

## *How Gottlieb Hauptman Abolished the Death Penalty*

### *A Fable*

*Elisabeth Mann Borgese*

Up until that point in his life there would have been little to write home about with regards to Gottlieb Hauptman. He was a plain, ordinary guy, round-headed and balding, short-necked, about 6ft3, including the head, about five and three without it. He did his job, grumpily but reliably, even during the years of the civil war which stretched back almost as far as he could remember, devastating the country, terrorizing the people. He drove his truck through the outskirts of town and the outlying villages, installed the company's security systems, and drove back home. Sometimes he was gone for the day only, sometimes for almost a week, overnighing in motels. The kids were glad when he came home; he would set up the electric train for them and fix the broken leg of the rocking horse. And the wife was glad. There were always things to do around the house, like leaky faucets, clogged vacuum cleaners or closet doors that would not shut. She also felt a bit more secure with him around because the guerillas would stray in, once in a while, and though all they wanted was a bite to eat and a place to sleep for the night, you'd never know: there were so many stories going around.

But when he got too grumpy, after a few days, complaining about the food, ordering the kids around and finding fault with whatever they would do or

not do; kicking the dog; drinking; smashing the glasses in the kitchen, they all were sort of glad to see him leave again.

One day he came back and found his home in ashes, the kids dead and maimed; the wife raped; lying in her blood, still whimpering.

That is when his world came to an end Something snapped inside him. He did not even cry. . It did not really make any difference who'd done it: the army or the guerillas. No difference at all. And you'd never know.

It was sort of automatic to join the government forces. They'd take care of whatever had to be taken care of They assigned him his place in the barracks They gave him

ammunition

blankets

boots

booze

canisters

defoliant gas

gas masks

goggles

guns

hand grenades

ID

maps

marching orders

shaving kit

smokes

swatters

tear gas

tooth brushes

wheels

All he had to do was to hunt down the guerillas (including those who had shared his bread, slept in his haystack, killed his family).

And he did his job, grumpily but reliably. He gunned them down; he rifled them; he blew them up; he nerve-gassed them. Whatever. He killed a few. He killed a few hundred. As a matter of fact, killing became the only thing that livened him up; that was kicks. He killed a few thousand.

Then the civil war was over, or at least that phase of it. No matter how many he had killed, the guerillas had won the war anyway.

They caught him. They put him before a Judge. He was told he had committed crimes against humanity. He was to be put to death.

He couldn't have cared less. Not about the lives he had taken. Least of all about his own. About life as such.

And then the day of his execution came. He was served a scrumptious meal in his prison cell;

Clear oxtail soup

salmon paté

lemon sherbet

venison with potato croquettes, red cabbage cooked in wine and roasted chestnuts

mixed green salad

Peaches flambées

They gave him a bottle of wine and offered him a cigar. Gottlieb Hauptman's head felt pleasantly light.

The priest came with him to the scaffold. He was dressed in black. He had buck teeth and a lisp; enveloped in the faded odour of cheap soap and cigarette butts. He asked him if he had a last wish; gave him his absolution.

Gottlieb Hauptman felt laughter welling up within him: irrepressible laughter. The executioner was dressed in black. His silhouette was slight. He wore a black face mask, black gloves.

There were masses of people in the square, under the scaffold.

A black bandage was put over Gottlieb Hauptman's eyes. A voice ordered him to lay his head on the block. The executioner chopped it off with one perfect blow.

The laughter that had been welling up finally burst out, exploded from his round head as it rolled away.

Ha ha ha ha

ho ho ho ho

hee hee hee hee

*They*

ha ha ha ha

*punish*

ho ho ho ho

*a crime against humanity*

hu hu hu hu

*with a crime against humanity*

ho ho ho ho,

he roared.

*A crime against humanity*

*for a crime against humanity*

*for a crime against humanity*

*ho ho ho ho. Hee hee hee hee.*

There was a murmur in the crowd. Then there was dead silence. The court ushers rushed towards the rolling head. They tried to shut it up. They threw a blanket over it. They rushed it from the scaffold, still roaring with laughter:

*a crime against humanity, hu hu hu hu.*

While everybody's attention was on the roaring rolling round head, nobody noticed that there was a woman, the wife, in fact, who got to the body, which was up already from the block staggering around like a chicken after its head has been chopped off. She put a jacket over his shoulder, including the rump of the neck; she tucked him under her arm; she led him away from the square. Nobody noticed; nobody cared. He had been executed. They could not execute him a second time for the same crime against humanity anyway. All they could do was to shut up that head and put it somewhere, safely, where no one could hear its laughter. As a matter of fact, they cremated it.

Gottlieb Hauptman's body was easy to care for. Especially since his nipples began to twinkle and now were eyes; and his navel opened, an astonished round little mouth. The wife fed it.

soups;  
baby food;  
ice cream.  
yoghourt.

She treated the open neck with potions and lotions.

After nine months, a little head began to sprout from the neck making gurgling baby noises. As it grew, the eyes and mouth on his body began to close and crust over.

The head was about 5 years old, when Gottlieb Hauptman, watching television, understood that there was to be an execution in the city.. He left his toys -- the rocking horse whose leg he kept breaking and fixing, breaking and fixing -- and said to the wife, "Want to see that man," and she took him to the square.

Although he was a fairly heavy man, measuring now about 5 foot 9, including the small head, he skipped lightly unto the scaffolding, just as they were dragging the man in: a skimpy fellow, shivering and shaking in his clothes and tears running down his face. "I didn't do it! I didn't do it I couldn't have done it!", he cried.

*Remember memember remember dismember,*

Gottlieb Hauptman chanted in his sweet little boy's voice,

*...is a quime 'gainst hunanity*

On the square, there was an icy silence, pierced by Gottlieb Hauptman's silvery pearly laughter.

The executioner, a slight black figure, dropped his sword on his foot and

emitted a scream, elicited partly by the pain, partly by the horror at recognizing Gottlieb Hauptman. He limped off the scaffolding. No other executioner could be found, and the man, shivering and shaking even more, was led back into his cell. His penalty was converted from death to life imprisonment. Twenty years later, his innocence was established, and they sent him home.

Gottlieb Hauptman somehow knew he was on to a good thing. He kept watching television, until he found another execution pending in another town. The good wife took him there. People made way for him everywhere, and the scene on the scaffold was pretty much the same. The executioner took one look at him, fled, could not be replaced, and the prisoner was taken back to his cell. Only this time, the people on the square applauded: just a few at first, and then the whole crowd.

Next day, the Human Rights Society phoned. They would monitor the media and arrange to take Gottlieb Hauptman wherever an execution was scheduled. He could hop, free, on cars, busses, trains, ships, or planes; every one knew him; the ladies loved him as his head grew into that of a rather angelic looking teen-ager, and they petted his blond locks falling unto the near parts of his broad manly shoulders. It was kicks; it made his life.

It became a sort of customary law. When the prisoner was brought out, there was Gottlieb Hauptman and said that the death penalty was a crime against humanity. They knew that he knew it first-hand, and the executioner vanished, could not be replaced, and the prisoner was taken back to his cell.

Once his plane was late, and he was not there when he was supposed to; but so customary was this law by now that, instead of proceeding with the

execution, a brass band was quickly summoned to the scaffold; it first played the national anthem, and then a series of funeral marches. Then the Mayor was fetched, and he talked about law and order. In the meantime Gottlieb Hauptman had arrived, and events took their normal course. The death penalty, in that country, was abolished the following week.

As a matter of fact, it was abolished in most countries Gottlieb Hauptman had visited, so that the calls for his presence became rarer and rarer. People almost forgot about him. They did not recognize him any more as his head had grown to its full size (he now measured 6 foot 3) and was balding.

Twenty more years; perhaps thirty or fifty. He needed a wheel-chair now when he was travelling and his voice had a tremor.

One evening he was sitting in his rocking chair at home (after fixing its broken leg), watching TV, and he heard the CNN guy announce that the last of the earth's 637 sovereign States, Texas, had abolished the death penalty. "I'll be darned," Gottlieb Hauptman mumbled, rocking softly. "You never know..." and then the chair stopped rocking.



## ***The Time Bomb***

Metaphors like “time bomb” or “biological clock” have been around for a long time. But once upon a time they were real and made history. We can piece events together from what is left of the volumes of the monthly Bulletin of the Psychophysicists which was published during the twenty-third and early twenty-fourth century. What was on Internet -- and it must have been quite a bit -- unfortunately got lost, and no trace could be found of the autobiography of Christiaan Astone, probably the greatest scientist of the twenty-third century. The book perished during the terrible destructions that took place at that time. However, excerpts from the book, as well as an extensive review, and a series of articles he wrote during the last, bitter years of his life, were discovered in the archives of the Bulletin.

Astone must have been a sort of Renaissance genius, at home in astrophysics and astrology as he was in microbiology, genetics and psychophysics and alchemy. He also had a predilection for music, especially the music of the spheres to which he built a temple on his return from a space voyage that left him thirty years younger than his cohorts who had remained on earth, but probably thirty years wiser and stranger.

