax and regenerate.

Which brings us to tonight. I am truly touched by this wonderful gala event. The organizers assure me that everything will go smoothly - indeed! Didn't I see to that all those years ago? I am most

grateful that my family and friends and colleagues could all be here tonight. The support has been tremendous. And now, without drawing it out any longer, thank you and good night.

## **Epoch Incorporated**

*by David Kroll*

"Thanks for coming in, Colin. I've got good news and bad news."

Colin cringed. The annual numbers had just come in the week before, and they weren't good. Colin had known that it was a matter of time before his boss was going to be having this talk with him. Judging by the circles under her eyes, she hadn't gotten much sleep lately. She's probably been under a lot of stress since those sales numbers came out, he surmised. Of thirty new products rolled out by MegaLife in the past year, the one that they had worked on was thirtieth in total sales by number of policies AND by face amount. It was a total failure, Colin thought. His fellow actuarial students had come up to him all this week and expressed their condolences. His cubemate Samantha had talked him into updating his resume because it was clear that this failure would follow him around for the rest of his career. Colin took solace in the fact that at least it was early in his career. He hadn't invested a lot of time in this job - he had very little accrued vacation, and he wouldn't be fully vested in the company's retirement plan for another five years.

His boss, on the other hand, was a different story.

Janet Waters was a "MegaLifer". She had come to MegaLife straight out of college, passed her actuarial exams, worked her way up the ranks, and finally earned her Fellowship - the highest rank bestowed upon a Life Insurance Actuary. All of her hard work finally paid off last year when she became an officer of the company. Soon after that she was put in charge of new product development. Brimming with enthusiasm, she had championed a new, innovative type of life insurance policy. Some of the old-timers didn't take to her idea; they had thought it was a waste of resources. Janet, however, had been a woman on a mission. She had called in a few favors, rattled some cages, but mostly ended up stepping on a lot of toes. Nevertheless, "Super Joint Survivor Life" had been a go!

Colin Peterson had just graduated from college and had been looking for a challenge. Coming in to work on a brand new product really had gotten his blood pumping. For the first few weeks, he had worked like a madman. Sixty-hour weeks became the norm for him, but he didn't care. It was exciting to be a part of something like this. However, as the weeks wore on, it had become clear to him that this product wasn't going anywhere. Through the grapevine, he had heard grumbling about how the product wasn't going to sell. Being associated with it was going to be a career killer. Of course, Colin couldn't just jump ship in the middle of the development cycle. Being pegged as not being a "finisher" would kill his career just as much as staying on. Besides, Janet's passion for the product had made him think that maybe she knew what she was doing. Of course in hindsight, that was just wishful thinking. No measure of optimism could have prevented this train wreck!

Thinking back on it, "Super Joint Survivor Life" was a stupid idea! Even somebody as inexperienced as Colin should have realized it. Basically, it was a life insurance policy taken out on five individuals, and it paid a death benefit after two of the five individuals died. When he first had heard about it, Colin had asked who would want to buy such a policy. In response, Janet had said that it was important to be on the cutting edge of actuarial science. And besides, that was a



sales and marketing problem, not an actuarial problem. Colin had been satisfied with that answer, and the next day he had gotten to work. Since MegaLife didn't have morality tables for groups of five people, they had to develop all of them from scratch. That had meant long hours in front of the computer, inputting all of the details by hand and analyzing the results. When they were done, they had generated hundreds of pages of mortality tables and illustrations. Colin sighed as he thought back on all the work he had done over the past year. All for naught...

"As you know, the annual sales report is out," Janet said excitedly, "and frankly I'm a little disappointed." Colin chuckled to himself. That's an understatement! "We only sold twenty-six policies so our market penetration wasn't quite there." Here it comes! The axe is about to fall. Colin rubbed the back of his neck subconsciously. "Nevertheless, the Board of Directors is very, VERY pleased with our progress."

Colin's jaw dropped, "Did I hear you correctly? Did you say pleased?!?!"

Janet leaned forward across her desk and handed him an envelope. "I know it's a bit early in the year to talk about bonuses, but I thought that you deserved it for a job well done!"

Colin couldn't contain his curiosity. He ripped the envelope open right then and there and ripped out its contents. Sitting in his hand was a check for \$4000! "I...uh...don't know what to... say..."

Janet smiled, "Well, you deserve it. Between you and me, there were a few people in the company who didn't believe in the product. They thought that we would fall flat on our faces. You, on the other hand, really dedicated yourself to it, and I admire that. This is just a small token of my appreciation."

Questions swarmed through his head. How could a product that had such terrible sales numbers be considered a success? Didn't the Board care about that? "Forgive me for asking, Janet, but I confess I am a bit confused." Janet leaned back in her chair and stared at him pensively. "I'm sure you saw that Super Joint's sales numbers were terrible..."

"Colin, Colin, Colin, you've got a lot to learn about the life insurance business!" At this moment, Colin felt like a total idiot, but he had no choice but to endure the lecture that was about to come. "Sure it's nice to have good sales, but it isn't the end-all and be-all." Janet paused for a second to let that thought linger for a bit in his mind. "There are other ways in which a product can be successful." She held up a finger. "First, we were the first to come to market with Super Joint. There is a lot to be said for being an innovator and a market leader. As we speak, other companies are probably scrambling to get their first-two-to-die-out-of-five policies to market." A second finger popped up to join the first. "Second, we have 100% market share and, in this business, market share is everything." Janet brought in a third finger to further bolster her argument. "Third and finally, we have very high penetration into our target market, namely basketball teams. 68% of men's and 53% of women's professional basketball teams have purchased our product, accounting for 96% of our sales. As you can see, we've totally hit our market without a lot of wasted effort."

Colin was in a state of shock. All that work to sell a couple dozen policies to a bunch of basketball teams?! Was the whole world crazy, or just him?

When he returned to his cubicle, Samantha was waiting for him. She wanted to get the word straight from the horse's mouth. Colin thought that she had an uncharacteristically subdued look on her face, but he knew better. He was sure that the gossipmonger was excited, hoping to get some juicy tidbits of news about how he and Janet had crashed and burned. Motioning to his bonus check envelope, she whispered, "Bad news?"

"Well not really. It's a bonus check. Apparently we did a good job or something." Colin moaned mockingly.

Samantha couldn't hide the look of surprise that came across her face, "Bonus? For stinking up the place with those sales numbers? How in the world could those pathetic numbers be considered to be a good job?!"

Colin took a seat at his desk and began playing Solitaire on his computer. "Well, let me see... how did Janet put it? Oh yes... 'Sales isn't the end-all and be-all'... or something like that."

Samantha was confused, "Huh? Is she feeling okay?"

Colin fiddled around with his mouse. He was still in a state of disbelief. How could he explain it to her if he didn't understand it himself? "Well, all I know is that she's got another idea for a product." He spun around from his computer to face his inquisitor. His voice got noticeably louder. "Check this out! She wants me to work on some crazy new thing called the "Lucky Day Policy". It's like a regular life insurance policy except it starts out only paying out if you die on a particular day of the year! As the policy accumulates cash value, you can use your dividends to buy insurance for more and more days until after 50 years you finally have year-round coverage." Colin threw up his hands. "Now tell me if that isn't the STUPIDEST thing you've ever heard in your ENTIRE LIFE!!!!" By the time he finished his explanation he was shouting, drawing curious glances from his fellow cube dwellers. Samantha started to squirm uncomfortably, but Colin didn't seem to notice the attention. He simply continued. "So how many people do you think are going to buy that. Maybe a few morons and possibly my mom just to make me feel good, but THAT'S IT!" More people started looking his way to see who was making the commotion, but that didn't stop Colin. He was on a roll! "Of course, the BOARD won't care cause we'll probably end up with 100% of the 'Colin's Mom' market which is a pretty phenomenal market share if you ask me." Samantha's discomfort was starting to turn to pleasure. It occurred to her that she was witnessing a nervous breakdown right before her eyes!

Colin split the rest of the afternoon between researching death rates by date and playing Solitaire on his computer. He didn't care that he was wasting the company's precious computing resources on such a frivolous activity. It seemed to him that the company was wasting HIS time working on such a frivolous product, so he didn't feel any guilt whatsoever. His current predicament got him thinking about why he became an actuary in the first place. "To use my mathematical abilities to solve real-world problems..." he whispered to himself as another game of Solitaire came to an end. So what kind of real-world problems was he solving now? Premium rates for a useless product that nobody in their right mind would buy? The perfect Solitaire strategy? Those weren't real-world

problems. Colin desperately wanted to feel as if his work was making an impact, but unfortunately he felt rather useless at this point in his life.

