

Death

Will we conquer death? • Do we want
to conquer death?

In the end death is another disappointment.
There's no arc of light, no tunnel with fire. Instead of that
the knowledge: your handful of life is emptying itself
into the big, general ocean. You disappear, like a drop of blood
in the cold sea, and after that you swim through all
moments that ever were, as water swims through water.

Max Philipps

I'm sorry life is very short. But it would be
really awful if it were too long.

Peter Ustinov

We all have to die, or better, we have been lucky.
Most people never die because they are never born.

Richard Dawkins

David – January 2080

The Smartcab skidded a little on the film of hoar frost that had formed overnight on the streets, but the gyrostats had a grip on the problem in milliseconds. They drove past domed halls, inside which the robots generated a green meandering light, overwhelmed by huge signs: »Thermoplast«, »SmartLiving«, »Hypercar«, »NanoWorld«. And then came »Compounds«, long rows of organo-habitats on stilts, whose metallurgical shell glowed orange with the first light of dawn.

David was tired and awake at the same time, as rarely before in his eighty years of life. Next to him sat Cayarabola, his granddaughter, dressed with a tight combination in thermoplast, which suited her brilliantly. With her coppery colouring and frizzy hair, she looked like a bronze sculpture. Her slim forearms

wore African gold rings, almost to the elbow. She smiled at him encouragingly and asked:

»How many days have you lived by today?«

He glanced at the device on his wrist, which had apparently heard the question. »Lifetime/Days« was blinking on the display, and under that the relevant number.

»Twenty-nine thousand three hundred and twelve. Do you count everything in days, you young people?«

She made a snappy gesture with her hand. »Twenty-nine thousand is –« she used one of the trendy words he couldn't understand, like »green« or »cool«, which was now used as a positive epithet. »I can only offer fifteen thousand.«

»That's half way to wisdom,« he said ironically.

»In any case, enough to make a decision. What I always wanted to ask you: how old do you feel now? I mean: really?«

»That's what's so strange«, answered David after a short hesitation. »That you always feel like a child inside. Eighteen. I'm eighteen, today more than ever. There may be a touch of 28 there as well. While your body around you is going on its way to decay,« – in a resigned gesture he raised his hands, which showed the wrinkles and arteries of advanced age – »you stay in the same neurons as yesterday. The human spirit refuses to really notice the decline. It must have its own reasons.«

Cayarabola smiled almost invisibly and then said in her hasty, French-accented voice: »Evolutionary brainprinting!«

»Evolutionary!«, groaned David. »I piss on evolution and its rotten tricks!«

»Five minutes to the destination,« murmured the automatic driver. They were crossing a big, continuous wood. Neo-fur trees, an impenetrable coppice. The cab slowed down and they turned into a four-lane driveway of greenish, glowing asphalt, which curved gently up a slope.

And then they saw the symbol. Big and red, it seemed to hover over the wood. A Pharaonic Osiris eye. The Thanatos Eye.

The cab passed through a lock with a microwave ID check, where their bodies were scanned and identified. They stopped in front of a yellow, luminous atrium, that was something like a grand hotel of former times. The swing doors hummed, they got out. There was a melody in the air that reminded him of a long forgotten longing of childhood. Christmas music, which they played everywhere these days, at all seasons of the year.

»Welcome to Thanatos«, said the overlarge Asian girl behind the counter, »I see you have found your way to us, and I wish you happiness and immortality.«

»Certainly«, said Cayarabola. »I would like a vitro-telomerase extension. My grandfather is with me – as ... as my BrainCoach.«

»Of course«, said the Asian and smiled. A little later they were sitting on soft armchairs in an oval room, one of whose walls was taken up with a softscreen. The screen showed the earth from the stream of a geostationary satellite. Small crosses marked the Thanatos locations, which by now had spread all over the planet. Above blinked the current stock-rate of the company, which created scandals and rumours all over the world. A gigantic stock-rate ...

»Thank you for your trust«, said Dr Petrowich, whose face had Eurasian features. »I must first point out that the operations we are considering here may still be illegal in some jurisdictions on earth, and that the legal situation changes very quickly ...«

They said nothing.

»First let me give you a brief introduction to our philosophy«, Petrowich continued. »As you are no doubt aware, Thanatos was founded in 2020 by the immortalist Steven P. Robertson. Steve, who is still on our advisory board at the age of 98 and is as forceful and crazy as ever«, – the doctor smiled as if he were telling a very old joke – »had a simple vision, which is still our motto today: *shift the boundaries*.«

On the screen there now turned a long, spiral form, the structure of life.

