

Automatic Lover

For Sophie and John; and for Isobel in trust

Author's Preface

In September 2005 I spent a weekend at the annual conference of the Women's Engineering Society. On the journeys to and from the conference I took the opportunity to re-read some of Isaac Asimov's robot stories. One of these was *Satisfaction Guaranteed*, a story about a prototype domestic robot called Tony. The housewife employed to field-test the robot falls in love with it. This set me thinking about the idea of the robot lover; one which occurs sporadically in science fiction. Generally, a robot lover is considered to be a good thing for a man (obedient and efficient at housework) but not for a woman (too cold – an idea encapsulated in the lyrics of Dee D. Jackson's 1978 chart single from which my story takes its title).

As an electrical engineering graduate who has worked with computers, my view is that the outcome is all in the programming. I consider that a sufficiently advanced humanoid robot programmed to be a pleasing companion to a human being might move very easily into the role of lover, and might indeed perform it extremely well.

All unconventional lovers – and many conventional ones – have their critics, and sometimes the criticism boils over into a fanatical desire to see the relationship brought to an end. I had the makings of a storyline.

The setting of *Automatic Lover* is a combination of science fiction cliché (flitting about the Solar System in space ships) and early twenty-first century life (telecommunications, social mores and slang). I make no apologies for this. Mine is a small-scale story about people and it would be lost in an epic backdrop. I have made efforts to be realistic about the technology I describe, but it is for others to judge whether I have remembered enough from undergraduate studies at Southampton University to be able to bluff convincingly. Above all, this story does not take itself too seriously, so if you think something is a joke then it probably is. It has even become infected with my eleven-year-old daughter Sophie's sense of humour (why else 'Uranusbases'?).

I also see *Automatic Lover* as an ode to women engineers and the contribution they can make to society. It is possibly in addition an ode to the power of oxytocin.

AriadneTampion
October 2005

The Lottery Win

All life support systems were functioning well on Uranusbase that evening, so all three duty engineers were able to sit comfortably in the life support system engineers' lounge and await the results of the weekly Solar System Lottery on television. Match three numbers out of six, between 1 and 99, and you win ten Solar System Dollars. Match six and the jackpot is a cool five million.

The engineers were all in their mid twenties: youth was a common condition in a place where facilities for families were poor and the work was often boring. Certainly these three all saw Uranusbase as a place where time was to be served until chartered status could be obtained and a more exciting life sought. Steve Barnes was tall, broad and blond. It was easy to guess that his game was rugby. But off the field he was a gentle giant, and his peacemaking abilities were often appreciated by the life support system engineering team at Uranusbase.

Paul Haycock was slim with wispy brown hair and glasses. His game was chess, as it was anybody's guess how many microseconds he would last on a rugby field. He too was at heart a nice guy, which is why the two of them could get away so easily with the amount of teasing they visited upon the third member of their duty shift: Andrea Kapell. A few German ancestors and parents with a rather nebulous desire to be different had given this otherwise very English young lady an unusual pronunciation to her name which she often cursed in English-speaking company. It was An-DRAY-a rather than AN-dree-a. Friends called her by a pet version: An-DAY. She was the typical bubbly blonde who was assumed to like having fun. The extent to which she lived up to this stereotype in an unconventional way set her up for much teasing, which she understood and accepted in good grace, thereby cementing her popularity within the team.

No sirens had gone off to signal a life support system emergency, and the lottery machine had revved up to full speed. The first number was 16.

"Hey!" said Steve, looking over the shoulder of the woman beside him. "It's one of Anday's. Let's have one of mine next." No sooner had he spoken, than 25 rolled into the chute. "Way-hay!"

"I've got that one too," said Andrea, quietly and purposefully. The third ball was numbered 60. "And that one."

"Anday's won a tenner," announced Steve.

Paul was sitting a short distance away. "The drinks are on Anday tonight," he said. Between them they had won the odd tenner before.

But there was more to come. Andrea had 99 too. She looked a bit winded. "I'm planning a serious holiday," she said, not quite sure she believed it.

52. "You can take us all on holiday!" exclaimed Steve.

But the reality of the 100k prize weighted the bubbly blonde down with unaccustomed responsibility. "I think I'd better put this in the bank and think about how I can spend it wisely," she said.

They almost missed the final ball. But Andrea had 7 too, turning her instantly into a multi-millionaire.

For an interminable few seconds she was completely silent. Then she spoke. "It's real. I can make my dreams come true. I can leave this place and start my own business. I've always wanted to do freelance, small, life support systems, but I realised I might never be able to raise the capital to start up. This is a chance I really cannot miss. I have to get a grip, and do it."

The resignation

The next day saw Andrea Kapell in the office of Jim West, Engineering Services Director of Uranusbase, handing in her notice. A plump, jovial fifty-something, he had by now heard about her lottery win and was sympathetic to her plans for the future. "I'm envious," he said. "I wish this had happened to me when I was twenty-five. If I got it now I'd probably take early retirement and spend more time fishing with my grandchildren."

"There's one more thing," said Andrea shyly.

"Yes?" said West.

"I would like to buy the companion robot with which I have been working here on Uranusbase, HCR-328."

West was startled. The top-of-the-range H-type Companion Robot was generally considered far too advanced for the needs and budget of a small freelancer. But Andrea was a lottery winner, she did not need to justify it to her bank manager, and in a way it made sense. She had worked with the robot for the best part of a year, and it had become well attuned to her ways and highly effective in its purpose of helping her in her work, protecting and pleasing her. The psychology that had gone into the design of those robots, he knew, had been phenomenal, and they were invaluable for working with stressed human beings in demanding and dangerous situations. They took the grump right out of the grumpy old man. He was the Director who had pushed to meet the bill for having them on Uranusbase, and he felt that the quality of work he now obtained from his life support systems team exonerated him absolutely.

"All right," he said. "We just need to agree a price. They are 500k new. Quite apart from their electronic complexity, there's a lot of titanium and carbon fibre in their frames! Yours has depreciated to maybe 400k, but we would still have to buy a new one to replace it, and you would need to compensate us for that. Then its value to you has increased throughout the year you have spent working together. It can be yours for 600k."

"Fine," said Andrea, "600k it is."

"I'll get the documentation sorted for the sale. I would appreciate you making sure that the work you have been doing is documented up to scratch so that we don't get any unpleasant surprises on your departure. Luckily we are expecting a new graduate intake soon, and if I simply promote the person at the top of the reserve list to a full job offer, we can replace you in terms of personnel numbers very quickly. The team will no doubt miss your expertise, but I can't begrudge you this once-in-a-lifetime opportunity, and I wish you well."

Once Andrea had left his office, West headed for the office of Marcus Tilman, the Head of Life Support System Engineering at Uranusbase. He found him studying some diagrams with Steve Barnes and Paul Haycock. Tilman tugged his beard, in a mannerism much imitated and mocked by his juniors behind his back. "I suppose you have come to talk about Ms Kapell," he correctly guessed.

"Yes, and to tell you my decision regarding her replacement," replied West, which he did. "And we'll need to replace the robot too. She's taking her robot," he added as Tilman threw him a puzzled look.

Steve and Paul immediately burst out in raucous laughter and sang in unison: "Woh-oh-oh, lover boy." West looked at them as though they were completely mad.

Tilman gave a nervous cough to attract attention, tugged his beard and explained quietly: "Ms Kapell and her companion robot are given to extravagant displays of physical affection. It adds a bit of colour to life around here. I shall miss them both." West started to feel a little uneasy. Had he been right to agree to sell the robot to its

allocated engineer upon her departure from Uranusbase? But this was a free market economy and surely the legal sale of an item of capital plant from one party to another must be allowed to proceed without let or hindrance?

One person who had no doubts about the matter of the sale of HCR-328 to Andrea Kapell was Uranusbase Head of Security, Wilfrid Portman. Portman was stout with thin grey hair, thick rimless glasses and a bit of a stammer. He disliked women intensely; especially young, sexually charged women; and most of all he disliked Andrea Kapell, whom he detested with every atom of his body. He seethed when he learnt of her lottery win, but this reaction was mild compared to the one he displayed when he learnt, in Jim West's office, that Andrea would be taking her companion robot with her. His face went bright red, he started to hyperventilate and suddenly he leapt a foot clear of his chair in a vertical direction as though a small rocket propulsion unit had been placed underneath his buttocks. West regarded him with horror, hand hovering over the phone lest he should need to call the Uranusbase medical centre. "It is imperative that you cancel the sale of that robot and wipe its dynamic memory forthwith," Portman finally spluttered.

Jim West was a Director, and did not like being spoken to like that by a man who was only a Head of service. "Why, pray, do you say that?" he asked coldly.

"The relationship between that woman," Portman shuddered as he spoke the word, "and that robot is highly irregular. I have CCTV footage to prove it. If they get out of here together there will be a scandal! Think of the reaction of the shareholders!"

"The shareholders," said West impatiently, "are interested principally in the bottom line. I sold a 500k robot to Ms Kapell for 600k, on account of the year's acclimatisation to her it has had. You don't need to be a rocket scientist to see that there is now 100k on the bottom line that was not there this morning. Furthermore," he added, needing to reaffirm his own beliefs given his current state of feeling a little shaken, "this is a market economy and the legal sale of an item of capital plant from one party to another should be allowed to proceed without let or hindrance."

"But if you saw the CCTV footage..."

"I do not want to see the CCTV footage. Such a frivolous use of my time would not serve the bottom line well. Ms Kapell is well known for her behaviour with her robot and to my mind it is all perfectly harmless. Those robots are designed to respond to the personalities of their allocated human beings. Ms Kapell obviously likes horsing around so her robot obliges by horsing around with her. I understand Haycock's companion robot is a very respectable chess player, despite there being no mention that I know of in the owner's manual regarding it having been programmed as a chess computer."

He lowered his head to papers on his desk: his signal to Portman to leave the room. Portman rose slowly from his seat and left in silence. Back in his own office he easily located the disc which held what he considered to be the incriminating CCTV evidence against Andrea Kapell and her companion robot, HCR-328. Very well, if West would not take him seriously, he would take this disc to somebody who would. Who were the manufacturers of the H-type companion robots? Mars Robots, of course. He had some leave coming up. He would log onto Bargain Bucket Spaceflights' website in his next tea break and book a flight to Mars.