The temple was a large, perfectly circular, empty space enclosed by round walls and windows and capped by a cupola. It was amazingly well conserved, probably due to the New Material, Aeternit, of which it was built, and to the eternally durable quality of the glistening little mosaic stones, made of synthetic diamond which adorned walls and cupola. The walls, all around, showed a large

reproduction of Picasso's *Guernica*; the ceiling, blue-toned, depicted symbols of peace of all ages, doves with olive branches, crosses and circles, calumets adorned with eagle quills or shiny women's hair; the symbols of the League of Nations and the United Nations. On the outside, facing west towards the sea, a water-filled basin was attached to the wall. Recycled water was continuously pouring down, causing a play of ripples on the water surface. This rippling reflected itself on walls and ceiling inside, conveying an impression of motion and life. While an ever changing music came from a set of pipes attached to the wall on the eastern side, through which the winds gently blew or the storms raged.

Astone must have spent long hours in the serenity of this timeless temple.

From the time of his return from outer space in 2251 until his death early in the next century, Christiaan Astone was the Master of the Watchmakers Guild which, it appears, was outlawed and subject to a witch-hunt shortly thereafter.

The roots of Astone's life work -- he was awarded the Nobel Prize in 2275 for the invention of the biological clock -- can be traced to his family origins and early childhood impressions, as recounted in the available fragments of his Autobiography.

His father, Astone the Elder, : a renowned psychophysicist, specialized in the exploration of telepathy and telekinesis, the nature and force of its radiation which knows neither space nor time. He studied the power of hypnosis, of Voodoo, the mutual awareness of identical twins over vast distances, the influence of fanatic gamblers on the turning of the wheels of fortune, the action of planets and stars on human destiny and the communication between ground personnel, artificial brains and cosmonauts far out in space.

His mother, a specialist in pearl culture, often took little Christiaan to her air-cooled laboratory where she and rows of other white-clad technicians, microscopes attached to their eyeglasses, implanted tiny nuclei into young oysters with the precision, steadiness and patience of a watchmaker combined with that of a surgeon. “These are living beings,” she explained, like you and me, only far more sensitive. If I hurt you, you say “ouch!” and get on. If I hurt one of these little children, when I implant the nucleus, it dies. They just die, and there’ll be no pearls!

His first memory, as recorded in his Autobiography, goes back to the time when he was only 8 months old.

There was a huge old clock standing on the stair landing between the hall where he was allowed to play with his parents for an hour before being carried upstairs to his nursery to sleep. He remembered his fascination with the motion of the pendulum through time, infinite, the even rhythm of the tick-tock, endless. Tick-tock indeed was the first word emerging from the gargling sputtering of his baby lips.

One evening some one must have forgotten to wind the clock, and as he was being carried past it, he noticed that the pendulum had stopped. He recalls his horror, indelible for life. He screamed. His breathing stopped. He screamed till his face turned blue. He kicked, trying to liberate himself from the arms of his nanny who, at her wit’s end, rushed him to the nursery, shook him, held him upside down, bathed his face with cold water till he breathed again. “Tick tock,” he implored and burst into desperate sobbing again.

The clock was wound up and Christiaan’s evening ended in exhaustion,

satisfaction and peace.

The next episode recorded in his Autobiography goes back to the time when he was one year old, and also this has remained vivid in his memory. It was the death of his grand-mother, far away. Although he could not talk, he understood a lot of what was being said. He listened to the mournful grown-ups *what a pity. Died. No more. Burial.* The stopped pendulum must have popped up in his mind. He envisioned his favoured puppet, pendulating, tic-tac, coming to a stop, collapsing on the floor. That was his idea of motion and time and death, when he was one year old..

The next fifteen years passed uneventfully. His performance at school was mediocre; his parents' home was host to many of the contemporary great scientists, and as he grew up, he eagerly listened to their conversations, about space and time and chaos and uncertainty, about science and ancient religions and astrology, the occult correspondence between terrestrial and stellar agencies, and another, extremely onerous problem, the affinity between fate in general and that of the individual. If a land endured war, insurrection or plague, this could well throw an individual out of his course. Collective fate, though, was as much subject to the law of twofold causes, the fortuitous terrestrial and the celestial, as the individual. These causes affected the fate of whole nations, who after all were only individuals in the aggregate.

At age sixteen he enrolled in the Clockmakers Guild, a wealthy and powerful guild that had provided the Government with a respectable number of Prime Ministers and Presidents. The Guild House was one of the most splendid palais on the bank of the river that traversed the town. The entrance hall, three

stories high, exhibited a copy of Foucault's pendulum, demonstrating the diurnal motion of the earth by the rotation of the plane of oscillation of the freely suspended, long, heavy pendulum. Behind it, the whole first floor was occupied by a splendid clock museum, housing an early Egyptian shadow clock with its obelisk; there were water clocks -- stone vessels with sloping sides that allowed water to drip at a nearly constant rate from a small hole near the bottom. There was a replica of Andronikos' Tower of the Winds. From the Far East came mechanized astronomical/astrological clocks and water clocks that drove various mechanisms illustrating astronomical phenomena. In every culture, some people were preoccupied with measuring and recording the passage of time.

The second floor contained meeting rooms and a gourmet restaurant -- the best in town, open to the public on week-ends, whereas on every Tuesday there was a gathering of twenty or thirty of the choicest wits, guild members and their guests. After a hearty meal, sometimes owing to the culinary mastery of one of the guild members, and the generous libation of exquisite wines, they would fall into discourses concerning atomic clocks and the cesium atomic beam device. They argued how to improve the best primary cesium standards which kept time to about one-millionth of a second per year, which was not quite good enough. But there also was much talk about art and music and festivals and processions, about markets and prices, about economics and politics and their own roles and responsibilities in these realms such as the training of apprentices and the old-age security of their members. Young Christiaan enjoyed his work and the company of his elders to whom he listened with awe.

He was twenty years old when his mother died, and apart from the sadness, the bereavement, the sense of being lost, the event imparted on him another indelible impression: At the very instant of her passing away, the pendulum of the big clock stopped dead. This discovery, the following morning, sent a shiver down his spine. He reactivated the pendulum, but for two weeks, it stopped again, exactly at that point in time. Cause and effect, effect and cause, he wondered. Did she die because the pendulum stopped, or did the pendulum stop because she died? What was cause, what was effect? Could they be reversed?

This thought gnawed his brain, wormlike, until it pushed him into the darkest reaches of psychophysics.

There was a certain guild member -- his name has not been transmitted -- a fellow generally unpopular because of selfish and asocial behaviour. Astone cut his picture out of one of the many group pictures of Guild festivals in his files, and fastened it behind the pendulum of the big clock. He left it there 3 days and 3 nights. Each time he passed the clock, his own heart started pounding, with death on his mind.

The fourth day, at about 04:00 in the morning he rose from his bed of sleeplessness, torment and cold sweat and approached the clock to do the unspeakable. *Requiem aeternam*, he mumbled, as he stopped the heavy pendulum which seemed to resist the pressure of his trembling fingers. *Requiem aeternam*, as the darkness of his mind blacked out his eye sight and he had to grasp the railing to keep himself from falling. Then he removed the picture from behind the pendulum and threw it into the fireplace.

Later that morning he learned what he already knew: the man had died of a

heart attack at four in the morning.

Astone fell gravely ill. His own life hung in the balance.

He never discussed his discovery with any one. As a matter of fact, it was revealed only 50 years later, in his Autobiography.

When he had recovered from his illness, he enlisted for the space flight. The mission was to last six months. He was to be in charge of accurate timekeeping, the relation between speed and time and distance from planet earth, which was required for the work in applied astronomy. In good cheer he signed the contract, including a clause that he was fully aware of the fact that 30 years would have passed on earth at the time of his return. That was the great hiatus in his life which he felt he needed after the events of the past year.

It was again a time of terrible wars, civil insurrection and pestilence when he returned from his space voyage: culture against culture, trade block against trade block, the poor against the rich, the oppressed against the oppressors; maniacs against themselves and the world; continents against continents. Wanton destruction, mass destruction and untold human suffering were ubiquitous.

With a heavy heart he resumed his work and his place in the Guild where he quickly rose to the position of Master.

Important developments had taken place in science and technology during the thirty years of his absence. The trend to replace mechanical and chemical processes with biological ones was to be noted everywhere -- genetically engineered microbes, enzymes, cell cultures performed better than anorganic materials and were widely used for the resorption of pollutants, the processing of metals from ores, and dozens of other processes, both for peaceful and warlike

purposes. No one had as yet thought of applying them to clock making, and this is where Christiaan Astone turned his attention. His early association of life and the motion of pendulums welled up in his mind, after all these years, and he began to experiment with cell cultures, to clone pulsing hearts *in vitro*, large in size, or small, or even microscopic. He imbedded them in fluid and made them immortal. In eternity they would impart motion to watches and clocks. These time pieces were immensely sensitive and also appeared to communicate with one another. They could be regulated by artificial brains. It was sufficient to regulate just one. If it was large enough, all other clocks and watches would fall into the same heart-beat.