»Thanatos approaches its task on several levels. We are working on life-extending drugs, but we are also working with many governments on the matter of general life extension – of course that also has a lot of social aspects: nutrition, drinking water, medical care and so on. Not only the best genetic technicians commit to us but also the best LifeCounsellors, FoodEngineers and infra-structurists.«

Now on the screen individual sections of DNA were lit up in red, removed from the total structure and replaced.

»But now to the offer that brought you to us. Today we are able to offer you an IVF exchange of your embryonal telomers on the roughly 150 genes that determine your general biological life expectancy. This raises the expected *real* lifespan of our child to 130 years. As a result, when your child is 50 years old it will have a biological age of 35 years. If we were 80, it would be just over fifty. We can guarantee you these values according to the age coding standards, which is a part of the contract.«

There was a pause until Cayarabola asked:

»So why is this method called *uteral* telomer extension?«

»Because we also have to modify your uteral function when you carry the child, or at least that of your surrogate mother«, answered Petrowich patiently. »It has been shown that the interaction of DNA between embryo and mother can decode the extended telomerase section during a certain phase of growth. We therefore also have to modify the messenger substances that you exchange with your child during pregnancy. We do that with »gene tubes«, nanotechnical enzyme carriers.«

»And my child? I mean – later, when it wants to give birth to children itself?«

»Aha.« Petrowich grinned. »You have already decided. It is to be a girl.«

»Right«, Cayarabola admitted.

»80 per cent of our customers want girls«, said Petrowich drily. »When your daughter later wants children of her own she can decide if she wants to activate the extension or not. It can be done with a simple enzyme carrier.«

For some time nobody spoke, but then David asked:

»How rapid is progress in this field?«

Petrowich looked at him acutely and nodded. »You are asking an important question, which most of our customers ask. If 130 years are possible today, why not 150 next year and 180 the year after that? Which means you would be investing in a way in an obsolescent technology with your child. I can put your mind at rest. The 130-year telo-model will be the standard with which we will be working during the coming century. Thanatos has legally committed itself to that.«

»And why?«

»For a very simple reason.« Petrowich suddenly seemed tired. »Because we need a certain number of T-Babys, as we call them in order to make what we have in front of us able to adapt culturally.«

»You mean that humanity needs some time to get used to people with extended lives?«

»Isn't that perfectly obvious?« Petrowich made a weary gesture. »Would you want to be *alone*, if you were life-extended? Or just a prototype?«

»Man is mortal«, Petrowich continued after a short pause while images of evolution ran on the screen, the dance of organic forms merging into ever more complex structures. »Even with the latest techniques that is still the case. But perhaps we can change death from an *extinction* to a *fading*.«

»You're a Romantic«, said David sarcastically.

»Our model is the old Celtic *Sidhe*. They believed you could simply move in to the Sidhe once you were old and wise enough, and you could move in *both* directions. At certain magical trees, on islands or in caves there were certain transformation points. From there you can enter a world that looks very much like normal reality, except, for example, all horses have wings and all women are princesses.« He smiled with perfectly white teeth.

For a moment David suffered the dizziness of fear. He wondered if he should take one of the shots that he always had in his pocket because of the panic attacks that came more frequently now he was old. Beautiful, absolutely pure morphine, legal from the age of 80. But then he decided not to.

The scenario: life-extension and the new death culture

The age ahead of us is the age of the genome and life sciences. Astonished and sometimes bewildered, we understand how much we do *not* yet understand: how proteins of enormous complexity are created by the code of life, and from them living, growing, dying cells with all their interactions and types of cooperation; how the individual sequences in the genome are switched on and off during growth; the roles played in all that by enzymes, message substances, RNA, free radicals and other substances. In proteomics and molecular biology, exogenetics and brain research – the core areas of the new »life sciences« – we are just at the beginning of a long journey to a fundamental understanding of what life is.

But we *will* understand »it« in this century, down to the very foundations.

The first life-extending techniques are already on the way. Fruitflies treated by the telomerase specialist Michel Rose, live three times as long as their natural lifespan, and do so *without* any loss of life quality. Fruitflies and mice are not human beings, but very slowly the puzzle is being pieced together. Among 100-year-olds »chromosome 4« has been discovered, which can clearly lengthen the human lifespan. In China old people suddenly get new teeth, for the third time. The biogerontologist

Aubrey de Grey asserts that we are not far away from »rejuvenation techniques«.¹ There are many rumours, but many sobering responses as well. For lifespans are fundamental for biological organisms, not just a side-effect like blue eyes or pointed noses. Lifeclocks are the results of evolution, allocating a certain cycle to each species. Even bacteria, in principle immortal because of their division, have an aging mechanism.²

In China a giant turtle recently celebrated its 325th birthday. (Who can verify the exact age?) That might be explained by its slow movements and its consistent salad diet. But certain kinds of macaws reach the proud age of 150 years, and although macaws are good-natured creatures, they are also very lively contemporaries of ours. Meanwhile, evolution has set the human lifespan at 80 to 100 years. Is that to be the case for all eternity?

