

Connection Machines

Eric Kluitenberg

epk@xs4all.nl

Editorial Notice

This essay was written for the forthcoming *Book of Imaginary Media*, which will be published by Uitgeverij De Balie in early 2006. The essay builds on a text called “A First Introduction to an Archaeology of Imaginary Media”, which was written for the mini-festival organised by De Balie, Centre for Culture and Politics in Amsterdam in February 2004.

The lectures of the project along with a selection of essays and other materials that formed the context for this event can be found on-line in the Dossier Media Archaeology on the website of De Balie. The dossier includes full length video documentation of the lectures by Siegfried Zielinski, Erkki Huhtamo, Klaus Theweleit, Bruce Sterling, Zoe Beloff, Edwin Carels, Timothy Druckrey, and John Akomfrah.

<http://www.debalie.nl/archaeology>

The *Book of Imaginary Media* is currently scheduled for release in early 2006, and will include a DVD with a.o. *A son et lumière* version of Peter Blegvad’s stage play “On Imaginary Media”, as well as invited works by a selection of distinguished cartoonists on the theme. The book furthermore contains new texts by the participants of the original event.

Connection Machines

By the time the German Catholic mystic Heinrich Suso published his manuscript “Horologium Sapientiae” (Wisdom’s Watch upon the Hours), most commonly dated to 1339, mechanical clocks had made their way in civic life throughout Europe’s major cities. Late in the thirteenth century the mechanical clock had appeared in monasteries belonging to the Benedictine order and it was used to mark the 7

canonical hours of the day to call for collective prayer. The clock spread to the civic sphere in the fourteenth century featuring as a public timepiece in the tower of many a European city's town hall. Its function also changed: The clock had become the central medium structuring and ordering the life and communication of late medieval city dwellers.

Suso's thinking was very much informed by the juxtaposition of the erratic temporal nature of earthly human affairs, versus the divine order of Eternal Wisdom of the Christian God he revered. With the spread of the clock in religious and social life the entire world system of earthly life, the passing from day to night and from night to day, and the movements of the heavens, came to be seen as the visible signs of the divine clockwork that ruled and governed earthly existence. Suso structured his book as a series of imaginary dialogues between Eternal Wisdom (his god represented by the virtue Eternal Wisdom) and himself, divided into 24 chapters following the 24 hours of the day [1]. It was Eternal Wisdom that instilled order in this heavenly clockwork, and the mechanical clock was the medium for ordinary man to bring his life into unison with this divine order.

The construction of Suso's imaginary medium is twofold: First he portrays the world-system as clockwork as one giant communication medium set in motion and guided by the invisible hand of Eternal Wisdom, which thus "communicates" divine order to the human subject. The mechanical clock then translates this divine order into perceptible form and becomes a medium for the lesser mortal to establish contact with the divine order, most notably by the call to prayer at regular intervals according to the canonical hours – the original purpose of the mechanical clock.

In Suso's mystical vision, which became highly popular throughout Europe in the 14th century, the clock is a connection machine, a medium to co-ordinate not only the affairs between humans, but also between the human and the divine. In the centuries following Heinrich Suso's mystical imaginations of the divine clockwork, the idea that technology compensates for the deficiencies of human conduct remained vividly alive. As society became more secular, the emphasis shifted away from its divine orientation towards the mediation of more worldly human affairs, and yet a certain mystical inclination never left the realm of technological invention.

Modern Machines

The great historian and philosopher of technology Lewis Mumford relates the regularity of monastic life and the central role that the mechanical clock came to play in organising it from the thirteenth century onwards, more or less directly to the development of modern capitalism. The regularity of the division of the day into even time segments in the Benedictine monasteries, punctuated by the call to collective prayer prefigured in many ways the organisation of collective labour in the Ford factories. The ticking of the mechanical clock might thus almost be likened to the humming of the modern production line.

In his seminal work *Technics and Civilization* from 1934 Mumford writes: "(...) The habit of order itself and the earnest regulation of time-sequences had become almost

second nature in the monastery. (...) So one is not straining the facts when one suggests that the monasteries – at once there were 40,000 under Benedictine rule – helped to give the human enterprise the regular collective beat of the machine; for the clock is not merely a means of keeping track of the hours, but of synchronizing the actions of men” [2].

With the spread of the mechanical clock from the monastery to the cities, and its subsequent miniaturisation and massification, worldly and spiritual life in Europe were integrated in a uniform time regime. For centuries to come the clock would become the ultimate connection machine, organising and binding the lives of millions into an integrated social, economic, and religious system.

The high-point and simultaneously the endpoint of the reign of the mechanical clock can be traced to the middle of the 19th century, when the invention of the telegraph allowed the first real-time [3] transmission of a time signal across vast distances, and ultimately around the globe. The demands of an industrialised society and the expanse of international trade relations made the deployment of the required infrastructure (transatlantic cables) economically viable. This in turn necessitated the adoption of a uniform world-wide time standard. Through a series of “World Conferences on Time” the Greenwich Mean Time standard (in 1884) [4] became the new global time regime as we know it today. Telecommunications, rather than the mechanical clock, would take over the role of connection machines supporting the new global time regime and its attendant social and economic structures.