Alas, after thirty years, Christiaan Astone still laboured, or laboured again, under the pangs of his conscience, the secret of the murder of his fellow guildsman.

Alas, he knew that, just as meteorology first monitored climate and climate change and then proceeded to determine it, chronometers could evolve from monitoring time to determining it: They could shrink time and expand it, the way he had experienced it on his space journey..

Alas, he knew the power of his biological clocks.

When he was at the peak of his fame -- he had just been awarded the Nobel Prize, he tried to assuage his tormented conscience by giving to his irresistibly upwelling plan a humanitarian guise.

The letter he wrote to the President of the Republic stressed his despair with the ongoing senseless destruction. Hundreds of millions of lives of men women and children had been sacrificed on the altar of the *Moloch horridus* of



this endless war Entire cities had been razed to the ground. Hunger was rampant. Unknown and intractable diseases were decimating populations still spared by the weapons of mass destruction Nature itself was poisoned. Why? For whose benefit? Irrationality was reigning supreme.

Science could suggest better ways. He confided to the President that he had a secret weapon which could end the war in one day, without spilling a drop of blood or destroying one single house. This was what he called “the time bomb.” The biological clock, for whose development he had been awarded the Nobel Prize, could act on time. It could shrink the time of two generations into a day, even into a second, if it were big enough. It would not inflict any suffering; People would not be aware of living their lives in condensed time, like certain flies, *ephemeroptera*, going through birth, maturation, love and courtship, procreation, decay and death all in one day: for them as long and full as eight decades may be for us.

One morning we would wake up, and the generation that had caused all the trouble in the trade block across the sea, would be gone. Another generation would have taken its place, with other interests and perspectives, and there would be no further need for death and destruction. If competition, on a smaller scale, were to rear its ugly head again, one could also think of slowing down their time, making them lose their competitive edge.

He could build a biological clock of the required size and strength within one year, if he had the appropriate laboratory facilities and a budget of one billion dollars. The laboratories should be in a secret place, removed from the curiosity of the population.

He felt it his duty to reveal this knowledge to the President, in the service of science and progress, in the service of his country and of humanity as a whole. He was ready to come to the Capitol to discuss the details of the plan with the President's experts.

An experimental time bomb was launched against a group of African nations in 2277.

The effect was devastating. Poverty, famine and pestilence had progressed at lightening speed. Emaciated tribes were butchering one another; no government was left. The United Nations, with the generous financial and man power support provided by the guilt-ridden country that had launched the secret weapon, had to step in with emergency aid. The region had to be occupied and recolonized if some semblance of law and order was to be restored.

And the rumour mills began to grind as the story of the time bomb gradually came to light. Since all industrialized countries had biological clocks, the inevitable happened: a race began to build bigger and still bigger, stronger and still stronger clocks.

Two schools of thought were evolving. The Chronopolitical realists, led by Professors Coen and Schweissheimer of New Oxford University, advocated primacy in time-bomb technology, and small scale preventive time-slowing applications to retard competitors. Others, led by the *Bulletin*, in which many articles by a bitterly disillusioned and rueful Christiaan Astone appeared, urged the immediate prohibition of the use of biological clocks for war purposes and the enforcement of time-bomb disarmament. They stressed the profound immorality of the use of time bombs. Astone himself struggled up the painfully difficult

intellectual path from his earlier conviction that time-bombing was the most humanitarian method of winning and ending a war to the horrifying recognition that to get rid of whole generations in a day was the most massive form of genocide that could be imagined. It all depended on what was meant by “time.” If time was an illusion, and finite being and eternity were one, then his humanitarian interpretation might stand up to reason. But as he gradually shifted to the conviction that the being of which the philosopher took cognizance might be time itself, as he substituted values of motion and change for static values, he felt compelled to move towards the genocide interpretation. He preached, he warned, like a prophet of old.

On a more empirical level, he stressed that time-bombing was not only morally unacceptable, but that it was a high-risk undertaking whose consequences were unpredictable. If it was written in the stars that the target population was to gain in science and wealth and power, then time bombing would merely accelerate the process and the attacker would be technologically overtaken by the attacked.

The United Nations established a Special Commission to deal with the prohibition of time-bombing, the timed reduction of the size and strength of biological clocks and their use exclusively for peaceful purposes. The Commission sat for one hundred years during which the clock race continued unchecked.

Then something happened which no one could ever had imagined. Was it due to natural causes or to an act of terrorism? No one will ever know. What we do know is that the clocks were attacked by a virus, and the infection instantly

spread through the entire industrialized world. Infected clocks behaved erratically, uncontrollably and then died. Whether, during their brief illness, they also caused time acceleration or retardation, was hard to tell, in the general chaos that ensued. Traffic and communication schedules, hospital and business schedules, educational and entertainment schedules all broke down. There were no facilities for the immediate production of mechanical clocks or watches. Attempts were made to import at least some from underdeveloped countries, but the available supply was totally inadequate and quickly disappeared in the houses of a few high officials and party bosses.

But the worst was yet to come.

The news came from Lisbon that the virus could be passed from the clocks to human beings, and that six persons, including two children, had died from it. This led to a decision by the General Assembly of the United Nations that all biological clocks had to be destroyed and safely disposed of, to prevent further contamination of human beings.

The task of destroying hundreds of millions of biological clocks was daunting and, in the end, totally futile. Incinerating the clocks did not solve the problem. The hyper thermophile viruses survived and thrived. Clocks were buried deep down in abandoned mines, but that took care of only a tiny proportion. Ocean dumping was of no avail: the viruses were swept ashore by wind and waves and infected coastal populations. Clocks shot into outer space rained down to earth. They burned in the atmosphere, but the viruses returned to earth invigorated. Contamination from human being to human being increased exponentially while attempts to develop a vaccine faltered.

Houses where people still uninfected withdrew, became fortresses and householders were encouraged to shoot any one, stranger or neighbour, who would approach them. Rotting corpses were littering the streets.

That was the end of a great civilization. Only countries too poor to have ever acquired biological clocks, survived and flourished.

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Fables

- 1 Birds
- 2 How Sullied (Death Penalty)
- 3 Tombomb

***Birdpeople******Prologue***

It started with an advertisement in the New York Times, signed, on the bottom line, by Clausen, Clausen and Gibber, inviting appointment calls for “Best DNA.” The headline, for the full-page ad, was “children made to order.” The bulk of the text, below the picture of an ideal baby boy, pointed out what, in fact, you could order: children free of inheritable diseases such as Alzheimer, cancer, or heart disease; you could ensure that your child was not myopic, not obese, nor susceptible to addictions or criminally aggressive behaviour; you could prevent premature baldness; you could determine gender, stature (tall, medium or small); eye colour; skin colour; musical ability and intellectual capacity -- “We can now insert genes associated with advanced mathematical ability!” “For the first time, humans now are the masters of their own evolution!”

“There we go!” Professor Niclas Heinzelmann of Berkeley University said to himself, as he scanned the ad with a magnifying glass, for he was myopic, not of the stature he would have chosen. He was short and balding in his fifties.

“I want the kids to fly,” he thought. “*Kids fly,*” he thought, a poster he had seen at O’Hare International Airport, *Kids Fly* flashing through his mind. “But fly like birds.”

This was a dream as ancient as the human race. He thought of Icarus who tumbled to his death when the Sun God melted the wax-wings he had fashioned to

invade the solar realm; he thought of the hoppicopters, part of the equipment of World War II soldiers in the last century: little motors strapped on their backs driving: over-head helica, looking like halos when in motion: gadgets that lifted them over obstacles or rivers or out of danger when they were dropped behind the enemy lines.

Haloes, he thought. Perhaps the angels' haloes had something to do with their flying. They couldn't possibly fly with the kind of sparrow wings they had on the great Renaissance paintings.

And he thought of the great scientists of that century, Werner Heisenberg above all, who had predicted that the technology of the future would be built into the human body: internalized like the technologies of the animal kingdom, through the eons: the sonar of bats, the compasses of migrating birds and fish, the weaponry, the fishing gear of the beasts of the skies, the lands, and the seas.

They shall fly like birds, professor Niclas Heinzelmann repeated to himself. What freedom! What new dimension to life.

And he began.

Arms would still be arms ending in hands; but they would have to be considerably longer, capable of folding, from the elbows, like wings which then could be dressed with a featherlike sort of sweater. But the arms would have to be formidably strong.