In the individualistic world we are now partly being driven into and partly striding into, death is the most monstrous scandal of all possible scandals. The more self-reflexive our existence becomes and the more »selfness« we develop, the less comforting promises of transcendence tend to be. The more we engage in forming our own life stories, the more absurd the molecular catastrophe seems to be that we are all inevitably heading for.

For all these reasons, the extension of the biological lifespan is the real project of the century. Nothing, not even space travel, is better suited to make us take up the trail of techno-utopian visions again. In the vision of a longer life many socio-cultural mega-trends of our present age are bundled into one horizon of expectation: the selfness trend, the health cult, the experience culture... Life extension, as Lucian Boia puts it in his book *Forever Young*, »has taken the place of transformist ideologies, which have not fulfilled their promises«.³

A brief (future) history of immortality

When the world was still inhabited by giants and gods, human being lived in other dimensions of time. Methuselah reached 969 years of age. According to Judaeo-Christian traditions, Adam lived for 930 years

and his grandson Enos for 905. Noah, the manager of the Big Flood, numbered 600 years when he saved creation with his Ark. The Mesopotamian kings are said to have lived even longer, the last of them reigning for 64,800 years before the Big Flood. In China, too, there were dynasties of up to 18,000 years. Gilgamesh, the eponymous king of the Indian epic, reigned »only« 126 years, but his descendents managed 420 and 325 years. In Homer we also find the »eternal king«, Nestor, the hero of the Trojan War, who had lived for 300 years and still led his men heroically into battle.

In comparison with these, the most recent age record-holder seems less heroic. The Frenchwoman Jeanne Calment died on 4 August 1997 at the age of 122 years, 5 months and 11 days. In the photos made on her 122nd birthday, we can see not only the dignity of great age, but also the apocalyptic decline with which we have to pay for imitating Methuselah.

Even so: there is no time, not culture, no epoch that does not have its Methuselaha and its immortals, those who walk again and the miracle doctors. Even Ovid in his *Metamorphoses* offered an elixir with thousands of ingredients which Medea used to replace the blood of Jason, who immediately changed from an old man to a young one. Laotse taught that a lifespan of 1000 years is possible, if the right way of life is followed, with meditation and in harmony with the laws of the cosmos. For Hippocrates of Kos, the inventor of the art of medicine, nutrition was the main key to life extension: »They who eat weak food do not live long...«⁴

Thomas of Aquinas declared in *Summa theologica* that the short human lifespan is due to human sin. Before the fall of man, Adam's body was immortal; only as a result of leaving the divine path did the suffering of the flesh begin. Roger Bacon, an English Franciscan (1220-1292) predicted in his essay *De vitae longae* that man could use the forces of nature to lengthen his life considerably – with the help of alchemy, a pious lifestyle and understanding. Like Paracelsus 200 years later, he believed that the natural lifespan of man was 900 or 1000 years – an idea suggested by the Bible. John (or Jehan) de Mandeville, an Anglo-French aristocrat (1340 to about 1400), claimed to have found rejuvenation in distant India, at the foot of a mountain:

I could smell the scent of a spring enriched with spicy herbs, and its aroma changed from one moment to another. Whoever drank this water three times on an empty stomach was cured of his illnesses and will always be young. Such power, people say, comes from paradise on earth...⁵

In 1546 Lucas Cranach was to transform this travel report into his famous picture »The Fountain of Youth« – a rejuvenation bath, where, astonishingly, only women are to be seen!

In the Renaissance men started for the first time – actually longevity always fascinates *only* men – to extend the lifespan with technical means. A famous case was Lodovico Cornaro, born to a rich Venetian family in 1467. In his youth he ruined his health with an excessive lifestyle, which he tried to compensate for in the second half of his life with a strict diet of at most twelve ounces (350 grams) of solid food and 14 ounces (400 grams) of fluid each day. His condition improved constantly. In 1550, at the age of 90 he wrote: »I am in excellent health: I ride; I climb not only stairs but mountains without help from others; I am cheerful, always in a good mood, without disturbances of the soul or troubles of any kind.«⁶ Cornaro, another age pioneer and an early predecessor of today's »hunger artists«, died at 100 years and proved for the first time that calorie reduction can lengthen life.