Technological Transcendence

It is difficult to escape the economic rationale that favoured the rapid development of telecommunications technology from the mid nineteenth century onwards. The continued expansion of global trade created the social and economic context for this particular breed of technology to flourish. Yet, if we rely exclusively on this all too obvious economic explanation for the rise of contemporary electronic connection machines, deeper layers of motivation that inform the creation and the wider adoption of these technologies will continue to elude us. To grasp these rather hidden motives it is necessary to excavate some of the seemingly irrational undercurrents that accompany much of the visible history of technology, and thus to probe more deeply into the realm of the mythological.

Invention and imagination are relatively closely linked, as concepts and as functional principles of human endeavour. It will come as little surprise then that the dividing line between inventiveness and the imaginary is ambiguous and often porous. In popular culture the inventor is usually portrayed as the semblance of a delirious maniac, rather than a rational man of science. Positive examples of this typology might be the absent minded personalities of Disney’s *Gyro Gearloose*, or Dr. Emmet Brown in the *Back to the Future* film series. A rather darker shade of character is beautifully exemplified by the corrupted scientist Duran Duran in Roger Vadim’s cult-classic movie *Barbarella*, which he based on the French comic strip by the same name created by Jean-Claude Forest in 1964.

Yet, when considering the extraordinary transformations in daily life brought about by the incessant drive for technological development in the industrialised world, such hard facts are rarely ascribed to the ravings of a lunatic. It is all the more intriguing then to see that some of the most infamous names in the history of technological invention derive their inspiration from deeply irrational, mythological, and even outright mystical sources. Indeed, the history of technology is littered with unfounded claims about the future (and the role of particular technologies in that imaginary future), misconceptions, arbitrary assertions, and inherently mythical beliefs about the immediate and longer-term significance of the machinic contraptions that emerge from the inventor's laboratory. Ironically, in many of these accounts the rhetoric of scientific rationality is emphatically employed to propagate preposterous, highly opaque, and sometimes deeply mystical ideas.

Since none of these claims made by seminal figures in the recorded history of technology has proven sufficient reason to rewrite that history, nor to discredit the status of these individuals within this specific historical trajectory, it would follow that the resident belief structure that feeds these ideas extends far beyond the immediate surroundings of the historical protagonists of obfuse techno-mysticism. However, the aim here is not to somehow marginalise the significance of these early visionaries in the course of technological development. Rather, I would like to argue that their prominent place in the history of technological invention came about not so much despite the fact that they subscribed to highly mythological imaginaries, but exactly because of their mystical inclinations.

Such a complex set of relationships between invention and the imaginary, between inventor and consumer of the final product, and between technological inventions and their social and economic context, cannot be written off as the eccentric idiosyncrasies of the "mad inventor" – that emblematic archetype of popular culture. Popular imaginaries require a willing clientele (preferably an eager one...!) to sustain themselves over time. The imaginary product, in other words, has to fulfil real-world needs to survive, regardless of whether these needs be actual or imagined.

It would require a lengthy study into the history of technology to "excavate" the various lineages and discontinuities in the development of imaginary media and imaginary machines. I would like to concentrate here on two of the most prominent representatives in the history of technological invention, who exemplify emblematically the porous boundaries between inventiveness and the imaginary; Nikola Tesla (1856 – 1943) and Thomas Edison (1847 – 1931). Their prominent position in recorded history means that their life and activities are well documented. Furthermore, Tesla and Edison shared a predilection for being outspoken public personalities. They were also contemporaries, and they even came head to head in the late 1880s in the so-called "War of Currents" [5] dispute.

What is of particular interest here is the structure of the arguments used by both Tesla and Edison to propose intensely speculative ideas for new communications devices and their application areas. Edison and Tesla worked at a turning point in history when the emphasis in the technological imaginary moved away from the pre-electronic metaphorical connection machines of the Suso-type, towards something much closer to the contemporary electronic cult of wireless connectivity.

Nikola Tesla and the Wardencllyffe Tower

The Serbian / Croatian inventor Nikola Tesla (1856 – 1943) is credited for some of the most important breakthroughs in electrical engineering. Among over 700 patents filed by Tesla were the Tesla coil, an induction coil widely used in radio technology, a telephone repeater, the rotating magnetic field principle, the polyphase alternating-current system, alternating-current power transmission, patents for wireless communication, radio, fluorescent lights, and an electrical induction motor. In 1884 Tesla had come to the United States to work for the Edison Company. His employment with Edison, however, ended in bitter conflict, and both parties went on to consider the other as a competitor.

Tesla's biography is momentous and begs the question whether such a life is produced by the wild genius he obviously was, or rather that his 'wild genius' resulted from his eventful and at times dramatic life story. Reading the fascinating biographies written about Tesla it becomes increasingly clear that it is very difficult to separate the many practical inventions he produced from his singular and idiosyncratic obsessions in life. He worked feverishly on new energy devices, communication media, information and energy transmission systems, and more generally on what McLuhan would probably call the birth of the electrical age. The practicality of his ideas seemed only a consideration in as far as he was necessitated to create the proper working conditions (space, support, investments) to pursue his singular ideas about the electrified future of mankind.