"You have mail!" a computer voice announced to him. It was probably from Janet, he thought. He put the Solitaire program in the background and clicked on the email program. Much to his surprise, the message wasn't from Janet. It wasn't even from anyone at MegaLife. The "From" line contained an email address that he had never seen before:

From: ps @ epoch  
To: colin @ megalife

Subject: A new day...

Tired of the same old grind. Looking to change the world. Meet me at Don's Deli for dinner at 6:30. I'll be looking for you.

-Parker

This had to be some sort of a joke. One of his fellow actuarial students must have heard his ranting and decided to play some sort of trick on him. He stood up and peered over his cube wall to see who was watching him. Everybody who was still here was hard at work. Whoever had sent it was playing it very cool. Very slick, he had to admit.

But what if this wasn't a joke? What if the message was legit? Who was this Parker fellow anyway, and what was "Epoch". He never heard of that domain name before. Was it some sort of insurance company? His curiosity was starting to get the better of him. He started his web browser and tried to go to the "Epoch" web site. Much to his dismay, all that appeared was a nondescript "site under construction" message. Oh well, Colin thought. It looks like the only way he was going to find out if "Epoch" was legit was by meeting this Parker fellow for dinner.

Colin had never heard of Don's Deli before. It took him a few wrong turns to finally find the place, since the neon sign that marked its location had long fallen into disrepair. The inside wasn't that much more impressive. The deli had a lunch counter and a couple of booths - all of which were empty except for one near the back. In it sat a middle-aged man eating a pickle. That must be Parker, he thought. Well, here goes nothing! If it's a practical joke, it better be a good one!

"Hello? Are you Parker?"

The man finished chewing the last bit of his pickle and swallowed it. "Colin Peterson! It's great to finally meet you. Won't you sit down and join me? Are you hungry? Thirsty?" Parker motioned to nobody in particular, "Waiter! A glass of water for my friend here. You like water, don't you? I'm not a big cola fan myself. Gives me gas..."

Colin was not amused by the man's ramblings. "I hope this isn't some sort of joke. I have better things to do."

Parker face exploded in laughter, "Better things? You mean like that stupid new product you're working on over there at MegaLife?" Colin frowned. "Forgive me, young man, but that's the funniest thing I've heard all day! Besides, life is too short to not laugh at ourselves every once in awhile. Don't you think?"

"So this IS a practical joke then?" Colin started to get up.

"No! Wait! I'm sorry. This is definitely not a practical joke. I was dead serious when I asked you to come here. Please sit down." Parker looked around frantically, "Where is that darn waiter? He was just here a minute ago..."

Colin returned to his seat. "Alright. I'm here, and I'm listening. Why don't you start by telling me what this is all about."

Parker smiled, "I see that you want to get right down to business. Just like an actuary! Well, if you want to work with me, you're going to have to get used to how I operate. And I suppose I'll have to get used to how you operate. Viva la difference, as they say." Finally, a young boy appeared as if out of the shadows and deposited two menus on the table. Much to Colin's surprise, Parker didn't seem to take any notice of the event. He simply continued as if nothing happened. "Anyway, I am starting a company that is going to change the world, and I am looking for people to help me build it. I know that sounds kind of conceited of me, but once I tell you my tale, you'll see what I mean." For the first time, Colin was getting interested in what the man had to say. Parker reached into his pocket, pulled out his wallet, removed something from it, and handed it to Colin. It was a picture of a young boy. "This is my son, Parker Jr. It was taken almost five years ago when he was two. He's the joy of my life." Parker's face was beaming with genuine pride. "Unfortunately, he was born with a genetic disease called Down's Syndrome." Colin looked at the picture in silence. "Now don't you go feeling bad for him or for me, Colin Peterson. Like I said, he's the joy of my life. In fact, he's the inspiration for Epoch Incorporated."

Colin handed the picture back to Parker, "Tell me more about Epoch Incorporated." He was becoming more and more interested in this man's story.

Parker continued, "Well, all my life I've worked in investment banking, so I didn't know anything about Down's Syndrome or what caused it. I asked the doctor if there were any drugs or therapies that could fix it. The doctor said no. He said that it was a genetic disease caused by an extra chromosome or something that. There was no way to prevent it, and no way to cure it. For a while I was depressed. My wife and I had been trying so long to have a child and now that we had one, there was something wrong with him. After the depression wore off, I became a man on a mission. There had to be someone out there that could help Parker Jr. After all, I was a man of means, as they say, and I was willing to spend any amount of money to find a cure. I used some of my business contacts to get in touch with some of the leading genetic researchers in the world. Well, to make a long story short, they said that it would require a fundamental knowledge of the human genome that we just don't have. We would need to understand what every gene does before we could begin to figure out how to prevent it."

Colin was totally engrossed in the man's story, "That doesn't sound good."

Parker continued, "The scientists I talked to said that there are millions of genes that make up human DNA. Each one controls some aspect of our genetic makeup: everything from the color of our eyes, to whether or not we get Down's Syndrome. Well, when I heard that, I figured that it wouldn't be such a big deal to figure out which gene we could 'turn off' to prevent Down's Syndrome. Of course, nothing is that easy. 'Turning off' one gene might prevent it, but may lead to something else, the scientists said. It's possible that several genes might have to be adjusted. Maybe thousands or millions. There are so many possibilities that it would take centuries to unravel the genetic formula necessary to do it."

"I guess there isn't any hope for Parker Jr."

Parker sighed, "Yes, no hope for Parker Jr., but there just may be hope for future generations. If we know what gene causes it, we could intervene prior to the embryo stage of development and prevent it." The excitement returned to Parker's voice. "So I asked some of the scientists to put together a plan for deciphering our genes, along with some timetables." Parker bent over and reached for something below the table. When he returned into view, he was clutching a large folder. "Here is the result of their work." He dropped the folder onto the table with a thud. "This is the 'business plan' for Epoch Incorporated!" Colin picked it up and started to flip through it. The bits and pieces he read didn't make any sense to him. Then he came across a cryptic timeline. He didn't understand the descriptions but he did make note of some of the dates. 2100... 2450... 2700... 3000... Suddenly, it hit him... those were years!!!!

"Ah, you must have seen the timeline, huh?" Parker mused. "That usually stops them in their tracks."

Colin was nearly speechless. "Is this right? You're expecting this to take one thousand years?"

"That's why I am calling it 'Epoch Incorporated!'"

Colin put the folder down. He had seen enough, "Either you are the craziest man in the world, or you are a genius!"

Parker laughed, "Well, I certainly hope it's the latter, although my wife would have you believe otherwise. So are you ready to change the world?"

"I don't know how I can be of assistance to you. I know nothing about biology or genetics or anything like that."

"Well, this is where my genius comes in. I'm no good at that stuff either, but I have two things going for me. First, I've got more money than I know what to do with. That certain helps, don't you think?" Colin nodded although he wasn't sure if that was supposed to be rhetorical or not. "Second, I made my money by putting teams together and delegating authority, so I think I'm pretty good at that too. I've got all the scientists that I need for this project; they were easy to find. The

hard part is finding people who can deal with what I call 'the long view'. I need people who can figure out how to keep this whole endeavor going for a thousand years. In other words, I need actuaries. There's a lot of risk and uncertainty to be managed, and actuaries are the ones to do it!" Colin felt a bit of pride swelling in his chest! "For instance, we need to make sure that we have the financial resources necessary to keep the company afloat for a thousand years. I've got plenty of money to throw into this company, but it has to be invested wisely to make sure that it's going to be around hundreds of years from now. We also need to make sure we have enough energy to keep things going. Do we need to have our own power plant or should we rely on the outside world for that? Then there are 'soft' issues, like how do we make sure the people in control of Epoch have its best interests at heart. I won't be around to see this project to its conclusion so some sort of succession plan needs to be in place. Plus... well you get the picture..."

Colin was overwhelmed. This was more than he had bargained for when he first showed up at the deli. "Parker, I have to be honest with you. I'm just a lowly actuarial student. I've only been on the job for a year now. I don't know anything about what you're talking about. I've got a little bit of product pricing, but that's about it!"