Going it alone

Woman and robot traipsed down the corridors of Uranusbase for the last time in the direction of the main airlock. Their luggage was shared between them in proportion to their respective strengths, as had been every manual task that had faced them in their

time as a pair on the Life Support System Engineering team there. A shuttle was waiting to take them to the main spaceport, whence they would travel to Mars, well known as the best place in the Solar System to buy a decent second-hand spacecraft. To be a freelancer you need a ship. Thence it would be to Earth, to buy toolkit and reference books, and then it would be time to start advertising for work. Andrea was aware that in the world of small engineering businesses it does not take long to burn through five million dollars.

Steve and Paul were waiting at the airlock to say goodbye and good luck.

"We'll really miss you," said Paul.

"Yeah," said Steve. "It'll be a long time before we get another engineer working here who we can take the piss out of so much."

"Don't be so sure," said Andrea with a big grin.

"And goodbye Robot 328," said Paul.

"It'll be a long time before we get another robot we can take the piss out of so much," added Steve.

The machine maintained a dignified silence. Its purpose was to help Andrea in her work, protect her and please her; not to take part in banter with her colleagues.

"And the very best of luck with your new venture," said Paul. "How long do you think it'll be before you're taking on staff or partners? I don't want to rot on Uranusbase."

"I really don't know," said Andrea. "The whole thing might be a horrendous flop. I've really got to keep focused. At least I have a cool name: AOK Life Support Systems."

"AOK?" asked Steve.

"My middle name's Ophelia."

"But you haven't got a middle name."

"I have now." Big, big grin.

Both men hugged her before she stepped into the airlock with robot and luggage, and the door slid shut.

On Mars

Andrea and her companion robot, whom she nicknamed simply 'H', underwent an utterly mundane spacecraft buying experience. There were many models to choose from, in varying states of repair, and it was simply a matter of selecting something to specification and within budget; something that had enough cargo space for their proposed toolkit and adequate living quarters, given that it would be their only home for the time being. Also combing through the documentation to ensure that there was nothing 'funny' in its past history. The robot was very good at this, and Andrea trusted its information absorption and retrieval abilities in the light of their year together on Uranusbase. She was so pleased she had managed to retain her robot and did not have to start with a completely new mechanical companion.

Wilfrid Portman's Martian experience was very different. Armed with his CCTV footage, he was determined to find somebody who would take seriously his allegations about an irregular relationship between Andrea Kapell and HCR-328, and the robot's manufacturer seemed a good place to start. Whereas Andrea had been welcomed heartily by Mars's spacecraft dealers as a potential cash customer, Portman had to work hard to get an audience with anybody who mattered. His difficulties, like his experience in Jim West's office, served to strengthen his resolve in his mission to the point where words like 'obsessive' and 'fanatical' might not be far off the mark. The Chief Executive of Mars Robots was in a meeting and not to be disturbed under any circumstances. The Head of Design was also in a meeting, as was the Head of

Development. Portman succeeded in getting messages sent through secretaries to both, but neither was interested in talking to him. Finally a middle-ranking engineer was despatched from the office, quite possibly principally to get rid of Portman.

"The HCR model is a mature design now," the youngish man explained patiently to Portman. "It has performed well in many testing circumstances, as, indeed, it was intended to do. Many satisfied customers have complimented Mars Robots on the positive effect these machines have had on the morale and cohesion of their engineering teams."

Portman sighed. This was his last chance. "My concerns are genuine, and I have CCTV footage I would very much like to share with somebody who knows about the make-up of the HCR machine. Is there a member of the original design team who would be willing to view my disc and give his response?"

The engineer thought for a moment. "I think I know the ideal person to put you on to," he said, "and I'm sure she wouldn't mind." Portman winced visibly at the word 'she', but this was important business and if he had to deal with a woman, so he would. "Wendy Fairfax was a key member of the team which designed, developed and tested the HCR model. She is an exceptional robotics engineer. We were all looking forward to getting her back when her daughter started school, but she has just had another baby!"

"Bloody women," Portman couldn't help saying.

"I look at it this way," responded his host: "Better them than us having to do the childbirth." He scribbled down Wendy's contact details on a leaf of a Mars Robots logoed jotter pad and bid Portman a cheery farewell.

Progress! Portman stepped out into the artificial air under the dome that was Marszopolis. The address he had been given was not far away, and he decided to walk. It would calm his nerves. He did not really know what to expect from this meeting, and would so much have preferred it to be with a fellow male, but at least he felt he was moving forward in his mission now. He rang the doorbell of the unremarkable house and it was answered by a woman in her late thirties with rather dishevelled light-brown hair. She looked tired, but greeted Portman with a kindly smile and examined his ID. Head of Security, Uranusbases. What could he possibly have come to see her about? She was intrigued.

She welcomed him into her living room with the reassurance that yes, she did have time for a little chat. Her five-year-old daughter was at school and her husband, who was not working today, was dealing with their baby son, now two months old. The most prominent feature of the room was the pair of sofas which faced one another. They were clean and neat, but their dilapidated appearance bore witness to the volume of bodily fluids which they had seen transferred over the years. Portman sat down gingerly and Wendy faced him. He spluttered out his concerns about the 'irregular' relationship between Andrea Kapell and her companion robot, HCR-328. Wendy listened sympathetically.

"By 'irregular'..." she started, but was interrupted by the door opening. A smiling male face with a pointed nose and round metal-rimmed glasses poked around the door. Wendy turned to greet her husband with a loving smile. "This is Jack Diamond, my forever," she explained to Portman and then introduced the visitor to her husband, "and this is Wilfrid Portman, Head of Security at Uranusbases, who wants to talk to me in my capacity as a member of the design team of one of the robots they use at the base which has been giving him some concerns."

"Security, hey," whistled Jack. "Don't say one of those robots has been caught with its hand in the till."

Portman was not amused by such frivolity. "It's a very delicate matter," he said. Even worse than discussing this matter with a woman would be discussing it with a couple

who were in a relationship, even if theirs were quite regular.

"I've got Ricky here," said Jack, deciding he had better keep out of the robot business, "and he's rooting like crazy. May I hand him over to Mum?"

"Of course," laughed Wendy and took the wriggling babe from his father. Ricky made impatient little squawks as his mother seamlessly shoved his head up her jumper. A good latch was second nature to them by now. Funnily enough, as Portman gazed on this iconic Madonna and child image, he relaxed. Wendy turned to him once more and took up where she had left off. "By irregular, do you mean sexual?"

The word 'sexual' made Portman wince, but he nodded. Wendy thought for a moment. "I spent a decade designing, developing and testing mechanical men," she said reflectively, "but I never saw them as sexual, and I find the concept rather strange." She paused. "So I suppose the best thing to do now would be to take a look at your CCTV footage. The TV and disc player are on that trolley over there. Would you mind bringing them around please so that we can both see them?" She shuffled herself up to the end of the sofa so that she could look down its length and face the set. The room struggled to serve the dual purpose of a people place and a place for electrical entertainment.

Portman was more than happy to operate the whole system, and this would have been the case even had his companion not been a nursing mother in action. He had at last found somebody who was prepared to listen to what he had to say and look at what he had seen. He took his seat on the opposing sofa and zapped with the remote control tool until he found the desired place on the disc. Before starting to play, he explained: "This is what took place when four new engineers at Uranusbase, including Andrea Kapell, were allocated to their companion robots."

"Yes," said Wendy as the recording proceeded, "the humans have to undergo a series of tests so that their companion robots can acquire data on their physical strength and flexibility. We had a top consultant physiotherapist working on this part of the project with us. I believe there has been exceptional success in the field with the HCRs protecting their allocated humans from strain injuries."

The tests consisted of the robots and humans pulling and pushing at each other in a series of carefully designed exercises that looked a little comical to the casual observer. The three men in the frame obviously found the whole process a bit awkward and embarrassing. "But look at Kapell!" exclaimed Wendy. "She's having a whale of a time. She's treating the whole thing like a dance. If I'm not mistaken, she's finding it a huge turn-on. Oh my goodness!"

Portman smirked with satisfaction.

When the three male engineers retreated from the centre of the room in relief, Andrea grabbed her robot around the waist, grasped and outstretched its other hand, and led it in a tango.

"Oh my God," said Wendy. "They're doing the tango. That poor robot doesn't know what's hit it. This should be an imprisonable offence: abusing the innocence of machinery." She reflected on what she had said and added: "No, I don't think that would really work." She watched on for a bit then exclaimed: "Would you believe it! That HCR is picking up the steps. That's a very respectable tango they've got going there." She felt a surge of pride. "That's my programming!" Having been surrounded for so long by little people requiring a constant stream of personal care tasks to be performed for them, she had lost touch with that sense of euphoria which comes from seeing a difficult programming task expressed in real life robotic behaviour. Portman stopped the playback.

"There's nothing more there," he said. "My second clip was a few months later, when Kapell and the robot had to collaborate on lifting a heavy box."

The scene opened with woman and robot looking at the box purposefully. The

woman crouched down on one side of the box and put one hand either end of it, braced under the rim at the top. The robot moved behind her, put its arms around her waist and its hands intertwined with hers at the ends of the box. Together they lifted and moved it in this way. Wendy's mouth dropped open.

"Is that the way that robot is programmed to help its human lift a heavy weight?" asked Portman, with another smirk of satisfaction.

"No," said Wendy in confusion. "The robot should go around to the other side of the box, facing the person, and should calculate where its hands should be placed on the ends of the box so as to bear an appropriate proportion of the load. The method employed by HCR-328 in that clip is inefficient and potentially hazardous: they could trip up, although I do have reasonable confidence in the calculation it would have done to share the load and protect Kapell from back injury."

"So why do you think the robot was behaving like that?" asked Portman.

Wendy thought, then said carefully: "The only reason an HCR might do such a thing is if its default programming has been overridden by a learned behaviour; in particular if it has learned that this sort of gratuitous physical contact is pleasing to its human." Her stomach began to churn. Portman observed her discomfort and was encouraged. He zapped to the third and final clip.

"This episode took place when Kapell and her companion robot had just succeeded in fixing a particularly difficult and dangerous problem in one of the life support systems at Uranusbase."

