HANGING BY A THREAD

By Deborah Strod

Chapter 1: The Thread is Fraying

Tonia sat in a shared computer area on Analysts' Row in the top secret government building in Washington, DC, but she was so focused, she did not notice any of the other people working. Her eyes were fixed on iridescent, crossing lines on the black computer screen. One shooting up, one plummeting down. It was a familiar pattern – the same way global warming gases built up and protective ones decreased, or infectious agents gained resistance as antibiotics begin to fail. The impact of each step on those lines was dramatic: not "two steps forward, one step back," but one step back, one step back.

The gasses and the antibiotics were unconnected of course, but these reports were not. She was looking at a meta-analysis requested by her boss, checking the results before he took the time to look at it. Hundreds of published and unpublished scientific studies and individual observations from personnel in various parts of the world had been compared and analyzed by their specialists. They showed that the pattern had extended to other seemingly unconnected fields, and events. Yet it was clear that in the realm of human behavior there was connection, deep connection, and it frightened her. For the first time in her years of service, she was frightened of an unknown more than the terrible things she already had experienced and absorbed.

There was no way that humans would be able to work their way out of this. In the next 5 years, this pattern would spread through the earth, making all life increasingly irritable. Ever more intolerant... hostile... belligerent.

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Gray looked down from the advertisement for "Wild America IV" as a lion mauled a cameraman. His eyes rested on the coffee table where the paper's headline read "Talks Fail in ..." listing all the diplomatic troubles in the world. He absentmindedly clicked the remote to a news story about a little girl caught in the crossfire of gang warfare. Another channel: a shooting at a clinic. He sighed as he descended back into the pile of books and photocopies surrounding him on the couch.

"It's no worse than it ever was, Gray," said Fred from across the dining table. "Humans have always resorted to violence as the final arbiter of their differences. Some people have said that it is simply Darwinian."

Gray paused his breathing, then looked straight up from the notes in his lap into his roommate's eyes: "No, you don't understand, Fred. It *is* worse than it ever was. It's not just that we know more about the violence in the world. The world *is* more violent. Domestic disputes, international talks breaking down. Even in the animal world -- more reports of unprovoked attacks, species that usually settle their dominance struggles with a show of bravado -- they're

actually going through with a battle instead. We generally believe that avoiding the fight helps to preserve the species members to reproduce. It maintains order and assures genetic variation."

"So this means that this species is decreasing in numbers?"

"Not just one -- all ten that I've been looking at have declined in the last ten years. I shouldn't be able to see a trend that quickly. And look at the societal data -- not just the troubles you see on the news -- "

"But after all, negative news sells --"

"But the data in our demographic magazines, the sociological journals, *Psychology Today*. Some people are making money reporting it, others run groups trying to teach us how to get along and resolve our differences. Family Mediation projects have an endless supply of clients. Sometimes it's explained by lack of resources – that if we truly have to compete for food or shelter, of course we'll resort to violence, they say -- even though there are plenty of instances where cooperation provides for all in a limited resource scenario."

Fred was getting impatient. "And so? So maybe there are fewer resources and we're all grumpy..."

"But I controlled for that with these populations, both the animal and the human. It's right here, look..."

"No, thanks. I believe you. I couldn't stand Stats 100 and you're not going to get me to look at any more of your graphs. Animals, people -- pretty soon you're going to tell me that the plants are getting more warlike. Look, you sound sure of the observation -- but what's the explanation? And what are we supposed to do about it? Your committee is going to want to hear that."

"I haven't got one. Not yet at least -- but that's a good idea to look at the plants," Gray added with a wry laugh. "Then I'd have to add a botanist, and spend another seven years learning their work. I think I'll stick to sociology and animal behavior -- two disciplines are enough for my Ph.D. If I can finish revising the damn thing and pass my orals."

"You've got to focus on clues to the cause and what can be done -- otherwise you're going to fail. Your special interdisciplinary committee, which needs help resolving its own differences, is going to eat you alive. With one of the first confirmations that things *are* getting worse, you're going to fail your dissertation. There's some kind of poetic irony in that, isn't there?"

Gray sank into the couch. For the first time he was more afraid of something than his committee. He stared at the graph in his lap: two crossing lines which signaled the end of reason. He had bigger problems than failing his orals... His breath sat in his lungs an extra second... what had Fred said about plants?

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Tonia queried the reference librarian at the CIA info house, then listened with practiced focus. "It's an old idea -- get your enemy to destroy himself. It preserves your own resources. Short-acting, irritating agents were one of the first chemical agents used, preserving most of the physical assets of the conquered territory, getting rid of the people.

"Conquering forces would be immunized first -- but immunizations can be stolen or created. The next step? It's the stuff of war and science fiction -- races bred to be immune to the agent could walk right into the warzone without any inoculation. But it's risky -- you have to use an agent that isn't alive, that doesn't mutate; and there is every chance that somehow your immunity could be compromised. But don't think it hasn't been explored. It's an extension of German Aryan prominence, but instead of some divine perfection it's pure chemical manipulation that decides who walks in and takes over. I'm sure it has been used in local conflicts already. Of course, these days they're more into the non-lethal variety of control."

"Try World War II," Tonia prompted, as the librarian started to explain how Tonia could continue the search on her own and let the librarian return to other questions. "The Germans were working on so much. They must have been working on something like this as well."

The librarian re-engaged with her terminal, information flowing from under her fingers across the screen. "There is one reference, an agent Barr. He was working undercover through the coloring industry -- chemical dying of yarns, working for a sham company catalogue. Kept tabs on all the latest in German organic chemistry and chemical processing. His last transmission was never received -- or at least, never recognized. On his deathbed, he swore he had succeeded in getting it off, but no one ever was able to find it."

"What was his mechanism of transmission?"

"Usually, there was a simple code in radio transmissions. For more sensitive items, the message was worked into one of the patterns of sampler afghans made by a group of women working for the catalogue. He used any number of methods: the stitch type, each stitch representing a unit, the pattern of color on the wrong side of the garment, a fake pattern being sent round which when done up provided the key information."

"That's a little slow, no?" Tonia was incredulous, as she felt for her beeper and cell phone and thought about all the coding and transmission courses she'd been required to take. Speed and security were the primary components of effective transmissions.

"By today's standards, yes, but at the time there really were occasions when no other source was available, and nothing could be done to jeopardize deep cover."

Tonia imagined what it would be like operating that way. She stared at a wall, losing her visual focus as her thoughts grew more precise. Under those circumstances, relationships might mean even more than technological prowess. "Did the women know? That they were working for a sham?"

"No. It was kept strictly business from their point of view."

"And what happened to this agent Barr?"

"He was taken from a German farm by the Gestapo. Never heard from, again, officially." The librarian left just enough near sarcasm in her voice to catch Tonia's ear.

"Officially?" she asked. "How about unofficially?"

"Says here a cell mate heard him speak before he was taken away to the morgue -- he's the guy who claims Barr said he got off that one last message." Tonia took a breath to probe further, but the librarian cut it off before she could move her lips to form a word. "Guy's dead -- don't even try."

Tonia didn't bother arguing, she just asked for what she wanted. "Any further contacts? What about the women, and the people on the farm?"

"We have the names of the women -- although they were all in their late 50's early 60's at the time -- 50 years ago. They're bound to be dead."

Tonia was beginning to tire of the librarian's cool and defeatist opinions. "Give them to me anyway. And the farm?"

Fingers flew over keys. The librarian was improperly opinionated, but competent. "Got it. Outside Bonn, shouldn't be too hard to get to the area. Actually, I know the region. You might find something there, it's one of the few places the city hasn't expanded into and the folk take some pride in their history and heritage. There was a lot of underground anti-Nazi work based there, and never really celebrated -- people just quietly continued on with their lives. We only know of it through agents who were helped -- I'm sure some of the neighbors never knew what went on. Could be kind of delicate to get anyone to talk even now though."

"Just give me the address. It's all I've got". *It's all any of us have,* she finished in silent desperation.

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In between catnaps on the plane, Tonia read what she could about sheep farming in Germany in the 1940s. Not a whole lot even the expert librarian could provide. She'd have to look at the town records to see if the owners were even related to the original occupants. But it was likely, given the description of the townsfolk.

She set down to strategy -- how was she going to get these people to tell her about activities they kept from each other? Perhaps as a relative, a daughter or granddaughter. She was practiced in many different communication styles, and one of her strengths as an agent was an ability to use both logic and instinct to use the right style to establish useful relationships. This was not a strength in her personal life, for her true center as a person was so often compromised at work,

and the secret nature of her job so compromised her ability to be honest with others, that she feared she would lose an ability to be honest with herself. She held onto the thin hope that since her success and survival at work depended on using her own instincts and reactions as clues, that her professionalism would not let an inner self disappear. It was a nearly specious argument and she knew it. But she also knew that since she cared, she was still alive inside.

She arrived in Bonn and took the train as far out as she could. At that point, an hour's backpacking trip brought her to the edge of town, looking very much like a young tourist on a budget. She found the center, and asked in one of the butcheries for the Fragge Farm. She hitched a ride, walked the long drive to the main house, and simply but firmly, knocked on the door.

"Allo?" she called. "Ich bin eine tochter Herr Barr. Bitte schoen, kenne ich mit zie gespreche?" She lifted her voice in broken German through the open window above the door. She was fluent in German, but thought that struggle and willingness to communicate on her part might lead those inside to do the same. The doorknob clicked as it turned and the door opened to reveal a weathered, bright-eyed, eighty-year-old woman. "Yah?"

"Sprechen zie English?" asked Tonia.

"Nein," said the woman. She looked Tonia over for a minute as Tonia pretended to fumble for words: "Oh. Herr Barr? Mein Fater...und ich gehe -- no that's not right -- iche komme heir ..."