"Do you think ANYONE knows anything about creating a company that must last a thousand years? This is something that's never really been done before, so you'll be learning on the job just like the rest of us. Besides, I think you're the type of person that Epoch needs. We're looking for people who want to be part of something that's bigger than themselves - for people who want to make a difference." Parker paused for a second, and then leaned closer to Colin. "So what do you think? Do you want to make a difference?"

Colin pondered for a minute. He certainly was flattered that Parker sought him out like this, and he certainly was intrigued by the opportunity. Nevertheless, doubts crept into his mind. "Well, one thing that's a little scary is that fact that we won't be able to see the results in our lifetime. It would be nice to know that what we are doing will actually make a difference."

Parker leaned back and a very serious look crossed his face. "I know exactly how you feel. It would be a shame for us to waste our lifetime on something that isn't going to last. That's why Epoch needs actuaries like you. We need people who can manage the uncertainty for us. Besides, there's something very comforting about putting your faith into something big like this. Are you a religious man, Colin?"

Colin was a bit surprised by that question, "Well... no... not really..."

"Nothing to be ashamed of, my boy. When I was your age, I wasn't very religious either. I thought I had all the answers, just like you. As you get older, you'll start to ask more questions. Things like 'who am I?' and 'why am I here?' and 'is the world a better place because I existed?'. You may not be asking yourself those things now, but believe me, you will. Well, Epoch is your opportunity to answer some of those questions for yourself, even if you haven't asked them yet. It's your opportunity to find some purpose for yourself. It's your opportunity to be a part of something wonderful!" Parker was nearly in tears. Colin could see the effect that this project was having on Parker's life. "I know how you feel, Colin. Those of us who are going to be there at the very beginning have the toughest job. We have to get this thing off the ground with nothing else to go on besides faith. But you have to believe me when I say that in a thousand years humanity will be

thanking us for our faith. Maybe even some of your own descendants will be thanking us for the gift that we have given them."

Parker's speech was starting to wind down when the waiter appeared again. Colin hadn't looked at the menu, so he simply ordered turkey on rye. Parker went with the hot pastrami. "It's the best in the city. I always get it when I'm here; although my wife would rather I stick with something green and tasteless. You won't tell her, will you?" Colin nodded. "So what do you say? Are you on board with us or not? Did I mention that we have an amazing 401(k) plan?"

"Look ma. Is this it? Is this it?" Luke screamed excitedly. The ten-year-old was tugging at his mother's hand as he pointed at the exhibit in front of him. Luke had been to dozens of museums in his lifetime, but this one was different. For one thing, instead of the usual, boring holoprojections and neuro-viewers, this one had actually, honest-to-goodness artifacts. The adults called it a "retro-museum", whatever that meant exactly.

"Luke, I'm coming! I don't have rubber arms. If you pull on them too hard I might break!" Lauren wondered if she was this hyper as a child!

"Oh, ma..." Luke squealed. "Look! That's it isn't it?" Luke pointed toward the transparent screen in front of them. Behind it sat a small plastic table with an off-white counter top. On either side of it were two low benches furnished with some sort of padding. On top of the table sat two long, thin objects with tiny words on them. The plasma screen next to the display case said that this was a "restaurant booth furnished in the twentieth century style" with "printed lists of the food available for ordering." Luke marveled at how different it was from modern eateries. "This is it!" Luke called out, "This is where Colin met Parker!"

Lauren pointed at the plasma screen, "No, Luke. According to what it says here, this booth is just a copy of the one that they actually used; however, the menus are actual menus from Don's Deli. It says that they aren't sure if these are the ones they ordered from, but it certainly is possible." Lauren smiled.

Luke was in awe, "Wow, that's really cool! What else does it say?" Luke could read it for himself, but he kind of liked it when his mom read him things like that.

"Well, it goes on to talk more about Colin." Quoting the caption, she read, "Colin Peterson was one of the original 35 employees of Epoch. Although he was the youngest of the Founders, he had an immediate impact on the project. He went on to become the second Chief Actuary of Epoch. During his most distinguished tenure, he implemented several policies that set the groundwork for Epoch's later successes. Along with Parker Smith, he is considered to be one of the most important figures in the history of Epoch Incorporated."

Luke was nearly jumping for joy, "I can't believe that he is actually one of my forefathers, ma."

Lauren smiled, "Yes, but don't forget, he is one of mine, too!"

"Oh ma..." Out of nowhere, Luke jumped into his mother's arms. "Thank you so much for bringing me here. It was worth the trip!"

Luke and Lauren Peterson had been planning this trip for the better part of a year. For as long as Luke could remember, he had heard the stories of Epoch Incorporated. He had been told about how it was founded by Parker Smith over a thousand years ago, how it had grown from an idea into a flourishing company, and finally it had cracked the human genetic code a mere forty years ago. Of all the Epoch stories, Luke most enjoyed hearing tales of Colin Peterson, his namesake. Society was still dealing with the ramifications of Epoch's work. There were some people who were vehemently opposed to tinkering with our genetic makeup. Most of these opponents were from the older generations who were alive before the great discovery. The younger generations - those who were born after the discovery - were more accepting of the idea. They had grown up with a totally different perspective. To them, genetic engineering had always been around, so it seemed more natural and less foreign. There were still laws on the books about when genetic modifications were allowed and when they weren't. As the old guard died, however, those laws were slowly being repealed.

Luke had been one of the beneficiaries of Epoch's work. During her pregnancy, Lauren had discovered that her unborn child was stricken with hemophilia, a genetic disorder. If he had been born a century ago, Luke would have had to live with the debilitating affliction. Luckily, doctors were able to identify the offending genes and modify them without affecting the rest of his genetic makeup. When he was born, Luke bore no trace of the hemophilia. Colin Peterson might have viewed it as a miracle, but Lauren just saw it as modern medicine at work.

As they left the Epoch Museum, Luke and Lauren walked past a small monument that they hadn't noticed on their way in. Inscribed on it were the names of the original Founders. They immediately found the name of Colin Peterson about half way down the list. Mother and son left the museum beaming with pride.



## **The Choice of a Lifetime**

*by Gary Lang*

As he waits patiently for Helt to appear at their temporary office, Jahn's mind wanders back to his family on Earth. His thoughts first focus on his wife, Maree, standing in front of her class of advanced level 13 and 14 students, teaching them about the wonders and magic of the mathematical world. She loves the interaction with her students, bringing home stories every night, describing the refreshing enthusiasm these youngsters show towards their world. Mentally he moves on to his daughter, Elln, and pictures her sitting in a clearing in the forest at a nature center, north of the city, speaking to a group of level 3 children. She is educating them in the ways of nature and suggesting how they might interact with their world. Some of her living examples bring gasps from the children's mouths before these curious creatures wander back under shelter. He chuckles as he imagines his other child, Jym, struggling to explain new software to a group of senior citizens who have little experience with the latest technology. He is walking them through the software and trying to answer their questions without laughing out loud at some of their more outrageous concerns. Jahn is very proud that his family takes the time to provide these services to the people of Earth.

His daydream wanders through several of the vacations his family took when the children were younger. During those wondrous adventures they learned about their world and the cultures of the other people that share that planet. The variety of experiences his family enjoyed nudged them in different directions when it came their time to support themselves. In spite of this, they never hesitate to share the excitement of their work whenever they get together, usually for a meal at "Mom's and Dad's" house.

When his thoughts change direction again, Jahn wonders how soon it will be before Elln adds to their family by marrying her fellow naturalist, Gorg. He knows they both are looking forward to raising several children and sharing their passion for the outdoors.

Helt cautiously steps through the door of his one story, square, ranch style house and heads across the lot which is void of any attempt at landscaping. He slowly trudges to the government vehicle he has been loaned for this project. As he struggles to put one foot in front of the other, his mind wanders back over his lifetime on Mirth. He remembers his 9th birthday and the fear with which he struggled as he made the choice for his first career. Talk among his computer pals, the ones that shared the school he had grown up in, reminded him of the importance of the first career, even though it was to last only 30 years. He had known that success in this career would lead to many more choices when it came time to decide on the next one. Finally, when the day came, he chose the study of social interaction between Mirthians, partly because so little research has been done in this area. Although his studies were at times quite tedious and getting Mirthians involved in an experiment to test his many hypotheses was almost impossible, he is proud of the written thesis he put together last year. He still can't quite believe that within a year of publication, contact had been made with long forgotten Earth and its very active society. Because his second chosen career is in economics he was not surprised when the government called to make him the prime contact in discussions with the people of Earth.