With trepidation, Wendy watched woman and robot turn towards one another, fling arms wide, and throw themselves into an embrace. She reacted quickly: "Hey, gimme that remote." She deftly inserted a little finger into the side of her now sleeping baby's mouth to break suction and removed him from her breast. She laid him down beside her so that she could move more easily, and reached out to take the tool from Portman. She immediately froze-frame and picture-searched backwards. Then she clicked forward frame by frame. "What's the frame frequency on this thing? That's not an adaptive response. It's too fast. It's a learned response." She clicked the frames to and fro and then: "Oh my goodness, the robot goes first. No! No!" she wailed in denial.

"It gets worse," said Portman with gritted teeth. Wendy steeled herself to watch further.

"Oh my God! It's a full-blown snog! Just look where all those hands are going! I can't watch!" And she put her head between her knees.

"And look who's leading." There was cruelty in Portman's voice. "Is that your programming too?" Why blame the lad when you can point a finger at his mother.

Wendy composed herself. "The designer of an adaptive intelligence and control system always takes a risk," she said as steadily as she could manage. "You can never predict or even imagine all the stimuli to which your system may be exposed in the field. It's simple chaos theory. You just have to make it reasonably reliable and fail-safe where possible. That said, you may have done Mars Robots a real favour by identifying a genuine flaw in the programming of the HCR model. The design team certainly never gave a thought to how our product might react when faced with a sexually charged young woman giving it a massive great come-on. May I hang onto your disc? I would like to show it to colleagues at Mars Robots and get their reactions."

"Of course," said Portman. "This is a copy. The master is safely filed at Uranusbase." He got up to leave, satisfied that his mission had gained momentum. After closing the front door behind her, Wendy checked that her son was still sleeping peacefully before making herself a very large cup of tea. It was not her usual practice to take sugar in tea at all, but this time she dumped in several heaped teaspoonfuls.

Mars Robots

Tea consumed and composure regained, Wendy picked up the phone.

"Hi, Diane, it's Wendy Fairfax here." Diane Blunt was the Chief Executive's secretary at Mars Robots. For many years she and Wendy had circled each other with suspicion, as is sadly often the case when technical woman meets non-technical woman. Diane felt intimidated by Wendy's academic and technical qualifications and her reputation for having a razor-sharp mind. Wendy felt intimidated by the role Diane played as the top boss's gatekeeper, and, if she were honest, by the other woman's sheer normalness. All this changed with Wendy's pregnancy. Diane was a mother too, and the two of them shared many tea-break chats about antenatal examinations and classes, childbirth and breastfeeding. When Wendy left on her career break they stayed in touch as friends.

"Hi Wendy! What a lovely surprise. What can I do for you?"

"You can set me up an urgent meeting with the Chief Executive, the Heads of Design and Development and Bob Spruce, who was Chief Engineer on the HCR project I was working on before I left."

"Gosh!"

Some explanation was obviously required. "I have just seen CCTV footage showing one of the HCRs in operation on Uranusbase morphing into a red hot lover."

There was total silence on the other end of the phone.

"Diane, are you still there?"

"Yes, my mind's just boggling."

"So did mine, but this is a situation Mars Robots really has to address. Just get those men into a meeting room with audio-visual equipment a.s.a.p. If they appear reluctant, mutter about lawsuits and insurance claims and that sort of thing."

"Yes," laughed Diane, "that will definitely get them scuttling into a meeting room. I'll call you back."

Wendy could do nothing but sit by the phone, hand poised above the receiver. Eventually it rang.

"Two o'clock suit you?" asked Diane.

Wendy suddenly remembered that Jack was off work that day and could pick Felicity up from school. "Fine," she said.

At two o'clock precisely, five people gathered in a meeting room at Mars Robots. The four men were all fifty-somethings with conservative haircuts and dressed in standard business attire. The fluffy earth mother who faced them looked out of place even before she put her baby to the breast. They all seemed bemused at having been summoned, so Wendy gave the briefest of introductions to explain the situation regarding Andrea Kapell and Uranusbase before showing the CCTV footage. They watched in silence.

The Chief Executive spoke first. "We will, of course, have to recall that robot immediately."

"Yes," said one of the others, "before it becomes dangerous."

"Yes," said a third, "the way it's going it might rape her and then there would be the lawsuits, the insurance claims and the damaging publicity. This company would be crucified in the press."

"Although you saw that first clip," said the fourth. "Any half decent lawyer could argue that the girl was acting like a complete strumpet and led it on. She didn't exactly resist in the third clip either. We could get any damages reduced to peanuts."

"There'd still be the publicity..." repeated the third.

"Gentlemen!" interrupted Wendy. They all turned to look at her. "You talk about rape," she continued. "For a start, physiologically that robot is not capable of anything a court of law would define as a rape. A serious sexual assault is the worst it could be

accused of. But why would it do that? It has no sex drive of its own. Its purpose is to help, protect and please its assigned human being. You are talking about aggression. There has never in the six year service history of the HCR model been one single case of aggression directed at the robot's own human, although they have been known to get a little stroppy with third parties."

The four men looked chastened in the face of such logic.

"To be honest," continued Wendy, "I find this situation absolutely fascinating. It is an experiment in artificial intelligence which nobody would ever dare to set up for ethical reasons, and now here it is going on in front of us. It would be a criminal attack on our knowledge and understanding of this field if we cut it short at this point. As I told you at the start of this meeting, the young woman involved has left Uranusbases to set up her own business, taking the robot with her. Once they have privacy away from the apparently omnipresent security of Uranusbases, who knows what might happen to this relationship? I propose we leave them alone for a few months at least, to see what happens. Ideally I would arrange to interview them at some point to see what account they give of themselves."

Now the men really looked stunned.

"But could we be sure she would be safe?" asked the Head of Design.

"We could keep track of them by monitoring the company blog. It's most unlikely they won't have one because all small businesses like to maximise their web presence; it's the cheapest form of advertising," said Wendy.

"But they're not going to give a caress-by-caress account of their relationship on the blog," mused the Head of Development.

"Of course they're not!" said Wendy impatiently. "But we can track where they are, what they're working on, and whether everything seems to be going normally. One hint that there may be a problem and we send in the hit squad, so to speak."

"I'm still worried that this is unacceptably dangerous," the Chief Executive trailed off weakly.

"Look," said Wendy. "When Isambard Kingdom Brunel set out to build the Great Western Railway, did he gaze at the fluff in his navel and worry that it was dangerous? Engineering progress has never been safe. But it has been what the human race has been all about."

"OK," said the Chief Executive. "We'll go for Wendy's plan. May we leave this with you, Wendy, the monitoring of the blog? And feel free to call them in to interview at any point when you feel it may yield worthwhile results."

"Great," said Wendy. "I'm glad you've all come round to my way of thinking. There's just one more thing."

"What's that?"

"My consultancy fee."

The proposal

Andrea Kapell and HCR-328 continued with their business completely oblivious to the interest they had aroused. Andrea taxied her new spacecraft to a pre-arranged short-stay berth at Marszopolis Spaceport Marina, prior to departure for Earth. She drove slowly to ensure that her unfamiliarity with its controls did not lead to accident or embarrassment. Her test flight at the showroom had given her confidence in her competence to take off and land, but she felt keenly the ongoing burden of her responsibility as a newly fledged small businesswoman.

The spacecraft stationary, Andrea relaxed, turned and smiled at H. "So far, so good,"

she said.

"Anday," said H, "as you know, my purpose is to help you with your work, protect you and please you. On Uranusbase I did all I could to please you as we worked together."

Andrea started to listen carefully. Her companion sounded serious.

H continued: "Your colleagues were amused by my efforts. They perceived our behaviour to be more that of lovers than of human being and companion robot. Now we are away from the restrictions of Uranusbase, I need to ask you this: would it please you if I were really to become your lover?"

Andrea's heart began to thump and her breathing became difficult. Serious indeed! H seemed in no hurry for a reply, so she steadied herself and took time to collect her thoughts. She knew she was hot for this mechanical man who had shared her life for the last year, but to take a titanium and carbon fibre lover instead of a flesh and blood one was not something she had ever known anybody to do before. If people found out, then she would have to run the gauntlet of whatever their reaction might be. It was a big risk to take. But a strong mitigating factor was the way that her supposed rhinoceros skin had become a self-fulfilling prophecy. She received a lot of teasing, yes; but it was not teasing to wound, simply because its perpetrators seriously did not believe that to be possible. She had thrived on being the centre of attention at Uranusbase.

More relevant were her feelings inside, the ones which truly had the power to make her vulnerable. And there, she suddenly realised, the prospects looked much rosier. A flesh and blood man would have his own needs and expectations and would bring his baggage to the relationship. H was simply programmed to please her. She would get kicks for free. Her response started to look like a no-brainer.

"It would please me very much," she said softly. "I think this was actually my purpose in bringing you away from Uranusbase with me. But I am so, so, pleased that you made the first move."

H stood up, moved towards Andrea and took her in his arms. She wound hers around him, and it was for her an embrace of sheer relief. No more bravado and pretending. And for him it was a straightforward task to read and comply with her need simply to be held.

After a little while they released their mutual hold. H spoke first. "If I am to be your lover and to do this well, I need documentation. You are young and your experience is limited, so I do not think I can learn all I need to know from you."

Andrea smiled wryly. Her two fumbling college boyfriends, both of whom she had originally 'got off with' at drunken student parties, had taught her how to be frustrated and how to be sweet and understanding about it. If she were honest with herself, these experiences were at the root of her characteristic exhibitionism. How can I possibly be frigid if I can cavort in this way with a mere robot? "You mean a sex manual?" she asked.

"If that is what you call it, yes," replied H.

"That's easy. We're off to the biggest bookshop in London, to get the best technical manuals on life support systems. They sell books on just about everything else too."

To London

Hovering above the Earth, Andrea set co-ordinates to lock onto Milton Keynes. The town planning experiment of the 1960's had been judged such a complete failure that it had been the obvious site to raze to the ground for Britain's only long-stay space park. From there it was only a fifteen minute journey by high speed shuttle train into central

London. They were lucky with their berth at Milton Keynes; it was convenient for all site facilities. This was important because they planned to stay docked here until they had secured a job, so it would be home for a while.