The woman called something over her shoulder into the house. A man soon came to the door and opened it further. He stood two feet over the old woman, with neatly trimmed blond hair. Not much like a farmer, Tonia noted.

"Yes?" the man said, looking straight into her eyes with an openness and a questioning and a sense of strength that Tonia could tell came from this woman. He was her son.

"Do you speak English?"

"A little. A bit more than you speak German, I believe."

"Yes, thank you. I know I am a stranger, but my father -- I think he spent some time on this farm once, and I am trying to learn more about him. It was during the Second World War. I wonder if you heard of him? Roland Barr."

"Who are you?"

"Oh, entshuldigung, I am Elizabeth Barr. I live in the United States and I have come to Germany to try to find out more about my father. He died when I was very young, and I would like to know more." This was true - Tonia's own father had died when she was young, and she would give almost anything to know about him the kind of thing she hoped to learn about Barr.

“Please, may I come in?” She looked back into those blue eyes, and suddenly conscious of her own black hair and gray eyes. She pleaded, silently.

After a moment, the man smiled and led her to a large sitting room. The woman disappeared, but returned with some sausage and a roll and some beer. Tonia realized she must have looked appropriately bedraggled after her walk.

“Thank you,” she said to the woman.

“You must have had a long journey to come here. I hope that we may be of some help to you, but I’m afraid that I’m not sure that you will find what you want. There are many people who have spent brief periods of time on the farm, helping us. You ask about a time so long ago -- why would you come here and expect that we would remember such a person?”

“Oh, I know you must have so very many people” she gushed. “I’m just so desperate -- this is really the only thing I know about him, that he worked for a yarn company and visited farms with wool sheep. He told me about yarn and sheep when I was small, but the Fragge Farm was the only one he ever mentioned by name.”

“He told you of the farm?”

“Only of your hospitality, and the quality of your wool...”

The old woman had been staring at “Elizabeth” during this exchange. She grew more distant as it continued. Tonia and the man talked about the difficulties of the war, of the many mysteries that it left, such as hers. He was noncommittal in his answers, as Tonia tried to probe about Barr's presence.

"Yes, there were many men from yarn companies, and cloth companies and rug companies. We sold to whomever we could, especially during those years, and took in whatever help we could find. You’ll have to be more specific," the man said.

Tonia described Barr in detail. She said, as if in desperation “I’ve told you all I can to help you remember him. He may not have been important to you, but he was and he is important to me. I can’t think of anything more to say -- I’ve told you everything except that he had a birthmark on his thigh -- but it was wintertime, and I’m sure you wouldn’t have noticed that.”

She was playing her desperation by drawing on some quite real frustration at this point. “I guess there’s no way you can remember someone from so long ago who was just a salesman,” she sighed.

Finally the old woman spoke. Coolly. And in English. “If you are his daughter, it means he did not love me. Did not respect me enough to let me know he was alive. To come back and to find me when the war was done. I always thought that he had died.” She was clearly taking Tonia’s measure, inspecting every facet of her face, her eyes, her body. Tonia moved only slightly, allowing the inspection, trying to convey nervousness. The woman continued.

"So either you were lying, or he was. I choose to believe that you are lying, and that you have some reason to be here other than what you are saying." The man took a breath and leaned forward to stop the conversation, but she waved him off. "No, Franz, I do not care. I am an old woman now, and no harm can come to me to say these things."

The woman held Tonia's eyes in a firm embrace with her own, taught glance. Tonia did not move. Then slowly her lips formed a question, while her body remained still. Her voice shaking, she said:

"You are Greta ... aren't you. In his things, I found a single note, in his handwriting. He must have kept it with him always, looking for a way to get it to you. He never found a way. But you were always in his heart. I think he felt that by writing down his feelings, he would always know they were real, never truly lose you, even though he could not be with you. That somehow you might know his thoughts.

"He longed to make a life together with you, to come back or to bring you to him. But he felt that if he came back, if he brought himself back into your life, that he would endanger you in some way. Some way I do not know about. That is why I had to come. To understand. I did not think --- did not dare to hope --that I would find you."

The woman had listened carefully. Her eyes brimmed with liquid tears which did not, and would never, fall.

"Your father was here. That is true."

"And you loved him as well."

"That is also true."

"Will you tell me about him?"

"Let us walk. We will talk." The woman rose from her chair and guided Tonia through a door to the pantry, and out into the air again. She stepped onto the stone path which led to the barn where the sound and smell of sheep still emanated these many years later. Tonia followed, calculating all the places that Barr could have left a message, all the ways he could have gotten one out. If he had known this woman's habits well, he might have left the message with her. But if he loved Greta as Tonia suspected, he would not have endangered her by doing so.

They reached the barn and a giant wall of shadow broke Tonia's thoughts.

"Why did you bring me here?" she asked.

"Because he was a very gentle man, and he loved to come out here and talk with the sheep. He would sit here and they were not afraid. For him, they were like a pet. He said that they helped him to think things through. And maybe they did."

She paused, reflecting on the image. Then moved on: “He slept up in the loft here” as she raised a hand toward the roof. Piles of hay stuck out over the edges, and Tonia brushed her hand against them as the two women started up the stairway to the loft. Greta was quite nimble for her years, but it was slow progress nonetheless.

“When did he come here?”

"In 1942, he came to the farm looking for wool. Our sheep were well cared for, even though the war was on, and he thought the wool would be good for a premium line of scarves, hats and gloves. He often came to see whether the wool had developed well. Sometimes he stayed for several days at once. He would look at the sheep, feel the yarn. Then he would go with some samples to the women who knitted and crocheted for the catalogue pictures. Every other month he would come.”

“And you came to know him?”

“Over time, my father allowed him to stay longer, and occasionally allowed us to spend some time alone. One day, he said he thought he could help us, not with just the wool. He seemed to know that some of our workers needed assistance to leave the country. He found them jobs. And so it began -- we trusted him because we knew him, and he knew our work and had not betrayed us. We were lucky that it was the right thing to do. We could have been killed even for such minor infractions of some of the laws. But in the end it was he who I think was killed.”

“Why do you think that? How did he leave?”

“The gestapo came for him. It was very civil, but it was also formal, cold... He was upstairs in the loft here -- for an hour he sat up there, preparing himself. He was in the habit of meditating, and asked to be alone for the last hour before the army arrived. Yes, we knew they were coming. Just a kerosene lamp, alone in the barn loft with our spun yarn discards. The ones that were not quite satisfactory, but we never threw anything away in the war.”

“Of course not. May I look?”

“Up the stairs. There is still some yarn and there are some old tubes of dye.” Tonia noticed a small set of stairs which led to an area she’d not noticed. She started toward the steps.

“When he left, did he do or say anything unusual?”

“No, he was all business. He gave me a final box of yarn to pass onto the women, said he’d had it with him and was intending to deliver it the next day. Some new batch -- it was ugly, just black and white.”

“And the Gestapo didn’t know about this box?”

“Oh, yes, they did -- he gave it to me right in front of them. I know what you think -- they thought of it too. Nothing was hidden in the box -- they tore it apart, pawed the yarn looking for something. When it was clear there was only yarn, they allowed it to go through. Rollie said it was a special dye lot, and this was the only batch, that I should tell the women to work it up in a standard pattern, but not to cut it at all, and to use all of it.”

Tonia read puzzlement on the woman’s face. “That was an odd remark?”

“Yes -- it was the only unusual thing he said, and I’m sure that the soldiers didn’t notice. I only know because I knit myself. You see, often you might cut the yarn, or to do a test with some and then not use it. So that was odd, as you say, but I thought it was just business. Sometimes there were some strange requests from the company related to moving to mass production from a test batch.”

“I see,” said Tonia. “What happened then?”

Greta’s face was a carved in sadness, a forlorn look passing through stone, frozen in the form Tonia had first seen it -- weathered and worn, but with a weariness she’d not detected before. “He was led to the car, and driven away. I never heard from him again.”

“Never?”

“No.” Greta rose slowly and started down the stairs. Tonia followed, and they walked toward the house in silence.

Tonia wondered. No message in the box, and his instructions were that a standard pattern be used, so no message in the pattern. The only thing he got off the farm was the yarn itself. The yarn... she looked up. The message must have been in the yarn, somehow.

Greta’s grandchildren were playing around the cellar door.

She looked back at the barn. She scanned the wall to the upper loft. The one window was high enough up, no one would have seen anything he did. What had Greta said? Tubes of dye, extra wool...

What if he had not brought the “special” batch of yarn with him? What if he had taken their discards and dyed his message into the wool?

She had to investigate what happened to that yarn.

Chapter 2: Blanket of Hope

Tonia left the farm with a faint hope. At least she hadn't reached a dead end. Greta had mailed the wool to the woman in charge of the sample-making group in 1942. Tonia boarded a train to Lufthasen, where the women had been. In the town hall, she searched for the woman's name. Greta had never dared to find out if Barr had contacted the woman again. But 60 years later, Tonia would have to try.

She found that the woman, Susanna Helflinger, had left the country after the war. In 1950, her husband had sold the property, and she had moved with him and a young child named Louisa to the United States. Tonia headed for the airport.

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The family had settled in Utah. Helflinger was an unusual name, and there was only one in the entire state. A hyphenated name -- Louisa Helflinger-Cratchet. Poor kids, Tonia thought. She found the street in a suburb, walked along the rock garden walk and rang the bell. Through a long side window in the doorway she watched as squealing children raced each other to the door. "Who is it?" they both called out, then giggled at having said the same thing at the same time.

"My name is Elizabeth Barr. Is your mother at home?"

"I'm sorry, we don't want any," said the boy, who seemed to be about seven.

"I'm not selling anything. I think your grandmother was somebody very important, and I'm trying to find out more about her. Do you think your mommy might help me?"

Tonia saw the boy whisper in the girl's ear. She ran out of sight into the house.