In pre-revolutionary France the point of view ultimately changed: no longer should divine grace of monastic asceticism break the age barrier, but knowledge and wisdom. In Paris in 1750 the Count of Saint Germain was the talk of the town, seeming to have an extraordinary range of knowledge, and Voltaire wrote about him to Frederick the Great: »a man who never dies and who knows everything.« Albrecht von Haller, a Swiss poet and physiologist (1708–1777) identified more than 1,000 cases of longevity and discovered people who lived up to 169 years – proof for Haller that man outlived all animals, as the jewel of creation. The Marquis de Concorde, a strict follower of the Enlightenment and an emphatic believer in the future, summarised this point of view when he claimed (in his book *Zum Fortschritt des menschlichen Bewusstseins* [On the Progress of Human Consciousness] (1793) that »in a time of revolution *everything* must be changed by revolution! In a world of equality and fraternity, in the age of universal

fraternity, human nature must inevitably change – towards greater immortality.«⁷

From this time on, longevity was a motif of the revolution. In Russia the doctor Lysenko experimented with all possible types of genetic change – he wanted to create a kind of »supernature«, which would help Communism to world domination. The »miraculous Caucasian old people« were discovered, who were to serve as a model for Communist Man – they became so old, of course, because of the »just social way of life« in the Soviet Union. Stalin was from the Caucasus, and a rich period of socialist experiments began, bordering closely on experimenting with people. Aleksandr Bogomoletz, President of the Ukraine Academy of Science, invented the famous »Bogomoletz Serum«, a miracle cure with obscure ingredients, which should be a cure for *everything* – cancer, impotence and indeed mortality. In China during the Cultural Revolution, manipulation with an »age serum« was also attempted, which was to prove the superiority of the Communist idea.

Sex or asceticism – which makes life longer?

The means and methods with which people tried to play a trick on death reflect the longing and doubts of the particular era. In the Middle Ages, the alchemical elixirs, »the drinks of life«, were associated with the hope of discovering effective medicines at last (there was little anyone could do against the plague). Franz Mesmer, a German scientist, created an uproar in 1780 with his »magnetic sessions«. In 1796 Christoph Wilhelm Hufeland (1762–1836) published his book *Makrobiotik – die Kunst, das Leben zu verlängern* [Macrobiotics – the Art of Lengthening Life]. There he agreed with Rousseau's idea that the degenerate civilised way of life robbed people of a long life (at least 150 years). Dr. Turck, an American doctor, made his own attempt a century later with »electricity and chloroform«. But even the hedonist variant was tried out as well. The ancient Chinese had already recommended sex as a means to extend life. And Vicompte de Lapasse contradicted the ascetic Cornaro already in 1798. Instead of self-restraint he recommended

good, varied food, rural French cuisine – and wine. Today one would call it a Mediterranean diet.

At the end of the 19th century, when the hormones were discovered, the Russian doctor Serge Voronoff implanted sheep and chimpanzee testicles in people – to restore the »vital« energies, a method that led to a medical fashion between 1950 and 1970, according to which Western millionaires had »fresh cells« from young sheep injected into them by Eastern scientists – a primitive predecessor of stem-cell therapy, which put cash in the coffers, in particular, of the East German state.

Thousands of writings, thousands of methods, and few results. But the question was rarely asked: what would happen if it actually *worked*? Goethe's *Faust* is about the great tragic failure of trading the soul for immortality. Jonathan Swift invented the »Strudbruggs« in *Gulliver's Travels*, a little race of immortal people, who became grumpy old folk at 80 and went on living for thousands of years getting on everyone's nerves, including their own. In 1888 Walter Besant wrote a story, *The Inner House*, describing a colony of 24,000 »Trans-Temporals« in Canterbury. In this case the protagonists are biologically immortal but can nonetheless die in accidents. The result is that they turn into neurotic refugees from reality, who are always in a panic that a fire might start; they avoid travel of any kind and ultimately vegetate in their houses.

In the 20th century utopian literati and science-fiction writers took up the theme again. The immortal Aldous Huxley worked through the theme of immortality in *After Many Summers Dies the Swan* an elegiac story where a multimillionaire purchases immortality – at the price of his intelligence sinking to the level of that of an ape. And then, in our youth, it all went out of control. Perry Rhodan, for many years the hero of German-speaking Sci-Fi youth, overcame the universe with the »cell activator«. Robert Heinlein's novel of the future *Zeit für die Liebe* [Time for Love] is about a family whose members all underwent a cellular rejuvenation process. Every member of the family had both a »reset« age and a »total« age. In this way they lived for more than 150 years in perfect health – a philistine suburban utopia.