Also landing at Milton Keynes was a budget space-bus which had also come directly from Mars. Its passengers included one Wilfrid Portman. Wendy Fairfax had contacted him at his hotel to update him on her meeting at Mars Robots. Whilst he could not disagree with her logic, her patience frustrated him and he could not resist the temptation to follow Andrea and H in the hope of collecting more incriminating evidence about them. It was fortunate he carried his Uranusbase ID; it was not difficult to obtain the necessary information from security officers at Marszopolis Spaceport Marina to know where he needed to go. It was a similar breeze to tap the intelligence of security officers at Milton Keynes and Euston Station.

Andrea and H still had something of a head start, and began a lengthy stint in the bookshop selecting the piles of technical manuals and databooks relating to life support systems which would be so necessary in their work. While Andrea was sitting on the floor studying one particularly heavy tome and trying her best to judge whether it were really worth the price tag or just dead weight, H crouched down beside her and said softly: "As you're busy, I'll go and look for that other documentation we need." Andrea smiled, flushed a little and nodded.

What neither knew or even suspected was that at that precise moment Wilfrid Portman burst through the front door. He did not waste his time searching the labyrinth of bookshelves for his quarries but headed straight for the nearest pay desk. He flashed his ID at the cashier. "I need to speak to your duty security officer," he demanded with urgency. The young woman looked alarmed, and hurriedly pointed him to the stairs he needed to climb. The duty security officer was in the room at the top, surrounded by the VDUs of a CCTV system.

Portman flashed his ID and the officer could see that he looked very troubled. "What's the problem?" asked the pleasant young man.

"There is a girl and her companion robot in this shop that I have under observation for suspicious circumstances," Portman spluttered. "I need to find them on the VDUs."

The security officer responded quickly to what appeared to be quite a serious situation, and waved Portman forward. Portman rapidly identified Andrea. "There's the girl," he muttered, "but where's that bloody machine gone?"

"Not all the cameras are continuously linked to a VDU," said the security officer. "That one is, because the books are all of a high value technical nature. Is it possible that the companion robot has been despatched to find something of a lighter sort? Interior decoration or cookery perhaps? I could flick through the cameras in the lifestyle section."

And that was where Portman saw H selecting a slim paperback volume. "Zoom!" he commanded. The security officer obliged. Soon he and Portman could read the title.

The security officer laughed out loud. "Now there's discretion for you! Send the robot to get the embarrassing stuff." There it was in an eye-easy font: *The Greatest Ever Joy of Sex*.

Portman huffed and spluttered. "I've seen enough!" he said.

"It'll take them a while to leave, with all those books to pay for," offered the security officer helpfully. "Shall I call the Police?"

"No," huffed Portman. "This investigation is still at an internal stage. Thank you for your time." And he left.

The following day Wendy Fairfax picked up her emails and found one from Portman. She smiled. "Well, if they weren't serious before, they certainly are now," she whistled to herself, unable to suppress fantasies about being a fly on the wall.

As for Andrea and H, they left the shop with a large pile of books, which they

decided prudent to drop in at Left Luggage at Euston Station before setting off on the second part of their mission: to obtain the specialist and standard tools necessary for the installation and testing of life support systems.

The honeymoon

Life in Milton Keynes was very different from life at Uranusbase. The routines demanded by living in a stationary spaceship were few, leaving Andrea to develop routines around her body clock which felt more pleasing and affirmed her decision to start out on her own, even though the act of actually obtaining a contract still seemed some way off.

Her behaviour with H changed too. The exhibitionism and bravado melted away; there was no need for them now. Instead there was a quieter, more subtle, rapport between them. The casual physical contact which so delighted Andrea became a part of everything they did together and suffused each task, however mundane, with delicious intimacy. As a lot of time was spent working on the company website, four-handed keyboard techniques became something of a speciality.

And Andrea found that she was not so unusual among the clientele of Milton Keynes Space Park. It seemed quite common for lone traders, especially female ones, to keep a companion robot principally as a bodyguard. The bottom-of-the-range Mars Robots companion model, the B-type, was a popular choice for this. One lady – she ran a franchise in outsize underwear – even addressed her mechanical friend as 'B', although Andrea doubted that this dumb weight-lifter with a gas-pipe frame could be to its owner what H was to her.

For when each day's work was done, H applied himself to the task of exploring her naked body, which had been hidden to him on Uranusbase where the robots were stabled in special cupboards when their allocated humans were off duty. Having taken a brief look at 'the book', he decided that some simple groundwork was necessary before attempting its recipes. He proceeded with exquisite care, and Andrea discovered it to be no lie that every part of a woman's body can be an erogenous zone. The first time he brought her to a climax, the sensation crept up on her by stealth and surprised them both. The second came with such a rush that afterwards all she could do was gaze upon the titanium and carbon fibre frame beside her, convinced it was the finest form in the entire universe. Wendy Fairfax would have been very proud of her programming.

And as the days passed, Andrea found herself tuning into the mind of her mechanical man in a way she had not done on Uranusbase. She developed an internalised understanding of his thought patterns, strengths and limitations which some might incorrectly describe as 'instinctive'. It was no more than he was programmed to do for her, of course, and the experience has been familiar to married couples since time immemorial. The fact that H's was a machine intelligence came as a bonus. Their dissimilarities increased the power of their intellectual symbiosis and this combined with the sexual element to drench Andrea in a blissful happiness which appeared to be without end. The nature of her feelings towards H had changed so smoothly and gradually that it was only by looking back that she could see how it happened: from hot'n'horny to deeply in love.

The only domestic dispute they had during this time concerned the taking of the chemical toilet to the space park disposal point and emptying it. H assumed they should do this together; after all, sharing tasks is what companion robots do. It is fundamental to their philosophy and programming, intended to promote group cohesion

in teams of humans and robots and avoid stimulating the slave master mentality. Andrea, however, felt that as H did not use the toilet, it was quite wrong that he should have anything to do with the yucky job of emptying it. The robot's adaptive artificial intelligence adapted to this conflict with highly uncharacteristic slowness, but got there in the end and accepted that Andrea was best pleased by being left to do the 'toilet run' all by herself. Andrea, too, felt she had learnt something from the conflict; in particular the way she had handled it by calmly holding her corner. Stubbornness provided an input of stability to those finely tuned algorithms and brought them to a steady state more effectively than the sort of erratic behaviour which many couples in conflict allow themselves to be drawn into would have done.

Eventually Andrea decided the website was satisfactory for the purpose of obtaining business, giving details of her CV and all the components and types of life support system she felt she could turn her hand to. Some who knew her would have considered what she was offering to be optimistic in the extreme; but, having a risk-taking personality, she would have come back at them with her firm belief in the philosophy of faking it until you make it. Even though she tried, her exuberant exhibitionism could not be completely purged from her work. The home page carried photographs of herself and H adopting the poses of some of the heroic statues which had been saved from the original Milton Keynes and which now dotted the space park. This was a risk, of course; but on the other hand there is nothing quite like humour and curiosity to stimulate people's memory when surrounded by details of a legion of competent but dull small engineering businesses.

Now registering with the search engines was vital, but Andrea knew that this in itself was unlikely to bring the work pouring in. There were a number of professional, institutional, regional and other sorts of umbrella life support systems websites which were the places where anybody actually wanting a system would tend to go. Andrea had to sweet-email and persuade the webmasters of these sites to include AOK Life Support Systems in their links for her to have any chance of attracting business. Often there was a fee to be paid, and Andrea knew she would have to monitor contacts from these sites to assess whether it were money well spent or money down the drain.

But eventually her persistence paid off, for an email arrived one day offering her a contract to install a life support system for a new mushroom farm on an outer asteroid, starting as soon as she could get there. Her disinclination to waste time almost led her to make a trip-chain of the toilet run and making final payment of berthing fees at the space park office. The reason she did not do so was not to avoid walking into the office with a toilet (albeit an empty one), but because she did not want to have to prevent H accompanying her there!

The mushroom farm job

Giles Baldwin was one of those farmers who had the art of growing fat off government grants off to a 't'. He chose both mushrooms and the outer asteroid belt to maximise his grant income, and then employed AOK Life Support Systems because Andrea's was a start-up business and he figured he could screw her into the ground, financially speaking. His doubts about her pecuniary astuteness were reinforced when he first set eyes on H.

"That's a very flashy robot for such a little girl," he remarked.

Why do I have to put up with this crap? thought Andrea. "It makes up for my deficiencies," she responded pleasantly with a sugar-laden smile.

The actual site was basic. The glasshouse domes were in place, but the life support

system for mushrooms and workers would form the largest part of the work. Andrea made a rough estimate of six months to get it up and running, dependent on supply of plant and parts. Luckily the space suit she had selected in London was equal to the conditions.

She then surveyed the site and at first was depressed by the absence of an obvious fuel supply. A small amount of solar energy could be obtained by photovoltaics which were probably too expensive for Farmer Giles, as she thought of him, to pay for. She learnt quite by accident about the tradition of circulation of organic material among the farmers, and she found herself having to do some rapid research on the web to tap into the potentialities of that, which, fortunately, were adequate. A heat pump would make temperatures inside the dome bearable for human and mushroom life. The most important part was of course the gas exchange, which would allow people to breathe an atmosphere sufficiently similar to that of Earth for them to survive. But because of the intensive farming use, her calculations had to take into account the effect of the mushrooms and their mulch; in fact the presence of human beings was a secondary factor which to a typical level of accuracy for such calculations could be completely ignored! This shocked Andrea more than a little, and, with the caution of inexperience, she simply increased the sensitivity of all her measurements and the accuracy of all her calculations.

Another unforeseen aspect of her new job was the human resources problem. With characteristic *insouciance* she had just assumed that she would use 'local casual labour' to do the digging on her contracts. This labour on the outer asteroids was present, certainly, but comprised mainly desperate men from deprived parts of the Solar System looking for farm work. Life had treated them to no favours and left them predictably tough. From having been junior employee and resident comedienne on Uranusbase, she found herself having to be the equally tough boss. Many of the men spoke little English, although some spoke German, which Andrea could get by in due to her family connections. They were not used to taking orders from a woman, especially one barely into her twenty-sixth year. Like so many women before her in the construction industry, Andrea had to hide her femininity as best she could and fortunately it was easy on the outer asteroids. With her silky blonde hair stuffed into a hard hat or space helmet and her soft curves obscured by a boiler suit or space suit, only her voice gave a clue. She found herself cultivating an authoritative contralto.