He always had been awed and envious, contemplating the enormous strength and agility of bird wings. Their built-in technology was far more efficient than anything humans had ever built; but with all the energy efficiency and aerodynamics they had developed, still large birds needed about 100 kg/m per

minute power in their wings to lift their 10kg bodies. Humans, to lift their 70 kg bodies would need at least 70x9.81x9, or 2 to 3 metric horsepower in their arms-turned-wings. And this he set out to achieve, genetically altering embryos, replacing key developmental genes with bird-like versions.

It turned out to be surprisingly simple. It was sufficient to alter one gene of the homeobox family to obtain the desired improvements in developmental patterning. A simple G to T transversion resulting in the substitution of one key amino acid residue led to bird-like patterning of the first thoracic segments. It was amazing: Man observing macroevolution within his own species, caused by a single point mutation.

Because of its obvious advantages and because it was transmitted by a dominant allele, the flying trait spread rapidly within the human population, and within a few generations its absence was simply considered as one of the many recessive diseases to be screened in prenatal diagnostic tests. Fetuses with the *wingless* trait were eliminated.

### ***Images***

The first baby, however, thus engineered, was a tragic figure. A perfectly beautiful, gentle little girl, called Angela, she strangled her mother in an affectionate embrace. This spelt misfortune, not only for her family, but also for herself. For there was no one to match her mother's unique skill in mixing bird food and mother's milk and dropping it in Angela's gaping round little mouth.

After her mother's death, little Angela began to lose weight, which also affected the strength of her arms. She became listless, guilt-ridden and refused to



fly. In her late 'teens she withdrew into a convent, devoting what was left of her strength to lifting and building what the Sisters could not lift or build. Lonely and forgotten by the world, she died in her early twenties.

Then came a whole generation of birdbabies; and, indeed, they flew like birds. The consequences were manifold.

First of all, the relations between children and parents were gravely affected.

Trouble initially had started earlier, already when the children began to take karate at school. What parents would dare to discipline a Black-Belt kid, after a couple of fathers had been hurtled through the room to end up with broken bones? But then parents, too, took karate lessons, and the situation was stabilized. There was nothing parents could do about the powerful arms grown by the genetically engineered children. They would not dare to go near them in a manner in any way punitive or disciplinary. The educational theories of John Dewey and Doctor Spock enjoyed a worldwide renaissance and kids were kings everywhere: In the world economy, the demand for junk food and toys grew by 100 percent and there was a 50 percent decline in orthodonty, in clothing (except GAP) and in kids' hair cuts. It lasted the span of a few generations, until the first generation of birdbabies became the equally strong parents of an equally strong second generation.

Then a lot of other changes took place.

Obviously, no one in his senses would climb up a tower, walk the length of the diving board to dive into the water, whether pool, lake, or sea -- when all you had to do was to soar skyward, any height and dive down, like the pelicans,

the gulls, after spotting a fish. Precision diving, as a matter of fact became a new Olympic sport. World champions, identifying tiny bright-coloured objects from dizzy heights of two-hundred, three-hundred metres or even more, after the introduction of electronic contact lenses, would dive at break-neck speed, then open their large wings, dressed, for these competitions with feather sleeves iridescent in all colours of the rainbow, take their places in V-shaped formation and perform magnificent ceremonial acrobatic dances mid-air, then soar again, fold their wings and dive into the sea to retrieve the object. For a number of years now, the world championship had been retained by Brazil.

Parachutes and hang-gliding equipment equally went out of business.

While this effected the world economy only marginally, changes in the building industry impacted more seriously. Stairwells, even emergency stairs, were abandoned by the parents of the first generation of birdchildren. Flying in stairwells was strictly forbidden, and those among the birdchildren who had retained a minimum of respect for their weak-armed parents, would comply and use their own arms to swing like monkeys from the railings, dropping from floor to floor. Others, however, would flutter around, screeching merrily, in spite of the warnings of their parents. Inevitably, they would crash against the walls, break their wings, tumble down and get seriously hurt. There even were a few cases of death, and stairwells were forbidden by law.

Person elevators disappeared, after a couple of generations. The only elevators that were retained were those for heavy goods, like furniture. The birdpeople would fly into their apartments directly from outside. There was a house-door, with a landing in front of it, at each floor. Windows, even on the

highest floors, had to be secured against burglars with cast-iron bars, often elaborately decorated, and instead of one doorman downstairs, there now were sixty, in large apartment buildings, one on each floor. New industries flourished as old ones died, with commensurate displacements in the labour markets

By then there was a major impact on traffic patterns and energy consumption.

The century of the automobile was definitely over. It might have been over anyway, because like most things in that perverse 20th century, it had gone completely haywire, *ad absurdum*.

The birdpeople would come freely hopping flocking and flying to the outdoor movie theatre and watch the historic pictures. Those who had bought their tickets in advance would directly fly to unoccupied seats, spotted from the air. When they were walking, their necks -- longer than the necks of 20th century people -- sort of bobbed forward and back. They took their seats. They chatted. Some voices sounded a bit parrotlike, especially those of people with very round beady eyes. That seemed to go together.

First came the advertisements They showed those beautiful cars so luxuriously equipped and capable of speeds of 150 miles an hour; and then came the main feature, *the traffic jam. Rush hour in New York; cars returning to Paris from their 14th July picnic*. Cars simply standing there. A sea of cars, as far as the eye could reach. Bumper to bumper, unable to move an inch. In the summer's heat; in the winter's blizzard. Cars honking despair. People climbing on the roofs of their vehicles to get a glimpse of what to expect. Children beginning to cry and

to fight in the cars' interiors. People passing bottles of liquor to one another between the cars. No policeman could get near anyway.

The audience roared with laughter. They hopped in their chairs, their long arms, bent, in wing skeleton fashion at the elbows, quivering and shivering . They laughed uproariously, with hooting, cackling sounds.

Those 20th century people must have been really primitive, to stupidly crowd surfaces when space was three-dimensional and vast. ....

Who, indeed, would use “cars” in the city! It was so easy just to lift off and go wherever you wanted to go, over roof tops, “the way the crow flies!” And they laughed and laughed, kicking each other in the ribs with their powerful arms craning their necks, to see better and laugh and cackle and hoot louder.

The century of the automobile definitely was over..

The air traffic was affected as well. So were travel agencies.

You wouldn't go to a tourist agency to inquire about plane schedules. You would contact the next Zoological Station and find out when the next flock of birds was to migrate and where. You would apply for eco-tourist co-migration .

Flying long distances without bird guidance was cumbersome for the Birdpeople.

Equipment and supplies could be accommodated in elongated back-packs giving to the body a good aerodynamic shape ending in a fanned feathered tail; but maps and compasses could not be accommodated in flight while arms and hands were wings. Birds had maps and compasses in their brains; birdpeople did not. There was no way of fastening these things in front of them in flight, as it would have increased the drag. Every time they felt unsure of their environs, they

had to land; undo the wing-sleeves, get compass and map out of their backpacks, and then get ready and start again. It was a tremendous waste of time and energy.

Flying with birds was secure and comfortable. Birds knew the weather condition; the directions; the routes; the altitudes, infallibly. The birdpeople would fly in V-formation like the birds, the lead birdperson about 10 metres behind the lead bird, one V within the other, the people formation getting a bit of a lift from the air stream of the bird formation. Eco-tourist co-migration was immensely popular, among young and old, male and female, rich and poor. They had clubs to practice formation flying. They stretched their legs, equipped with small flippers; they craned their necks; they rhythmically beat their colourful wings. They glided, motionless, carried by the wind, like eagles..

When they were ready, they chose their flock, their goal, their route.

When they flew over Italy, Malta, or Jamaica, the two formations would merge in a simple manoeuvre, placing one or two birdpeople (depending on the size of the formations) at the side of each bird: a human shield, preventing the hunters below from shooting at the birds. The birds quickly grasped the benefit of these manoeuvres.

There were other advantages for the birds as well, which they gladly bargained against the small sacrifice of flying a bit slower to enable the clumsier birdpeople to keep up with them during the long days' flight..

When darkness fell, the birds would alight on some suitable forested area, like so many flowers on the green growths, or decorations on Christmas trees. They would prune their feathers and sing their evening songs while the birdpeople would unzip their elongated backpacks, build their camp site, wash their wing-

sleeves hang them in the wind to dry, like panoplies of colourful flags; they would make a fire and distribute the food provisions. They always carried some bird food with them which they would strew out on the grassy ground, and the birds would descend from the trees and walk around between the tents and round the fire, picking the bird food; heads bobbed back and forth as they walked and picked. There was much happy cackling hooting and whistling. The older birdpeople would sit around the fire and sing, and the birds would embroider with their song on the people melodies. Some of the younger birdpeople would use the last rays of daylight, or the moonlight, to swing themselves with their mighty arms up the trees to mingle with the unperturbed birds getting ready for sleep. It was almost as if birds and birdpeople understood each other in this friendly symbiosis.