And what about today? In the supermarket of the life-extension movement, which has its main focus in the USA and is now taking over

Asia, there is nothing that can't be found. Pill champions and vitamin enthusiasts with huge book sales and their own life-extension clinics. Deep-frozen human bodies that are supposed to be thawed out again and healed of the diseases that are now fatal (the »cryonics« in the USA with such organisations as Alcor). Fast, fast, fast, until your skin is stretched over your thin body. And then the unlimited arsenal of tinctures and hormones...

Immortality has also become the core business for sects. The Re-alians, for example, tell us that they are in constant contact with aliens, who have long mastered the relevant techniques: here is the original voice of these aliens (according to the sects):

Our body lives ten times as long as yours, like the first people in the Bible: between 750 and 1,200 years. But our soul, our real self, can actually be immortal. We can clone a new body from a single cell of our body, and then we live in the new one (...). And so on, to infinity. However, in order to keep the population constant, only geniuses have the right to immortality.

Question: But if you live so long, don't you get bored?

No, never; we do the things we really want to do. We work only with our minds, because we use robots for everything else. And in particular we make love. We think our women are very beautiful and we enjoy them (...).⁸

Do we repress death?

The first register of the dead in a London quarter from the 16th century states the following causes of death: murdered (2), from shock (2), suddenly (2), suicide (2), lethargy (3), madness (1), fall from clock tower (1), worms (11), flatulence (3), teeth (33), gluttony (49), grief (3), age (23).⁹ Not even a quarter died of old age (interestingly, however, the majority died even in those days of a »cardio-vascular event«, from overweight, otherwise called »gluttony«).

One of the cultural-pessimistic litanies of our own times is concerned with the »repression of death«, which is characteristic of this evil modern society. Death occurs, according to our accusers, only in anony-

mous hospitals or shut away in homes for the aged. Nobody thinks about death, but instead the number of cosmetic operations is increasing... But did people really die earlier »securely surrounded by other generations«? Death »caught up with you« rather accidentally, incidentally and in everyday life. In the isolation of peasant culture it was not unusual for the dying to be left to themselves, and they were even helped along (especially in times of famine). When people gathered around in the village community »for a death«, the departing person in all his or her individuality and experience was not necessarily at the centre of things. The ritual of belonging served rather to provide social security for the living. Who would turn down a good funeral feast?

In modern palliative wards the dying person is more at the centre, perhaps, than at any time in cultural history. His suffering and his experience of death are by no means ignored – exceptions prove the rule. Relatives often take their mortally ill family member home with them at their own request. The film *Das Meer in Mir* [The Sea Inside Me] deals with the right to one's own death – and became one of the most noted films of 2005. The dying of the American coma patient Terry Schiavo was a topic for international debate for weeks. We don't debate death? Nonsense.

Dying light

When Jane died, fifteen friends were gathered around her bed. And Jane did not make it easy for herself. Her dying took place over five years. From the time when an incurable tumour was discovered in her brain, she had made herself strictly the focus of social life. Her bed, which she ultimately called rather cynically her »departure centre«, became more and more the focal point in a staging of her life. Here she spent the whole day receiving friends and acquaintances from all over the world. They came and went and were accommodated in the many rooms of her huge old apartment. Once they had come they did not go again for a while.

Bert, her husband, a mild-tempered, melancholy literature professor, did everything for Jane. He cooked for her many guests without complaint; he drove her to see all the doctors she wanted to consult, and to

places connected with her childhood; when she was only dimly conscious for days, he took her to China and pushed her along the Great Wall of China in a wheelchair.

»But no-one can expect me,« Bert explained drily, »to go around in mourning all day. I'm feeling fine. Things are what they are. Jane is well looked after.«

During the last year, when Jane scarcely left her bed, he built her a swimming pool that she could get into in her wheelchair. He put up with her scolding when she lost her memory and recognised no-one any more. He coped with her aggression, her hatred – of the illness and everyone who was healthy.

When you went into her huge room you could usually hear glasses clinking and people laughing. There was an endless party going on there. And in the midst of it all lay Jane on huge colourful cushions of satin and silk, in the end without speaking, staring at the ceiling with wide open eyes, hairless and half naked. Now and then someone went over to her and stroked her gently, even when she no longer noticed.

Just as the individualist culture reinterprets birth as a very personal *experience*, the force for change in individualist culture is also intervening in the last phase of life. Accompanying and socially integrating the dying will be a major topic in this century, and it will bring about a huge service industry – with all the consequences for »awareness of death« that it can have for society.