Strangely enough, H proved to be her greatest asset in managing the men. Whilst the robot had reinforced Farmer Giles's impression of Andrea as a stereotypically dumb blonde, the rough, tough labourers were impressed by such a quality bit of kit. It gave them the idea that Andrea must be at least a bit of a princess, and worthy of greater respect for that.

The challenges of such a project frequently had Andrea teetering over the limits of her capabilities, but her determination to fake it until she made it kept her on course. She came closest to serious embarrassment over the gas exchange. The one on Uranusbase had been simply enormous; this was a micro-system by comparison. Familiar with the figures for the Uranusbase plant, Andrea mis-read the data book when specifying components and nearly precipitated a disaster which might have put her out of business for good. But H saved the day and pointed out her error to her. That is one of the things that anybody would get for their money when investing in an H-type machine.

Back in their spaceship home after the day's work on site, Andrea would update the company blog. This was a very important task, as it would serve as a window on her professional ability for prospective clients. She had to give an account of what she had been doing, but 'spun' to show her work to its greatest advantage while saying nothing that might breach commercial confidentiality. It was a difficult art to master, and for the

first few weeks the blog came out very thin. But as time went on she started to infuse it with her personal brand of humour and her non-engineering interests, and unbeknown to her it started to gain a bit of a cult following.

Generally, life was tough but rewarding, and the most rewarding part of all continued to be her relationship with H. Once the blog had been uploaded each day, he would help her with the exercises she had to do to maintain her bone density, given the very low gravity conditions in which they were working. This reminded her of their meeting on Uranusbases, when they had ended up dancing the tango, and she always found it a turn-on. So it was no surprise that they invariably ended up in a passionate embrace. Then they would continue their journey through *The Greatest Ever Joy of Sex*. Improvisation was always necessary as they were not the pairing for which it had been written. But hey! When one of the couple is an engineer and the other is programmed to please, improving on any standard procedure is no less than integral to life.

And it hardly seemed as though six months had passed when the project was installed, thoroughly tested, and presented in turnkey form to Farmer Giles. He tried hard not to show how impressed he was as he handed over the final banker's draft, but did not really succeed.

"I shall pass your name around, me girl," he assured her. "Not a bad job you've done here. Not bad at all."

Andrea and H then returned to their spacecraft where the reality suddenly dawned on Andrea that their contract was finished and they had not yet been sought with an offer of another.

"I think the thing to do is leave messages on a few of the eforums to remind potential clients that we are available," said H.

"Let's just go straight to Milton Keynes and have a rest," said Andrea.

Back in Milton Keynes

Although the season had changed, in many ways it felt as though they had never left. Even the underwear saleswoman with her robot B was there. She and Andrea chatted whenever they met at one or other of the space park's facilities, but never found out one another's names. Space parks are oddly anonymous places.

Over the next few days Andrea and H busied themselves updating the main website to give a glowing account of their successful installation of the life support system at the mushroom farm. Andrea was frequently reduced to fits of giggles by her own hyperbole. A certain amount of this was expected in the business, but H was wise to Andrea's flamboyant style and made it his business to survey other similar sites and alert her whenever he considered her prose had gone over the top.

Wendy on the case

Andrea had faithfully written up her blog each day unaware even of its growing cult status, let alone that one follower had a special interest in her activities on the outer asteroid.

Wendy Fairfax logged on religiously every day, even on holiday and when her children were ill, because she felt keenly the responsibility she had taken on for the welfare of one Andrea Kapell, known to be in an unconventional relationship with one of the robots which she, Wendy, had helped to design and program.

Day by day she read Andrea's words, right from the thin beginnings when nobody would choose to do so for amusement. But even then she enjoyed what she read, because of the window it gave her on another branch of engineering, and because she felt a fellowship with another woman working in this male-dominated profession. She felt immense admiration for Andrea's bravery in not only operating in what was such a tough field even within engineering, but for doing it as a lone operator at such a young age. Her own career looked safe and conservative by comparison, having been spent, pre-family, entirely at Mars Robots.

At first she was bemused by Andrea's penchant for taking photographs of herself and her companion robot in peculiar poses; there was one almost every day on the blog. Then she re-read Andrea's CV and discovered that among all the technical qualifications Andrea had a history of art qualification and then all became clear: those poses were intended as comical pastiches of great works of art! No art historian herself, Wendy nevertheless had little trouble identifying Leonardo da Vinci's *Mona Lisa* and Edvard Munch's *The Scream*. In fact *The Scream* was a favourite and both parties posed it at regular intervals. Every engineer will understand. But the one which really had Wendy in fits of giggles, and not only because of her privileged knowledge, was Andrea and H's take on *The Arnolfini Marriage*. It was so thoughtfully crafted and so utterly absurd and ridiculous that Wendy could not help seeing it as a double bluff: "No way are we having a sexual relationship!"

When Wendy read that they were back in Milton Keynes, she realised that she needed to act quickly if she were to secure her interview before they shot off on another job and might be unwilling to oblige her. But cold-emailing Andrea proved harder than she had anticipated. What, exactly, should she tell her? "I want to talk to you about your sexual relationship with your companion robot," would certainly not do; that was for sure. After much thought and many presses of the delete key she devised a fictitious research project in which she was following up a selection of Mars Robots products in service in order to assist in future product development.

The next morning Andrea picked up her emails as usual and found two of particular interest.

"Hey, HI!" she called across the deck to her companion. "There's one here from some academics at the University of Johannesburg. They are impressed with my success at the mushroom farm and love my erudite blog – blimey! – and will be in London next week and would like to meet me at the Institution of Engineering and Technology to discuss my possible involvement in the setting up of a new solar observation station on Mercury. Wow! Mercury! What an experience that would be. London's convenient of course but I'm just a tiny bit disappointed they don't want me to go to South Africa... Kumala... Evolution... Leopards Leap..."

"As your protector," responded H, "I think I need to keep you as far as possible from the South African vineyards."

"You're supposed to please me too, remember."

"OK, maybe one or two glasses, but no more, per day."

"And this one's from a Wendy Fairfax of Mars Robots – your manufacturer. She's doing some product development research and would like to interview us both. She's offering expenses, so that's the rocket fuel and berthing fee at Marszopolis Spaceport Marina covered, and it might be an interesting way to fill in time until we meet these South Africans next week." She emailed back immediately and said that they could make themselves available as long as it was very soon.

Later that day the phone on the spaceship rang. It was Wendy. Could they make tomorrow as her husband would be off work and would be able to deal with her nine-month-old son? Yes, of course they could, with nothing else to do but bum around Milton Keynes Space Park at this point in time.

The interviews

Wendy and Jack had planned carefully how they would conduct the day's business. Wendy decided she wanted to interview the two parties separately, because then she would have two stories to correlate. Also, the power she naturally held over her interviewees by meeting them in her own home would be substantially diminished if they outnumbered her. Inside, she did feel a bit of a cad, calling them up on a false premise, but she also felt that the information she might obtain could be so vital to future robotics work that it was worth the trouble risked by mild subterfuge.

At the appointed mid-morning time there was a knock on the door. Wendy had to steady her nerves consciously as she opened it to the petite blonde and her companion robot who stood there waiting.

"Please do come in," she smiled. Once the door was closed behind them she explained: "Ms Kapell, I would like to talk to you first, and then, if I may, have a few words with HCR-328."

"Fine," nodded Andrea, looking uncharacteristically nervous herself. She followed Wendy into the living room with its two sofas while Jack took H into the study where Ricky was busying himself with various baby toys in his playpen. Wendy had given him a breastfeed less than an hour ago, and he would also now drink water from a cup and eat a variety of finger-foods, so she felt she could justifiably ask Jack that she not be disturbed during her interviews.

"Please take a seat," said Wendy, and then sat opposite Andrea.

"I am particularly interested in your experience," she began, "because it is unusual for a top-of-the-range H-type companion robot to be used in a small business setting, let alone by a sole trader." You lying witch! she silently reprimanded herself, but the weaving of the tangled web had gone too far now.

"H worked with me on Uranusbase for nearly a year," explained Andrea, beginning to relax, "so when I won the lottery and decided to set up on my own using my winnings as capital, I took the opportunity to buy him – it – from Uranusbase. Then I didn't have to start all over again with a new companion robot. We all get quite attached to them, you know."

Wendy smiled. She had planned a little more procrastination, but also knew she would have to get to the point soon. "When you were working on your job on the outer asteroid," she said, "did you find that such a high specification robot gave you any particular advantages or disadvantages?"

Andrea was able to explain about the contrary responses of Farmer Giles and the labourers to H as well as the ways in which H had helped her in the work. Wendy listened with genuine interest, but the time had come to move onto the serious stuff.

"You said a moment ago," she began, "that everyone gets attached to their companion robot. I would now like to ask you a bit more about your attachment to 'H', as you call it." Andrea started to look worried. Wendy felt a bit of a shit. "I have seen CCTV footage which seems to indicate that your relationship with H goes beyond the usual attachment that is typically felt towards a companion robot. Not only from Uranusbase, but from a London bookshop, where you were witnessed buying this book together," she waved her own copy of *The Greatest Ever Joy of Sex* which she had stowed handy but obscured in preparation for this confrontation.

Andrea went bright red and looked really unhappy, but she knew there was no escape; she just had to get through this. She became defensive. "I have just set out as a sole trader in a really tough business. If I had a relationship with a man, the odds are he wouldn't want to come with me on jobs, and then might resent me being away. Or if he did come, we might get into arguments which would make life even harder. And

ultimately he would have his own aspirations which might conflict with mine. Taking H as my lover at this time of my life was easy, has been very enjoyable and is risk free. I am unaware that it breaks any laws and I don't think it is anybody's business but my own."

"I see," said Wendy contemplatively. "I am really sorry I had to bring this up, but I hope you can understand that having heard about your relationship with H, I could not help but be interested and concerned, because this is not a function the design team ever considered for our product, and there may be health and safety considerations."