He shudders, bringing the daydream to an end. Although he has followed this routine, walking to the car and having it take him to the project headquarters, for the past month he is still very uncomfortable with it. Most Mirthian adults work with others via the computer. Being outside is not especially pleasing, but being in the same room as his partner on this project, Jahn, and finishing the required tasks requires extreme concentration. Even the drive to their meeting room is an unusual undertaking. Halt does not leave his house very often and has never owned any means of transportation. The computer driven government car conveys him to the meeting room every day although he still can't make sense of the wasted driving time. The homes on Mirth are so scattered that in this half-hour drive he only notices three other homes. High government officials "suggested" he meet as many of Jahn's requests as possible, so in spite of his distasteful feelings he continues to meet with Jahn in person. The trade possibilities are vital to Mirth's economy. As the car slows and stops, the door opens. Helt takes a deep breath, climbs out and heads inside.

Jahn shakes his head in wonderment, thinking back to the last time he was at his desk on Earth in his office at United National Life. A Friday! He has been the chief actuary for the past couple of years, but the job hasn't challenged him as expected. The compensation and benefits make it difficult for him to look elsewhere, and his age doesn't seem to allow him the time needed to start another career. His days are spent managing other actuaries and solving communication problems between his department and the rest of the company. It is a challenge, but not one he truly enjoys. The job doesn't require the mathematical and analytic skills he is so proud of. He smiles to himself as he realizes that by excelling at what he is good at, he put himself in a position to be promoted to a job he wasn't prepared for.

What a Friday! Jahn's buddy, Myke, from marketing, dropped in. Myke seemed filled with nervous excitement. That was unusual for the smooth, always calm and collected marketing leader that had helped make United National Life the fastest growing life insurance company on Earth. Because it was late afternoon, Jahn had asked Myke if he wanted to run across the street for a cold, dark beer and some conversation before they headed home for the weekend. Myke had surprisingly declined, but instead invited Jahn and Maree over for dinner Saturday evening. Jahn knew Myke had the latest, fanciest meal processor with a huge recipe file, so he accepted, hoping for his favorite meal of meatloaf and twice-baked potatoes.

Jahn had eaten that meal, and it was as good as he dreamed it was going to be, but now it reminded him of a prisoner's last meal before his execution. The dinner foursome had been completed by a friend of Myke's, a government woman looking for a person with Jahn's mathematical and analytic skills, especially someone with his actuarial background. The conversation that evening quickly led to a short briefing, followed by a medical checkup on the way to the spaceport, and before Jahn or Maree realized what was happening, Jahn had blasted off for Mirth.

In that short briefing, Jahn discovered he had been at the top of a short list of several actuaries. After the government's background check, Jahn has been singled out as the best choice to assist the government on their newest project. The story of the recent discovery of Mirth, accessible through an unusually stable wormhole, was all over the Internet. The fact that it was colonized by space travelers who left Earth ten centuries ago was reported by the media until everyone was pretty bored. That those travelers had spent many years traveling while undergoing specific genetic changes during a drug-induced hibernation was not mentioned. If their trip had succeeded, others

expected to follow, but a certain infamous religious movement on Earth brought a halt to most scientific investigation, including space travel. The colonists had been completely cut off for a very long time.

A few very wealthy businessmen had pushed for immediate trade, but before the first ship set out, loaded with goods, all thoughts of trade disappeared. An initial government investigation led to the announcement that a certain Mirthian virus might be fatal to all Earthlings. Jahn learned in his briefing that this story was used to halt the curious until the economics of the trade and other, more subtle, problems could be solved.

Jahn has been here for two Mirth weeks, approximately four weeks on Earth, as a guest of the Mirthian government. Every waking minute of his visit has been used to collect enough economic data, financial statistics and general information to keep his computer in analysis mode for another two Mirth weeks. He and Helt, his Mirthian counterpart, are hoping to figure out how to open up trade between the two planets without disrupting the economy of either. Jahn is strongly aware of the fact that the genetic changes in the original settlers on Mirth allowed them to live for 150 Mirthian years. Jahn is working with a man who expects to live almost four times longer than Jahn does.

Helt's knock at the door rouses Jahn from these thoughts. Jahn asks the computer to open the door, and Helt slowly peeks in. Jahn is aware of how uncomfortable Helt is, but he still thinks it is important for the two of them try to work out their problems in person. Today's agenda begins with a discussion of the previous month's work.

Helt pushes aside his anxieties and starts the discussion by explaining his aggressive attack on the trade problem. Initial findings indicate that the several differences in the two human civilizations, caused by the abundance of different metals on each planet, could be the key. The differences provide trade goods that could be unique to each planet and are of similar value, so that neither side would build a trade deficit. Jahn points out that four generations of Earthlings would buy Mirth goods during a time span over which only one generation of Mirthlings would buy Earth goods. Jahn doesn't add, out loud, that this is one of the early warning signs of trouble he sees. He knows there is more to the problem. An analysis of his inner feelings indicates a bit of jealousy showing up already. He realizes, as Helt continues, that he cringes every time Helt makes any suggestion requiring a lengthy period of time to develop.

Two hours of discussion and they both realize the simple economics can be worked out, especially with some initial price setting, but now it is even more apparent that there are subtle problems concerning the differences in life expectancy. Jahn projects his own emotions to a world's population and sees strong possibilities of war. Jealousy is not easily tamed. He needs to clear his mind and suggests a break for lunch. Immediately Helt nods and leaves the room. Jahn, continually aware of Helt's discomfort, realizes there is no way Helt can bring himself to eat in the same room as Jahn. It just doesn't happen on Mirth.

Jahn carries his lunch outside to a bench the Mirthlings placed in front of his temporary office building. After a quick bite he relaxes, his subconscious thoughts seem to coordinate and finally bang him on the head. He realizes that he does not belong here. It isn't just the "new kid in school"

feeling. The social environment here is set up to handle lifetimes of a much longer length. Mirth has very few people due to very strong population controls, and they are spread out over a large area. Social skills are of very little importance and the traditional family does not exist.

Jahn grabs his pocket computer and lets his mouth ramble until he has emptied all of his thoughts into the computer's memory. Peaceful coexistence of the two different worlds may only require a few rules and a rite of passage. The rules will allow each person to decide, at age 18 in Earth years, which planet they want to live on and by making this decision choose their expected lifetime.

Jahn realizes that if an individual wants to switch planets that individual will have to pass an exam showing full understanding of both planets' rules. Once the exam is passed, genetic adjustments would be made, and the individual could find a home on the chosen planet. Each planet will have the right to adjust their own set of rules, thus controlling the immigration and emigration. Jahn asks the computer to organize and summarize these thoughts.

Ten minutes later Helt knocks and cautiously enters as the door opens. His head droops, a sign of his discouragement, but he pops up and brightens as he listens to the computer's summary of Jahn's latest thoughts. As soon as the computer finishes, Jahn cautions Helt that this plan might lead to a 10% shift in population from one planet to the other.

Helt smiles broadly for the first time, "10% is high."

## **Sabbatical**

*by Carol Marler*

The plane was just taking off for New York, and my seatmate asked me how long I had been in Africa and what I had been doing there.

I explained that for the last year I had been part of a multi-national team who were designing, building and implementing a pan-Africa health care database. We had wrapped up the train-the-trainers session a month ago, and had stayed to oversee the first round of training and on-the-job checkout of the new trainees from all parts of the continent.

My seatmate was a young MBA who was returning from a routine audit of several offices that were clients of his firm, MercerDTEYKPMGPWCTTPWWW. He confided to me that he hoped to become a partner in a few more years.

Then he asked how I came to be a part of the database project. He really seemed interested, so I tried to answer him. It was a process of thinking out loud.

A few years ago, I began, I was perfectly happy in my little corner cubicle. Almost nobody ever talked to me. They held me in such awe. Not only did I have my actuarial credentials, I was a fantastic computer nerd. My data warehouse was one of the best in the business. Of course, I mean the insurance business. So it wasn't entirely state of the art.

But I could make that software spin. I could mine data with the best of them. Sometimes a vice president would e-mail me a request. Of course, they only did that after exhausting every other possible source, so I was their last hope for the board presentation. And I always came through. Then I would get one of those marketing gewgaws with the company logo on it as a token of appreciation. I always e-mailed my thanks. No sense in letting them think I wasn't a team player.

My salary wasn't high enough to attract the attention of the work redesign consultants. The ones who get paid proportionally to the number of lay-offs they can justify. Plus those redesign folks always figure that technology is the solution to whatever the current problem is. So having technology in my job description helped a lot. Occasionally I would hang out with the company webmaster. But webmasters come and webmasters go. It really wasn't worth the trouble to suck up to the new ones.