"Just a minute!" he shouted through the glass. He stared at Tonia, half suspicious because she was a stranger, more than half curious since she thought his grandmother was important.

The girl returned with a woman in tow. The woman cracked the front door and said, "Can I help you?"

"I hope so. As I mentioned, I think that your mother was someone very important and-"

"Please, I don't mean to be rude, but I know my family tree already, and we don't want to donate any information to the research banks. Okay? I've asked to be put on the "Do not contact" list, and if one of your people comes here again, I'm going to call the Better Business Bureau." She started to shut the door.

Tonia gulped out "Wait -- I'm not trying to get you into any databases. I'm trying to find out about my own father, and I think that your mother worked with him in Germany. Please, I've flown all the way here from Virginia. Just hear me out." More pleading with her eyes. She had tested well on non-verbal communication.

The woman opened the door. She sent the children upstairs, then led Tonia into a modern, open floorplan kitchen. "This is beautiful," Tonia remarked. Louisa did not respond.

"Look," she said. "Who are you and what are you looking for? My mother did not work in Germany. Many people questioned our loyalty to the United States when I was a child because we came from Germany and I'm quite tired of new ways being found to probe our past."

"Well, she may not have viewed it as work, but she crocheted with a group of women who created samples for a catalogue of yarns and knitted and crocheted products. My father helped to put out the catalogue."

"And you think I can help you… how?" She was still suspicious.

"Did your mother keep any keepsakes of that time? Any notes or any samples of her work, or the names of the other women she crocheted with?"

"She did crochet with a group of women, yes. But they viewed it as a hobby. They really didn't earn much money -- just enough to have tea and socialize together. She was quite proud of their products, though. I have every catalogue in boxes upstairs. But I still don't see how this will help you find out about your father."

She had stood stonily in the same place for the entire conversation. Her body language and sharp tone said she was not about to budge. The possible proximity of any evidence, any tangible connection to her target at all, moved Tonia to new tactics. She pulled out her identification card.

"You're a federal agent? What on earth…?"

"Please listen to me. Now that the children are not here, I'd like to tell you why I am trying to find out as much as I can about your mother's group of women. This information has been declassified, but not published. I will leave it up to you whether you feel it is in the best interest of your adopted country to reveal it when I leave.

"The company your mother crocheted for was a fake. It provided a cover for one of our agents to keep tabs on the German chemical industry, and to send messages back to the US through the samples these women did up. His last message was never received, and I am trying to track it down. There is a possibility, that is, if you have any samples of your mother's needlework from that time, for example an afghan, that it might contain information of vital importance to the security of the United States." *And for that matter, the world*, she thought.

"Excuse me?" *Clearly over the top*. Time to refocus.

"Do you have any samples of your mother's crocheting?" Tonia provided a direct, simple concrete question.

“I -” She looked at the ID again. “Yes. Yes, I do. Come this way.” She walked to the stairs. “In the attic, I have a trunk. I have all the catalogues as well. There’s really only one blanket of hers that she kept from that time, it’s in there with some of her papers. I’ve not looked in years.

"She was always a very private person -- I only knew about the blanket because I was a nosy kid. She put it away again when I found it, and when she grew ill and we moved back here -- well, I never got to cleaning out this stuff. Hold on there.” She pulled down a staircase to an attic.

Tonia crawled up behind Louisa, sweating from anticipation as well as the heat. She just let it wash over her -- her feelings would not change what they were going to find. She just let it be.

They emerged into a low-roofed sauna of old boxes, forgotten chairs and dressers, lathes and planes and saws. “That was my father’s lathe -- he did beautiful work. They both had a real aesthetic sense... there it is.”

She pointed across a stack of unmarked boxes. Tonia could just make out the curved top of a trunk. It was inlaid with intricate patterns, and even through the dust and dim light the cherry wood had an uncommon depth. Louisa reached for the lock, flipped it up and raised the lid. The hinges squealed as both heads peered into the dim contents. She reached in and felt around.

She pulled out a book. “What’s this? For a nosy kid I sure wasn’t thorough enough. It looks like a journal."

She flipped a few pages. "The dates are around the time you are looking for. Here.”

She handed it to Tonia, who stepped under a nearby, bare lightbulb and stared. She translated the German silently to herself. *December 21, 1942: Today I received a package from a farm outside Bonn. In it was a note from a woman I do not know, saying that Roland had asked her to send it. It contained yarn for a new sample, and the instruction to use it all. It is so unlike him, and so strange. This is the first time he has not brought the yarn himself, and the color -- he usually has much better taste. The dye job is not of our usual quality, nor the yarn. It must be some new “rugged” look they are trying. I will be surprised if it does well, though.*

December 22, 1942
We met for the last time this year, and I started on Roland’s project. I called the company and was told that he is being replaced, and I wonder where he has gone. Such a personable young man, so efficient and thoughtful. Roland instructed us to use the standard pattern #41 -- the Perseus design. Perhaps is will not be so ugly done up -- the black tends to group nicely in the clusters of the pattern, and the nubs of the yarn enhance the nubs of the pattern.

February 5, 1943
I have sent the afghan for photography, with a request to keep it. It is unusual, and I admit to a sentimental attachment to the last thing I have that Roland gave to us. I will miss him.

June 7, 1943

The afghan is far too warm and I have put it away for the summer. The pictures appeared in the April catalogue, and although the pattern helped, I still do not understand why it is selling so well. I wrote to order some of the yarn to make a matching pillow, and they told me that they are all out. Already! It must be a fashion in the making in the city, because it is not here.

"Here -- this is the afghan I was thinking of." A flow of material protruded from the trunk as she pulled, and Tonia could just make out the contrast of colors. More than she could hope for, it looked to be black and white. Lousia read a tag attached to a corner: "'Perseus -- hand crafted by Susanna Helflinger.'"

Tonia arched over the box between them and reached for the trunk. "Let me see that label -" As she reached, she saw the section of afghan fall from the rest.

"Oh dear. Moths must have gotten in. I really should have checked long ago. But the diary must be more useful than some old afghan, no?"

Tonia reached desperately and deeply into the trunk. Louisa was quite right -- the afghan was in fragments. The message literally fell through Tonia's fingers as she probed. It would be impossible to reconstruct the afghan -- even if it were possible, it would have been impossible to reconstruct the yarn. The advantage of crochet was that it could have been pulled out easily, in one piece. She was sure that was why Barr had chosen crochet. But now, the last message was surely lost. She sat back on her heels, clutching the tag in her hand.

"Hand crafted" Louisa said. "They don't make them like that anymore. It's all machines now."

Machines, thought Tonia. Yes, everything was thoroughly mechanized - computers ran knitting and crocheting machines. Suddenly she had a wild, desperate, improbable -- but possible – thought. "Do you have the pattern for the "Perseus"? And the catalogues with the pictures?"

"Should be in one of the other boxes. Why?"

A plan was forming in Tonia's mind. "Never mind -- just find them. May I borrow your phone?" She had a cellphone, but the dependence and distraction would continue to occupy her host. Louisa led the way down, to a phone in the living room. Tonia booked a flight to Washington, and placed a call to the office. Shifting her weight from foot to foot, she said, "Yes, machine crocheting -- sweaters, blankets. The most modern plant you can find. I'll call you from the airport." She hung up.

Louisa called out from the attic "I've found the box!" and started down the stairs. "I only have the catalogues -- the patterns are probably somewhere else in the attic."

"That's all right. Let's go with what you have. How are these organized?"

After a few minutes, they found the catalogue. A picture of the front and the back, showing how the "wrong" side looked just as nice as the "right" side of the Perseus pattern. As Tonia picked up the magazine to take it with her, a yellowed paper slipped to the floor. "It's the Perseus

pattern" said Louisa as she rose from the floor with the paper in her hand. "Wonderful," said Tonia. She thanked Louisa for her help and flew out the door.

CHAPTER 3: YARN ALGORITHMS

"Perseus - " Tonia was eagerly saying to her contact on the flip phone, waiting for instructions, "- it's an ancient Greek myth. He found his way out of a maze by following a string he rolled out behind himself as he went in. Barr was trying to give a signal to the home office by telling the women to use the Perseus pattern. I'm sure that the message is in the yarn now -- we've got to find out what that yarn looked like. That's why I'm heading for the mill. Which one?"

Tonia blasted through the domestic terminal at the airport. "Destination?" she asked into the phone.

"Massachusetts" came the reply. Lowell, Massachusetts was one of the textile capitals of the country. "Just over two years ago, one of the mills burned down, and they rebuilt with all of the modern mechanisms you could ask for. Plus you've got the Route 128 belt --if you need any help with the computing side, you're in one of the densest areas of academic and business high tech in the country." She booked the ticket, a red-eye. She would sleep on the plane.

When she arrived at Valdez Mills, she was greeted by the Alfredo Valdez, the president of the company. "I joke that I'm the product of two generations of mill workers, the Italians from the twenties and thirties, and the Hispanics of later years," he said.

After the mill had burned to the ground three years before, the workers, with his help, had rebuilt it. The sense of ownership and pride formed a quiet link among every worker she passed as they walked to his office. It was just one of many cubicles in the area, albeit a larger cubicle. He offered her a cup of coffee, then kept walking toward the atrium in the center of the large building.

"I thought you might want someplace where you could talk without being overheard. I have found that our open workplace has made me accessible in a quite positive way, but on occasion it is necessary to find the privacy a door affords." He shut the door to the atrium. No one was outside at the moment.

Tonia turned to face Alfredo. "Basically, I have a knot I need to untangle, and I think you may have the tools to do it. Imagine morse code written in dots and dashes onto a long piece of yarn. Imagine that yarn is crocheted into a blanket. You want to reconstruct the yarn as one long straight string so that you can read the code."

"You don't need me for that -- just unravel the blanket."

"The blanket has fallen apart -- eaten by moths."

"Ah. Go on."