It was indeed a friendly and harmonious year: the Year of the Pigeon. The tall telephone poles sprouted little twigs and leaves of trees no one even knew; small birds arranged themselves on the wires like musical notes forming simple melodies which the students of the conservatory avidly copied and used as *cantus firmus* for their composition exercises. When they had copied one, they clapped their hands, and the birds flew up: the nightmare of any composer, to see his notes fly up and away from his staff. But it was all in the prevailing spirit of friendliness and harmony, accompanied by much mixed twitter and laughter, and then the birds settled down again and formed another melody.

The information given out by the Zoological Station was: a flock of Canada

Geese, 37 birds strong, was about ready to leave from Yellowknife. It would fly to the Caribbean via Toronto, Miami and Cuba. The migration would take about 20 days. 40 birdpeople would be accepted for the ecotourist co-migration. It was a motley lot of birdpeople who assembled at the appointed hour at the appointed place. After the first practice flight, a strong young woman named Artemis emerged as lead-birdperson. The last one in the formation, sort of barely hanging on, was an odd fellow named Tobias Mindernickel. He did not talk like birdpeople; he did not walk like birdpeople. In a way he looked more like a 20th-Century person, but he was uglier than most. He had one long tooth, on his right side, that emerged from under his upper lip and hung over the lower lip. Often it had food rests sticking to it. It made him liable to drooling. His right eye was paralysed. Apparently he could see with it, but it did not move. It stared at you. He was always unshaven, ill groomed, and his flying lacked style and joy. He did not associate with the rest of the flock, except that he carried on with a young girl named Eve who did not seem to mind, but the affair was frowned upon by birds and birdpeople alike. It just was not done during eco-tourist co-migration when all energy was to be concentrated on the flight.

After carrying on with Eve, in full view of birds and birdpeople, Tobias Mindernickel lazed on the ground near the fire that the others had built in the meantime, one arm under his unwashed head, his knees pulled up. He was smoking a smelly cigar: another thing that was not done and much frowned upon. One of the most majestic of the geese, a twenty-five-pounder, iridescent black-headed with shining white cheeks, walked near him, picking bird food and

emitting chattering sounds of satisfaction between one grain and another.

As though without any forethought or malice, Tobias grabbed the bird by its neck. He threw his cigar into the fire, and with both his long strong arms, undeterred by the beating wings, he twisted the bird's neck, twice, three times around, until the wings drooped and the neck went limp. Then he took a knife, sliced the bird open in front, from the neck to the tail, and pulled the skin with the feathers off the still twitching body. Blood was dripping from the knife, down his hands and arms, and formed a puddle on the grassy ground.

Out of a strong fresh branch, Tobias Mindernickel fashioned himself a spit, poked its sharpened point into the bird's belly and lifted it over the fire.

Full moon in all its splendour must have been the night before. The moon was still bright and full, but waning which always gives it a depressing look, passing storm clouds wiping its aging face. Smoke, with the odour of death, was rising from the birdpeople's camp fire. The logs, leaning on one another at the summit formed a pyramid. Tobias, half naked, holding the goose corpse on his spit weeping drops of fat into the fire. The others were crowding and pressing in a circle around the fire. Their long arms stretched over their heads toward the centre, over the flame, to warm their hands, ready to claw their share from the dead bird's bones. a pyramid of arms and bodies over the pyramid of logs. Shivering in the light of the flickering flame. The sizzling sounds of the dripping fat, and the rushing wind and the drying wing sleeves clattering in the wind was all to be heard.

Not far, on the grassy ground of the clearing, the birds were gathered,



under the same moon. There was silence but through the lack of cackling chattering sounds, the air was charged with some unfathomable tension. The birds were puffed up, their wings shivering, their heads tucked in, like dying birds, under the moon, its aging face wiped by the rushing storm clouds.

It was said that birds sit in judgment, when a bird crime is committed. Ravens, for instance, monogamous like Canada geese, take adultery to be a capital crime. The accused is put to trial, and if convicted, must die. They send him off; he soars, he races into the void, without aim, just away, to survive -- as fast as the wings will bear. After a couple of minutes, the whole flock will rush after him. If they catch up, they will mob him and peck him to death. If he escapes, he may die a slow death of loneliness. Rarely, very rarely will he find another flock ready to accept him for a new life..

The birds were sitting in judgment, but who was the accused?, their quivering wings asked. Just look over there, their body-language suggested, at that twitching pyramid of corruption, turned inward to consumptive decay. Their lecherous greedy outstretched arms: they all are guilty, one for all and all for each.

And they, only they? Their body language whispered. What about us, they hushed. Did we not consort with them, take their food, the protection of their body shield, the warmth of their fires? We all, we all must die, die with the waning moon and the failing warmth and the deepening darkness. Their feathers shivering in the flickering moonlight, puffed balls of dying birds.

The morning dawned, silent as the night. There was no bird song to be heard anywhere. The birdpeople, still belching their ghoulish meal, folding tents, zipping backpacks, fitting their wingsleeves, spreading their mighty wings.

The bird formation headed straight north. Well, the birdpeople surmised. The birds know what they are doing. They know the weather conditions, the directions, the routes, the altitudes, infallibly. It must be a detour they have decided to take to avoid a storm. And the birdpeople fell into formation, V-shaped into the V-shape of the birds, unquestioning.

The day was short, and darkness fell. Northern lights lit the gray sky flashing green, red-rimmed underneath, divine portents of coming disaster; the storm howled against their wavering formation. Snow fell. Ice fell. Wings became heavy and slow. First the birdpeople began to drop from the leaden sky. Ice on the wings. So cold, so benumbed, they went down in peace. 40 casualties. No survivor.

The birds did not last much longer. Ice on the heavy, slowing wings, benumbed, they dropped from the sky, one after the other after the other, to their snowy graves.

### *Epilogue*

There were no more eco-tourist co-migrations after that. The birds were not to be trusted, after all.

Tourist agencies opened their shutters, overgrown by the ivy of time. They plastered their crumbling ceilings, dusted their desks, resumed their business.

A few years later, the first automobiles reappeared on the streets of Tokyo.

The last wilted flowers had been removed from the monument to Niklas

Heinzelmann in San Francisco, where the whole story had started. “Taking evolution into our own hands” had been successful: Almost.. Whither humankind? We will never know.

Ein noch vergessenes großes Geschick!

## **Die Parabel von der Zeitbombe**

Metaphorische Ausdrücke wie "Zeitbombe" oder "biologisches Uhrwerk" hat es lang gegeben. Zu einem gewissen Zeitpunkt aber waren diese Dinge starke Wirklichkeit und bestimmten das Schicksal ganzer Zivilisationen. Wir können die Ereignisse aus den noch existierenden Heften der Monatszeitschrift *Bulletin der Psychophysiker* aus dem späten 23. ~~und~~ frühem 24. Jahrhundert zusammenstücken. Eine ganze Menge von Information muss am Internet zu haben gewesen sein -- aber leider ist das alles verloren gegangen, wie auch, höchst unglücklicherweise, die Autobiographie von Christiaan Astone, zweifellos der bedeutendste Gelehrte des 23. Jahrhunderts. Das Buch ist während der furchterlichen Zerstörungen, die damals stattfanden, abhanden gekommen. Zum Glück wurden Auszüge daraus, wie auch eine ausführliche Buchbesprechung und eine Reihe von Artikeln aus den letzten Jahren von Astones Leben, in den Archiven des *Bulletin* entdeckt.

Astone muss eine Art von Renaissance Genie gewesen sein. Sein Geist erstreckte sich von der Astrophysik und Astrologie über Mikrobiologie und Genetik bis zur Psychophysik und Alchemie. Er verstand auch viel von Musik, mit einer besondern Vorliebe für die Sphärenmusik, der er einen Tempel erbaute, nach seiner Rückkehr von einer Weltraumfahrt, die ihn dreissig Jahre jünger als seine auf der Erde gebliebenen Zeitgenossen gelassen hatte -- wohl aber auch dreissig Jahre weiser und sonderbarer.

Der Tempel schloss einen vollkommen runden, leeren Raum ein, mit befensterten Wänden und von einer Kuppel überwölbt. Das Gebäude ist

wunderbar erhalten, wohl dank des Neuen Stoffes, Aeternit, aus dem es gebaut war, und der ewig andauernden Qualitaet der glitzernden Mosaiksteinchen, aus synthetischem Diamand gehauen, die Wand und Kuppel schmuecken. Die Wand, ringsum, ist mit einer grossen Reproduktion von Picassos *Guernica* bedeckt; die Kuppel zeigt, auf einem himmelblauen Unterton, Friedens-Symbole aller Zeitalter: Tauben mit Olivenzweigen, Kreuze und Kreise, Calumeten, mit Adlerfedern oder glaenzendem Frauenhaar verziert; die Kennzeichen des Voelkerbundes und der Vereinten Nationen. Aussen, gegen Westen und auf das Meer zu, ist ein Wasserbassin an die Mauer gebaut. Ein staendiger Wasserstrom ergiesst sich in das Becken, mit dessen bewegter Oberflaeche die Sonne spielt. Dies kleine Gewoge spiegelt sich an den Waenden und an der Decke innen im Tempel und scheint die Mosaik Bildnisse mit Bewegung und Leben zu beseelen. Immer neue Musik indessen kommt aus den an der Ostwand befestigten Orgelpfeifen, durch die der Wind sanft weht oder der Sturm heult.