Tesla's Wardencllyffe Tower, or 'Tesla Tower' might be considered both his most grandiose design, and his most catastrophic failure. Tesla was offered an opportunity to build what most likely was originally conceived as a communications tower, on a piece of land in Shoreham Long Island. The main investor in the site James S. Warden gave the tower and the area his name. He envisioned it as the beginning of a future radio city to be called Wardencllyffe-On-Sound. Tesla started working on the facility in 1900 and construction started in 1901. However, by 1905 Tesla for various reasons ran out of money. Construction was halted and staff were laid off, while the facility still did not function properly. A long period of unclear ownership conditions followed and in 1917 the tower itself was finally disassembled. Tesla meanwhile, seeing his biggest project ever fall apart, suffered a severe mental breakdown.

There are many competing theories how the tower and the facility should have been operated. The most mundane explanation of its designated purpose was to create a worldwide wireless communication system and radio broadcasting facility: A second station would be set up on the southern coast of England to receive and respond to transmissions. However, Tesla envisioned other, more important uses of the system he was building. He was convinced that the facility would be able to transmit wirelessly not only communications and radio signals, but also electrical power. After the failure of the Wardencllyffe project Tesla continued to work on his ideas and on prototypes that would enable the wireless transmission of electrical power.

Again, there are unclear and competing accounts concerning the results of Tesla's

ideas and experiments. According to some of these accounts he was able to light electric bulbs and other devices over longer distances without the use of conducting wires. Tesla's idea was supposedly to distribute electrical energy in a wireless manner through the air in the sparsely inhabited American countryside. People would be able to receive this electrical energy cheaply via antenna's on their roofs. But other claims go further and connect the Wardencllyffe facility to its use as a weapon that would be able to produce bursts of electrical energy over vast distances, comparable to the effects of ball lightning or electromagnetic fireballs. Consequently, the withdrawal of life-saving funding for Tesla's work and the final decomposition of the tower in 1917 are explained as US government interventions aimed at reserving this possible military technology for classified research and preventing the sensitive technology from falling into the wrong hands (the German empire or the Bolsheviks in Russia – who staged their successful revolution in the same year the tower was taken apart –, were likely candidates).

Tesla himself made a bold proposal for what the tower facility should be able to achieve and demonstrate as a principle. In his vision the earth itself could be used as a giant conductor to transmit electrical energy on a global scale with minimum energy loss. The earth's large cross-sectional area could provide a low resistance path for electrical impulses, which could be electrically resonated at pre-determined frequencies. The main obstacle was the need to set up the transmission points where the earth's coil could be charged. Once in operation, electrical energy could simply be culled from the earth by drilling a collecting rod into the soil. The planet would thus act as a giant battery, and practically free electrical energy would be available instantly anywhere on the planet!

The most speculative explanation of the Tesla Tower's purpose, however, introduces a distinctively different reading of both the facility itself and Tesla's incessant singular preoccupations. According to this largely undocumented theory the Wardencllyffe tower was not primarily an earthly communications and radio transmission device, nor was it a global provider of free electricity. Rather, the tower would serve as a giant resonating and communications mechanism to reach the spirits of the deceased, a global transceiver of psychic energy and communication. Both Tesla and Edison expressed at various stages in their life a keen interest in and adherence to psychic phenomena, and both socialised in spiritist' circles. One admittedly highly speculative explanation for Tesla's preoccupation with the occult could be found in his early life, when through a dramatic chain of events he was the cause of his older brother's horse-riding accident, which proved to be fatal. Tesla remained filled with grief and guilt throughout his life, and repeatedly alluded to the insignificance of his own achievements in the light of what he imagined his older brother would have been able to achieve, had he lived. Was Tesla seeking contact with his brother who had passed away too early, was he seeking absolution of his life-long sense of guilt?

In his 1908 essay "The Future of Wireless Art", Tesla writes about the Wardencllyffe Tower as a true visionary:

"It is intended to give practical demonstrations of these principles with the plant illustrated. As soon as completed, it will be possible for a businessman in New York to dictate instructions, and have them instantly appear in type at his office in London or elsewhere. He will be able to call up, from his desk,

and talk to any telephone subscriber on the globe, without any change whatever in the existing equipment. An inexpensive instrument, not bigger than a watch, will enable its bearer to hear anywhere, on sea or land, music or song, the speech of a political leader, the address of an eminent man of science, or the sermon of an eloquent clergyman, delivered in some other place, however distant. In the same manner any picture, character, drawing, or print can be transferred from one to another place. Millions of such instruments can be operated from but one plant of this kind. More important than all of this, however, will be the transmission of power, without wires, which will be shown on a scale large enough to carry conviction.” [6]

His remarks are uncannily familiar to the early 21st century reader, used as we are to the (fraudulent) promotional narratives employed by the vendors of wired and wireless electronic communications services. Later, once the irreversible demise of the Wardenclyffe project had become clear to him, Tesla’s tone turns bitter and disappointed. Interestingly, he attributes the ‘grandesse’ of his scheme (i.e., wireless global communication, worldwide free electricity, the planetary earth-battery, wireless transmission of electricity through the air, and a wireless electrical cannon) to “a simple feat of scientific electrical engineering”, and its demise to the inability of the public (and his investors) to follow the lead of the visionary inventor. His words reveal the compulsive character of the vision he tried to pursue:

“It is not a dream, it is a simple feat of scientific electrical engineering, only expensive, blind, faint-hearted, doubting world! [...] Humanity is not yet sufficiently advanced to be willingly led by the discoverer’s keen searching sense. But who knows? Perhaps it is better in this present world of ours that a revolutionary idea or invention instead of being helped and patted, be hampered and ill-treated in its adolescence, by want of means, by selfish interest, pedantry, stupidity and ignorance; that it be attacked and stifled; that it pass through bitter trials and tribulations, through the strife of commercial existence. So do we get our light. So all that was great in the past was ridiculed, condemned, combated, suppressed, only to emerge all the more powerfully, all the more triumphantly from the struggle.” [7]

Thomas Edison Phones the Dead

(1847 – 1931)

Besides being a professed materialist (philosophically speaking) during the early stages of his professional career, Thomas Edison was also a shrewd businessman with a keen sense for the potential practicality of the ideas he was working on. His business skills may equally have helped assure him a prominent place in history, as did his genuine intellectual gifts. In this sense the typology that may be drawn of the young Thomas Edison seems to stand in marked contrast to the wilder imaginations of his contemporary Tesla.

Although Edison’s biography reads significantly less momentous than Tesla’s, his life also appears to have been characterised by the continuous presence of the occult. His parents were reportedly spiritualists, and Edison, though a professed atheist in his early years, seems to have enjoyed a life-long interest in the occult and the

paranormal. These interests included a firm belief in psychokinesis (the ability to move objects ‘merely’ by mental powers), Extra-Sensory Perception (ESP), and in his early thirties he dabbled in the writings of a certain Helena Petrovna Blavatsky, a prominent protagonist of theosophy. All these metaphysical liaisons are documented in detail in various biographies of Edison, and a concise summary of Edison’s forays into the supernatural can be found in Martin Gardner’s essay “Edison, Paranormalist” for *Skeptical Inquirer*. [8]

Gardner in fact digs up quite a number of startling quotes by Edison that illustrate the ambiguous nature of his relationship to the paranormal. It seems that Edison moved ever further away from his early radical materialist positions as his life progressed. Finally, when facing death, various reports and public interviews suggest that he was working on a communication device with “the afterlife”, or the departed, though actual designs for such a device, sometimes referred to as the “psychic telephone”, were never recovered, nor any experimental devices for that matter. It has, however, made Edison a particularly popular reference for the extensive international Electronic Voice Phenomena (EVP) movement, a loose association of groups and individuals who are thoroughly convinced that it is possible to receive the murmuring of the dead by means of electronic devices. EVP advocates even go as far as to believe that much of what we hear on off-station frequencies, and which we tend to interpret or discard as static or mere noise, are in fact the voices of the dead, clogged and meshed-together, attempting to reach out to us lesser mortals across the rifts separating life from death. [9]

In October 1920, Edison gave an notorious interview to B.C. Forbes for the *American Magazine* entitled “Edison Working on How to Communicate with the Next World” (Forbes later went on to establish *Forbes Magazine*). In this interview Edison claims to be working on an electrical device to communicate with the departed. This is later also confirmed by one of his laboratory assistants, but never corroborated with hard evidence in the form of working notes, sketches or actual physical devices. The question here is, were Tesla and Edison outdoing each other in bold claims to tap into that newly emerging phenomenon, the product of the real-time society of electrical speed, the attention economy? It cannot be ruled out that both, already media-savvy men, put out bogus claims that spurred the public imagination, referencing the supernatural with their costly technological ventures. Even Edison, though less so than Tesla, could not do without broader public support to ensure sufficient financial support for his operations, and although he was less strapped for cash than Tesla, he might have tried pre-emptively to ensure continued public interest in his explorations.

In an article in *Scientific American* (October 30, 1920) by Austin Lescarboursa’s entitled “Edison’s Views on Life after Death”, Edison spells out his otherworldly concerns in more detail:

“If our personality survives, then it is strictly logical and scientific to assume that it retains memory, intellect, and other faculties and knowledge that we acquire on this earth. Therefore, if personality exists after what we call death, it’s reasonable to conclude that those who leave this earth would like to communicate with those they have left here.

(...)

I am inclined to believe that our personality hereafter will be able to affect

matter. If this reasoning be correct, then, if we can evolve an instrument so delicate as to be affected, or moved, or manipulated... by our personality as it survives in the next life, such an instrument, when made available, ought to record something.”

It sounds convincing enough that Edison was pursuing a genuine interest here. And unlikely as it may seem for someone taking such a strongly anti-metaphysical stance at the outset of his professional career, there are further grounds to suspect that Edison might indeed have ‘succumbed’ to the illusion that an electronic communication device to establish contact with the dead might truly be feasible. Edison started to believe in the existence or at least possibility of a disembodied soul, something that a radical materialist strictly rejects seeing the soul as nothing more than the product of the proper organisation of the body, and the brain in particular. Through Henry Ford, founder of the Ford automobile factories and spiritual father of modern scientific management, Edison became acquainted with the fake magician Howard Reese, who claimed to possess the power of Extra-Sensorial Perception (ESP). Edison was so deeply convinced that Reese’s powers were genuine that he went on to defend him in print even after Reese had been publicly exposed as a fraud.