"You have a picture of both sides of the blanket, and a copy of the pattern. What I need you to do is to reverse the processes I understand that you use here. Usually, you take a style of yarn, program in a pattern, and see what the pattern will look like done up. Here, we have the pattern,

and we know what it looks like done up as a blanket. We want to work backwards and see what the yarn itself looked like."

Alfredo gently lifted a hand with a breath, then dropped it. One eyebrow furrowed while he looked at Tonia, then he spoke directly into her eyes. "This will not be easy, but I think it may be possible. You see, usually a yarn is made of one color, or random changes of color, or regular changes of color. When we select a yarn type to image in a pattern, we choose from a menu picking the type of color change and colors involved and their order, if any. But the coloration representing morse code you describe would not fit into that scheme. What you have is non-random, irregular changes of color. So we will want to work with our programmer on how to handle this difference." He motioned to her as he started to walk down the hall. "This way."

"We can provide all the programming backup your person needs," said Tonia. They walked together down the long hall, turning halfway down into a side hall. Alfredo opened a fire exit door and they started up a staircase, their steps echoing on the metal grate landings.

"Do you mind if I ask where this yarn came from? It seems most unusual for our government to put secret messages into yarn these days, with all the modern computer technology."

"I can't tell you many details, but you're right," she smiled, "it's not standard issue coding equipment. Many years ago, someone was in a sticky situation, and thought creatively. I can only tell you that it is very important for our national security that we retrieve the message which that individual managed to leave for us in the yarn."

They reached the second floor, and Aflredo stopped at a small room with cartoons on the door. "Micehl Doritta, Computing" read the nameplate.

He was out, and Alfredo paged him. "Shouldn't be but a minute," he said.

Micehl came down the hall dragging a submarine sandwich out of his mouth, mayonnaise dripping to the floor every couple of steps. "Sir, what can I do for you?"

"Please, go ahead and finish your lunch while we explain. This is special agent Tonia Matters of the CIA. She has a problem, and I told her we would try to help." Micehl fumbled his keys out of his jeans pocket and into the lock, leaning the door open with his shoulder. He sank into a nearby chair on rollers which coasted a few inches before his feet pulled it still.

Tonia proceeded with a detailed explanation, and Micehl peered through the sandwich wrapper at her as he struggled with the end of his sandwich. His dark hair fell raggedly around his face as he angled his head to minimize the dripping and took a bite. Occasionally, it apeared to obscure his eyes, but he always maintained an attentive attitude.

"Let me show you what we do while I think this through," he said, wiping his fingers on a napkin and then with a reflex on his jeans as he stood up. He rolled his chair over to one of the two terminals in the office, and punched up a view.

“This is the program Mr. Valdez described to you. You see the menu driven imaging: the pattern is programmed in -- you do have the pattern, correct? -- and the choice of yarn comes in here. Now I would split this into two pieces. Programming the stitches is one thing, working backwards to the specific sequence in the yarn -- that’s something else entirely.

“This program makes assumptions about machine work which would not hold true for handwork -- all the stitches being the same size, for example. We’ll have to make a few of our own, and hope that the person who crocheted was experienced and produced consistent stitchery or this won’t work at all.

“We’ll also have to assume he dyed the yarn all the way around, not just on one side, or the twisting of the stitches will hide more than we expect.

“Do you have a crochet hook? We do knitting here, and we put on lace borders with crochet, but I am most familiar with knitting. Show me one of the stitches.”

Tonia said “I can do better than that -- here’s a small piece of the afghan. This should help to provide the proper scale for analyzing the pictures, and establish the consistency of the stitch." She reached into a bag she'd been carrying. "Here’s the pattern, and here’s a glossary of stitch types with pictures.”

“Okay” Micehl said, “ some of these are already in here, but we’ll have to put the rest in. That our program can handle. But going backwards to the specific sequence... our program just doesn’t look at that level of detail. We can handle a mono color or a regularly changing color, or even randomly dyed color, since we just generate a random sequence using a randomization algorithm. Keeping track of how much yarn has been used won’t be any problem, since that is established by the stitch and tracked throughout the model.

“Let me think this through as if we were going forward, not backward. If we were going to take a specific sequence of color change which was non-random, we’d have to know exactly where we started in the sequence, then keep track of how much yarn was used to know where we were in the sequence for any given stitch. We don’t have to keep track of twisting because we never use multicolored thread in lace borders, and in knitting, the yarn is, compared to crocheting, almost straight -- it forms a simple arc over the needle, but again all we’d need to measure is length to know what is showing.

“I don’t know. To get the twisting and folding of the sequence -- well, it sounds a lot like DNA -- no, actually, it reminds me of how a protein forms.”

“Pardon me?”Tonia asked quizzically.

“You know, a bunch of amino acids are strung together, and based on the attractions of the atoms for each other, the whole thing folds up. The conformation at the end gives the protein its function -- like an enzyme, the proper conformation gives the ‘lock and key’ feature that let’s it latch onto a specific shape on other molecules to do its job. My wife’s a molecular biologist, and

she's always trying to figure out the shapes of enzymes -- x-ray diffraction images, deconvolution algorithms -

"- huh-?"

"Getting the 3D image out of the multiple 2D pictures. Look, basically, her crew does a lot of imaging also. It's one of the things we share in our work. I can get you part of the way there, but it's going to take something like what she's got to get the rest of the way." He picked up the phone and hit speed dial.

Alfredo turned to Tonia. "This is the advantage of coming to a mill near the 128 belt, and Cambridge. We never would have reached the level of automation or of prescreening of patterns without the work of some MIT graduate students. Their social life provides connections that business would never expect. His wife is a lovely woman, and very bright. If anyone can do what you need, she can."

Micehl dropped the receiver on the hook as he spun on his chair to face Tonia. "She's out, but should be back by the time you get there. Why don't you get on your way. I'll start this end of things, and send her email explaining who you are and what the issue is. It'll take you about an hour to get there from here by car -- actually if I were you I'd take the train at this hour. Either way, when I'm done I can mail the program to her at the lab, and you can test it out.

"It's going to take a couple of days to get this end of things done, and then to get this stuff to work with hers -- well, it's a crapshoot, but it's the best shot I can see."

He picked up the shred of afghan. "From this sample and the pattern, together with the pictures, we can estimate the length of the thread, and then start filling in sections, starting with the scraps that you found -- we can decode them and place them as we find related sequences from Stacy's work. That will help to verify our process as well.

"You know," he finished, "it's really not as hopeless as I thought it was at first!"

He certainly gets right to it, Tonia thought. "We could use more people like you," she said. "I know when to follow someone else's lead, and this is it. Now how do I get to MIT?"

Chapter 4: Unfolding Drama

Tonia rode the train to the Kendall Square/MIT stop. She followed Micehl's directions to his wife's lab. Fortunately, she was there ("no surprise, she's always there," he'd said). Susanna greeted Tonia with a smile. "Now this will be hard to explain on the percent effort reports! Do you think you can put in a good word with the NIH for me? Just another branch of government… Well, anyway, I got the rough idea from Micehl of what you're after. Come on over to this terminal and let me show you something."

She pulled up a metal stool in front of a terminal screen. It was a giant UNIX box with what looked like a big tangle of yarn, rotating on the screen. "Take a look at this." As Tonia watched, the tangle undid itself, then reknotted. "What is it?" she asked.

"It's one of the enzymes that helps you digest food. This section over here latches on to a bit of fat and this end latches onto a digestive molecule, and the two link up, thanks to this little matchmaker. Once they are linked, it releases them and goes on to find other lonely hearts."

"This is what it looks like as it is forming. Note that the folding begins before the initial amino acid chain is even completed."

"How did you get this?"

"X-ray diffraction, magnetic resonance images. We know the sequence of the DNA this protein is based on, and we know the amino acid sequence of the protein. Figuring out how it folded up took the imaging though."

"So you knew the sequence already... could you have figured it out from the images?"

"No, but this level of molecular biology doesn't depend as much on seeing what's going on as deducing it. But with a piece of yarn where you could just see the differences between black and white...look, what I'm trying to say is I think we can help you. How good are the pictures you have?"

"They're from a 50 year old yarn catalogue. I've had them enhanced as best we can -- they're here on disk." She pulled out a CD and handed it to Susanna. Susanna popped it into the drive, which hummed briefly. She punched it up and there was a full image of the front of the blanket. "You have the front and back...well, there's not much more to a blanket than that -- it's not like you're looking at a heart section in motion. Each stitch individually could be seen like a heart section, but I think you'd be able to see most of the yarn from a front and back view. Let's zoom in and see how good your people are." She rolled the mouse up briefly, clicked and the image jumped toward Tonia. Susanna repeated the command and the image jumped one more time, growing slightly blurry but nevertheless with clear distinctions between black and white.

"We can work with this."

Susanna worked on enhancing the image, and Micehl worked on the mill computers to encode the stitches. About three hours latr, Micehl's piece of the puzzle arrived as an attachment to an email file at Susanna's desk.

"What we'll do," she said, "is substitute Micehl's code for the piece of our program that provides the rules about how proteins fold. We've got software which folds and unfolds our amino acid sequences for us, and I think it will work just as well on this.

"I've enhanced the contrast on your photo, since it looks to just be black and white coloring. It's kind of like OCR - optical character recognition software -- for word processing. You scan in a document, and it takes the image, recognizes the letters, and turns it from a picture into a collection of words on which you can use the wordprocessor.

"Micehl created a kind of library of stitches, including what they look like from the front and back. I've created a virtual blanket by matching up the two pictures you provided. In some spaces, that alone will be good enough to see the front and back of single stitches. In other places, we'll guess from one picture and try various stitches to find a match for a blurry image on the other.

The program will recognize the stitches from the two images you've provided, and then use Micehl's program to unfold each stitch, and link all the unfolded sequences together. I've programmed it to compare the shreds of afghan you found intact with the image on the blanket, and use them as a calibration for the rest of the calculations.