Astone muss lange Stunden im Frieden dieses zeitlosen Tempels verbracht haben.

Von 2251, dem Jahr seiner Rueckkehr vom Weltraum, bis zu seinem Tod anfangs des naechsten Jahrhunderts, war Christian Astone Meister der Uhrmachergilde, die, so scheint es, kurz danach gesetzlich verboten wurde und einer Hexenjagt zum Opfer fiel.

Die Wurzeln von Astones Lebenswerk -- in 2275 bekam er den Nobel Preis fuer die Erfindung der Biologischen Uhr -- greifen auf sein fruehes Familienleben aud seine ersten Kindheitseindruecke zurueck, wie man aus den noch verfuegbaren Fragmenten seiner Autobiographie ersehen kann.

Sein Vater, ~~das~~ <sup>der</sup> aeltere Astone war ein beruehmter Psychophysiker, dessen besonderes Interesse sich auf die Erforschung der Telepathie und Telekinese richtete: auf die Art und Kraft ihrer Strahlung, die weder Zeit noch Raum kannte. Er studierte die Macht der Hypnose und des Voodoo, das wechselseitige Einvernehmen von identischen Zwillingen ueber weite Entfernungen, den unverkennbaren Einfluss fanatischer Spieler auf das Drehen des Gluecksrades, die Eingriffe von Sternen und Planeten in menschliches Schicksal, und Mitteilungsverbindungen zwischen Bodenpersonal und Kosmonauten im Fernen Weltraum.

Seine Mutter, eine Technikerin in der Perlenzucht, nahm den kleinen Christiaan oft mit in ihr luftgekuehltes Laboratorium, wo sie, unter den Reihen anderer weissgekleideter Techniker mit ihren an Brillen befestigten Mikroskopen, winzige Kernchen in die jungen Austern einpflanzte. Dabei wiesen sie eine Praezision, Staetigkeit und Geduld auf, die einer Mischung von Uhrmacher und Chirurgen entsprach. "Dies sind Lebewesen," erklaerte die Mutter, "so wie ich und Du, nur viel empfindlicher sind sie als wir. Wenn ich dir weh tue, dann sagst du 'autsch,' und machst weiter. Wenn ich diesen kleinen Austernkindern ein bisschen weh tue, beim Einpflanzen des Kernchen, dann stirbt es. Die sterben gleich nur bloss so, und dann gibts keine Perlen."

Astone's erste Erinnerung, wie aus den Bruchstuecken seiner Autobiographie hervorgeht, stammt aus der Zeit als er erst acht Monate alt war.

Auf dem Treppenabsatz, zwischen der Diele wo er mit seinen Eltern fuer ein Stueendchen spielen durfte, und dem ersten Stock, wohin man ihn zum Schlafen trug, da stand eine grosse alte Uhr. Er war gebannt von der Bewegung

des Pendels durch die unendliche Zeit, dem ebenmaessigen Rhythmus des Tick-tack, endlos. "Tick-tack" war in der Tat das erste Wort, das sich aus den gurgelnden lallenden Lauten seiner Babylippen entformte.

Eines Abends musste jemand vergessen haben, die alte Uhr aufzuziehen, und als man ihn vorbei trug, bemerkte er, dass das Pendel still lag. Ein Gefuehl des Entsetzens kam ueber ihn, das er zeitlebens nicht vergessen konnte. Er schrie. Sein Atem stockte. Er schrie bis sein Gesicht blau wurde. Er strampelte mit den Fuessen, im Versuch sich den Armen der Amme zu entwenden. Diese, hilf- und ratlos, eilte mit ihm ins Kinderzimmer, schuettelte ihn, hielt ihn an den Beinen, Kopf nach unten, und wusch sein Gesicht mit kaltem Wasser, bis er endlich wieder zu atmen begann. "Tick-tack" wimmerte er flehend, und brach erneut in verzweifeltes Schluchzen aus.

Die Uhr wurde aufgezogen, und Christiaan's Abend endete in Erschoepfung und Frieden.

Die naechste Eipsode, die sich in seiner Autobiographie findet, geht auf die Zeit zurueck als er ein Jahr alt war, und auch dies Erlebnis blieb unverloeschlich in seinem Gedaechtnis. Es handelte sich um den Tod seiner Grossmutter, irgendwo weit weg. Obwohl er noch nicht sprechen konnte, verstand er doch schon viel von dem was er hoerte. Und er lauschte den trauervollen Erwachsenen. *Wie schade...was fuer ein Verlust...die Welt ohne sie...die Bestattung wird...* Irgendwie brachte dies das bewegungslose Pendel wieder in Erinnerung. Sein inneres Auge sah seine Lieblingspuppenfigur, hin und her pendelnd, tick-tack, und dann hoerte sie auf zu pendeln und brach auf dem Boden zusammen. Das war seine Vorstellung von Bewegung und Zeit und Tod,

als er ein Jahr alt und noch sprachlos war.

Die naechsten 15 Jahre verliefen ziemlich eintoenig. In der Schule zeichnete er sich nicht gerade aus. Aber sein Elternhaus bewirtete viele der bedeutendsten Wissenschaftler seiner Zeit, und wie er heranwuchs folgte er gebannt ihren Unterhaltungen, ueber Raum und Zeit und Chaos und Ungewissheit, ueber Wissenschaft und Religionen alter Zeiten, ueber Astrologie, die okkulten Zusammenhaenge zwischen irdischen und planetaren Geschehnissen; auch ein anderes, aeusserst schwieriges Problem bewegte die Unterhaltung der Besucher wie auch sein eigenes Gehirn, naemlich die Beziehung zwischen Gemeinschaftsschicksal und Einzelschicksal. Wenn Krieg, Pest oder Buergeraufstaende das Land verheerten, dann koennte das wohl manches Einzelschicksal aus dem Kurs heben. Doch Gemeinschaftsschicksal war wohl ebenso bestimmt wie das Einzelschickal, vom Gesetz der zweifachen Ursachen: der mehr zufaelligen irdischen, und der in den Sternen festgelegten. Diese Ursachen bestimmten das Schicksal ganzer Nationen, die, genau genommen, ja nur Individuen im Aggregat waren.

Als er sechzehn Jahre alt war, schrieb sich Christiaan Astone als Lehrling bei der Uhrmachergilde ein -- eine reiche und maechtige Gilde, die das Land mit einer betraechtlichen Anzahl von Minister-Praesidenten und Staats-Praesidenten versorgte. Das Gildehaus war eines der praechtigsten Palais am Ufer des Flusses, der die Stadt durchzog. Die Eingangshalle, drei Stockwerke hoch, bot eine Kopie von Foucaults Pendulum zur Schau, das die taegliche Bewegung der Erde durch die Drehung der Oszillations-ebene des frei haengenden, langen, schweren Pendels demonstrierte. Hinter dem Pendel, war das ganze erste Stockwerk von



einem wunderbaren Uhrenmuseum eingenommen. Da war eine fruehe, Aegyptische Schattenuhr mit ihrem Obelisk; da waren Wasseruhren -- Steingefaesse mit abfallenden Seiten, die es dem Wasser gestattet, konstant herunterzutropfen; da war eine Replique von Andronikos's Turm der Winde. Und vom Fernen Osten kamen mechanische astronomisch/astrologische Uhren und Wasseruhren, die die verschiedensten Werke antrieben, astronomische Phaenome darzustellen. In jeder Kultur gab es Menschen, die ihr Leben der Messung und Aufzeichnung des Zeitvergehens widmeten.

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Der zweite Stock behaute Versammlungsraeume und einen Feinschmecker-Speisesahl: die feinste Kueche in der Stadt. Wochendes war der Sahl offen fuer das Publikum, wohingegen sich Dienstag abends jehweils eine Gruppe von 20 bis 30 der bedeutendsten Geister versammelte, Gildemitglieder und deren Gaeste. Nach einem herzhaften Mal, das gelegentlich der Kochkunst eines der Mitglieder zu verdanken war, und dem reichlichen Genuss erlesener Weine, kam man dann auf gemeinsame Probleme zu sprechen, atomische Uhren, zum Beispiel, oder den atomischen Cesium-Mechanismus. Man diskutierte wie man die fortgeschrittensten primaeren Cesium standards, die Zeit auf die Geneuigkeit von ungefaehr einem Milionstel einer Sekunde pro Jahr hielten, weiter verbessern koennte; denn das war noch nicht gut genug. Aber man redete auch viel ueber Kunst und Musik und Feste und Prozessionen, oder ueber Maerkte und Preise, ueber Wirtschaft und Politik und die Rolle und Verantwortung der Gilde auf diesen Gebieten und im Bezug auf die Ausbildung von Lehrlingen, und die Altersversicherung der Mitglieder. Der junge Christiaan tat seine Arbeit gern und gut und war froh in der Gesellschaft der Aelteren, denen

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er verehrungsvoll zuhoerte.