Gardner notes that it was Edison’s self-conception as a rational man of science, who was too intelligent to be fooled by a cheap-trickster, that reinforced his belief in Reese. Similar overtones can be heard in the quote above: “If our personality survives, then it is strictly logical and scientific to assume that it retains memory, intellect, and other faculties and knowledge that we acquire on this earth”. Exactly because his method of observation and analysis is ‘strictly logical’ and ‘scientific’ it cannot be wrong or misguided. The afterlife, formerly the strict domain of mystic and religious cults, now becomes a new terrain for scientific analysis and logical deduction. It seems that this mere act of transference to another domain of analysis is enough to convince Edison that the object of his curiosity is no longer fictional. This is also reflected in another quote from the article in *Scientific American*:

“Certain of the methods now in use are so crude, so childish, so unscientific, that it is amazing how so many rational human beings can take any stock in them. If we ever do succeed in establishing communication with personalities which have left this present life, it certainly won’t be through any of the childish contraptions which seem so silly to the scientist.”

What is startling is not that one of the most prominent figures in the history of modern (Western) technological civilisation can make such a dramatic philosophical turn-around and become deeply immersed in mystical obscurities. In fact, it makes Edison suddenly appear all the more human, because he exposes his own fragility. Suddenly he is no longer the shrewd businessman, the brilliant inventor, the ruthless egocentric. Here we see a man faced with the inevitability of his own life coming to an end, struggling with the insignificance of his own inventions when confronted with the ultimate boundary, and longing desperately for transcendence. And of course he resorts to what he knows best to achieve it, technological invention.

What is startling here is rather the appropriation of the language of scientific rationality to his mystical project. Edison makes a desperate attempt to bring his all too human desire for transcendence over death in line with his lifelong project of

‘technoscientific rationality’ [10]. By reframing the afterlife as a scientific question, Edison tries to redress his irrational desire as a scientific problem. The myth is not that of the afterlife, but rather the suggestion of science and rationality in the very question he so desperately tries to resolve.

The Long Now Clock

Technological transcendence involves time and measurement as two poles at either end of its ambivalent union. The clock introduces the even measurement of time, yet it does not transcend the scale of a human life. Some clocks, of course, survive their makers and their owners, but most disintegrate within a lifetime or within a few generations. Some time-pieces are kept alive only thanks to the great effort of their owners. Technological transcendence therefore requires a more profound temporal perspective than traditional clocks can offer.

A group of scientists, engineers, and enthusiasts in the United States has started working on the realisation of such a deliberately profound perspective, the 10,000 Year Clock. The original incentive for the project came from computer scientist Daniel Hillis, the principal architect of the Connection Machine, a ground-breaking design for a parallel computing device pioneered by Hillis and applied widely in the field of high-performance computing. Hillis noticed in his extensive professional career that the emphasis in technological development and in society at large was shifting towards an infinitely shortened time-span, brought about by the continuously increasing speed of information processing machines. Although this strategic acceleration is crucial to the short-term success of any society in the face of international competition, Hillis and others became increasingly concerned about the possible implications of this preoccupation with ultra-short duration.

They started to think about a project, or a series of projects, that could shift public attention away from the immediate towards the longer term, and embarked on a rather surprising mission. They concluded that it was necessary to construct a technological edifice that would serve from the outset as a mythological object and that would be in stark contrast to the contemporary drive for the real-time. The edifice became the 10,000 Year Clock, a mechanical clock that ticks away 10,000 years, one tick per year, bonging once a century, and displaying a mechanical ballet once every thousand years. Although this clock is not made for eternity it transcends the subjective time frame, and if finally realised it would very likely transcend every conceivable cultural frame of time. In this time-bridging immanence it can be considered a truly transcendental edifice.

The task of preparing the clock project and other similar undertakings has been entrusted to the Long Now Foundation. The necessary funding has apparently been secured, a plot of land to host the clock has been acquired, and a design of the clock is finished. It would seem that nothing now stands in the way of the clock being put into operation. The project’s website [March 14, 2004] quotes Hillis describing the starting point of the clock project as follows:

“When I was a child, people used to talk about what would happen by the

year 2000. For the next thirty years they kept talking about what would happen by the year 2000, and now no one mentions a future date at all. The future has been shrinking by one year per year for my entire life. I think it is time for us to start a long-term project that gets people thinking past the mental barrier of an ever-shortening future. I would like to propose a large (think Stonehenge) mechanical clock, powered by seasonal temperature changes. It ticks once a year, bongs once a century, and the cuckoo comes out every millennium.