The new culture of ancestor cults

Among the Batek people in Malaysia the corpse is wrapped in the most beautiful sarong. The relative blows tobacco smoke around its head, to cool it and give it pleasure. Then the village people come to pay their respects. They ask how the dead person is feeling, if he has everything he needs, why he has decided to go. They offer him cigarettes. They sing and dance and make as much noise for as many nights as possible. Sometimes the dead person is placed in a big container to collect the body fluids and to watch the decay process for as long as possible.

Other families carry their dead to a hidden part of the jungle, decorate them with flowers, offer them presents: beautifully decorated pipes, arrows and artefacts. Then reeds are planted around the corpse with magic spells against tigers.¹⁰

Until a few years ago, practically all burials in the USA and Europe followed the Christian ritual. The clergyman spoke a few general words from the Bible, the organ played, people followed the coffin and shovelled a handful of soil onto it.

This ritual should not be carelessly ignored – there must be a reason for it to have been the standard so long. But for more and more people in the individualised world of our days, it seems impersonal to the point of pain.

»I hate coffins«, an acquaintance said to me recently. »The idea of being stuck in a box like that and then put in the ground is simply awful. Only Christianity, with its morbid views, could think that one out. I would rather be placed on a bier wrapped in linen, like the Hindus.«

In the big cities of the West the contours of a new funeral culture are growing. If you die in Globopolis you can have yourself put into the ground in a designer coffin; you can have a professional funeral speaker and order a speech of praise or mockery, a celebration with your personal choice of music, from Indian gay decadence to cool jazz. You can have your ashes spread to the winds or yourself buried in a forest. You can have the urn taken home a set in a shrine, in front of which debates are held.

One historical service of Christianity and its monotheistic successor religions was to farewell the cult of ancestor worship, where the living were often terrorised by the dead in all sorts of ways. The dead of Christianity were really dead, and they »lived«, if at all, far away in heaven or at the cemetery. In the global knowledge society, the world of virtual and social networks, this process of »externalising« the dead is being reversed again.

Individualistic culture means that every person goes further and further away from his genealogical roles. Now he is no longer just father, mother, aunt, grandfather, »ancestor« but increasingly a unique »work of art«. As a result, his specific »secret«, his memetic capital, which is to be preserved, goes on far beyond his death.

The funeral itself is now expanded into a process that is less religious than social. Farewell parties, days of memory and memorial dinners bring the circle of friends and relations together, to celebrate the dead and to bring them – yes, really! – *gifts*. They take the form of poems, memoirs and images of respect. No, we are not dead as long as someone remembers us. Our social network, in which we were a major node, goes on living after our death and remembers our uniqueness.

The time is not far away when we will ask good friends in a relaxed atmosphere: »And how would *you* organise your death – and the time after it?« Anyone who has no answer ready can invent one, or have it invented for them, perhaps with the help of the many death counselors who will be with us in the future.

Can we extend the term of life?

Without a doubt, humanity is changing as a biological species. Although human DNA has been relatively stable for about 100,000 years, there are also gradual changes even in our basic biological make-up. How tall we grow, for example, is influenced by protein and carbohydrate nutrition. Or the lengthening of the period of female fertility – the time when puberty begins and the shift of the menopause to beyond 45 – are the results of adaptation processes in different living conditions.

The latest insights of exogenetics show us how living organisms exist in a complex interaction between the genetic code and the environment. The biological code is not enough in itself to have a fruitfly or a human being grow. A huge number of »environmental switches« are turned on and off during the development of the embryo. DNA is not an isolated unit but part of the network of life.

Even if Lamarck was in error, when he asserted during Darwin's lifetime that acquired characteristics are *directly* stored in the genetic code, recent experiments have shown how quickly organisms can form variants and sub-species under the pressure of selection. In the case of

macrophages and bacteria, the rate of mutation is increased in laboratories today, by using radioactive irradiation – and suddenly a whole range of mutations appear over night. In his latest book *The Ancestor's Tale*, Richard Dawkins describes how wild foxes can be made tame animals within a bare decade. If the pups that relate best to people are selected from every litter and then bred further, just 30 generations are needed to achieve a species of fox that behaves like a dog, or more precisely like a Collie. And most surprising of all: this new, tame fox looks very like a Collie!

Experience with green genetic technology, i.e. working with plants, also shows, however, how hard it is to maintain the stability of optimised organisms in a biological environment. Genetically modified plants quickly lose their special features again; in other words they become recessive. Or else they generate undesirable changes in other organisms, which in turn adapt to new competitors...