Er war zwanzig Jahre alt, als seine Mutter starb, und, ganz abgesehen von der tiefen Melancholie des Ereignisses, dem Gefuehl des unersetzlichen Verlustes, des Verlorenseins, das es in ihm erzeugte, gab es ihm noch einen unausloeschlichen Schock. Genau in dem Moment, in dem sie hinueberging, machte das Pendel der grossen Standuhr auf dem Treppenabsatz Halt. Christiaan brachte es wieder in Schwung, aber fuer zwei ganze Trauerwochen stockte das Pendel wieder, genau zu dem Zeitpunkt. Ursache und Folge, Folge und Ursache, fragte sich Christiaan Astone. War sie gestorben, weil das Pendel still stand, oder kam das Pendel zum Stillstand, weil sie starb? Was war Ursache, was war Folge? Konnten Ursache und Folge vertauscht werden?

Der Gedanke nagte an seinem Hirn, wie ein Wurm, trieb ihn, bis er ihn in den dunkelsten Abgrund der Psychophysik stiess.

Da war ein Gildemitglied -- seinen Namen hat die Geschichte vergessen -- den niemand so recht moechte ~~vor~~wegen seines egoistischen und unfreundlichen Benehmens. Astone schnitt nun ein Abbild dieses Mannes aus, von einem der vielen Gruppenaufnahmen anlaesslich von Gilde-Festlichkeiten, die er in seinen Archiven aufhob, und befestigte das Bild hinter dem Pendel der grossen Uhr. Dort liess er es fuer drei Tage und drei Naechte. Jedesmal, wenn er an der Uhr vorbeiging, fing sein Herz an, lauter zu schlagen und Todesgedanken kamen ueber ihn.

Am vierten Tag, gegen vier Uhr morgens erhob er sich von seiem Bett der Qual und Schlaflosigkeit, in kalten Schweiss gebadet, und naehrte sich der grossen Uhr um das Unsaegliche zu vollbringen. *Requiem aeternam*, murmelte er,

in dem er das schwere Pendel, das sich dem Druck seiner zitternen Finger zu widersetzn schien, zum halten brachte. *Requiem aeternam*, und das Dunkel seines Denkens ergoss sich ueber seine Augen, und er musste sich am Treppengelaender halten, um nicht zu fallen, wie alle Energie von ihm wich. Dann nahm er das Bild weg hinter dem Pendel und warf es in den Kamin.

Spaeter am Morgen erfuhr er, was er bereits wusste: der Mann war einem Herzschlag erlegen, um vier Uhr morgens.

Astone wurde schwer krank Sein Leben hing an einem Faden.

Er sprach mit niemanden ueber seine grauenvolle Erfindung. Erst fuenzig Jahre spaeter, in seiner Autobiographie, erfuhr man davon.

Als er sich von seiner Krankheit erholt hatte, schrieb er sich ein fuer die Weltraumfahrt. Seine Mission sollte sechs Monate dauern. Seine Arbeit betand aus Zeitmessungen und Beobachtungen ueber das Verhaeltnis zwischen Geschwindigkeit, Zeit, und Entfernung von der Erde. Solche Messungen waren von grundlegender Wichtigkeit fuer Arbeiten in angewandeter Astronomie. Froh im Herzen unterzeichnete er seinen Vertrag, einschliesslich eines Paragraphen, der bestaetigte, dass er sich voll und ganz im Klaren darueber war, dass dreissig Jahre vergangen sein wuerden zum Zeitpunkt seiner Rueckkehr auf die Erde. Das genau war der hiatus in seinem Leben, den er brauchte, nach den schrecklichen Ereignisses des letztes Jahres.

Wiederum war es eine Zeit furchtbarer Kriege, Umwaelzungen, und Seuchen, als er vom Weltraum zurueckkam. Kultur kaempfte gegen Kultur, Handelsblock gegen Handelsblock; die Armen gegen die Reichen, die Unterdrueckten gegen die Unterdruecker; Wahnsinnige gegen sich selbst und die

Welt; Kontinent gegen Kontinent. Sinnlose Zerstörung, Massenmorde, und unsagbares menschliches Elend herrschten allerorts.

Schweren Herzens nahm er seine Arbeit und seinen Platz in der Gilde wieder auf, und in kurzer Zeit erklomm er den hohen Posten des Gildemeisters.

Wichtige Entwicklungen in Wissenschaft und Technologie hatten während seiner dreissigjährigen Abwesenheit stattgefunden. Eine Tendenz, mechanische und chemische Prozesse mit biologischen zu ersetzen war überall spürbar -- genetisch modifizierte Mikroben, Enzyme, Zellkulturen leisteten bessere Dienste als anorganisches Material und fanden unzählige Anwendungen, in der Vertilgung von Pollution, der Verarbeitung von Metallen aus Erzen, und Dutzenden von anderen Prozessen, gleich ob zu friedlichen oder kriegerischen Zwecken. Bis jetzt aber hatte noch niemand daran gedacht, biologische Prozesse ins Uhrmacherhandwerk zu bringen, und dieser Gedanke nun war es, der Christiaan Astones Genie gefangen hielt. Seine frühen Assoziationen zwischen Leben und dem Hin und Her des Pendels wallten auf in seinem Geist, nach all den Jahren, und er begann Versuche mit Zellkulturen, schlagende Herzen *in vitro* zu reproduzieren, grosse Herzen oder kleine, sogar mikroskopische Herzen. Er bettete sie in eine Flüssigkeit, und machte sie unsterblich. In Ewigkeit würden sie Uhren, gross oder klein, in Bewegung halten. Diese Zeitmesser waren ungeheuer sensitiv; auch schienen sie sich untereinander zu verständigen. Man konnte sie mit einem künstlichen Hirn regulieren. Es war genug, nur eine einzige zu regulieren. War sie gross genug, dann würden alle anderen, gross oder klein, in den Rhythmus ihres Herzschlags fallen.

Aber ach, nach dreissig Jahren quälte sich Christiaan Astone noch

immer, oder von neuem, mit seinem Schuldbewusstsein, seinem schlechten Gewissen, seinem Geheimnis des Mordes, den er an seinem Gildegenossen begangen hatte.

Und ach, er war sich bewusst, dass, genau wie die Meteorologie Klima und Klimaveränderung erst nur registrierte, dann aber zu bestimmen begann, so konnten Chronometer sich entwickeln von der Messung zur Bestimmung der Zeit. Sie konnten Zeit verkürzen oder dehnen, so wie er selbst das auf seiner Weltraumfahrt erfahren hatte.

Und, ach, er wusste um die Macht seiner biologischen Uhren.

Als er den Gipfel seines Ruhmes erreicht hatte -- gerade hatte er den Nobel Preis erhalten -- versuchte er sein gequältes Gewissen zu beschwichtigen, indem er dem Plan, der unwiderstehlich suendig in ihm aufdrang, einen humanitäre Anstrich gab.

Der Brief, den er an den Präsidenten der Republik richtete, begann mit dem Ausdruck seiner eigenen Verzweiflung angesichts des fortdauernden unsinnigen Kriegsgemetzel. Hunderte von Millionen von Leben von Männern, Frauen und Kindern waren geopfert worden am Altar des *Moloch horridus* des endlosen Krieges. Ganze Städte waren dem Boden gleichgemacht. Und das ausgemergelte Antlitz des Hungers erhob sich über den Ruinen. Unbekannte und unheilbare Krankheiten machten den Restbevölkerungen, die noch der Gewalt der massenmordenden Waffen entgangen waren, den Garau. Selbst die Natur war vergiftet. Und warum? Wer hatte etwas davon? Das Irrationale herrschte uneingeschränkt.

Die Wissenschaft, so meinte Christiaan Astone in seinem Brief an den

Präsidenten, kenne andere Mittel. Er vertraue ihm an, dass er eine Geheimwaffe besaesse, mittels derer dieser Krieg in einem einzigen Tag beendet werden koenne, ohne dass auch nur ein Tropfen Blut vergossen oder ein einziges Haus zerstoert wurde. "Die Zeitbombe"; so nannte er seine Geheimwaffe. Die Biologische Uhr, fuer deren Entwicklung er den Nobel Preis erhalten hatte, konnte aktiv wirken auf die Zeit. Sie konnte die Zeit von zwei Generationen in einen Tag, sogar in eine Sekunde draengen, wenn sie gross genug war. Niemand wuerde zu leiden haben. Die Menschen wuerden es gar nicht merken, dass sie ihr Leben in verkuerzter Zeit auslebten. Man denke nur an gewisse Fliegen, *ephemeroptera*, die Geburt, Reife, Lieben und Werben, Zeugung, Verfall und Tod, alles in einem einzigen Tag durchleben, der so lang und voll fuer sie ist wie acht Jahrzehnte es fuer uns sein moegen.