"Less so than a relationship with a man, surely," said Andrea, her confidence recovering. "H can't even get me pregnant, let alone give me VD or AIDS. And the fact that he is programmed to please me ensures that the few domestic disputes we do have are always resolved."

"Thank you very much, Ms Kapell. You have been very helpful. I am sorry to have embarrassed you so. Now I have spoken to you I think I can go a long way towards reassuring my employers that far from the legal action they fear, Mars Robots may indeed be creating some very happy women."

They both smiled with relief, and Wendy escorted Andrea out to the study. Then she returned to the living room with H in tow. The two of them sat down on opposing sofas and Wendy paused a moment to contemplate the awesome machine facing her. Its humanoid frame was constructed of titanium and carbon fibre, both materials chosen for their lightness and strength and each deployed where its other properties were most appropriate. It was powered by the most advanced solid-state cell, located in the abdominal region to keep its centre of gravity as low as possible. Rudimentary eyes and ears were sculpted around the most advanced optical and auditory sensors. Likewise a mouth circled the high-bandwidth loudspeaker which gave the robot such a pleasant voice. The HCR model even had olfactory sensors obscured beneath what Wendy considered a rather cute nose. They could not detect domestic gas – why bother when the stuff has been so carefully prepared to be detected by human equipment – but more importantly could detect carbon monoxide. It was not a face that would win any beauty contests, but then there are plenty of human faces that appear beautiful only to their mothers and lovers.

The humanoid's many complex movements were actuated by a battery of the lightest precision servomotors available. And the electronics which provided the machine's adaptive intelligence and control were so extensive and complex that they filled the remainder of the internal space, despite being on a nano-level of miniaturisation in many places.

Wendy stopped herself just in time from letting out a dreamy sigh. There was business to be got on with! Her plan was to interview the robot about the details of the physical relationship to spare Andrea's blushes. To do a proper health and safety assessment she felt she needed more than the self-evident truths that the machine could not impregnate the woman or pass on STIs.

"I am aware that you have become the lover of Andrea Kapell," was her opening statement. The robot did not reply. It was not a question. Wendy started to wonder if her idea had been such a good one after all.

"I find myself a little puzzled by this," continued Wendy. "When we designed your type at Mars Robots we did not think to cast you in this role and therefore did not provide you with the equipment that men consider essential for the task."

Still no reply. Wendy felt rising irritation at the double standards of this recalcitrant machine which had had the audacity to move into a human sphere of activity but lacked the decency to discuss it the way a human would: obliquely.

"Dammit," she said. "How d'you manage without a penis?" There was no evading this issue and if she had to put it that crudely, so she would. The answer she got

stunned her.

"The penis has three functions," the robot replied. "The elimination of liquid waste, the fathering of children, and the provision of pleasure for the man who possesses it. I do not produce liquid waste. I do not need to father children because more like me can be made in a factory. And I have no need for pleasure; my purpose is to help, protect and please the human being to whom I have been assigned as companion."

The robot's words were unfaultably logical: a neutral statement of difference, but one which came across to Wendy at first as extraordinarily arrogant and the sign of a serious superiority complex over the poor human male. The apparently effortless combination of the two most powerful political speech tactics (build 'em up then knock 'em down and the three part list) certainly helped! But she was quick to question herself and realise that throughout her years of robotics work she had been living with a deep-seated assumption that robot 'life' understood itself to be inferior to human life. This was less a direct reflection on the modern humanoid robot, designed thus to share human tools and living environments, than the historic tendency of human beings to see themselves as superior to other life forms which is embodied in most traditions and religions. Roboticians had even postulated a 'Pinocchio complex', named from the Italian folk tale: a condition in which a robot wished and sought to become human. Now here was an HCR, an example of the most advanced intelligent humanoid hitherto developed, quite clear that it saw no need and had no wish to be a man, even in the context of an intimate relationship with a woman.

"OK," she said, composing herself. "So you don't need a penis. Would you tell me what you might do to go about pleasing Ms Kapell, in a sexual way?"

The robot was silent for a while, then eventually said: "You have not given me enough data to answer that question."

Bloody machine mind. Never ask it to 'give an example'!

Wendy had to think fast. She was by nature a woman of action: an engineer not a lawyer. She got up, crossed the room, and sat down beside HCR-328. She picked up one of its hands. She raised the hand to the height of her neck and angled it around the back. She hoped that would narrow the choices down to the point where the robot could reasonably be expected to demonstrate a response. "How would you continue once you were in this position?" she asked.

Companion robots of all types, although principally intended to help, protect and please a particular human being, are also programmed to be generally pleasant and obliging to others. After all, many, if not most, worked in teams as well as pairs, so a demonstration of this nature posed no particular problem to HCR-328. It slid one hand around the back of Wendy's neck then turned it to run the fingers comb-like up through her hair. Nice, she thought, relaxing at last but feeling a bit guilty about enjoying the experience. With the back of Wendy's head still cradled in the first hand, the robot started to run the fingers of its other hand down her spine; not just over the bones but cleverly also around the sides of them, hesitantly at first, as Wendy's contours were different from Andrea's. Kinda cute, thought Wendy as she gazed at H's face and started to feel warm inside.

By the time the hand reached Wendy's lower ribs, H's software had deconstructed the pattern of her spine into a sine and cosine series and passed control directly to the algorithms which linked the sensors and the servomotors in the hands: the bit which Wendy had programmed in assembly language. The fingers then fell with mechanical precision onto the most sensitive points around her lower spine and by the time they reached the bottom she discovered she had melted 'down below'. She gasped. This was not the objective scientific experience she had been expecting.

Both parties had passed control to a lower level and it ennobled neither. For the robot, a program break immediately followed as Wendy was most evidently not Andrea.

It took its hands away from Wendy's body and folded them chastely in its lap.

Whilst the HCR project had taken a team of designer-programmers several years to complete, the human female sexual response was the result of millions of years of evolution. Any remaining cerebral function active in Wendy immediately shut down in the face of her desperate desire for the orgasm which she was now confident those carbon fibre fingers could deliver with consummate skill and precision. She simply asked weakly: "Aren't you going to finish the job, then?"

"Do you mean, am I going to bring you to a sexual climax?" asked the robot for clarification.

"Yes," said Wendy.

"No," said the robot. Wendy had triggered the characteristic stropiness of an HCR faced with what it considered to be excessive demands from a third party.

You tease! "Why not?"

"Because I am not your companion robot." H would not expect to help Wendy in her work, or to protect her from back injury with no data on the strength of her back. He categorised the giving of sexual pleasure along with the other exclusive functions of companion robohood.

Wendy had no choice but to re-engage her higher mental functions and accept her rejection philosophically. She should have realised that the robot's fidelity was hard-wired. And had her seduction attempt succeeded, the effect this double infidelity might have had on Jack and Andrea did not bear thinking about. There was the further consideration that ever since she had seen H learn the tango, Wendy had perceived him, after a fashion, as her son – a teenager maybe – so that such an act would have uncomfortable incest implications. Finally, she realised that to this point she had still had difficulty taking the idea of a robot in a sexual relationship seriously; but now it was clear that H's technique was no joke.

"Thank you very much," she said, standing up unsteadily. "You have been very helpful." She escorted the robot out of the door as her mind buzzed and she realised she had something more to say to Andrea.

Andrea was in the study, playing with Ricky and exchanging small-talk with Jack.

"Ms Kapell, may I have a further word?" asked Wendy.

"Of course," replied Andrea pleasantly, and followed Wendy into the living room. Wendy closed the door behind them.

"Ms Kapell," she began, "I have had a very interesting and illuminating talk with your companion robot, and I felt I just had to alert you to something which had not occurred to me before."

"Yes?" said Andrea.

"Earlier on," started Wendy, slowly and deliberately, "you told me that one of the greatest attractions of a relationship with a robot is that it is 'risk free'. Now I have identified a risk, and this is it. That machine could wed you to it so completely that you will never be able to let it go and will miss out on the richness that a relationship with a real man can bring – growing old together and bearing children to suckle at your breast and watch with pride as they develop towards adulthood. And the reason for this risk is not a mystery; it's a hormone called oxytocin."

It was obvious that Andrea had never heard of oxytocin, so Wendy explained. "The 'love hormone'. It's released by the body at arousal and orgasm, childbirth and milk ejection. Nobody is ever as beautiful as our lover or our baby because we see them through the oxytocin glass."

Andrea looked chastened and thoughtful, but almost immediately she had made this stirring speech Wendy realised it was presumptuous and less than logical. The fact that Andrea's soft youthful skin would turn rough and wrinkly with liver spots and unsightly little growths while H remained sleek and shiny was most unlikely to be a problem

given H's hard-wired fidelity. And H's adaptive artificial intelligence could certainly cope with the changes in Andrea's mind due to ageing. Furthermore, some women genuinely felt: "Children, yuck!" and it was no doubt good for the human race that they did, because they were freed from the tyranny of the infantile whinge to do other useful things for society. Still, she affirmed silently to herself, it was probably best said. It was important in life that risks were calculated and choices informed. Then no matter what the outcome, one could look back and sing: "I did it my way," instead of wailing: "Nobody told me."

Andrea spoke. "You've given me something to think about. Thank you."

Wendy felt a wave of compassion. "But I may be wrong. Everybody's different. Everything may work out fine for you. I think we've covered everything I want for now. You have my email address; well here's my calling card with full contact details. I don't rate myself great as an agony aunt, but I do know your secret, and I do understand robots well, so if you ever have any need to talk to me in future, please don't hesitate to call."

"Thank you," said Andrea rather weakly as Wendy escorted her once again to the door.

After they had gone, Wendy typed a short courtesy email to Wilfrid Portman to let him know that she had confirmed his suspicions about the sexual nature of Andrea and H's relationship; but that she was happy there was no problem with it, at least in the short term. Perhaps, she thought, this sort of thing was an inevitable consequence of creating a sufficiently advanced humanoid robot. As with all unintended consequences, it was hard to see where it might lead when the only data you had concerned one isolated early instance. There was nothing the scientist could do but be alert and very patient.

In London again

When Wilfrid Portman next read his emails he found the one from Wendy Fairfax and could not believe his eyes.