Such a clock, if sufficiently impressive and well engineered, would embody deep time for people. It should be charismatic to visit, interesting to think about, and famous enough to become iconic in the public discourse. Ideally, it would do for thinking about time what the photographs of Earth from space have done for thinking about the environment. Such icons reframe the way people think". [11]

Transcendence here, as in so many other cases in Western technological history, is imagined as a machine. To transcend the timeframe of human life and experience inevitably points towards the eternal, and within that to the divine. The Long Now clock seems to be yet another imaginary medium whose prime intention is to unite daily human affairs with eternal wisdom, regardless of whether this eternal wisdom is given the name "god" or "nature".

Compensation Machines

As noted earlier popular technological imaginaries are sustained by a willing clientele (preferably an eager one). The ideal clientele for the promise of technological novelty is perhaps a desperate one, i.e., one that is not primarily interested in 'objectifying' its relationship to the new technological objects, or making 'sensible' assessments of these technological objects, and the imaginaries that accompany them.

Looking back at the wonders of technological invention and the bright futures they promised in the past, we are often struck by a sense of disbelief that such silly narratives could be taken seriously at all. That the earliest computer games, or pre-GUI computer systems could once be the objects of such intense delight may seem laughable now. Could not the inadequacy of these primitive technological systems only be admired, either through the prism of mental disorder, or under the sway of a grand narrative according to which today's inventions were but the first stepping stones towards that magnificent future of limitless possibility?

Are the early adopters and trend followers of such technological novelties all befallen by some form of mental disorientation? What constitutes this extraordinary mesmerising quality of the technological sublime?

There is little point in taking a derogative stance here. The sense of an eternal return of the same techno-futuristic meta-narratives is too strong. The scale of involvement and investment (not least in hard cash) is too large. The excessive nature of the techno-imaginary embrace, bordering on the brink of sheer desperation, runs too deep to be discarded as the misguided preoccupations of a few simple minds. From the

earliest unfounded expectations about the cultural literacy building capacities of television to the hype of virtual reality technologies in the early 90s, the Dotcom mania in the later 90s (turning Dot Bomb in 2000), and the subsequent ‘great telecom crash’ [12] – soon to be followed by the demise of 3G [13] – the public and professional investment is simply too large to marginalise the deep-seated belief in the saving grace of contemporary connection machines, and treat it as a social fringe phenomenon.

As with cars, clothes, real estate, or briefcases, new communication devices and technological gadgets are objects of social distinction. Owning the right item, rather than the merely functional one, confers status. Furthermore, certain communication technologies do provide actual economic, and private or social benefits. Also, the revenues made on stock markets in the 1990s with technology funds have been highly beneficiary for some shrewd traders and a very few companies. All these incentives can explain part of the excitement that characterised the later 1990s, and part of the willingness to put up the cash for it. But it can never provide sufficient grounds to explain the degree and the intensity of the excitement, let alone the measure of personal and corporate/institutional investment, and the inevitable but still astonishing destruction of capital that was to follow.

The involvement of such vast numbers of people ready to buy (into) what the market has to offer, and the readiness of venture capitalists and institutional investors to put up the required capital to fuel the dotcom and telecom manias, points far beyond the merely practical, the functional, even the rational. A certain form of existential frenzy appears to be involved in creating the right conditions for this modern day version of Tulipomania [14] to emerge. The term ‘technological sublime’, which has achieved some currency in recent debates on technological culture, even though it has come to mean several rather incommensurate things, actually points in an interesting direction to analyse these recent forms of popular delusion.

There are a number of different understandings of the philosophical concept of the sublime, from Longinus’ literary interpretation to Kant’s almost cognitive concept of “Analytik der Erhabenheit”, and more recently Lyotard’s transformation of Kant’s theory of the Sublime as the unrepresentable. Most productive for current purposes, however, is the theory of the ‘existential sublime’, whose arguments have paradigmatically been laid out by the eighteenth century philosopher and statesman Edmund Burke (1729-97) in his study on aesthetics *A Philosophical Enquiry into the Origin of our Ideas of the Sublime and Beautiful* of 1757. [15]

Privation, horror, and delight

Burke maintains that there are passions that stir the soul to a far greater degree than those aroused by the experience of beauty. These passions are not of a singularly positive nature. Yet, they bring about intense sensations of pleasure and they seem intimately connected with our innermost existential experience. What’s more, these sensations appear to follow on necessarily from one another in a particular order, under specific conditions, and they always seem to involve an ambiguous mixture of pleasure and pain.

The progression of these sensations and the experiences they give rise to, necessarily follows a similar pattern, according to Burke, that of privation, horror, and delight. He introduces the term 'delight' specifically to indicate a distinct sensation of pleasure far more intense than the experience of beauty. His theory can best be explained by considering the existential fear of darkness, which in contemporary terms can be considered a genetically imprinted instinctive reaction to the absence of light, connected with an inborn sense of self-preservation.

Burke observes that the deep-seated fear of darkness results from privation of light, and he points out that this fear is of an existential nature. When light is taken away altogether and for an indefinite period of time, this privation gives rise to the fear that the darkness might prevail without end, and in absolute darkness we are surely destined, as biological creatures, to perish. Prolonged darkness heightens the fear of the end of life to the threshold of absolute panic, of horror. The confrontation with absolute darkness is the confrontation with an experiential rift, a non-space and a non-time. It is the confrontation with the very principle of death itself, and such a confrontation mobilises the sense of self-preservation more than anything else in life can.

