

**ART.** A concept by Peter Brooks. First version last edited 7/22/2001.

Elements of Bicentennial Man, A. I.

**Preamble:**

**Note:** The Roman Empire was built upon a slave economy. One group of human beings subjugating and using another group for its benefit. Not an uncommon practice—ants and other insects have been doing the same for millennia. Even third world tribes practiced slavery upon each other.

**Note:** In the year 2000, 13 year old children manipulated computer technology—devised by minds far more sophisticated than theirs—to incapacitate entire organizations: so-called Denial of Service (DoS) attacks (and lately DDoS - Distributed or Dispersed DoS).

The motive behind these attacks was not born out of political differences nor was it the result of a backlash against perceived suffering brought about by economic strategies. The motive was simple, childish malice. These child terrorists were nicknamed "script kiddies". You can find out more about them by searching the Internet. I recommend Steve Gibson's excellent description of an encounter with one (<http://www.grc.com/dos/grcdos.htm>).

**Outline:**

In the year 2010, the first glimmerings of practical artificial intelligence are stirring in the research centres in many places in the world. Before long, "artificials"—or **Arts**—begin to be commonplace. Designed to be human-looking and behaving, Arts are destined to form the basis of a new—and more acceptable—slave economy, bringing health, wealth and happiness to all...

...Until an updated version of the script kiddie (now called "SK") strikes.

Innocuous at first, it begins when a fourteen year old SK in Chicago, Illinois reprograms 1000 Arts to travel to his friend's house in Tampa, Florida to sing Happy Birthday to her on her sixteenth birthday. Some of them take three weeks to get there; not all of them survive the journey. Some develop mechanical or electrical problems, others take routes across country and fall prey to a variety of mishaps: they slide into sinkholes, unwittingly walk in front of trains in remote areas, or even suffer disabling attacks by predatory animals.

The early arrivals congregate outside town in a remote gully, waiting silently and patiently for the moment to move. When enough have arrived, they walk quietly en masse to the child's house where she is already waiting expectantly at the front door, sing the song in perfect harmony, wish her a "Happy Birthday from u4me" and then disperse as quietly as they have arrived.

Those still en route at that time simply turn around and try to return to their owners. The task they had all been given is erased from their memory and they continue with their original interrupted task as if nothing had happened...

Slowly at first, the incidents begin to increase in number, despite the best efforts of the manufacturers to prevent reprogramming. As quickly as the makers implement patches the SKs devise workarounds or use other routes to subvert vulnerable Arts.

An Art's eyesight is sensitive to a broader spectrum of light and can receive data at infra-red and ultraviolet frequencies. A vulnerable Art can even be reprogrammed just by looking at a Web page on a demonstration display in a store while shopping for its owner—it is that simple. A hacked and suitably-reprogrammed dynamic Web page with special graphics is capable of transmitting instructions to a watching and susceptible Art, overriding the innate programming and retasking the machine.

The tide begins to turn nasty when one twelve year old SK decides to take revenge on the parents of his friend, who have banned their son from associating with the SK. The youngster reprograms an Art belonging to neighbors of his friend and in the middle of the night the unit breaks into the friend's house and kills both parents while they sleep... The family did not own an Art and thought that they were therefore immune to the activities of SKs. The fact that he was depriving his friend of his loving parents didn't even occur to the twelve year old.

This is where I come in. Part of the time I'm a screener—I check Arts for vulnerabilities and if possible decompromise them—and the rest of the time I work as a tracker—I attempt to trace back from a compromised Art to try and find the culprit responsible for the reprogramming.

Sometimes I get lucky, but mostly I don't. It's not an exact science. The most frustrating part of the job is actually being fortunate enough to find the perpetrator and then being unable to do anything because they're below the age of legal responsibility. The best anyone can hope for is that the child eventually becomes more responsible.

The worst part is when I'm fighting for my life—literally— against a junior Art that looks exactly like a child and that has been reprogrammed to protect itself in a way which violates the First Law of Robotics, first proposed by Asimov and Campbell in 1940.

They're the hardest to destroy...

Violations of the First Law are supposed to be impossible. The machine's circuitry is supposed to be hardwired to implement every Law of Robotics that has been formally ratified by the UN, and so subsequent software uploads to the machine cannot override these immutable conditions.

But as is always the case, no-one reckoned with the kids...

The vast majority of people are never affected directly by reprogrammed Arts. It's a little like gang territorial disputes--gangs usually only ever target each other and not the public at large, but from time to time innocent bystanders are unintentionally involved and the details surface in the news for a few days or weeks and then the fuss dies down until the next episode.

Occasionally there are terrorist strikes either by or against political dissidents, but those are few and far between. Not many governments or dissidents are prepared to spend the time it takes to hack into domestic service devices when it's so much easier, quicker and cheaper to send a human to take potshots at someone.