Then, for some reason, the top actuary at our company decided that all employees with an actuarial designation ought to go San Francisco, for the giant fiftieth anniversary bash. What did I know about meetings? I went to the General Session, and listened to all the speakers. It was only later that I learned most actuaries (except those running for a position on the Board of Governors) skipped any session with more than 50 people in a room.

The keynote speaker kept talking about doing something for society. Giving back some of the good things we have received. Well, I thought about it. But it didn't really seem to fit my life.

And I decided to stay in my comfort zone. Back to my favorite cubicle, with the Dilbert cartoons on every available bit of wall space.

Then there was this big deal about the new millennium starting January 1, 2000. Yeah yeah yeah, I know that the software issues had to be dealt with. And certain folks did such a fine job of publicizing it, that the technology folks were given the opportunity to fix the problem before it happened. Mon oh mon, whatta concept! The truth is, Y2K was a management problem, and fortunately management realized it and got it fixed in time all over the world.

But the real millennium started 1/1/2001. The TV jocks scarcely noticed it. It was like 1/1/99. Just another holiday. But what really put me over the top was my birthday. Can you believe it, DOB = June 1, 1951. So on June 1, 2001, I was 50 years old. The big five oh.

I remember reading once that academics take a sabbatical every 5-10 years or so. The term originally meant one in seven. Even more significantly, after seven times seven, the ancients took an extra year off, and called it the jubilee year. Me. Fifty. Time for the jubilee.

I pulled out my company benefits summary. My gosh, I have 45 days of vacation coming. And I have enough money in the bank to live for a year without any salary at all.

I went in to see my boss. And then I called that guy that spoke in the SOA general session, to offer my help in building that health data warehouse in Africa. He put me in touch with a guy who put me in touch with someone who. . . Well, you get the picture. I got my passport and my immunizations, and I was off to the wilds of darkest Africa.

And you know, it was one of the greatest experiences of my life.

Then the fellow started asking me about my friends and family. I made a mental note to get his story, too.

Parents both dead. No brothers or sisters. Not much contact with aunts, uncles or cousins. Not even sure who they were or how many were alive. We don't do family reunions, see.

Tracey and I were divorced years ago. No children. No regrets. No recriminations. Now I wouldn't even call us friends. More like acquaintances. When Tracey remarried and started a family, we simply went our own ways.

While I was in Africa I got two, no three, e-mails in my personal account. Not counting, of course, the junk mail which my screening program offered to me as potentially worthwhile. I deep-sixed all of those.

Of the actual e-mails, then, the first one was from my boss. The company had decided to split my job into two parts, one systems person and one actuarial. The two people assigned were sharp folks, and had stuff well under control, but there were a couple of questions. I had only been out one week, and figured I was still on payroll since the vacation checks would keep coming for a while. So I responded to the questions directly to the replacement people, with a cc to my boss.

That was the first e-mail. The second was when the replacement folks sent me a joint "thank you and have a good vacation."

And the third e-mail was from that SOA speaker. It came very close to hitting the deep six also, but then I recognized his name. It was another kind of thank you note, but I guess it made me feel good that he had remembered my phone call.

And that's it. Essentially no friends and family. No job to go back to. Well, of course my boss could find a spot for me, but I think the replacement folks can handle my specialty now, and nothing else really appeals to me.

If I had it all to do over again, perhaps I would have spent more time relating to people. I remember on the flight out here, I read a magazine and slept (or pretended to sleep) the whole way, just to avoid a conversation like this one. Perhaps I would have become a doctor. That would be the best way to do health statistics. Not collect them, but create them. Too late now, though.

Well, as they say, enough about me. And I asked my seatmate for his story.

Pretty much like yours, he claimed. No family, no close friends. He joked that it was an ideal situation for a witness protection program. I thought that phrase a bit strange, and asked him what he knew about witness protection. He hesitated a moment and seemed to make a decision.

It's not really a witness protection program, he admitted. But when you get this treatment that he had taken, it gives you a new lease on life. He had been in his late sixties, and had come out of the treatment looking (and feeling) like a teenager. He had chosen to go into accounting and had zipped through college courses, receiving his CPA and MBA in pretty good time. His "maturity" is a plus, even today, especially combined with his apparent youthfulness. His health is still that of a person in the mid-twenties.

And the decision he had come to was whether to tell me this. Because doing so committed him to recommending me to the clinic, where I could become young again. I could go to medical school, if that was the route I chose to go. His organization was able to see to the necessary transfer of funds from my old identity to my young one. And the price of the treatment was well within my range.

So I sat there a while myself. Making up my mind whether I should trust him, or just write him off as a crackpot of some kind. As I thought it over, he handed me a couple of business cards. One from MercerDTEYKPMGPWCTTPWWW. And the other from a place called "Renewal Clinic."

Then he picked up his magazine and started reading. Leaving me to my thoughts.

## **Presumption**

*by Chris Fievoli*

It was about twenty minutes into the meeting when CEO Frank Samuels yanked off his glasses and barked, "At what point is someone going to tell me what the hell we're supposed to do?"

His comment was directed at CFO Barry Leonard, who wisely decided to keep his gaze locked downward on his notepad. He didn't have an answer for Frank - at least not one he wanted to hear - and he hoped that if they didn't make eye contact, he wouldn't have to respond.

It worked. Frank turned to Edgar Zellman, who was seated beside Barry. "Edgar, you're the actuary here. Do you have any suggestions?"

He opened his mouth to speak: "Well, I - " Suddenly he stopped, as the colour drained from his face. "Will you excuse me for a moment?" He stood up and briskly walked from the meeting table towards the washroom door, his last few steps turning into a trot. The door had barely closed behind him before the sound of Edgar vomiting echoed off the tiled walls inside.

"What's his problem?" grumped Frank.

"Space lag," explained Barry. "Give him a break. He just arrived three days ago."

"I pay \$150,000 to fly this guy out here, and now we get to listen to him throw up. Wonderful."

Frank was upset, and justifiably so. He was about to report to his bosses back on Earth that the First Abraxian Life Insurance Company, after twelve years of strong and consistent earnings, was about to report losses in excess of US\$15 million for the third straight quarter. And he wasn't looking forward to that.

Edgar returned to the table, looking not much better than when he left. "My apologies," he muttered.

Frank dismissed it with a wave of his hand. "Don't worry about it. But Edgar, I'm at a loss here. What do I do about this whole mess?"

Unfortunately, Edgar didn't have any magic answers either. "What Barry said was right," he explained. "You're getting killed - no pun intended - on the mortality experience. It's right there in your sources of earnings."

"That's what I said," Barry piped in, trying desperately to redeem himself.

"Okay, fine, I see that," Frank said. "But I'm going to be asked two questions: Why did this happen, and what am I going to do about it? And guess what? I still have no idea how to answer those questions!"



"They should have understood that this venture carried certain risks," Barry replied.

Frank shot him a glance. "Yeah, Barry, that's great. You tell the Board that they should have known they had this coming. And then see how far your career goes with this company after that. I bet they won't even pay your space fare home."

Edgar watched the proceedings with some bemusement. It was hard to believe that just last week, he was in his office back on the planet Earth, poring over a client's GAAP reserves. Was it last week? Or was it eight months ago? Space travel had a way of bending the time-space continuum so that you couldn't tell. In any case, here he was on the planet Abraxas-7, home of the first intelligent life form discovered outside of the solar system.

It was twenty years ago that the first human visitors made their way to this planet, much to the exhilaration of scientists and astronomers everywhere. The whole world watched with fascination as the first images of the native Abraxians made their way back to Earth, thus indicating that Steven Spielberg wasn't too far off when he made E.T. - except that these aliens were less "cute" ugly and more "disgusting" ugly. Edgar could now say that they didn't look much better in person. None of them stood much higher than three feet, and were covered with hard, scaly skin that was the colour of a freshly boiled lobster. They had two stubby appendages that were supposed to be arms, and no legs to speak of - just a cluster of undulating nodules that allowed them to scurry around surprisingly quickly. And the way they communicated - my God, Edgar found that annoying. The only noise they were capable of making was a rapid clicking sound. When two or three of them got into a conversation, it reminded Edgar of his childhood back in Skokie, Illinois, when he used to tape baseball cards to the spokes of his bicycle.

