

# Split Personalities

*Asimov's Robots - 0*

**Greg Toland**

Mike Donovan groaned in pain and frustration as he turned on the bed. ❖ The cast on his leg was irritating him again. ❖ It had been three days since the accident and he was still cursing himself for his stupidity ...

He had been viewing the new production facility that was manufacturing the AST robot in Los Angeles. ❖ As part of the tour the group was passing at the side of the automated torso assembly robot when he slipped on a patch of hydraulic fluid leaking from the feeder conveyor belt. ❖ It was a simple slip producing a complex fracture that meant he would be laid up for the next two weeks. ❖ It was not really anybody's fault, but he knew that if he hadn't so curious to inspect the linking mechanism he wouldn't have been so near to the fluid patch and wouldn't have ended up on his back in the hospital.

The knock on his door was loud and interrupted his reverie ...

"Suppository for Mr Donovan", announced the gruff voice as the door opened.

He started at the comment and then relaxed as Greg Powell's grinning face appeared around the door.

"I might have guessed it was you", he said as Powell came into the room with a bunch of grapes in a bag and placed them on the bedside table. ❖ He flopped down on the bedside and then rapidly moved to the visitor's chair as Donovan grimaced at the movement of the mattress.

"How's the invalid today then?" asked Powell, although he could clearly see that Donovan was fed up after only a few days.

"Bored, tired, frustrated, uncomfortable...", he tailed off and reached for a grape. ❖ He brought out an empty stalk on his first attempt.

Powell looked a bit sheepish and with a grin said “Sorry about that – got a bit hungry on the way”

“What’s going on back at base?” asked Donovan as he reached back into the bag successfully finding fruit this time.

“Oh, not a lot. ♦ The AST project is still ongoing, usual things, ...”

Powell hesitated and looked out of the window at the bleak sky. ♦ “At least you’re laid up during bad weather so you are not missing ...”

He tailed off again as Donovan caught his eye.

“And Lolly?” Donovan asked in a very pointed fashion.

“Erm, yes, continuing”

Donovan stifled a curse. ♦ “Blast, I knew it! ♦ You know that was what I was asking about”.

“Don’t blame me!” retorted Powell, “You know they cannot stop until you get back even if you are the lead field engineer for the project”

Donovan knew Powell was right, but that did not stop him feeling aggrieved about it. ♦ Eventually he calmed down enough to ask Powell how things were going.

“Very slowly, so we are likely to still be working on the project long after you get out of here”

They started to get into more detailed discussions and before they knew it the nurse came in to shoo Powell out so that Donovan could settle down for the evening.

Two weeks later Donovan was still cursing the cast on his leg, the use of crutches, the lack of lifts in the building, ... the list went on - but at least he was back at work. ♦ It was early in the morning and he was in the laboratory continuing an argument with Powell over the

viability of putting the LLL robot into the field for detailed testing. ❖  
The argument had started the previous afternoon and Donovan knew he was losing the battle.

“Nobody has ever tried these tests in the field before. ❖ We should conclude the laboratory tests before we move on to field testing”

“But the whole point of the plan was to try these tests in the field and that was your idea” replied Powell.

“But ...” began Donovan.

“... you wanted to do the field tests”, said Powell completing his sentence.

Donovan paused and started to reply, then he realised the truth in the statement and begrudgingly admitted defeat.

“OK, you win, go and do the field tests by yourself. ❖ I’ll stay here and rot doing paperwork.”

“Actually I cannot go by myself both from a safety aspect, two field engineers is always the minimum number, and some of the tests will require two people to do them”

“Who are you thinking of taking with you?” asked Donovan.

“Well I thought Cecil Johns would be the logical choice as he has got the most appropriate previous experience”

“Yes, good idea”

“I also thought we could try out DIREC on this job” added Powell.

“Who’s Derek?” asked Donovan with a puzzled look on his face. ❖ “I don’t think I’ve met him”

“Try Direct Robot External Communicator” replied Powell emphasising the acronym.

“No, you couldn’t do that” said Donovan. ❖ “It’s not a portable device and can only be used from the project office. ❖ You would need to have an extra team member based here ...”

He stopped speaking as what Powell had suggested sunk in.

“Of course – me! ❖ I could be involved in the field trial from here and it would give a very thorough workout of the whole system. ❖ Great idea!”

The pair continued their preparations for the field trials for the remainder of the week and on the Monday morning Powell and Johns set off by helijet to the ice fields of Alaska with the LLL robot in a transportation crate.

The LLL robot was designed to be used on mining asteroids, where there would be frozen ices of normally volatile elements and compounds, which did not merit a complex and expensive operation. ❖ Effectively the ices could be hoovered up, segregated and stored for periodic collection by a rocket that would tour the active asteroids. ❖ In order to do that they needed a versatile robot that could identify the ices at collection time and could be left to run unattended for months on end.