The authorities do occasionally make use of Arts and even junior Arts to entrap those who are criminally inclined, but since the machines do give themselves away regularly they don't really get used that often. And in any case, when all you have to do is to carry a tiny magnet with you and see if it sticks to your target, being hoodwinked by a machine is an ambition achieved by only the most dense of criminals.

A few Arts end up being abused by their owners, both in private and in public. It's still doing the rounds in the courts even now; no-one can quite make up their mind whether taking a hammer to an Art in anger is quite the same as taking one to a car, or even whether it's a matter of freedom of expression or speech. Either way, it's disconcerting when you see it. I prefer not to see it, but I don't let that get in the way of my job.

Most Arts end up being almost family members, anthropomorphism being so endemic to humans, so when one is compromised it's as if they have been lured away by some obscure cult intent on mind (and bank balance) control. When you send your machine to the store to buy some fruit and vegetables and then see a newsflash in which it is being chased by the police after an abortive attempt at a bank robbery, the emotions you feel are the same as if it was a family member. The psychologists call it inappropriate identification. I call it creepy, and that's why I don't own one. An Art, that is, not a psychologist.

The more expensive models possess shapeshifter technology. Give one a photo of someone and they'll transform themselves into a copy. The intention, apparently, is to make them more acceptable. Having a domestic service device that looks like the Queen of England or Mel Gibson is fun for a while but the novelty soon wears off, especially when there are hundreds if not thousands of them. There are the lawsuits to consider too, for theft of likeness.

It can be unnerving too. I once had an SK reprogram a shapeshifter model to look just like me. When I took that one out it felt very weird, almost like committing suicide.

Don't get me wrong. I'm no Luddite. I use Arts in my work because it helps, but at the end of the day I really can't trust them as far as I can throw them (and some of the older models are pretty heavy). There's always the risk that an SK has compromised one and I've missed it, which means I never let my guard down unless I know for certain that I'm surrounded by humans.

I treat Arts just as a zookeeper treats a wild animal in their care—no matter how long an association you have, you never turn your back on one.

Except the one time I let one get close. Too close. I don't know what I was thinking. Well, to be honest, maybe I do. It was an Ann— a female Art (artificial neural network—is there no end to the ingenuity of the marketing acronyms?) and there was something about her that made me vulnerable. Not that I'm a pervert—I know some folks use them for ... well, you know ... my preference is strictly homo sapiens sapiens—but there was undeniably ... something, and it resonated with me. Almost cost me my life...

At the time I was working on an unusual case. A young woman hired me to find her younger brother, Ben, who had run off with an SK called Gretchen—also known as ParenTeacher (a little witticism on her part—she saw herself as teaching parents a lesson) after a family argument about the ethics and morals of SKs. Gretchen was 16, Ben was 15, and neither were thinking clearly about what they were doing.

Gretchen's parents lost control of her long ago—they even took the unprecedented step of legally divorcing themselves from her so that they couldn't be held liable for her activities. Talk about a lost cause. It's not my place to judge whether her parents failed her or she failed her parents—the situation arose, it had an impact on someone else and they sought my help.

For some reason Gretchen had a thing about machines developed and distributed by one of the mainstream companies, GenAndroids. Most of her targets were GA products, and since GA designed industrial strength machines, she was able to inflict quite a bit of damage using their abilities.

The company gave me all the help they could, provided me with a full set of maintenance manuals (which would let me identify and exploit the same weaknesses that had allowed Gretchen to compromise them in the first place) and made sure I signed plenty of non-disclosure agreements.

But there was something not quite right about the whole scene. The progress I made was too easy, everything fell into place much too conveniently. Life is not like that. Not for me, anyway. It was as if someone was orchestrating the chase, giving me just enough leads to stay close to Gretchen and Ben, but giving them the edge every time I began to move in for the rescue.

So I began to sweep around for other sources of information. What I found was puzzling, but it made a sort of warped sense. Gretchen's parents were the founders of GenAndroids. That explained her targeting of that company's products—she was probably more knowledgeable than the engineers who designed the machines.

Then Gretchen began to branch out, targeting the machines developed and distributed by other major manufacturers. It took me some time before I realized what was going on.

Gretchen wasn't a daughter, she was an experimental device so close to being human that nothing she did betrayed her secret.

What was more, she was taking my attempts to decompromise some of the other Arts and using the knowledge she gained to devise more sophisticated ways to subvert the competition. GenAndroids' competition. Gretchen wasn't just an experiment, she—it—was a weapon for industrial espionage and warfare. And I'd been helping to improve her performance.

And that's when things really got nasty...

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Development continuing 6/29/2004.

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