Eines Morgens wuerden wir aufwachen, und die Menschengeneration die uns solche Schwierigkeiten bereitet hatte, im Handelsblock jenseits des Meeres, wuerde nicht mehr da sein. Eine andere Generation wuerde ihren Platz genommen haben, mit ganz anderen Interessen und Perspektiven, die uns nicht zu Tod und Vernichtung herausforderten. Sollte Konkurrenz, in kleinem Ausmass, wieder in Erscheinung treten, so koennte man eventuell die Zeit der Konkurrenten taktisch etwas verlangsamen, so dass sie ihre Konkurrenzfaehigkeit einbuessten.

Christiaan Astone koenne eine Biologische Uhr von der erforderlichen Groesse und Staerke innerhalb eines Jahres entwickeln, gesetzt er haette angemessene Laboratorien und ein Budget von einer Miliarde Dollars zur Verfuegung. Die Labors sollten in einem geheimen Platz, fern von der Neugier

der Bevoelkerung, etabliert werden.

Er fuehlte, es sei seine Pflicht, dem Praesidenten dies Wissen zu eroeffnen, im Dienste der Wissenschaft und des Fortschritts, im Dienste des Vaterlandes und der ganzen leidenden Menschheit. Er sei bereit aufs Capitol zu kommen, um die Einzelheiten des Plans mit des Praesidenten Experten zu besprechen.

Eine Versuchszeitbombe wurde im Jahr 2277 auf eine Gruppe Afrikanischer Staaten losgelassen.

Die Folgen waren verheerend. Armut, Hungersnot und Pest hatten sich blitzartig ausgebreitet. Verhungerte Massen schlachteten einander ab. Regierung gab es keine mehr. Die Vereinten Nationen mussten mit Nothilfe eingreifen, wobei sie grossmuetig mit Geld und Mannschaften unterstuetzt wurden, von dem schuldbewussten Staat, der die Geheimwaffe entsandt hatte. Die ganze Region musste besetzt und wieder in eine Kolonie verwandelt werden, wenn auch nur ein Hauch von Gesetz und Ordnung wiederhergestellt werden sollte.

Geruechte wurden laut in allen Erdteilen, und langsam aber sicher kam die Geschichte der Zeitbombe an den Tag. Da die ganze Industriewelt mit Biologischen Uhren arbeitete, geschah, was geschehen musste: Ein Rennen began groessere und immer noch groessere, staerkere und immer noch staerkere Biologische Uhren zu bauen.

Man war jedoch geteilter Meinung in dieser Sache. Auf der einen Seite war die Schule der Chronopolitischen Realisten, gefuehrt von den Professoren Coen und Abendroth an der Universitaet von Neu Oxford. Diese Schule machte

sich stark zugunsten der Zeitbomben-Technologie, in der man die Oberhand behalten muesse An Hand von Computer Modellen wollten sie auch beweisen, dass kleine taktische, praeventive, zeitverlangsamende Angriffe auf Konkurrenten von groesster Nuetzlichkeit fuer die Wirtschaft seien. Auf der anderen Seite standen Wissenschaftler, unter der Fuehrung des *Bulletin*, in dem eine Serie von Artikeln eines bitterlich enttaeuschten und bereuerten Christiaan Astone erschienen. Diese Gruppe draengte zum sofortigen Verbot der Anwendung Biologischer Uhren fuer Kriegszwecke und forderte kontrollierte Zeitbomben - Entwaffnung. Sie betonten die teuflische Unmoral der Anwendung von Zeitbomben. Astone selber wand sich den qualvollen Weg hindurch, von seiner frueheren Ueberzeugung, dass Zeitbomben die humanitaerste Methode seien, Kriege zu gewinnen und zu beenden, zur entsetzlichen Erkenntnis, dass, ganze Generationen in einem Tag loszuwerden wohl doch die massivste Form von Genocidium, die man sich vorstellen konnte, bedeuten musste. Alles hing natuerlich davon ab, was man unter "Zeit" verstand. Wenn "Zeit" nichts als eine Illusion war, und sterbliches Sein und Ewigkeit waren ein und das selbe, dann waere seine humanitaere Interpretation wohl zu verteidigen gewesen. Aber waehrend er sich Schritt fuer Schritt zur Ueberzeugung durchrang, dass das "Sein" der Philosophen und die "Zeit" identisch waren -- wie er begann, Bewegungs- und Veraenderungswerte fuer statische Werte einzusetzen, sah er sich mehr and mehr zur Genocidium Interpretation gezwungen. Er predigte und warnte, wie ein Prophet aus alten Zeiten.

für die

benutzen

Genozid

Auf einer mehr pragmatischen Ebene unterstrich er, dass Zeitbomben nicht nur moralisch verwerflich seien, sondern auch noch ein hohes Risiko

hochriskantes



Unternehmen darstellten, mit voellig unvorhersagbaren Folgen. Wars in den Sternen geschrieben, dass die anzugreifende Bevoelkerung an Wissenschaft, Reichtum und Macht gewinnen sollte, dann wuerde die Zeitbombe diese Entwicklung nur beschleunigen, und der Angreifer wuerde vom Angegriffenen sehr ploetzlich technologisch ueberholt werden.

Die Vereinten Nationen stellten eine Sonderkommission auf die Beine, mit dem Ziel einer Einigung ueber das Verbot von Zeitbomben, einen Zeitplan fuer die Begrenzung von Groesse und Staerke Biologischer Uhren und ihre Anwendung zu ausschliesslich friedlichen Zwecken. Die Kommission sass fuer hundert Jahre, waehrend derer das Uhren-Rennen unbehindert weiter raste.

Dann aber geschah etwas, was niemand sich jeh haette vorstellen koennen. War es natuerlichen Ursachen zuzuschreiben oder war es ein Akt des Terrorismus? Niemand wird es jeh erfahren. Alles was wir wissen ist, dass die Uhren von einem Virus angegriffen wurden, und dass die Epidemie sich rasend in der ganzen Indusstriewelt ausbreitete. Infizierte Uhren manifestierten ein willkuerliches, unkontrollierbares Benehmen, und dann starben sie. Ob sie, waehrend ihrer kurzen Krankheit auch noch Zeitbeschleunigung oder -verlangsamung verursachten, konnte man schwer sagen, im allgemeinen Chaos das ausgebrochen war. Verkehrs und Kommunikations Zeitplaene, Hospitaeler und Geschaeftsplaene, Schulplaene und Unterhaltusprogramme -- alles brach zusammen Die technischen Mittel fehlten, zur sofortigen Herstellung mechanischer Uhren. Man versuchte wenigstens eine kleine Anzahl solcher obsoleten Uhren aus Entwicklungslaendern einzufuehren, aber der vorhandene Bestand war gaenzlich unzuLaenglich, und die paar Uhren, die zu haben waren,

verschwanden schnell in den Häusern von hohen Beamten und Partei Bonzen. —

Aber das war noch nicht das Allerschlimmste.

Die Nachricht kam von Lissabon, dass der Virus von den Uhren auf Menschen übertragbar war, 6 Personen, einschliesslich zweier Kinder, waren bereits daran gestorben. Dies nun hatte eine Entscheidung der General

— Versammlung der Vereinten Nationen zur Folge, der gemäss alle biologischen Uhren zu vernichten und sicher zu versorgen waren, um weitere Ansteckungen von Menschen zu verhindern. —

Die Vernichtung und Versorgung von Hunderten von Millionen von Biologischen Uhren war keine Kleinigkeit, und am Ende stellte sich heraus, es war voellig nutzlos. Die Uhren zu verbrennen brachte keine Lösung: die hyperthermophilen Viren überlebten und gediehen. Man begrub die Uhren tief in verlassenem Minenschäften, aber da war ja nur Platz fuer einen ganz kleinen Teil der Uhren. Sie im Meer zu versenken, half auch nichts. Wind und Wellen trugen die Viren landwaerts und sie infizierten dichte Kuestenbevoelkerungen. Uhren, die man in den Weltraum schoss, regneten auf die Erde nieder. Sie verbrannten in der Atmosphaere, aber die Viren kamen zur Erde zuruck mit verstaerkten Kraefte. Ansteckung von Mensch zu Mensch beschleunigte sich geometrisch, waehrend Versuche, einen Impfstoff zu entwickeln, nicht weiter kamen.

Haeuser, wo noch gesunde Menschen wohnten, wurden zu Festungen und die Bewohner solcher Haeuser wurden befugt und ermutigt, jeden niederzuschliessen, der sich naeherte, gleich ob Fremder oder Nachbar.. Faulende Leichen bedeckten die Strassen.

Das war das Ende einer grossen Zivilisation. Nur Voelker, die zu arm

waren/jemals Biologische Uhren eingefuehrt zu haben, sollten ueberleben und gedeihen.