The LLL robot was to be that means of collection and the project had gone well to date. ❖ The positronic pathways had been designed to interface with the complex analysis equipment that would be built in to the robot. ❖ Effectively the robot would be able to ‘taste’ and ‘smell’ the frozen ices as part of the identification process.

It took Mike Donovan all of one second to come up with the name Lolly for a robot that would taste and smell frozen ices!

Powell and Johns were progressing reasonably well on the field tests and had managed to complete all of the individual component tests on time. ♦ They had been positioning individual frozen test samples around an area of broken terrain covering approximately five square kilometres. ♦ Each of the samples simulated the compounds that would be found on the asteroids, but at a higher temperature for ease of the testing. ♦ Lolly had successfully found and identified all of the samples within the design parameters. ♦ The final full integration test would be for Lolly to find, identify, collect and place the samples into the collection hopper.

Donovan had been monitoring the tests from the laboratory using DIREC and was getting a clear picture of what decisions and why Lolly was making them via his direct contact with the positronic brain.

Powell had found working with Johns in the field had been a very different experience to working with Donovan. ♦ He was used to having someone to bounce ideas off and they frequently had vociferous discussions in order to resolve the problems that they encountered. ♦ To an outsider it could appear that Donovan and Powell were not friends, but the truth was far from that.

Johns was much more like Powell in character and as a result they tended to over analyse their problems. ♦ This tended to mean that they solved the problems that they were working on, but it took longer, and often the intuitive leap to the best, or right, solution was missing.

They were now in this situation, as the full integration test was not going to plan. ♦ Lolly was still finding and analysing the samples appropriately but the placing of them into the appropriate collection hopper was unsatisfactory.

Powell and Johns stood by the collection hopper watching the final stage of the latest failed integration test. ♦ Lolly had brought all of the samples back in turn, but was not placing them into the correct

compartment. ❖ In fact Lolly was not putting them in any of the compartments.

Powell had 'interviewed' the robot to try and find out what the problem was but each question was met with the same reply - "The compartment is not the right one". ❖ Unfortunately Lolly's design had meant that they had to sacrifice some of the higher analytical pathways to be able to include the specific interfaces to the volatiles analysis equipment. ❖ This meant that the robot could not tell them why it was not the right compartment.

Powell had come up with the theory that Lolly was not putting the samples into the compartments due to a misidentification of the storage bins. ❖ Johns had locked onto the same idea and they had changed the storage bins labels from human readable to optical character and then to bar code. ❖ Each change had produced the same effect – Lolly still refused to put any of the samples into the compartments.

❖ "Let's try using a radio frequency tag in each compartment", suggest Johns. ❖ "That way we could monitor the situation better as we could intercept the signal ourselves and follow the decision analysis through the cognitive pathway tracer."

"Excellent idea" said Powell. ❖ "While we are at it let's also put a radio signal tracer onto each of the samples so that we know which sample is which. ❖ I don't know about you but I cannot tell the difference between the samples by sight alone and we do not have the equipment to differentiate between them on the test site."

Donovan had been monitoring this exchange of ideas back at the base by radio.

"I've got an idea," he offered. ❖ "Why don't we ..."

Powell cut across him before he could continue.

“That’s OK Mike. ♦ We’ve got it covered. ♦ I’m confident that this change to a higher level of technology for identification will solve the problem.”

“I’m not convinced,” replied Donovan. ♦ “If it was purely down to the identification of the compartments I would have thought that one of your previous changes would have worked. ♦ I think it’s down to something more fundamental regarding the equipment itself.”

“OK then Mike. ♦ You investigate that possibility from there and we’ll carry on changing the bin identification for the next test.”

Donovan came off the radio muttering to himself.

“They’re just too focused on a technological solution. ♦ Any one of those labels should have worked ...”

He trailed off as he started to think about what could be causing Lolly to refuse to store the samples in the compartments. ♦ He hobbled over to the DIREC terminal and started to investigate.

Although a modern concept, the DIREC terminal was an old-fashioned keyboard based system that interfaced directly to the positronic brain of the robot that it was connected with. ♦ As the concept was still relatively new they would not develop a voice interface to speed up communication until it had been proven in use.

Donovan typed in his instructions. ♦ He first of all reviewed the command that had been given to the robot by Powell and Johns and was stored in the memory cache.

‘Go out into the sampling area and gather all ices of the following types; hydrocarbon, fluorocarbon and chlorocarbon. ♦ Bring them back to the collection hoppers and put them into the appropriate compartment for harvesting by the rocket.’