When light is finally reintroduced, and the existential fear, resulting from the threat of darkness without end, is put at bay, a tremendous sense of relief engulfs the mind. The reintroduction of light confirms the fact that life has not come to an end. The lost connection to the world of the living is restored. The removal of this existential pain, the end to horror, produces a feeling of pleasure much stronger than any possible experience of the beautiful, exactly because of its existential nature. Such a singular sensation required a new name, and Burke named it 'delight'.

The experience of what we would now call 'the existential sublime' is not restricted to any particular domain. It appears across different forms of experience. What it retains from one domain to another is the adherence to the particular structure of sensation of privation, horror and delight.

Analysing different domains where the experience of the existential sublime may be found, Burke touches upon the theme of "Society and Solitude". He observes that "society (...) gives us no positive pleasure in the enjoyment; but absolute and entire solitude, that is the total and perpetual exclusion from all society, is as great a positive pain as can almost be conceived. Therefore in the balance between the pleasure of general society, and the pain of absolute solitude, pain is the predominant idea. But the pleasure of any particular social enjoyment outweighs very considerably the uneasiness caused by the want of that particular enjoyment". [16] And this is to him no small matter. The pleasure of general society, of contact with others, is even stronger than the fear induced by the threat of absolute solitude. The threat of an entire life of solitude, Burke concludes at the end of his observation, "contradicts the purposes of our being, since death itself is scarcely an idea of more terror" [17].

The basic structure of the experience of the sublime in relation to solitude and human contact follows the structure of the experience of privation of light, fear of darkness, and subsequent delight, discussed above. Privation of contact, if that

privation is complete and of indeterminate duration, induces the existential fear of absolute solitude – a fear that is in fact of ‘scarcely less terror than that of death itself!’ When this threat of ‘absolute’ solitude is put at bay, the removal of the privation of contact gives rise to an enormous sense of relief, an almost absolute delight in the pleasures of general society, of contact with fellow human beings, with family, friends, and loved ones, even with colleagues, or simply with other people *suis generis*.

Here is a practical application of this theory. Most mobile phone conversations begin with the words: “Where are you?”. This question is in itself entirely pointless, since the very fact that it is uttered in a telephone [18] conversation means that presence of both parties in the same space is not available, while for the conversation their actual location is irrelevant [19]. It therefore points beyond the immediate situation, maybe towards future action (a meeting), but certainly to a set of implicit existential fears and desires. The question “Where are you?” actually speaks a multitude of other messages, “We are not together”, “I want to be with you”, “I miss you”, “I’m on my way to you, but I can’t wait until we actually meet”, “Even though we’re not together I want to speak to you”, “I’m afraid not to find you where I expect you”, “I desire you”, “Please do not forget about me”, “What if we never find each other, what if we never meet again?”, “I ‘m afraid to be alone”, “Please don’t leave me (alone)!”, “I feel lonely”, “I’m afraid of solitude”, are just some of the modalities of this existential outcry we hear around us daily as we move through public spaces, on busses and trams, in trains, in corridors and on the street, in meeting places, airports, stations, waiting rooms, sometimes even in the public lavatory.

The phrase “Where are you?” is first and foremost the expression of an existential anxiety, but it also already implies its immediate resolution, not in the future meeting that puts the fear of absolute or relative solitude at bay, but already in the very moment of its utterance. The call being answered, even in the absence of a reply, the confirmation of contact established with the designated addressee, instantaneously infuses the mind with relief. Privation of contact had instilled the fear of solitude, and the removal of this privation of contact through the telephone connection produces an intense and immediate sensation of delight. The threat of the fear of solitude, a fear imbued with scarcely less terror than the idea of death itself, is relinquished at the click of a few buttons, real-time consolation – a highly addictive apparatus!

Experiences

In the web campaign *Experiences* [20] SonyEricsson introduces six stories (“experiences”), six imaginary scenarios where their new 3G [21] mobile phone comes into action, exploiting the wireless multimedia capabilities of the new device and the broadband mobile communication networks. The stories present daily situations, which the potential consumer can easily identify with; stories that reflect the “mobile lifestyle” of the potential customers, or attune to a high pitched life in the international business community.

Although many of the narratives used are highly predictable; see the unseen, transmit your images in real-time, connect to people you would otherwise miss, share information and ‘experiences’, play games together, etcetera..., one story (“Bedtime

story”) reveals a keen understanding of the psychological insecurities that drive the use of mobile communication technology as a compensatory apparatus.

It is break time in the big city and we follow the musing of a manager, dressed in typical middle-managers attire, working far from home in a business district of functional high-rise buildings. There is no clear indication in which city the story is situated, it could be anywhere on the planet. If we hadn't decoded it yet, there is a text version that accompanies the flash animation, which builds on the story with associative images and sounds. The text explains that this manager is working far from home. Back there, at home, it's his little daughter's time to go to sleep, but he is not there to read her a bedtime story, or sing her a lullaby.