No problem! No problem! But this was a relationship between a woman and a robot. How could it be no problem? It was disgusting and degenerate and needed to be put a stop to. He found himself hyperventilating at the very thought of it. That Fairfax woman was useless. As he had predicted she would be. Very well, if she would not put a stop to it, he would have to do so himself. He checked the Security Department duty rota and decided he could be spared for one day in the middle of the following week. On the one hand the delay was frustrating; but on the other it would allow him more time to work out a plan.

Meanwhile, Andrea and H returned to Milton Keynes.

"That was awkward," Andrea said to H on the way. "She wanted to know about our relationship."

"She did," agreed H. Fortunately it did not occur to him to relate to Andrea the tale of how he had managed to turn Wendy on so. "But then we are unusual, and she has a right to be interested, as one of the designers of my type."

But Wendy's words were still haunting Andrea, and she was having her first doubts about her relationship with her companion robot. But those doubts evaporated when they docked in Milton Keynes and H started once again to demonstrate the faultless precision with which he could turn her to jelly inside.

The weekend and the early part of the following week passed quietly. Andrea did some web-research into conditions on Mercury to give her a better chance of

impressing her prospective new clients. It would be a completely different challenge to the outer asteroids. The threat to life would be heat, not cold; and the gas exchange issues were very different. At least power would not be a problem. The sun could give it all and more. Efficiency would be irrelevant to the PV specification but care would need to be taken to find a material that would have a meaningful lifetime under such severe operating conditions.

The meeting at the IET went well. Andrea and the South Africans discussed not only Mercury and the fascination of studying the sun but the history of art and the fine wines of the Western Cape. Afterwards they all went to dinner where a few bottles were available to sample. True to his word, H ensured that Andrea had no more than two glasses, so that by the time she had also imbibed a peppermint tea she was sober enough to think seriously about whether to return to the ship or whether simply to check into a London hotel. She decided upon the latter, and was soon standing at the reception desk of the Thames Embankment Hotel with H by her side.

Mike Webb was the duty night security manager. He looked with concern upon Andrea. He had seen enough customers arriving late at this hotel to recognise somebody who had had a slightly heavy evening. But this was not his only concern. He looked at H.

"Is that robot insured?" he asked.

"Yes," lied Andrea. She had no idea how she had managed to overlook this issue for so long, but did not want to risk being unable to find a bed for the night in London now.

"OK," said Mike, "I'll put you in Room 20," and he gave her the keys.

Room 20 was furnished in old-fashioned style with a wooden bed and green velvet drapes everywhere. Andrea had a bath and washed her underwear with shampoo in the basin (she really ought to be prepared for these unscheduled sleepovers as a matter of routine...) while H made her another peppermint tea.

By the time she had consumed the second peppermint tea she was largely past the effects of the modest amount of alcohol she had taken and would normally now be sleepy. But tonight she was still high from the day's events: the excitement of her new contract and the pleasantness of her new clients, who were the very antithesis of Farmer Giles. Furthermore the green velvet drapes conveyed to her a deep eroticism and she leant over and touched H in anticipation.

The passion and imagination of the lovemaking which followed broke through all Andrea and H's previous boundaries. H used his whole body and Andrea's served her well as one extensive erogenous zone, so eventually only the lightest of touches was necessary where it really mattered to send her flying to Paradise.

But unbeknown to the lovers, the whole session was being silently tracked by the half dozen CCTV cameras obscured among those very green velvet drapes which Andrea found such a turn-on.

The last thing Mike Webb had in mind when he put Andrea and H in high-security Room 20 was a night of voyeurism. He was genuinely concerned about the personal safety of such a vulnerable-looking young woman with such a high-cash-value robot. But in his profession he saw some very strange things and it would take a lot more than this to make him judgemental rather than intrigued and amused. He was enjoying the show with a mug of strong coffee to hand when there was a knock at the door.

"Wilfred Portman. Head of Security. Uranusbases," barked the visitor, flashing his ID. Portman had followed Andrea and H through London in exactly the same way as he had in order to locate them at the bookshop seven months previously. Now he knew he had them in his sights.

"Come on in!" welcomed Mike. It was a lonely job at times and he took a very relaxed approach to customer confidentiality when entertaining a fellow security professional, so the presence of all the active VDUs concerned him not one bit. "Would you like a

coffee?"

"No thanks," muttered Portman. "I've come here about a girl and a robot who I believe are staying at this hotel."

"Oh yes," Mike chuckled. "They're rather busy at the moment." He indicated the relevant VDUs.

Portman took a look and almost choked in disgust. He felt physically sick. He sat down, spluttering.

"Hey, Man, chill out, watch, enjoy, learn a few tricks to take home to the missis," said Mike.

Portman's gut urge was to charge up the stairs, burst into the room and expose them at it. However he still had enough wits about him to realise that this would almost certainly not be the most effective way of achieving his goal: the destruction of the relationship.

"That woman," he explained, "is a former employee of Uranusbase who has stolen that robot. And you can see what she stole it for. I would like to reclaim the machine with the minimum of fuss tonight, and so with your permission I would like to remain here until she has gone to sleep before going to the room to collect the robot."

"Fine by me," said Mike. "Glad to be of help to a fellow professional. Would you like to change your mind about the coffee?" Portman nodded. "And feel free to read any of these newspapers."

As Portman had predicted, eventually Andrea slipped into an oxytocin-drugged sleep with H watching over her. Portman's hour had come! With the key Mike Webb had lent him he unlocked the door of Room 20 with practised stealth.

"Hey, Robot," he hissed. H turned to the door. He knew Portman, of course, from Uranusbase, but he was a little bemused to see him in London.

"There's been a security alert on Uranusbase," continued Portman, "and we need you back there to give us some information."

"But what about Andrea?" asked H. "I am her companion robot. It is my purpose to help, protect and please her."

"She'll be perfectly OK here," said Portman. "The security at this hotel is very good." A twisted smile appeared briefly upon his lips. "Reception will tell her where you've gone when she wakes in the morning."

Suspecting nothing, the machine followed the man out of the hotel. For the journey to Uranusbase, Portman had spared no expense and booked a personal space-taxi fast enough to get to Uranusbase by early morning and nimble enough to launch from the middle of the Thames. Portman and the robot said little on the journey; there was not much to say.

Back at Uranusbase Portman led H through the familiar corridors to the robot maintenance workshop. As Head of Security, access to every corner of Uranusbase was his by right.

"Please sit down," invited Portman, pulling out a chair and motioning H to it. "I need to run some tests." Cleverly, he had arranged the chair with its back to the control panel to minimise the chances of H working out his planned fate.

But H started to become suspicious as Portman picked up a screwdriver and removed the terminal plate at the back of his neck. "I am unaware that I have a malfunction," he said.

Portman did not know much about companion robots, but he did know that what roboticists call the machine's 'dynamic memory' is what gives it its personality, learnt over time through association with the human being to whom it is assigned. The 'functional memory' is hard-wired and enables the robot to see, hear, walk, talk and so on. In H's dynamic memory was all he knew about Andrea, including his experience of being her lover. Realising he needed to be quick, Portman grabbed a likely-looking

parallel data lead which fortunately fitted the port at the back of H's neck labelled 'DYN MEM'. He plugged one end in firmly. The other he plugged into the control panel.

"You have a fucking enormous malfunction, you damn machine," he grunted as he turned the rotary switch to 'RESET'. A needle on a dial swung to zero. The robot HCR-328 was once again as good as factory-fresh.

It took a few moments for Portman's success to sink in. Then he gave a wild cackle and started to leap about the room singing and shouting. "No more tangos at Uranusbase! Absolutely no more tangos at Uranusbase! Oh joy! Oh sweet success! No more tangos at Uranusbase!"

And that was how he was found by Marcus Tilman, Steve Barnes and Paul Haycock as they arrived to retrieve their own companion robots at the start of their shift. When Tilman opened the door, Portman waltzed out and disappeared down the corridor. It remained for the three life support system engineers to discover H and work out what had happened.

Andrea alone

Andrea was awoken the following morning at the Thames Embankment Hotel by her mobile phone. It was nearly nine o'clock.

"Hi, Anday, it's Steve here; Steve Barnes from Uranusbase."

"Uh," said Andrea sleepily.

"Anday, we've got your robot here. Portman brought it in. He's wiped its dynamic memory. I am so terribly sorry."

There was total silence at the other end of the phone. Steve started to panic.

"Anday! Please! Don't do anything silly. We all care about you here. Please. Anday. Please."

Marcus and Paul started to develop lumps in their throats and knots in their stomachs. They did not even have a telephone receiver to listen into in hope. All they could do was look at Steve, waiting for him to register that he had some response. At last his facial expression changed to one of relief.

"Uh-huh, ... uh-huh ... see you soon." He turned to his colleagues. "She's on her way. She's not leaving 500k's worth of uninsured capital plant in the charge of a madman. That girl's a survivor!"

"Uninsured, hey?" mused Paul. "Must have been some honeymoon."

Steve threw him a stage punch. The three men went about their work as usual, making sure that one of them always had sight of H. They could not tell whether Portman considered he had finished his task or whether the Head of Security intended returning with a sledgehammer.

Meanwhile, Andrea dressed as quickly as she could and put her few bits and pieces into her bag. Even this was hard when she was so blinded by tears. She was in a state of shock and felt completely numb, but they would not stop flowing. With a Herculean effort she blinked them away and washed her face in order to make the journey downstairs and check out. Breakfast was simply not a consideration.

The underground took her to Euston whence the high speed shuttle took her to Milton Keynes. She dropped in at the office to settle her bill with the Space Park before returning to her ship and seeking clearance for take-off. That time of the morning was usually busy but Andrea was lucky with her slot. She tried not to look towards the co-pilot's seat beside her which was so hideously empty where it had previously always seated H.

As she left the Earth's pull and headed away from the Sun, she was overwhelmed by

grief and rage and found herself shaking and sobbing uncontrollably. Being back in the ship which had been their joint home made her so conscious of the absence of H that it was hard to pay attention to steering her course. Her mind was awash with memories of him. She might set eyes upon his black-and-shiny body; she might hear his pleasant high-bandwidth voice; but never again would those carbon fibre fingers creep between her legs and take her to Paradise where everything was so beautiful.