Donovan sat back and looked at the instruction. ❖ Because he was using a lower level interface to the positronic brain he had to make his input syntactically and semantically correct. ❖ He could not rely on the positronic synaptic parser to interpret his commands and in addition he had to work in Reverse Polish Notation

He started to type.

“Command: On Validate Mode”

That would put Lolly into a mode that would accept commands and validate them, but not execute them.

“Declare: Sampling Area 030405-040405”

The cursor flashed back at him without an error. ❖ He then put in the instruction to move to the sampling area.

“Sampling Area; Go”

Again an error free cursor, so far so good.

“ ‘Hydrocarbon, Fluorocarbon, Chlorocarbon’; Definition Display”

That brought up the predefined definitions of what fell into the classifications and Donovan sat for a while cross checking the list against the formulae that they had been given for the volatiles. ❖ It all checked out and took account of the higher temperature samples they were using.

“Hydrocarbon; Collect: Storage Area; Hydrocarbon; Deposit”

An error message flashed up on the screen.

“Semantic Error: Invalid Storage Area = Hydrocarbon”

Donovan sat back with a smile; he had found something that Powell and Johns had missed. ❖ All he had to do was work out why the

storage area was considered invalid and he would have the solution. ❖ He reached for the radio to call Powell to let him know, and then paused. ❖

“No”, he thought. ❖ “I’ll let them keep following their ideas, especially as they wouldn’t listen to mine!”

Back at the testing site Powell and Johns were getting cold and fed up. ❖ They had installed radio trackers in a new set of the samples and were now trying to install the radio frequency tag in the storage compartments, but as the bins were metallic screened the signal was being blocked. ❖ Powell had just started to climb onto the top of the storage compartments to fit an external aerial above each bin when Donovan radioed through.

“Got it Greg!” he exclaimed. ❖ “Watch this”

Powell turned to look, forgetting that Donovan was not at the testing site. ❖ He nearly fell but managed to catch hold of one of the supporting struts for the storage sliding doors.

Lolly started to pick up each of the samples that it had left on the ground after the last failed test and began to load them into each appropriate compartment. ❖ The robot slid the door open on the compartment Powell was hanging onto and ...

Greg Powell groaned in pain and frustration as he turned on the bed. ❖ The cast on his leg was irritating him again. ❖ It had been three days since the accident and he was still cursing Mike Donovan for his stupidity ...

He heard a hesitant tap on the door.

“Come in,” said Powell.

A white flag was waved around the corner, but no one appeared.

“Come in Mike,” snarled Powell.

Donovan came into the room. ❖ He was walking just about normally with only a cane to help him and was carrying a bag which he placed on the bedside table. ❖ He was trying to keep the smile off his face but was failing.

“How’s the invalid today then?” he asked, although he could clearly see that Powell was fed up after only a few days.

“Bored, tired, frustrated, angry with you...”, he tailed off and reached into the bag. ❖ He brought out a very cold plaster encased ice-lolly.

Donovan grinned and said, “Sorry about that – Cecil’s’ idea”

“OK. ❖ At least put me out of my misery and explain what was wrong with Lolly.”

Oh, there was nothing wrong with Lolly,” explained Donovan. ❖ “The robot was working perfectly. ❖ It was the test area that was at fault.”

“What do you mean?” spluttered Powell indignantly. ❖ “We simulated the environment perfectly – we even used the actual storage compartments that are going to be used on the asteroids.”

“Ah, but you didn’t have them refrigerated did you?” asked Donovan.

“Of course not,” replied Powell. ❖ “They didn’t need to be cold as the samples were not volatile and when they are on the asteroid they will be at the correct temperature so they do not have any cooling mechanism.”

“Semantics my dear boy. ❖ Semantics.” said Donovan in a very superior voice. ❖ “When you instructed Lolly to put the samples in the ‘appropriate’ compartment how would that be interpreted?”

“A compartment that is the correct one in terms of label, location, ...” started Powell

“... and temperature for storage.” finished Donovan. ♦ “In the test environment you could not reproduce the exact storage conditions without changing the storage bins - your first of three slips. ♦ I had to use DIREC to input commands to Lolly so I had to be semantically correct and that’s how I spotted it. ♦ Lolly knew that the temperature in the compartment was too high so it left the samples outside where it knew the temperature was all right because that was where the sample were happily existing. ♦ You should have listened to me when I questioned the labelling changes you were making – your second slip up.”

Donovan started to get up to leave.

“Wait a minute”, said Powell. ♦ “You said I made three slip ups but you’ve only explained two of them.

“Ah,” said Donovan as he disappeared through the door. ♦ “You were just hanging around when you made your third slip down!”

**THE END**