But, the Abraxians proved themselves to be on a par with humans when it came to intelligence - once someone figured out exactly what they were saying. To their credit, they had created a fairly successful societal order, and welcomed the human visitors, who now numbered several hundred thousand permanent inhabitants. Shortly after the first human communities were established, a group of investors back in the United States realized that this new life form potentially represented a lucrative source of business. Thus, within a couple of years, the First Abraxian Life Insurance Company was formed, specifically to market insurance products to the aboriginal residents of the planet.

It was a few years before the first policy was sold, as academics and researchers tried to figure out exactly what sort of life expectancy these creatures would exhibit. Over time, they began to develop a fairly comprehensive body of knowledge, and soon discovered that a native Abraxian could enjoy a life expectancy of close to one hundred years. (Earth years, that was. In the local lexicon, it was an even more impressive-sounding 350 years.) The first life insurance products soon followed, making use of the preliminary survivorship rates, plus an unearthly actuarial margin of over three hundred percent.

Did they even have a need for insurance, Edgar wondered. Evidently they did, or else the company wouldn't have sold anything, right? And that meant they obviously understood the concept of money. Or maybe they didn't. And if not, did anyone care?

Edgar realized that he had been mentally blanked out of the conversation for the past few minutes, so he decided to give them his attention once again.

"You know what I think the problem is," Barry said, trying to sound authoritative. "There's some sort of flaw in our underwriting procedures."

"No, there's not," snapped Frank. "We've been using the exact same damn procedures since day one. Don't tell me they work for twelve years and then suddenly don't."

"How do you underwrite an alien?" Edgar asked. He suddenly realized that he meant to ask the question in his head, not out loud.

"Don't ask," Barry said as he rolled his eyes.

"You don't want to know," Frank added. "It gives fluid collection a whole new connotation."

"But let me continue with my point," Barry said, bravely trying to float another theory. "If it's not our underwriting, then there's likely another problem, which is a lot bigger than anything we can do anything about." He paused for what Edgar guessed was dramatic effect. "Maybe the human presence on this planet has started some sort of contamination."

"No, it hasn't," Frank said brusquely. Barry was now 0-for-3. "If that was the case, then we would have seen some better results on that annuity block we're holding. But, no, we're still paying out tons of money on that one." He turned now to Edgar. "Can you believe that?" he asked rhetorically. "These little spacemen live over a hundred years and we decide to sell them annuities. Luckily, we only got about three months worth of sales before we shut the whole thing down and sent out head of marketing on the first spacecraft home."

"OK, then," Barry continued. "Maybe it's an oddity with the local Abraxian accounting standards."

Edgar tuned out completely as Frank tore another strip off his hapless CFO. Out of the corner of his eye, he noticed that Frank's office had a pretty decent view of the city. There was, of course, the collection of ugly Earth-style concrete-and-glass office buildings. But he could also see some of the landscape beyond the environs of Gagarin City, the naming of which was an obvious attempt by the original settlers to make this look like a "global" effort, despite the fact that 95% of the funding came from North American and Western European governments. The hills surrounding the city were quite impressive from afar, rolling bluffs covered with green and gold vegetation. The operative word was "afar", as the vegetation was actually a thick sticky moss, four feet deep in parts, which apparently stained all forms of human-made material beyond recognition. In the sky above, Edgar had a perfect view of the three purple "suns" which floated just above the horizon. Stunning at first, until you realized that they never set, casting the planet in eternal twilight. At that point they just became another annoying source of disorientation.

Frank noticed that Edgar had stopped paying attention, but also noticed that was rather intently rubbing his thighs. "Edgar, is there something wrong?" he asked.

Edgar, evidently unaware that he was doing so, quickly brought his arms back above the table. "No, nothing," he said. "It's just that my legs are really quite sore today."

"Gravity," Frank explained. "Abraxas-7 is just slightly larger than Earth, and you start to notice it after a while. You'll get used to it."

"Just don't jog," Barry added.

Not a problem, Edgar thought. It was so damn humid on this planet that he broke into a sweat just walking to the Starbucks across the street from the Gagarin City Hilton, where he was staying.

"Well, I really don't think we're any farther along here than when we started," Frank said with resignation. Edgar could see he was visibly distressed. Had his hair actually gone more grey during this course of the meeting? Stress did that to people. "Edgar, I'm looking to you to help us out here. We're piling up more death claims that we ever could have expected, and I need to understand why. Can I leave this one with you? You have access to any resources you need here at the company."

"Yes," Barry added. "And that includes financial resources." Barry seemed to react to stress by swelling up. His puffy red face looked like it was about to burst.

Edgar nodded. "Okay, Frank. I'll see what I can do." What the hell. He didn't have anything else to do out here.

Edgar spent his spare time in his hotel room, which presumably looked like a room inside any other Hilton in the universe. Between watching re-runs of old American television shows from the last century - it was Kojak week on Turner Galactic Broadcasting - he pondered the problem he was faced with. No doubt about it, the First Abraxian Life Insurance Company - he judiciously avoided the acronym - was in a quandary. What do you do when your mortality experience suddenly, precipitously takes a nosedive? And it was sudden - a year ago, everything appeared to be emerging as per normal; the excessive margins they originally built into the rates showing themselves to be unnecessary. But now, claims were way, way above what they had expected.

All the usual possibilities went through Edgar's mind. Anti-selection? Maybe so, but you would expect that on a few select policies; nothing as widespread as this. And the bad experience was hitting at all durations. It was inconceivable that anyone doing anything surreptitious would suddenly decide this was the year, along with a few thousand of their friends.

Or maybe it wasn't. After all, they were dealing with a life form, a whole culture, that they had only been studying for at most twenty years. Maybe there was some weird thing that wiped out the whole population every few generations. Who knew? But, no, if that were the case, then the streets would be full of bodies, and they clearly weren't. No, this appeared to be something peculiar to everyone who bought a policy from First Abraxian Life. So he was back to the anti-selection issue. But how?

Edgar realized he needed to find out more. Definitely look at the cause of death, but he needed to

understand what he was dealing with - learn more about the culture, what made these Abraxians tick. And what was making them all die in one particular year and really screw up earnings.

The next day, Edgar came across Frank and Barry in another discussion, "discussion" being defined as Frank berating his CFO over one matter or another. "I have a question," he said, popping his head in the door. "What kills these creatures?"

"What do you mean?" asked Barry, obviously relieved to have a change of subject.

"Cause of death. What is it? Do they get the same diseases we do? Cancer? Heart disease? Do they even have hearts?"

"Good question," Frank interjected. "I had been wondering the same thing myself. Mostly, it's just what we call old age. Their bodies wear out, and that's it."

"Yeah, but if it's old age," Edgar said, "then why are we seeing so many death claims at relatively young attained ages?"

"Exactly," Frank replied. "Congratulations. You're now at the same point of confusion that I am."

"Some of them blow up," Barry added.

Edgar shook his head, not sure if he heard him correctly. Frank cupped his hand over his eyes. "Barry, why did you have to bring that up?"

"But they do!"

"What are you talking about?" asked Edgar.

"It's only happened a few times," Frank said. "It's not really significant."

"I never said it was," Barry replied.

"Then why in hell did you bring it up?"

"What are you talking about?" Edgar asked again.

"Let me ask you this," Barry said. "Did you ever get so angry that you felt you would explode?"

"Every day," Frank muttered.

"Well, that's exactly what happens. There have been occasions where some of them get so worked up they just - well, go off."

"How do you underwrite for that?" asked Edgar.

"We try to say something controversial at some point in the sales process. If they show a visible negative reaction, then we take note of it."

"Could that be our problem?" asked Edgar.

"Hardly," said Frank. "If it was, you couldn't walk down the street without a space alien blowing up in your face."

Edgar thought about that for a minute. "I think I better look into this. Who's in charge of your claim processing?"

"That would be Carole Martinez," Frank said. "I think she might be able to help you out."

For Carole, stress seemed to manifest itself in the form of nervous laughter. "Oh, yeah, we're the body counters!" she admitted with an inappropriate chuckle.

Edgar uncomfortably shifted in his seat across the desk from her. "Isn't that kind of a - I don't know - crass way to talk about it?"

"You have to," she said. "Otherwise, you go crazy. I'm sorry, but this is one operation where you have to treat the customer as a number. You personalize it too much, you wouldn't be able to handle it."

Edgar looked around her office, which was plastered with hundreds, maybe thousands, of photographs of mountains, farmers' fields, horses, beaches, and football players. Evidently Earth homesickness hit some people harder than others. "Do you happen to keep records on cause of death for any claims you process?"