It did not take long for her to realise that she was in no fit state to fly all the way to Uranus. Mars was on the horizon. She altered her course and headed towards the red planet.

It was midnight in Marszopolis. Clearance to land was easy to get but she was unable to tell the Spaceport Marina whether she wanted a short or long stay berth and ended up agreeing to pay over the odds for a flexible pay-on-departure berth. The market economy always gets its richest pickings from the chaotic customer.

A taxi took her swiftly to Wendy Fairfax's house, where, a little concerned about turning up at such an hour, she rang the doorbell.

Wendy to the rescue

Despite the hour, Wendy was still up and about, pottering. The other members of her family were sound asleep, and she needed these quiet times. The doorbell took her by surprise, and she approached the door with some trepidation. It was an even greater surprise to find Andrea there, her hair dishevelled and her face streaked with tears. Wendy motioned her into the house and into the living room without a word. They sat down side by side on one of the sofas, where Wendy waited patiently for the younger woman to stop sobbing before listening to her story.

Then Wendy, too, started to go into shock. She had welcomed Wilfrid Portman into her home, watched his CCTV footage, pursued his concerns and kept in touch with him by email. Yet she had never suspected his true agenda. She felt a dreadful personal responsibility for what had taken place.

"I think you need a cup of tea," she said, and made one for both of them.

"Andrea," said Wendy as they drank, "I don't think you're in any fit state to fly yourself to Uranusbase. Jack and I are members of a community spaceship club and I don't think anybody else will be using the craft at this time of night. I am very happy to fly you to Uranusbase. It is the least I can do. The craft is a small one which can be launched from one of the free-to-space 'circles' which are dotted around the Marszopolis dome. It's currently parked in one only five minutes' walk away."

"Thank you," said Andrea weakly, "that's really appreciated."

"Then consider it agreed," said Wendy, "but you'll have to bear with me while I express some milk to bung in the fridge. We don't know quite how long we'll be gone." Her breast pump lived on a handy trolley which could be brought up to the sofa. Wendy unzipped the front of her clothing and nestled both breasts into its cups. "You wouldn't mind lending me some of your oxytocin, would you?" she quipped, not quite sure how she would effect a non-baby-triggered let-down under such tense circumstances. Andrea smiled weakly and snuggled up beside Wendy on the sofa. Wendy thought of this nubile blonde with her 'teenage son' and the milk began to pour. Then there was nothing to be done but wait in the half-dark, listening to the eerie stop-start whine of the breast pump motor as it did its mechanical best to simulate the suckling pattern of a human infant.

At last the receiving bottle was full and Wendy could extricate herself from the machinery, put a clean lid on it and stick it in the fridge. "I'll just write a quick note for

Jack, go to the loo and then we can be off," she said.

Flying a spacecraft was definitely not one of Wendy's talents and the time of night did not help. After a remarkable sequence of swerves, lurches and near misses she felt the need to apologise to Andrea. Andrea barely nodded in acknowledgement. She felt her heart and soul had been obliterated by the brief electric current that had wiped H's memory, and if her body were to meet the same fate in a space crash it would be sweet release.

Space became less busy as they passed beyond Jupiter and Wendy's flying became less erratic. Andrea calmed a little too.

"Andrea," said Wendy, "there is a way you can get H back, you know."

"What?" said Andrea, not quite sure what to think now.

"It took only eighteen months to turn him from factory fresh robot into the love of your life the first time around. This proves that such a thing is possible. If you just stay with him and be yourself, the odds are the relationship will form again spontaneously."

Andrea thought about this a little.

"No," she said. "I couldn't handle that. H may be a machine, but I am not. I shall find him a new home, somewhere I can visit from time to time and check that he is well looked after." The University of Johannesburg sprang to her mind. "And I shall buy one of those 'B' jobs which everyone seems to have. It will look after me well enough. And then I shall do as you have, find a real man to spend my life with and have children by." She was starting to accept the reality of her loss and preparing to move on.

They spoke little for the rest of the trip to Uranusbase. Steve and Paul were at the airlock to meet them and take them in funereal silence to where H sat. The robot clearly did not recognise Andrea. In Wendy's community spaceship Andrea had felt she was coming to terms with her situation, but now her stomach tied itself in a knot and she just wanted to cry until she died.

"You should press criminal charges against Portman," said Paul. "He stole your robot and interfered with it. If that's not a crime I don't know what is."

Andrea shook her head. "No," she said. "I do not want my relationship with H to be picked over in a court of law. I just want to move on."

Wendy had been looking pensive over this time.

"I've just thought of something," she suddenly said. "Gentlemen, did Portman also wipe the back-up memory? He may not have done. It's actually quite difficult to do. It is wiped automatically, of course, when the robot is imprinted with data from a new human being."

The other three turned to look at her in stunned silence.

"I don't know," admitted Paul weakly.

"In that case I shall take a look," said Wendy.

Andrea's heart began to beat very fast. She tried not to raise her hopes too high. She had already lost H once that day and did not want effectively to go through the loss again.

Wendy picked up the data lead which Portman had left lying on the table top. She then turned to address the robot. "H-type Companion Robot 328," she said, "I am Wendy Fairfax from Mars Robots. You have been reset in error, so I am here to check the data in your back-up memory, and, if possible, restore it to your dynamic memory, so that you can continue as companion to your assigned human being." She deftly unscrewed the terminal plate and plugged one end of the data lead into H's waiting port. The other end went into the control panel. Wendy sat at the console and started quickly typing her way through the various security protocols. Each time the response was positive. Finally, she pronounced triumphantly: "Back-up memory intact."

"So you can really bring him back to life?" asked Andrea cautiously.

"The back-up memory is highly compressed, and some information is inevitably lost,"

said Wendy, "so for a while H will be like a person who has suffered concussion or a mild stroke. But bearing in mind how fast he learnt the tango, I have every confidence he will be firing on all cylinders, if you'll pardon the metaphor, within hours if not minutes." She observed the look of excited anticipation on the younger woman's face. The conversations they had had the previous week and in the spaceship came back to her.

"Andrea," said Wendy, "please think very hard about this. You can decide to have H back just as you knew him yesterday, or you can take this opportunity to move on as you were describing to me on the way here."

Andrea barely paused. "I am confident now that I want H back," she said. "I am sorry to be such a coward, but please, please, get H back for me."

"Actually," said Wendy, "I think you're taking the courageous option. You've taken a step away from the heat of your relationship with H, understood the potential problems with it, and decided to run with it anyway, to wherever it takes you. I'm not sure I would have had the guts to do the same in your place. So here we go. 'Reinstate'," she read from the screen as she typed the all-important command and watched it appear there. "'Do I really want to reinstate back-up memory?' 'Y' for yes I do." With a final triumphant flourish she lifted her hand high of the keyboard. "This will take several minutes, folks; the process did not appear to the design team to be one which required undue speed." All they could do was wait in silence. There was a collective sigh of relief when H looked once again upon Andrea with recognition.

"Anday," he said, "I'm so glad you're OK. I was worried about leaving you in London while I went to Uranusbases with Mr Portman." Andrea went and sat on his lap and put her arms around him, not caring what anybody watching would think. But only Wendy, Steve and Paul were watching, and there were tears in all their eyes. Wendy in particular felt a great surge of joy. She had got her teenage son back. The one who had been so terribly naughty but of whom she was so incredibly proud. It was with nothing short of tenderness that she replaced the terminal plate on the back of his neck.

But Paul the chess player foresaw a problem.

"Anday," he said, "I know this is the last thing you want to do now, but I think it is important that you do press criminal charges against Portman. You know how fanatical he is. Once he knows H is up and running again he will be in pursuit before you can say 'robot'. You will never be safe from him."

Andrea looked downcast. "I just don't know," she said softly.

Then suddenly the door opened and two figures stood there silhouetted against the light in the corridor outside. Marcus Tilman and Wilfrid Portman observed the scene in the workshop; in particular that Andrea was sitting on H's lap and that the robot obviously understood the situation.

"My goodness!" exclaimed Tilman. Portman said nothing.

"Wendy Fairfax from Mars Robots saved the day," announced Steve. "The robots have a back-up memory which can be reinstated as live. HCR-328 is Andrea Kapell's companion robot once again."

Marcus Tilman tugged his beard in satisfaction. He loved happy endings and had so felt for Andrea Kapell. Then suddenly it occurred to him that it was strange he had heard nothing from Portman: no huffing, blustering or complaining. He turned to the man beside him in the doorway and thought he looked very pale.

"Are you all right, Wilf?" he asked. And Portman collapsed to the floor.

Steve, who was nearest the telephone, called the medical centre and two paramedics were on the scene before he had put the receiver down. They did their best to resuscitate Portman, but to no avail. He was dead within minutes of a massive heart attack. "That is what happens," said Wendy, "when you designate your body an oxytocin-free zone."

The paramedics took Portman's body away and it took the company a while and a large pot of tea to recover from what they had just witnessed. The most pervasive feeling now remaining for Andrea and the friends who cared about her was relief. Portman and the threat he posed were history. Soon they were chatting with an air of normality about life at Uranusbases, Andrea's last job at the mushroom farm and her upcoming job on Mercury.

Eventually Wendy stood up. "Anday, I have a family waiting for my return and I think we'd better be going now. All's well that ends well."

As she led the way briskly back to the spaceship she reflected on the way that the commercial development of artificial intelligence had diverted from the original holy grail of the field, which was to create a perfect simulation of a human mind. Mathematician Alan Turing had devised the 'Turing Test' in which, to pass, a machine mind had to be able to convince a human interviewer that it was really a human mind. By contrast, the philosophy of the companion robot was to create an intelligence which worked better in symbiosis with a human mind than another human mind. Wendy thought back to her interview with H, less than a week ago. H was most definitely a Turing Test failure, but that had not prevented him becoming the partner of choice to an attractive young woman who could have had her pick of men. There was definitely food for thought there regarding the future of the human race.

Andrea followed the older woman quietly, holding H's hand. Whatever the future held for herself and her unconventional lover, she knew she would be able to look back and sing: "I did it my way."

THE END

© Ariadne Tampion 2005, 2007, 2008