"How long will this take?" asked Tonia, breaking through the cascading information.

"It should run faster than our protein folding, since it won't be calculating relative attractions of the molecules like it has to do for proteins. Ours takes a day to run, on average.

"On the other hand, this afghan is one *big* knot. I told it to work from least complicated stitch to most complicated, validating as it goes against the shreds we have. Once it goes through the whole image and recognizes stitches, we should start to see the yarn sequence for the stitches that are easiest to recognize. As it comes up with candidate strings, it will display them over here on this workstation. Since takes about a day to run ours -- let's see if we can get something for you in hours. " She nudged the cursor to the start button and clicked once.

The front image of the afghan started to appear slowly from the top, line by line. Micehl walked in about 20 minutes later and watched with them. After about half an hour, the rear image started to appear. Almost exactly an hour later, a message appeared on the screen: "Image acquisition complete. Display translation?" Susanna typed a "y", hit enter and sat back.

"Now we'll see what it comes up with." A moment later, spots began appearing on the screen in a regular pattern. Susanna zoomed in. "That's a double crochet!" said Tonia, looking at the outline of a stitch. "And so is that... and that." "It makes sense," said Susanna, "the repeated portions are easy to recognize. It will go through and put in every double crochet first because it recognized it first." The program was adding stitch after stitch and the screen soon filled. The

image rotated from front to back, the stitches translucently displayed in fine detail. Tonia looked at the pictures from the catalogue. "Unbelievable..."

A new message appeared: *Display complete. Adjustments or fill data?*

Susanna turned to Tonia and explained,"You know how OCR sometimes miss-recognizes words that look clear to us humans -- well the same thing can happen here, and we're given the chance to change something if we want. How does this look to you?"

"I can't tell," said Tonia. "Let's just tell it to go ahead." Susanna chose *fill data* and tapped the enter key with a flourish. "Piano lessons," she joked.

The image reappeared with black and white filling in the outlines of stitches. It looked like a crisp, clean digital image of an afghan.

"Unfold?" came the now familiar dialogue box.

"Here goes," whispered Susanna, and hit enter for the last time.

The image disappeared and bit by bit, strings of black and white sequence were added across rows, starting in the upper left hand corner.

"It really is like wordprocessing" said Tonia. She leaned close to the screen, peering at the sequence. She took the mouse and zoomed in. She brushed the screen with her fingertips, breathing slowly with concentration. She measured some lengths of black stretches between her thumb and forefinger, and shook her head. She sat back.

"I don't get it yet. What kind of code would..." She leaned forward, measuring again, only this time the white. "That's it, Barr," she whispered to herself. She turned to Susanna. "I couldn't see it at first, because I was looking for a patter in the dye he had added to the yarn. But he used a reversal. The message is in the undyed portion of the yarn. And it's simpler than I thought.

"It's morse code. But I have no idea what it says."

* * * * * * * * * * * * *

Hours later, the whole string unfolded, the message translated from code into alphabet, Tonia sat alone in the lab, still puzzled, staring at the printout in her hand. There was not a single word she recognized, not a single word that the decoders back at Langley could find meaning for.

She tried reading it backwards and forwards, looked for repeating patterns to be deleted, tried lining up the rows offset from each other. She read it out loud, looking for some pattern to be detected by non-visual senses -- some kind of sound or rhythm that might be the key. There was a lilting sound to the string of pronunciation, which reminded her of being a child and listening to her parents' voices through her bedroom door when she was supposed to be falling asleep. She could not understand the words, but the tones comforted her as she drifted off. She followed

the thought, having learned to trust her seemingly small connections. It has the tones of language, but not the meaning...maybe it is another language. Maybe it is a transliteration of another language. But what?

She pulled out her laptop and punched up Barr's background. Public high school in Indiana, political science major in college, Fellowships for brief travels across the US and to Europe. *Junior Year Abroad in South Africa and Kenya.* Few significant details about his dating, but a notation of deep involvement in the philosophy department at the University of Witswaterand and with an archaelogical dig in Kenya. He was the type who would have tried to communicate with locals, she thought. *He would have learned the language of the workers and natives.* She pulled out the phone book and called the Harvard information line. "African studies department. Chairman's office, please."

CHAPTER 5: OUT OF AFRICA

Tonia found a Ph.D. student of African languages and literature. If she didn't recognize the sounds, Tonia would try the various embassies, and the resources of the CIA. But even the CIA would be hard pressed to find someone who knew the clicks and whistles of South African native language.

Everlina Botswoda was originally from Kenya. Tonia found her in her apartment in Somerville. She lived with two men, one a social sciences Ph.D. candidate and the other an actor. "Sure, I'll listen," she said.

Tonia read it out loud, stumbling over some of the pronunciation. "Let me read it" said Everlina. She looked at it, and as she read, the confidence in her voice grew. "It is a mixture of swahili and South African native language. It alternates with each sentence. See, here, you can hear the swahili directly, but here he is *describing* the click sounds of South African native language *in Swahili*. Here he is saying "back of the mouth tongue click, front of the mouth tongue click, three second whistle..."

"Can you translate this into English?"

"Yes, but it will take some time. Can you wait a day or two? My thesis defense is tomorrow and --"

"I'll take care of your defense. You translate this and I guarantee you pass. It's a matter of some urgency, and my boss would be very appreciative of your help." *I'll guarantee you a job when you get out of school and a congressional medal of honor, too*, she thought. She handed over her card.

Everlina evaluated the card coolly. "CIA?" She paused. "Okay, I'll do it. A delay of a few hours on the defense would be fine, though. I can pass on my own. In a way, this will be a useful distraction --I won't get too stressed out thinking about the defense." Everlina turned back into the hallway and walked down the dark passageway to her room.

You'll get stressed out if you truly figure out the message... thought Tonia. "I'll just wait here," she called out to Everlina, and sat on the couch amid a blanket of notebooks and charts.

Tonia phoned in an update. Then she started to study the apartment, take the measure of this graduate student. Her surroundings were humble, and not neat, but relatively clean. *Must be a mix of tidy and sloppy roommates*. She glanced at the tall bookshelf crammed with books at all angles. The topics were the same as the ones she was sitting by: sociology, animal behavior, peace activism. Her eyes froze at the draft chart loosely balancing on the edge of a textbook, half covered with a photocopied journal article -- she'd seen the comparison before, but only in a top secret file briefing her for this mission.

What's out there is out there, she thought. *I can't be investigating this student as well. It just confirms what I've always thought -- we spend a lot of time keeping secret things that the civilian*

world can observe just as easily. She picked up the pieces of the draft chapter, *Analysis*, and started reading. *I need all the help I can get.* She wondered whether or not the author had any idea what was behind the changes in behavior the thesis described.

After about an hour, she noticed an unshaven, scraggly, but very sweet looking young man starting at her. By the look on his face, he'd been watching her reading for at least a few minutes. She hoped the concern and engagement on her face had not betrayed the gravity of the situation.

"Can I help you, ma'am?" the young man said evenly. Considering she was invading his private intellectual drafting, it was a fair question. "I hope so," Tonia said, "although I may be able to help you, as well. You've done a very interesting analysis here."

"Thanks. And you are...?"

"Tonia Edge. Yes, as in 'on the ...'. I work for the government, and I'm investigating the same phenomenon you describe here."

"What part of the government?"

"Central Intelligence."

"Mm hmm." He finally moved from the doorway, straight toward the couch, hand outstretched for his chapter. He took it out of her hand, but kept the proximity by planting himself squarely against the doorjam near the couch, leaning his foot on the coffee table in front of her.

"One of my professors seems to do some work for you people. But you could get anything you want from him, so what are you doing here? Don't get me wrong -- I'll take validation from any quarter at this point. But I don't understand why you would seek me out."

"Actually, I didn't. I'm here to see your roommate, Everlina. She's translating something for me. The fact that you are grappling with the same thing that I am is a most unlikely coincidence, however. I believe that someone wanted us to meet."

His focus lingered on her eyelashes. They were moist, he noticed. Her eyes weren't red, but her eyelashes were moist.

"Are you allergic to cats?" he asked. The question caught her off guard, and she returned a puzzled, querying stare to his gaze that just didn't quite look her in the eye. She had betrayed the stakes with one, brief response, of which she hid all but matted eyelashes. "Yes," she lied, noting that he perceived the lie but did not challenge it. What was he doing in academics, she thought. *What's he doing when this is all over*, she finished. She had not ever responded like this to someone, and what she had felt before had been based on more interchange.

"Who wanted us to meet?" he asked, wrenching her almost entirely from the privacy of her soul and back into her body, sitting on a couch, in a strange city, waiting with someone she did not

know but knew she would, for a translation of the last words of someone she thought she knew as if she'd met, by a woman who she would never know. "Someone you don't even know exists," she replied. There was only one candidate, only one person who could have somehow known about this connection before she did. She would follow up on that as well. His reason for not telling her would be interesting.

He released the wall from his shoulder and strode toward her on lanky legs. "How can I help you?" He made the sentence last all the way from the doorway to the couch, deftly moving books with one hand and sliding his lap right next to hers. He gently took the papers she was holding, and she leaned toward him. Their conversation over the next two hours was entirely professional, entirely composed of critiquing data and analyses; their body language was entirely sensual, touching, breathing each other's scent, thighs never losing contact, reaching for books across each other, writing in the other's lap, reaching with their brains together, an entirely romantic and rational duet.

He had been looking for some evolutionary pressure, some environmental influence... until he'd considered the public health model, not the sociological or animal behavior models. He'd not considered deliberate use of an agent. It threw off some of his calculations, but once he took the epidemiologic perspective on his data, it made more sense. He had the answer to his committee, now. He knew the cause, but he didn't know why. Soon they might know how to combat it, if there was any way.