"Well, there really is only one cause," she explained. "What the doctors here call general failure."

"That and blowing up."

"Excuse me?"

"Never mind. Listen, what do we normally accept as proof of death?"

"We need official certification from a doctor."

"Human doctor?"

"Of course." She looked perplexed.

"Just checking," Edgar explained. "What the hell, maybe space aliens had doctors too. "And then what happens?"

"What, to the claim?"

"No, to the body."

"Why?" She looked agitated.

"I was just checking out all the angles," Edgar assured her. "If there's some fraud being perpetrated, I want to find out."

Carole shrugged. "I don't know, I guess they return it to the family for burial. Frankly, that's not an area we pay a lot of attention to. You know, we've got enough to worry about as it stands."

"Preoccupied with paying claims, I take it?"

Carole laughed out loud. "You wouldn't believe it. I've got all my staff working overtime until we can hire more people on. I've asked what the hell's going on, but no one seems to know."

"Yeah, that's why they brought me out here. Listen, who knows more about the whole Abraxian culture when it comes to dying? I think this is kind of a missing piece that I need to understand before I go any further."

Carole shrugged. "I have no idea, Edgar. That's something the average human doesn't get too involved in, you know?" She drummed her fingers loudly on the desk. "Maybe you ought to be talking to someone at A.U."

"A.U.?"

"Abraxian University. They have a bunch of field researchers there that have been studying local habits ever since the first humans arrived. They might know."

"Thanks," Edgar said. "I'll let you get back to work now. Hate to keep you away from it."

All Carole did was roll her eyes, as if to ask who he thought he was kidding.

Edgar spent most of the next morning in the bathroom of his hotel room. No one bothered to tell him that the additional gravity would affect his digestive system as well. Fortunately, he was able to reach Barry by phone and get a contact at A.U. Dr. Lars Lindergan had spent most of his earth existence as a renowned anthropologist, before being recruited to head up the Native Abraxian Studies program at A.U. Edgar called the university and set up an appointment with the doctor - for the next day, of course.

When morning arrived, Edgar felt somewhat better, but had to contend with what the locals called a paint-peeler. The wind had shifted to the Northeast, the exact location of the area called the Lotharian Fields, where the climactic conditions caused the moss to be in a permanent state of decay. The winds, which carried with them the smell of rotting moss, were reputed to be so foul-

smelling that they could peel the paint off walls. Air conditioning systems helped to reduce the stench, but couldn't completely keep the odour out of the air. To Edgar, it smelled like that plate of uncooked chicken he accidentally left on the counter for a few days when he was in college.

He arrived at the Qaddafi Campus - obviously named when it was time to pander to Libya - and proceeded to Dr. Lindergan's office on the third floor of the Haile Selassie building. What he saw when he arrived looked like anything but the office of a renowned scientist. The room was filled with clumps - not even piles - of paper, heaped into great mounds on the floor and what he presumed were tables. It looked like someone had taken the office, turned it upside down, given it a shake, and put it back. He imagined there was a desk in the somewhere, but he couldn't say with certainty.

Hesitantly, he knocked on the open door. In one corner of the room, he saw a glimpse of movement, and then noticed a huge denim-covered backside emerging from a prodigious pile of typewritten reports. The doctor crawled out backwards on his hands and knees, a presumably important document clenched in his teeth. He turned, and brought himself up to his feet. "You must be the actuarial," he declared.

"Actuary," Edgar corrected him diplomatically. "My name is Edgar Zellman."

The doctor offered a handshake. "Very nice to meet you," he declared. Lars Lindergan was a heavy-set man, almost as wide as he was tall, sporting a blue striped shirt and elastic-banded jeans, both of which were tragically a size too small. He looked like the stereotypical absent-minded professor, with tiny spectacles and a full grey beard, a fitting complement to his disheveled grey hair, which was loosed tied into two ponytails at the back of his head.

"Thanks for allowing me to come visit," Edgar said as he looked for someplace to sit down. Lars noticed this, and knocked over a stack of manuals onto the floor, revealing a metal chair.

"Oh, now, not at all," he said, sounding somewhat grandfatherly. "We're here to serve the public, you know." They both sat down on opposite sides of the room. "Now, what exactly is it that you need help with?"

"Here's the situation. I've been hired by First Abraxian Life to try and solve a problem they've run into. For the past year, mortality claims have been far in excess of what anyone expected, a complete reversal from what they've been seeing for the last twelve years. If we don't find out what the problem is, it could bankrupt the company if the trend continues. I think they were expecting me to approach the problem from a financial standpoint, but I want to start with a bigger scope than that. I think we need to understand more about the native population before we can try to model or understand their behaviour."

"Oh, that's very interesting. Good for you," Lars replied. Edgar wondered if he spoke that way to everyone. "I think you've come to the right place. I've been studying these creatures for eight years now, including extensive field research. It's been a most fascinating experience."

"I can imagine," Edgar replied, although he didn't want to. "Let me ask you this - are you aware of anything that may be causing an increase in mortality amongst the natives?"

"Well, now, let me see." The professor ran his finger down a foot-high stack of papers, stopping at about the five-inch mark, and miraculously pulling out the document he was looking for. "I have the most recent census statistics here, up to date as of last month." He began thumbing through it. Edgar couldn't help himself anymore. "Why is there so much paper in here?" he asked.

Lars looked up over his glasses. "I'm sorry?"

"The paper. Most other offices here have everything stored electronically. You, on the other hand, have paper copies of everything."

"Ah, there is a reason," he declared proudly. "You see, I don't think we've done enough research on those three little suns you see out there." He pointed through the window for emphasis. "How do we know that they won't someday send out a huge electronic pulse, wiping out every means of electronic storage. Paper," he said patting the report confidently, "will always be around."  
"Unless the suns send a huge fireball to the planet instead."

Lars found this amusing, laughing out loud. "Very true, my friend, very true. Oh, my, my, my. I guess if that happens, we'll have bigger things to worry about, won't we?"

"Indeed," Edgar declared. But he liked the way the professor was thinking.

"Well," Lars said as he closed the report. "We did see a very slight increase in expected deaths in our last study, but well within the statistical margin of error."

"Possible that it could be caused by the policyholders of First Abraxian?"

"Oh, that could well be the case," he replied. "That and a hundred other things. But there's nothing solid here for you to go on."

Edgar nodded quietly. Time to try another approach. "Another question for you, then. When one of the native Abraxians dies, what happens? What sort of ritual do they follow?"

"Oh, yes, indeed. Well, it's very simple, Mr. Zellman. The body is simply returned to the family for safe-keeping. They have a brief memorial - usually the home of the deceased - and then place the body in storage."

"In storage? Not buried?"

"Oh, no. They don't decompose, you know."

Interesting, thought Edgar. He never would have supposed that. "So they just sit in a closet or something?"



"Well, no, not a closet. They actually use a..." Lars paused for a moment. "I'm sorry, the term escapes me. Just a moment." He stood up and walked to the office door, poking his head out into the hallway. Then, much to Edgar's amazement, he perfectly replicated the clicking dialect of the native Abraxians. Within moments, one of them appeared, scurrying over to the professor's side. Edgar watched in fascination as they carried on a conversation, clicking back and forth at each other for a good three minutes. Finally, Lars returned to his seat. "The most accurate translation is a 'repose room', usually in what we would call the basement."

"I see," Edgar replied. "I didn't know you could speak the language so well."

"Oh, yes," Lars said, reaching for a bottle of thick white liquid he kept on the shelf. "But it's painful as hell." He took a large swallow and grimaced. "You can rupture your larynx if you're not careful. By the way, I also asked him if he knew of anything that could be causing all the extra deaths you've been seeing."

Edgar looked hopeful. "And?"

"Nothing. At least nothing he was aware of. Or willing to tell me."

"I see." Edgar reflected for a moment. "How do you tell them apart?"

"Tell who apart?"

"The natives. They all look the same to me. But then again, I've only been here a few days."

"Oh, you learn after a while," Lars replied. Edgar noticed that one of his ponytails had come loose, causing his hair to flop around on the collar of his shirt. "You begin to recognize distinguishing marks."

"Yes, after you know them for a while. But how about if you're trying to identify one that's deceased?"

Lars looked puzzled. "Meaning?"

"What if they decided to bring out an already deceased -" He wanted to say person, but didn't know the proper word. "You know, one of the natives, and claim that he was the life insured under the policy? How could anyone tell? Do they do any sort of DNA testing?"