For the genetic restructuring of human beings – for example life extension – all this leads to some awkward conclusions.

- Life-extended humans would – in the first place – change *in their very nature*. They would no longer be the old species that came to fill the evolutionary gap for large-brained multivores.
- Life-extended humans would possibly have to be *totally isolated from the environment* (because, for some reason, they are »very sensitive«).
- To keep life-extended humans viable – beyond the level of a single individual or a small group – we might have to change *the entire environment* as well!

For all these reasons, »hard« life-extension methods would create a lot of confusion. Bruce Sterling says:

If we pay for life extension, it will probably be like paying for information today. You can have everything, but never precisely what you want in a pure unadulterated form. Everything comes in pieces, fragments, with limitations, problems and traps. You have to put it together yourself, like an old IKEA cupboard without the instructions.¹²

The immortal society

Will there be bitter struggles between »transtimers« and »short lived«? Will humanity split into two basically distinct species? Or will there soon be a reaction of the short-lived, who will then oppose the bored gods on the Olympus of long life as a vitally productive caste? What does the shift of the mortality threshold imply for our reproduction? Is our short life the condition for our fertility, the deeper reason for sex and love, and also for writing books, composing, travelling, surfing, fighting? Will the long-lived even be interested in reproducing themselves?

The history of humanity began when people first asked about the dead. This distinguished the human animal from other animals. Why did we need writing, art, pictures if we didn't want to overcome the abyss of time with them? (We would be able to tell all stories ourselves because we were always there.) What is the use of cultural complexity if not to compensate for death?

If we removed »its sting« from death, the evolutionary path of humanity would be ended at once. The interaction of genes and memes would end. An immortal – or greatly life-extended – culture could resemble that which the time travellers get into in the year 80,000, in H. G. Wells's *Time Machine*. Bored, cloned people, the Eloy, endlessly eating fruit in decayed palaces. They are interested in nothing, certainly not in sex. If one of them falls in the water and drowns, that is noted with a certain regret – he should have learned to swim!

In Wells' story there is also the old duality that goes through the entire history of Western culture in its relationship to death: crime and punishment; death as a penalty. As it turns out in Wells, the Eloy are bred and fed by the Morlocks, underworld monsters, a reflection of the industrial age (the proletarian caste of slaves). At this point the social-critical element in Wells's novel becomes clear: he is constructing a future cannibalistic class struggle.

In this way, whenever we try to think about longevity, we always end up with old socio-cultural models. The problem is that we are using our old, primate brains, »polluted« with a range of cultural memes, to think about a world we really can't imagine. In our primate brains death is firmly connected with life. We can feel the fixed bor-

ders, the bonds that bind us to mortality. That »stabilises« us, because only thus does death acquire a creative meaning. But it also brutally limits our ability to imagine a world where other horizons and measures could apply.

Evolution – technical, social and mental evolution – is inventive. Who can say whether, when we slowly extend our lifespan, we won't invent and define *other* boundaries and fields of tension, on the basis of which evolutionary adaptive ness – seen as the maintenance of the vital impulse of life – will go on developing? Is it not probable that evolution will evolve? The science-fiction philosopher Jack Vance developed this idea in the following way in his 1956 novel *To Live Forever*:

Only in the infinity of the universe can the immortal attain a development that is in harmony with his immortal nature. The planet-bound, the socially limited is mortal; to organise itself and to cooperate closely is its fate. The immortal, on the other hand, can never be limited by social conventions or to one hemisphere. Planets, cities and societies are fetters: an immortal bound to them would become weak and dull-minded (...). The enormous liberation in years must correspond to a liberation in experience (...). Only the unlimited cosmos is the appropriate environment for eternal life.¹³

The mortality border is indeed the Rubicon, where the future of the human species is to be decided. And that is precisely why it will be the »last frontier« that concerns and challenges us beyond all measure. For *that* is also built into our evolutionary constitution: rattling at the bars of the cage, the stubborn will to cross over borders. Only if we were to lose that impulse would we have reached the »end of mankind«.

We fear the finite no less than the infinite. We have to cope with both as well as we can.