He wondered what the effect would be. People like the ways they are used to being. Many societies in conflict become so used to the boundaries of war that they don't know how to have a productive peace, an exciting peace. There are enough challenges in living together, and in managing human impact on the planet, and in learning about the world, that he found it exciting enough to wrap his mind around those problems. He couldn't relate to the need to one-up another person, to use strength to dominate (outside the bounds of pick-up football games) rather than to lead. But that's why he was not in the army, or in politics. He used his strength to learn and to study the remaining problems in the world; he hoped someday to help lead some solutions to fruition.

If it were an agent released into the environment, either deliberately or accidentally, it would take international cooperation to administer an antidote. It was ironic that an antidote would require the very cooperation which it hindered. And dosage... how much would need to be released to counteract the agent? But more than that, what was the goal? A level of violence from just before the agent was released? Or could the goal be to achieve a greater peace. Such a greater peace would have its own environmental consequences, if killing of food by prey were eliminated: populations of prey would soon outnumber their resources, and starve to death, if they did not initiate new violence. It seemed to Gray that the environmental system they had required some level of violence in the animal and plant kingdom to maintain the current ecosystem. But perhaps in the human subsystem, a more peaceful existence could be attained. Maybe there was just the right amount of antidote to create that slightly better balance. Not an ideal world, but a better world. Just maybe.

He looked up at Tonia, who had been studying his analysis of the geographic distribution of increased violence. He'd color coded the spread by years. What confused Tonia was that while the pattern of spread intensified during the second world war, a detectable pattern had existed before. If the Nazis had deliberately or accidentally released a biochemical agent, it was not one they invented -- it was one that they harnessed.

The change in violence predated the 1940's by at least decades. If some of the more speculative sources were right, the change might have gone back centuries, even into the Babylonian times. She wondered -- what if it were not truly "natural" for even a modicum of violence to be an accepted and integral part of human society? What if Agent Barr's last message could allow them to return to a more peaceful state?

She realized Gray was looking at her. "If he found an antidote.." she started. "It might help in more ways than you thought," Gray finished. "But we may not be able to take it as far as you, or others, might like." He explained the environmental argument. "Maybe humans could take it like a vitamin or food supplement, and let the animal world go on as it has.

"We're just speculating, of course. He might not have found an antidote." He paused. "But if someone high enough in government found a way for you and me to meet, I bet they know something that you don't. I bet that the message contains something useful." Tonia agreed, nodding, as she saw Everlina returning with a paper in her hand.

"I'm not a chemist, but I think some of this is chemical formulae -- lots of 'low 2' and parentheses around letters. I did my best, but I think you'll want me to talk with a chemist. Gray, you might understand some of this better than me.

"It's very sad, even though it is very factual. He knows it will be his last message, that he'll probably be killed. He learned of the experiments with violence control -- letting the enemy kill itself for you, leaving the infrastructure messy but intact. It would have to be a self-limiting agent, or the invading forces would also succumb and destroy themselves through infighting. The scientists were having trouble creating an agent which would do the trick -- it seemed to build to a critical mass, increasing the level of violence, then cease for a while, then return with even greater force."

"It evolved," murmered Gray. "It spread, ran into limitations, nearly died off, and then the few bits that survived had adapted sufficiently to the new circumstances to multiply even further. Or it was like the some viruses, hiding in the lymph system only to return to the blood at some point. Or it was like lead poisoning, or a vitamin deficiency -- each have been shown to have profound effects on behavior which could be localized."

"Yes, something like that. Every cycle got worse, but was finite. There was always a break, but the breaks got shorter and shorter. They hadn't yet found a way to control it, but Barr had found notes about a longshot plan they were going to try. They had to time their attack to a particular dormant point in the thing's cycle so that the invaders would not be exposed right away, then use a carefully modulated sound to stimulate the thing into a completely different state that seemed

harmless. It ceased multiplying, and within10 days had not only become motionless, but disintegrated."

"There were words for all this in Swahili?" asked Gray.

"Well, he stretched some, but he got his point across."

"You keep saying 'thing,' not 'virus' or 'bacterium' -- what is it?" asked Tonia.

"It is a really tiny, almost molecularly small, self-replicating, kind of mechanical cricket. It uses photosynthesis to create new cells, then spins thin, strong legs which it uses to build another cricket; as the legs rub together they generate a sound which no one can hear, but which is stimulating to the brain in just the right area to create irritation, confusion, anger. It was based on a kind of dust mite that was found in some frozen fossils of wooly mammoths. It isn't clear if this mite still exists, or if it died out with its hosts."

"So there is a natural and a synthetic version of this violence-stimulation. Synthetic… how could this be possible? They harnessed photosynthesis, they created self replicating nano-mechanisms -- how could they have lost the war if they had this technology? We haven't even got it now - at least not yet. People are working on it, but we're not there yet."

"It was near the end of the war. They couldn't control it well enough to use it in time.

"We lucked out."

Tonia looked at Gray, then back to Everlina. "So how do we stop it? Sound? We either need to give a pair of headphones to every creature in the world, or we need a way to broadcast a sound across the world to the mechanism. Simultaneously all across the earth. I don't know, satellites maybe, or broadcast during Baywatch, the most popular TV show on the planet even in reruns." She rolled her eyes.

Gray responded, "you know, it's not necessarily the case that you'll have to broadcast simultaneously. In different areas, the thing may be in different phases of its cycle. In fact, given that the breaks were getting shorter and shorter, the cycle itself may have been changing. This thing may be constantly vulnerable to sound at this point, or it may be immune. We need some help from the artificial life folks. Wait a sec," said Gray. He went to the bookcase and pulled down two books. One was a textbook entitled Synthetic Forms of Life.

"This is the guy you want to call about models of artificial life. I've got a hunch about the nano-technology angle on it, too." He handed the book to Tonia.

Tonia glanced at the author and publisher. "Harvard University Press - okay, back to Cambridge. What's that other reference?" asked Tonia, noting the a small paperback in his left hand.

“It’s A Cricket in Times Square. My favorite book as a kid. This Synthetic Life guy has a whole section on crickets, and it made me want to revisit my childhood friends. I keep a lot of my books together by theme.”

“I’ll have to come browse your bookcase sometime,” said Tonia, taking her coat and moving for the door. *Your bookcase, yeah, right; I want to browse something else, too, but that will have to wait…*“

"Gray - I’ll need you to pull some of these pieces together. Everlina -- I’ve got to ask that you come with me, as well. The translation will need to be confirmed, and you’ll need to be debriefed on what you’ve heard and how to handle it.”

“You don’t want me to freak out and go to the press or something?”

“That, too, although you don’t seem the type. Let’s go.”

“Hang on,” said Everlina, “this sounds like I might need to pack a few things. What about my defense tomorrow - will I make it?”

“I’ll do my best. If not, I know someone who can arrange a postponement with no penalty.” Everlina walked back to her room to grab a few things. What else could she do?

Tonia watched her head off, and turned to pick up the phone. “I’ll get things cooking ahead of us.”

CHAPTER 6: Nano-Cricket

“I’ve always been interested in the relationship of craft and science, the blend between gut instinct and training,” said professor Stu Schonberg. “To live in a really fulfilling way for me requires a balance between the two. Sometimes, I’m like an artist, using feeling as a large part of my process, sometimes I’m a disciple of pure, rational planning and evidence-based action. I adapt my method depending on the problem. Now what can I do for you? I understand you have an interesting model for me to consider.”

Tonia set up the interview as a sham consulting relationship to a venture fund looking to invest in a start-up high-tech company. Schonberg thought that he was to provide an evaluation of the company’s project, as to whether the whole thing had any chance of working. The professor would be paid handsomely, and never know what the true project was.

She explained that there was a model of a cricket, which could provide soothing tones, as a high-tech take on a sort of new-age aroma/sound therapy let loose in a therapy room. They were considering a method of “population control” for it. What did the professor think?

“Mmmm. Sound based control could work. What kind of chemical did you say it is delivering?"

"No chemical, just sound."

"Why not just build in an 'off' or a 'self-destruct' response to a specific signal?"

"We want the sound to fade, not just disappear suddenly. We also were looking for a non-sound-based way, since the sound environment is the key to these therapy sessions. Even a pleasing tone might disrupt the client balance. Isn't there any way except sound?"

"Well, how do these things get power?"

"Photovoltaics" she lied. To get into photosynthesis would distract him, and make the technology too interesting.

"So how about turning down the lights? Something that small can't store a lot of power. You must have discovered this already," he sneered.

Tonia thought for a moment. They had not looked for a correlation between time of day and violent activity; of course the effect on humans was transient but long lasting, so any diurnal pattern to the crickets would have been masked. The dustmites were another question, not likely needing light to do their trick. One problem at a time, though.

She refocussed on the professor, bluffing "They have a privately held powersave mechanism which I am not at liberty to talk about," but wondering all the same if what they really needed was a series of total eclipses. If they could drain the power from the crickets or prevent power

from reaching them…or find some "off" switch that had been originally programmed in that they could exploit…

"There's always redirection," Schonberg was continuing. "Whatever pattern they've been programmed with in terms of motion, there must be some way of trapping them, or using their program to get them all into the same place. What attracts them, what do they get their power from; if they are programmed to survive, then there is some tendency you can exploit. Like pest control. The ideal is to kill the little buggers with something toxic to them that doesn't affect anyone else. If these things are really unique, you have to find that thing which is unlike anything else in the world, and then find a way to stop them by using it. It really shouldn't be such a big problem if you designed the things," he finished.

"We licensed the technology in. Let's just say the technology transfer was less than complete," she said, a half-truth.

Schonberg smiled wryly. "I see. You've got the things, they're breeding out of control and you don't know how to stop them, and you pissed of the originators so much they're not going to tell you. By the time you sue them for breach of contract - that is, if the contract was well-written enough to start with for you to sue under - you'll be up to your ears in teeny tiny devices, enough to make even a soothing tone sound irritating."