"They don't actually have DNA like we do."

"Fingerprinting?"

"No fingers, I'm afraid."

"Then how do we positively identify one?"

"Well, there is frequency," the professor replied.

Edgar cocked his head to one side. "Frequency?"

"Yes, each of them issues an series of ultrasonic sounds. They're too high for humans to perceive, but if you capture the pattern and the frequency to a few decimal places, they are unique. The technical term is Frequency Emission Categorisation; FEC for short."

"Yes, but that works if they're alive....."

"After death, too," Lars added.

"How is that possible?"

Lars folded his hands contentedly in his lap. "Mr. Zellman, when you deal with space aliens, the safest bet is to assume everything is possible and work back from there."

Edgar pondered that one for a moment. It actually was a pretty good premise to work from.

The rest of their meeting was fairly uneventful. Dr. Lindergan regaled Edgar with tales of living amongst the natives, while Edgar did his best to avoid asking what it was like when one of them blew up. Later, that evening, Edgar decided that he deserved a little bit of relaxation. There was a pre-recorded hockey game between the Pittsburgh Exxon Penguins and the Detroit Daimler-Chrysler Red Wings on television in his hotel room, so he put his feet up and tried to put his mind at ease.

It wasn't that simple, though. Over and over, he processed the information in his head, wondering if he missed something. The policyholders of First Abraxian were suddenly dying quicker than anyone could have imagined. There wasn't anything external to the company causing it. There couldn't be fraud - there was apparently a foolproof method of identifying bodies using the FEC that Dr. Lindergan told him about. Then what the hell was it? The professor's words echoed though his subconscious - start by assuming everything is possible, and work back from there. But how was that going to solve anything?

Then, it hit him. It was an idea that seemed outrageous, but - at the same time - possible. He quickly scribbled down some notes on a piece of scrap paper, and shut off the television, his mind now exhausted enough to sleep. It would be an eventful day tomorrow.

The next morning, an invigorated Edgar Zellman headed off to the First Abraxian head office. The stench of the previous day had been replaced with a thick greenish fog, which looked like the city had sustained a nerve gas attack. He had been assured that the fog was harmless, but the professor's words - assume anything is possible - made him the slightest bit uneasy.

The office was barely open when Edgar strolled into the office of Rudy Boyle, a young systems

analyst that had been assigned to help his investigation. "Hey, Rudy," he said. "I was talking to someone about something called FEC. Do we happen to keep that on file anywhere?"

"Actually, we do," Rudy replied, as he removed his headphones. "We store it digitally for each policy issued. Why?"

Edgar subconsciously clenched a fist in celebration. "How easy is it to get that information for all the policies that had death claims this year?"

"Should still be there," Rudy said as he punched at his keyboard. "We keep it for a least two years before we purge the files."

"Great. And I need the same thing for all new issues this year."

"No problem. What format do you want it in?"

"I need you to do some analysis for me," Edgar replied, and he went on to explain exactly what he was looking for.

Close to seven hours later, Edgar returned. "Any luck?"

Rudy sat staring at his screen, his chin resting in the palm of his hand. "I don't know, Edgar. Something isn't right here."

"Like what?"

"Well, have a look at this report," Rudy said, handing him a printout and pointing out what he thought was an obvious error.

"No, that's fine," Edgar said, beaming. "Just what I expected, actually."

Rudy looked confused. "I think I need more coffee," he said, reaching for an empty cup.

Edgar clapped him on the shoulder. "Don't worry - I'll explain it all later. I have to go see the boss now." He hurriedly marched towards the elevator, suddenly realising that he may have just cost poor Rudy his job. And everyone else, for that matter.

They found Frank Samuels in the corporate Turkish bath, where he usually spent the last half hour of his day. He hurried back to his office, his face even redder than Barry Leonard's, his shirt clinging to his not quite dry chest. "What the hell was so important that you needed me right this minute?" he growled as he flopped into a leather chair behind his desk.

"Edgar says he found something," Barry said. "I'll let him tell you about it."

"Thanks, Barry," Edgar said. "I hate to say it, but we've all been acting under some pretty large presumptions here. I just met with a professor that keeps paper copies of every file in his

possession, because he's afraid there might be a burst of energy from one of the suns that could permanently knock out all the computer systems."

"Sounds like a paranoid nut to me," muttered Frank. A large drop of perspiration rolled off the end of his nose.

"Maybe so," Edgar continued. "But he reminded me that we're in a different world out here, and everything we believed to be true back on Earth may not still be the case. We can't presume anything."

"So what does that mean?" asked Barry nervously.

"Yeah, cut to the chase," added Frank. "And don't you actuaries make a living from making presumptions, anyway?"

"Actually, part of our job is to make assumptions, not presumptions. There's a subtle difference. You make an incorrect presumption, then everything you do from that point forwards may not matter."

"Incorrect presumption, huh?" Frank wasn't impressed. "Like what?"

"Like presuming that when an Abraxian dies, they stay dead."

Silence. For at least thirty seconds. Then Frank spoke. "What in hell are you talking about?"

"Back on Earth, the whole life insurance business is predicated on the belief that a policy will generate one and only one claim. Because once you're dead, that's it. But what if you had a life form that could not only die at will, but resurrect itself at some point in the future? Apparently, Abraxians are just stored away at death, and their bodies remain intact. It could well be that they could come back to life. It's just that they never had a reason to - until now. Buying a life insurance policy is a pretty good motivation for doing so, I would say."

Frank threw his hands up in disbelief. "You're completely crazy, you know that? That's the most preposterous load of -"

Edgar didn't let him finish. "I looked at all the death claims we processed this year. For every policy holder, we capture the FEC - that frequency measure that uniquely identifies each individual Abraxian. So I decided to compare these to all the new issues this year. Guess what? On over 90% of them, the same FEC appears on both lists. They're dying, and then coming right back to life and buying a new policy. Some of them use an assumed name, some are bold enough to use the same name again."

Barry Leonard seemed to grasp the implications of what Edgar was saying. "Oh, my God," he said, and curled up on the floor in the fetal position.

"In fact," Edgar continued, "you've got one fellow here that's hit us for six death claims in a row."

Frank was still defiant. "If that's the case, then how did we not catch that?"

"How many insurance companies run a comparison of their new business files to their recent death claims? It doesn't happen, Frank. No one on Earth thinks that way."

"We're finished," Barry moaned quietly from under the table.

"And none of those damn researchers at A.U. caught this?" Frank asked.

"Like I said, they probably didn't even know to look for it. And the Abraxians had no need to do this for a long time, perhaps ever. But some of them figured out there was a strong financial incentive to die and then come back to life, if you own a policy. And obviously word has spread." Frank slumped back in his chair, looking like someone had just punched him in the chest. "You know what this means, don't you?"

"That you have over hundred thousand policies in force that you could pay multiple death claims on?"

"Oh, yeah," Frank said slowly, his mind trying to work through the implications. "Once word on this gets out, we may as well pay the death claim when we issue the policy," he offered sarcastically.

"It's all over," wailed Barry.

"Barry, will you please knock it off?" barked Frank.

"Maybe you could appeal to the Abraxian Supreme Court, or whatever it's called here," suggested Edgar. "Since you didn't know this was possible, maybe that's cause to void all the inforce contracts?"

"I don't know," Frank responded, staring at the floor, shaking his head slowly from side to side.

"This is a mess. A complete mess."

Edgar didn't know what to say at this point. Frank sat and stared out the window, wondering how his company was going to survive paying out the entire inforce amount of coverage in the course of a few months, and realising, of course that it was impossible. And Barry - well, looking at Barry, it was apparent that he was going to need some professional help dealing with this one.

The failure of the First Abraxian Life Insurance Company was the first intergalactic insolvency in recorded history. By the time a team of liquidators worked through what was left of the company, most of the Abraxian policyholders received at least part of their premiums back, but nowhere near what they should have been entitled to. Frank Samuels, after he was fired from his post as CEO, eventually returned to Earth and landed a job with a major insurance company as, ironically, Vice President of Global Development. Barry Leonard stayed on Abraxas-7, and after extensive

treatment at the Abraxian University Psychological Research Centre, opened up a Burger King franchise in downtown Gagarin City. And Edgar Zellman, the actuary who started the whole sordid affair, quietly returned to his consulting practice, vowing that if any other projects outside of the solar system ever came to his attention, he would respectfully - but unequivocally - say no thanks.