David – December 2100

David was in the midst of a long-lasting dream – or was it no dream? – which was like a computer game from his childhood. He was running through dun-

geons, gigantic halls, where clocks were ticking and mechanical traps were shutting and big chests opening, in which were luminous stars, sweets and golden maps. He had to collect points, constantly collect points, and refresh his strength by hoarding magical elixirs, strength points and brightly coloured sweets. Time was running against him; fire-spitting monsters, poisonous plants, gnomes, ghosts that suddenly came through the walls and gave off horrible laughter; under his feet bridges were crumbling, and all this was eating up his life's energy. Strange words ran through his brain: »Expalliarinos!« »Hufflepuff!« »Dumbledore!« That had been his world, the world of childhood, a world of electronic promise, the beginnings of cyberspace. And now he was going back there, to the terrible *final opponent*, who was waiting somewhere in the depth of the dungeons.

They had given him the *Uterus* again, in the perfect and yet still primitive form of almost-22nd-century-technology. The *Pod*, at the centre of which stood David's bier, was a little dome on the bank of an African river, in the middle of the savannah, where humanity began eons ago. The transportable building was fitted out with all imaginable simulation technologies. The hemisphere of about five metres in diameter was a single 3-D softscreen of some translucent material. From his bier, a soft armchair able to swivel in all levels, which supported his fragile limbs as well as might be – he was able to control everything, if necessary with a movement of his head. The pod was connected to MindNet, all the data storages of mankind were at his disposal, all films, all images, all books, all sounds, all smells of the world could resound in this little space-ship in infinity.

David was able to control the strength of the precious morphine that flowed into his veins through a microscopic tube.

And at any time he could use the big virtual lever in his field of vision, which would end everything.

There was much laughter and cheerfulness around him, food, conversation, discussion about the questions of the time. The children were playing with hippopotamuses, big, very cosy animals that had become trustful animals as the result of some genetic corrections. His companions on his last journey were lying in hammocks out on the river, watching the lines left by the Scramjets, their condensation traces, coming from the equatorial ramps in the East, and fading away like strings of pearls in the highest levels of the atmosphere. The faint rumbling made by the transporters on the way into orbit were like the voices of the lions that still lived in part of this savannah.

There was Cayarabola with her pretty, willowy »immortal«, as she called her, a 17-year-old, who was hardly different from youth of all ages, but who was astonishingly concerned about him. (She cut David's hair, examined his skin in a strange way and held his hand for hours.) His other granddaughter, Karla, a fuel specialist working on the New-Hope Project, the space programme, whose results they could see in action over their heads. There was Joe, a child of Alya's second intermediate marriage, who was concerned with exobiology and was considered to be an »alien hunter« (he had taken part in decoding the »song«). There were three other grandchildren of the third degree, wild creatures with dangerous looking devices that could do incredible things such as free 3-D swordfights. There was Kevin, an old friend, himself in his late eighties, and Parayama, his Vietnamese partner, a dignified woman of middle age wearing a sarong, with whom he had had a late child.

In the evening, when the sun went down over the savannah, they all moved closer together, drank and told parables in Indese, that flowery language made up of English, Hindi and Singhalese, which was now spoken everywhere, even in the vastness of China.

In these years Central Africa was the destination for death tourism from all countries of the world. Perhaps because death had always had its dominion here, in its colourfulness and variety. And because a new journey of mankind was now beginning from the equator. The New-Hope Programme was carrying a colony of several thousands into space for the first time. Only since scram technology had been perfected had the flight into orbit become so inexpensive that an ordinary person could afford it.

All over the river, as if scattered under palm trees and fresh-water mangroves, stood the death domes of Thanatos. In the darkness they glowed like opaque bladders, and when their pulsing light changed into a dark red glow, that meant that another person had started on the journey to eternity.

David flew through the rings of Saturn, which showed the eternal dance of their particles in dignified silence. He dived into coral reefs, which always reminded him of his mother, because he had snorkelled with her in the Indian Ocean when he was fourteen (she had tried in vain to take away his terrible fear of sharks). He crossed the mountains deep down into the glowing core of the earth, and flew through forests, in whose damp depths bizarre new species were evolving. He called up the scents of freshly cut grass, rain, olive oil, Lego blocks, hot metal, 20th century plastic, the skin of girls and children.

On his way deeper and deeper into the network of networks, David left traces as he went. He altered connections, coded codes and wrote himself in. He wove the traces of his existence for all eternity into the structures of knowledge and memory, which bound humanity as an omnipresent fluid.

He was the network, and the network filled him with gratitude, so that at last he could let it go.

When it was all over, they stood together around his body, the optimised men and women of the coming 22nd century, the warriors of the future, fair and dark, long-lived and less long-lived people, slim, filigree bodies, elastic and optimised. And while the Thanatos sisters oiled his broken body, to prepare him for the fire, the Scram-Jets gave off their rumbling. The calls of the hippopotamus-sounded like a giggle.

And then the drumming was heard from the other side of the river.