Tonia stopped listening to the harangue about intellectual property, and the ways it "kills science" in universities. Something he said had clicked: making a soothing sound irritating. Maybe the massive effect of the bugs was due to the absolute numbers, but maybe she didn't have to come up with a way kill every one. Funnily enough, Schonberg had finished his ranting and returned to the problem, and he was thinking the same thing.

"You know," he was saying, "what you're really interested in is stopping the tone from affecting your clients, not killing the little things - killing is just one way to stop the tone from affecting the clients. You could put ear pads over the clients when the treatment is done, or spray the room with something that will bind to the sound generators on the devices…"

Tonia was out again. She suddenly had visions of cricket legs soundlessly sliding past each other, covered with KY jelly. *Coat the legs with something permanent and slippery*, she thought. But how could it be delivered only to the bugs and not cover the entire world with KY jelly?

"Then again, you could create a pathogen that would only destroy your bug. Once the bug was gone, it wouldn't have anything else to feed on, and would die itself. At least that's the theory. Organisms are amazingly adaptive."

Maybe we could create organisms with a sex drive aimed at the legs, cover the legs with goo and they'd all be covered with goo, but only the crickets, and maybe the mites as well. Something inert - titanium or some other metal that is already used in medical implants. Could the same mechanism really be used to combat both the synthetic and the natural sources of her problem? Could she make bugs that would seek out the synthetic crickets and the mites, slobber goo all over them, and stop both from making any noise? It was wild, but it was a concept. She tuned

into the conversation long enough to formally extricate her body from the room. Once outside, she hopped into the car where Gray and Everlina had been waiting. "What else does Boston have to offer?" she asked. "Got anyone in non-stick coatings and genetic engineering?"

CHAPTER 7: HOW, AND HOW FAR?

Tonia and Gray dropped off Everlina for debriefing at the local Boston office of the CIA. At this point, her thesis defense would be a piece of cake and seemed rather trivial in comparison to the issues she had already been exposed to. Given how she handled herself, Tonia thought Everlina would likely be offered a job at the Agency.

Tonia and Gray headed for the airport. She had been pointed to the materials science group at Nascent Technologies, Calttech spinoff, and the pest control group at the University of California at Davis. World renowned in agriculture, Davis was a good source of work on Integrated Pest Management. They also had a good medical school, which would help in looking at the dustmite management problem.

"It's too bad you didn't look at the microscopic level of behavior for your thesis, Gray, then I could bring you along," she said lamely, as he drove his broken down Ford Escort to the American Airlines terminal.

He looked over at her as he downshifted at the entrance to the Callahan tunnel, always slow at this time of day. They would have a nice long ride together. Not the most romantic setting, but somehow they didn't need much encouragement. Unfortunately with a stick shift , there was no way to accidentally touch and let it happen as there had been on the couch at the apartment.

"I could add a chapter, and begin my research now. Will you be coming back this way to wrap things up afterward?"

"No, not for business…" she started, wanting to add *but for you*, and he could see it in her eyes. They both knew it was too fast to say such things, but at the same time, both knew they felt the same way. They would see each other again. It made saying goodbye simpler.

Gray stopped outside the terminal to let her off. Couldn't go in. "Good luck," he said. "Call me if you need help."

"You have my pager, still, right? You call me, too, if you need anything."

And she turned into the terminal with her small bag, briskly onto the next thing. *Stay focussed, Tonia* she thought to herself, *there's a lot left to do.*

The Germans had not known about the dustmite that made the same noise. They had simply designed something to fit their purpose, but as she noticed, so often nature had already designed something similar. But both were running amuck.

She took a cab to Nascent Technologies, and a consultant from Davis met her at the door to the company. *Their security is almost as good as ours* thought Tonia, as she was led through hermetically sealed glass paneled doors. The consultant was a total contrast to what she expected: scraggly beard, wild hair which had been brushed in a vain attempt to take on a

corporate look, old suit and faded sneakers. But he looked at home in the building, knew where he was going, was known by the passers-by. *Science makes odd matches*, she thought.

"Ideally, you want something you release once, and that makes a change in the mite itself, that they pass on only to others of their own kind. Then you don't get into the issues of spraying goo all over the county," one scientist was saying to the other as she was led into a conference room. There were already slides up, showing the mite, and showing a schematic of the best guesses at the nanocricket design.

"Ah, Agent…uh…"

"Just call me Tonia," she filled in, disarming them with informality as she slid into a chair. In a few minutes, after she established by her explanation that she was smart, and powerful, and knew what she was talking about, but really did need their help, she would tuck her feet up onto the seat cushion: as with all conference room chairs, these were too high for her to rest her feet comfortably on the ground. At least in this atmosphere, her personal comfort would fit with trying to get these smart people to relax and come up with ideas. Sure enough, they did.

"Look, all creatures have some forms of natural secretions which can be lubricants. If we can coax them out of the mites, they could coat themselves without our having to intervene much more than initial applications. As for the synthetic bugs, that's another story," said Charles During.

"They must have some self-lubrication, too. And if they use photosynthesis, perhaps they also generate some of their own lubrication to keep their parts moving." They looked in the tome which had been compiled on the fake insects.

"I think the same tactic could be used for both pests. We'll just need different applicators."

"This is Dr. Draver from the medical school. Her life is mites, so to speak."

A tall blond woman rose from the table. As she outlined exactly how the bugs could be defeated, Tonia's thoughts went back to Gray, and whatever was happening there. *Where is he, what is he doing* she thought as she hungered to picture him in her minds' eye. It was so odd for her to react this way to anyone. It was such a coincidence that in the midst of this whole sojourn, she and he should meet…but hadn't she decided it was not a coincidence? Who could have known that her way of figuring out this puzzle would lead her to Everlina, and therefore to Gray? Only someone who knew what Barr's message was, and someone who knew Gray's work. And someone who knew her… knew her well. She had thought of one person who seemed to know everything, but even he couldn't know this.

Hadn't Gray mentioned that his professors seemed to be connected to the government on occasion…? And hadn't he called one "an old codger, probably 76, but sharp as a tack.." Which one was it…he'd been rambling about the committee and she hadn't really been paying attention, but now she played the conversation back in her head. *Rosenfeld, Grant, Heffer, Nishioka…*was it the Japanese fellow that was so old? No, it was a B-name, *Berthold,* no *Bannock.* That was it.

Bannock. *He seems to know everything,* Gray had said. *He's the gentlest, firmest, smartest man I've met.* Tonia thought back to what Greta, the woman in Germany, had said about the young Barr, his tendency to meditate, his gentle manner, his wisdom. She remembered the diary entry she found in Utah by Louisa's mother Helflinger, who kept the blanket as a remembrance of a sweet man. He certainly had an impact on people. Those kinds of men are so rare - so smart, so powerful yet so gentle and so wise that they don't need to impress or impose themselves on others. She had been told that her own father was such a man. *Maybe that's why I feel so strongly when I meet them*. *Maybe that's why I was so taken with Barr, and this puzzle*.

The scientific presentation was finishing up. A biologic mechanism could be created which would induce the mites to coat themselves with the mite-equivalent of KY jelly, and would prevent the production of any sound. This in turn would interrupt their mating cycle, and within a few years the mites would die off. It was felt that any beneficial function the mites served to their hosts would be taken over by other parasites, so destroying the mites was not a concern.

The crickets were another story. It would be nearly impossible to turn on a lubricating function to prevent the sound production. They would have to intervene in the photosynthesis function, and stop the crickets from functioning at all. It was a much more dangerous proposition to intervene in that system, because photosynthesis is so important in all biological functions in the plant world. The scientists were not willing to attempt it.

Tonia re-entered the conversation. "So you're saying it's possible to get at half the problem, but not the whole problem?"

"Yes, although it is only half from one perspective. Technically, we don't know if the mites started overproducing centuries ago, or more recently, or whether the crickets just added some element following World War II that sent us all over the edge. We don't know which has the greater influence."

She could see another discussion arising, and a problem, too, so she had to get out of there. "Well, thank you, all. I'll take the information back to my superiors, and they'll combine it with their other sources to address the concerns. Your checks are waiting with your secretaries now." That cleared the room, even the wildhaired one headed off. *Money talks,* she thought. *And so do the dead* as she realized how far Barr's last message had traveled.

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Tonia realized that being part of a military organization might be a distinct disadvantage in the next task: deciding exactly how far down to bring the levels of nononcholy mites, as they had been named.

It was a delicate balance, as Gray had described, at a moment that seemed so long ago. It would seem ideal to eliminate violence, have a peaceful existence on Earth. But if the change were made suddenly, no creatures would have time to adapt. Those that truly depended on meat might not thrive on plantlife; having all species suddenly start eating the plantlife might eliminate it all

and all creatures would starve to death. Of course, there were other sources of violent behavior than the mites and their sound; if the animals really started to starve, it is likely that another mechanism that let them kill each other for food would kick in. But not a certainty.

No public debate was even considered. All the decisions about release of biochemicals would be made on a need-to-know basis only. Private debate was another matter. Even though animal testing proved the chemical antidote worked, the testing and computer modeling also revealed that it worked too well. Too high a dose and population control started to fall as animals stopped eating each other. In addition, while photosynthesis would continue and the diatomes, the smallest cellular creatures, would continue to consume enough foods to reproduce, at some level of the food chain there would be an overpopulation. Those creatures that had a complex enough nervous system to respond to the sound were higher than bacteria, but smaller than crawfish. It was unknown how many nanocrickets there were, and how their influence would be felt.

Although there were so many unknowns, the debate centered on the appropriate goal. Need they only go return levels so far as to be back at the level of violence thought of as "normal"? Who knew what "normal" was without a cricket or a mite influencing our instincts. Wasn't this an opportunity to take the chance to create a less violent, more harmonious world, without destroying our ecosytem? The Preservationists liked their violence in limited amounts, but they liked it the way they knew it. Those who work for civil rights and global justice believed it was not a natural state to have a chemical influencing violence. They argued that humans are smarter than that, and should free their brains from the shackles of an induced violence that we came to accept because we couldn't do anything about it. Now we can. The environmentalists were split.

As always, the real decisions were partly dependent on how good the science was, how well they could monitor and control the impact, and partly purely part of a geopolitical power game. But what was the alternative to using the antidote that had been developed? To go on with a level of violence that they knew was preventable, simply because they couldn't emotionally handle the power? They came up with a dosage. They delivered it. It was out of her hands, now.

She flew back to Gray.

Chapter 8: The Greatest Love, Barr None

Gray stood by the rope dividing passengers from greeters. He was a little less lanky without a wall to lean against, thought Tonia. She hugged him, and whispered in his ear, "So, does the world *feel* any different?"

He pulled back in surprise, his hand sliding to grip her upper arm. "Already?"

She nodded. She looked around. Everything looked the same as it ever was. "Your data won't show any difference for a few years. We don't even know if it will really work. You should have heard the debates. Even though they wouldn't allow public debate, all the opinions were represented in the Agency alone! Final decision was out of my hands, of course. They barely let me sit in on some of the discussions, afraid I was too involved.

"Little did they know…" she said, as she took his hand off her bicep and held it gently.

"Let's get out of here," said Gray, and they walked along the terminal hallway, hand in hand, a friendship and deeper sealed with a single gesture.

"Did Everlina pass?"

"With flying colors. She was cool as a cucumber, nothing could faze her. Let's hope I'm the same way this afternoon."

"This afternoon??? Why didn't you tell me?"

"There wasn't really a time. And I was just glad to be seeing you. You know, it's kind of a good luck thing. Will you come? Do you have time?"

"Of course. I'm not on the clock for a few days now."

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After Tonia settled into her hotel room, she took the train to Gray's defense. Building E-100, room 302. What a weird way to name buildings, she thought in passing as she climbed the wide staircase up to the third floor. She was surrounded by pictures and posters and excited college students, and serious book-carriers, and laughers. The energy was infectious, even if the place was intimidating. She found the room, nodded to Gray and snuck to the back row of a small, dark auditorium. Gray sat on the small stage, facing a panel of professors, his Committee.

Tonia tried to make out the nameplates, but she was too far away, so she studied the faces, and waited for them to speak. She was looking for Bannock, of course. He rose, and called the small audience of Gray's friends to be attentive, and participate if they liked. He asked Gray to give a short presentation about his work, for those in the audience who'd not read it yet. As the lights dimmed even lower to allow the slideshow, she took in Bannock's face with her eyes. At first glance he seemed like many elder men of European descent, but in this lighting, chiseled features

surrounded his wise eyes. He looked a little like a Native American Chief. Gray finished, the lights came back on, and Bannock's cheeks filled back in. The Chief was gone as quickly as he had appeared.

The questions were probing. It soon became clear that the committee was divided between people who thought that Gray's methods and conclusions were a valueless interdisciplinary indulgence, and those who thought he was really on to something. Somehow, Bannock managed to reframe the most political of questions into substantive issues that Gray could respond to. Bannock could not make the playing field easy, but he did make it fair.

At the end, Gray waited outside with Tonia and Everlina and Micehl and Susanna for the decision. Finally, the door opened, and Bannock came out with a serious look on his face, but a tiny sparkle in his eye. When he spoke, it was with a smile and an outstretched hand. "Welcome to the Club, Doctor," he said to Gray. The two shook hands, then pulled into a hug.

All the friends were proud and happy, and the two newly minted PhD's threw a big party at their Somerville apartment. Chips and drinks and loud music and Jengo and dancing and good food and raucus happiness filled the space and burst out the bright windows into the night. Anyone walking down the street knew what had happened, because there was a giant banner hanging across the front steps announcing the triumphs.

Tonia heard the bell faintly behind the loud music and opened the front door. She found someone tangled in the banner, which had just blown down in the New England evening wind. She saw the trousers, and the shoes, and just before she looked into his eyes, she knew what she would see. Bannock. He held her gaze longer than normal, held her hand just a beat more than a stranger would as she helped him out of the torn sheet.

"Here, let me give you a hand getting that back up," he offered, holding the corner up to her as she reached to feel if the nail were still on the porch-post to rehang it.

"Oh, no, that's all right, I'm sure Gray would want you to come right in," she replied

"Gray will be fine, my dear, as will I…as will you," he said gently.

"Pardon?" she asked as she reached up to hook the sheet again. She looked down at him, held his glance again, frowning slightly. She cocked her head, and leaned forward, melting into those eyes. They were her eyes. The same color, the same eyelashes, the same shape. *No one has those eyes but me*.

"You have my eyes," he said. She startled, and shuddered.

"Who *are* you?" she asked. She knew part of the answer almost as soon as she asked. She had seen enough aging algorithms, and she had been practicing this one in her head for a couple of days. She closed her eyes, pictured the one black and white photo of her original target in her mind, morphed the picture according the examples she'd seen. She set the final image for comparison and opened her eyes. Perfect match.

"You're Barr," she said quietly.

He nodded, his eyelids slowly closing and opening over those eyes as he confirmed her statement. She held his gaze again, not even starting to think of the thousand questions this revelation brought, because he looked like he was not finished.

"And," he paused, "someone else."

"Who?" she whispered, as the moonlight came from behind the clouds and the Chief appeared again.

"I have been many people. But among them I have only once been a father."

He let the words waft a strong bond between them, and she let out a soft cry. "My father died when I was very young…" she started. But she looked at him, the way he held himself, and she knew that it was familiar. It was like looking at her shadow - you know it is you by the outline, by the way it moves - you know, even though partly it looks completely different.

The outline of how this moment came to be flashed into her imagination: Barr, escaping from his captors leaving behind people who thought they had witnessed his death, became an incredibly rare commodity, an agent who could never be traced, ever. He saw her grasping what his life had been like, and the cards he had played to be able to get her assigned to this case, for the long shot chance that his current cover would allow them to meet. He knew her so well because he had followed her from afar, was privy to her psych files at the agency, but his cover was so deep that he could not betray it to *be* with her.

Of course he could not remember the content of his last message, so he had had to let her find the blanket, and solve the problems herself. "I'm proud of you," he said.

"We can never meet again, can we…" she said. "I would ask you so many things."

"And I, you. No, you are right. 'Professor Bannock' will soon be transferring to another University, and will lose touch with this world; in fact I'll tell Gray tonight..

"But for the sake of easing your pain, and for the sake of knowing that you've seen my face, and know I love you, and that I always have and shall for the remainder of my days. It was the one thing I longed for all these years, and that I couldn't let go even thirty years after that assignment ended."

"Mom was part of an assignment, but the pregnancy wasn't planned - that's it, isn't it," said Tonia.

"No, the pregnancy was not, but the love was. I didn't think I would ever have children, in the profession I'd chosen, but I knew that if I did, I would value it to the end of my days, and love those children to the depths of my soul. And I did."

"Why the name Bannock? Close to Barr … but there must be a deeper reason that you chose that name for this time," asked Tonia, knowing that This Time would be quite short now.

"It's a throw to your heritage from me. I hoped that, even if we didn't meet, you might figure a few things out. The Bannocks were a Native American tribe near present day Idaho and Wyoming. One of our ancestors was a Bannock Chief named Buffalo Horn, who led a major rebellion in the late 1800s against the tribe being limited to a Reservation. I wanted you to know that you come from strong stock, and that your roots are deep in this land.

This explains all the Native American art in my apartment, thought Tonia. It also explains the Chief that appears out of the moonlight.

"I believe in the spiritual links between people, Tonia," he continued, "but I also did a lot of old-fashioned manipulation for the chance of this meeting."

"And to introduce me to Gray, as well?" she asked.

"Let that be a side benefit of your own choosing. It was a side benefit for me to work with him, he is a truly decent and deep person."

"Now that's what I'm always saying about you!" said Gray as he slid out the door, soda water in hand. "Having a little trouble with the banner? Let me help there…" He reached over and lifted Tonia around the waist to give her the height she needed to hang the sheet permanently.

"Come on in, Dr. Bannock, join the party!"

The elder man sighed, for the first time in a long time. "I'm sorry Gray, I can't. I am of course delighted for you, but unfortunately, I have to go home to pack. I didn't want to tell you until your defense was completed, but I've taken a job at the University of Wyoming, near where my family is from, and I'll be on field work for the next year or so. The shipping company came today, and my plane leaves tomorrow. But you did a splendid job, and I think that your prospects," he paused with a knowing glance from Gray to Tonia and back, "are quite sunny. On the professional side as well, I should add," he quipped with a smile. "Take this card - it's an old friend who could use a fellow like you. See if you are interested in his work. And here - you can leave word for me at this address. I won't be able to get back to you, at least not in realtime as you say, but if you really need me, just write. I'll be there."

He gave Gray a long, solid hug, one of support and comradeship and promise. He turned to Tonia, gave her a light hug, shook her hand and said, "It was a pleasure meeting you young lady. You have a fine young man here. Best of luck." He pulled his overcoat around him, buttoned the middle button and stepped down the three wooden stairs, walking calmly down the sidewalk as the wind ballooned his coat around him. He looked like a great big soap bubble some child had blown, buffeted by the wind but solid in purpose.

The two stood on the landing, leaning against the porchpost, holding each other and watching Brannock leave.

"I'm going to miss him a lot," said Gray."You know, he became a kind of father-figure to me."

They watched as the bubble became smaller, and popped as it turned a corner.

Tonia whispered, "To me, too."

THE END