The new multimedia phone comes to the rescue. From the business park he starts to photograph the fluffy clouds in the beautiful blue sky behind the towers of commerce. With the images he constructs a story that is transmitted real-time to his daughter's bedroom, and we see her watching it unfold on the laptop (with wireless internet connection). His wife sends the pictures back to him (with her multimedia phone); the little girl reading the digitised clouds and finally falling asleep

The text is full of mystification and play on the subliminal desires of transcendence of the separation implicit in the scenario. Some quite literal: “you wish you could be there with them”, and “you're missing your wife and child”, while other suggestions are more sophisticated, planting keywords in the narrative that ascribe values to the story and the device that lead away from its lowly technical function and the commercial purposes of the advertisement (i.e., selling the new phone to ‘early adopters’ at a much too high introductory price). “With a flash of inspiration and with just a few clicks you capture your vision..”, and, “you've written a wonderfully magical story”, and then more overt again “It's almost as if you were there with her”. And gratification is instant: “Your instant reward is an e-mail back from your wife” - the picture of the sleeping girl that “inspires you for the rest of the day”.

The text of the advertisement story is in fact remarkably similar to a dialogue in Peter Blegvad's stage play “On Imaginary Media”, between the characters A and B about creation, effort and inspiration:

A - “So, you want media that will make bringing into being effortless?”

B – And instant. Inspiration comes so slowly to us mortals, that's why in allegories she is depicted as travelling by turtle.

I want imaginary media that will put skates on Inspiration's turtle.

I want media that will remove all obstacles to the immediate gratification of my every whim”. [22]

And of course we do not merely share text, images and voice, but ‘experiences’, implying that what is sold is not a product, but rather that an experience is created for you. The text ends with three more keywords, “Touching from a distance”, by sharing images you are supposed to share experience more directly “than words ever can..”

and you can share a moment “no matter where in the world you are” - the death of distance. Finally everything can be personalised, you can “be yourself”, literally according to the ad, and what is more, you can “share your character”. The new medium enables the sharing of that aura of personality that produces mind, spirit and persona, your character, not just empty words, images and text or data. How this metaphysical transformation is achieved is of course not explained, it is merely suggested...

Technology as Myth

Myth, Roland Barthes taught us long ago [23], is a second order semiological system. Second order because mythological meaning is always superimposed over the historical existence of any event, object or person. Thus, beyond mystification myth serves many other purposes and performs other roles. The function of myth is always at least two-fold: to superimpose and to hide.

For myth to work it has to estrange the object, person, or event from its historical existence. The original significance of the mythical object has to be erased in order for the myth to be able to take hold of it and use it as a clean projection surface for a whole new range of significations. The second order signification ascribed to the object of myth transcends its own existence here and now. Often these mythical significations are gathered from an extended, suggested, or even a purely imaginary past that can then be projected into the future. Although the new significations superimposed by myth are often mystifying, they are never arbitrary. Myth is entirely strategic in character. It serves an agenda and a purpose. It is never neutral, although in what any particular mythology communicates it will always deny its own strategic character by appearing ‘natural’.

The superimposition that informs the mythologies of various forms of connection machines discussed so far is the dream of technological transcendence. This almost archetypal Western mythology can be read as a compensation complex, where technological apparatuses of various kinds are expected, believed or suggested to alleviate a wide spectrum of human, biological, and social deficiencies – as if ‘at the flick of a switch’: a true *Deus ex machina*, a magic spirit that resides inside the machine. This magic, which in itself remains unexplained, is supposed to abolish distance (physical, but also emotional distance), provide knowledge and insight, give inspiration, create a ‘new economy’, establish new forms of politics, make things free (of cost), reinvigorate community, include the excluded, bridge cultural divides, enhance or rather reduce mobility, create a global consciousness, it should be able to transcend the confines of time, and even cross the divide between the living and the afterlife, or serve as a mediator of the divine. In short the mythology of new technology is the promise of the ultimate compensation machine, realising all that is humanly unachievable.

It is not very difficult to decode the strategic interests behind the eternal return of the mythology of new technology. The rise and fall of the New Economy has been a clear case in point. Today we understand why insignificant start-ups were blown up out of proportion, so much so that the Dutch proverb of “Windhandel” (to trade on the

wind) became a highly popular and apt characterisation. From the viewpoint of financial speculation the hype of new technology around the rapid expansion of the internet as a public access medium was the perfect opportunity for a well-established trade game. Hype the start-up company and buy into the stocks before they actually reach the market, wait for the hype to reach culmination point, cash in at the right moment, and take home incredible gains. For the speculator it is completely irrelevant whether the start-up company has any real economic, technological, or innovative potential – the only relevant question is whether it is believed to have that potential on the stock market.

These traders could then rely on the age-old human flaw of greed to do the rest. As the hype grows, more inexperienced and amateur investors hit the market and start buying into the attractive offers of the New Economy's emerging markets and players, looking for a quick profit, oblivious to the risks, or simply blinded by greed. The scheme is astonishingly simple and effective, and can be applied anywhere: biotech, security, tulips – as long as there is an 'emerging market' and new players that can be sold off as the promise of the future, all the necessary ingredients are at hand.

What is more difficult to understand about the impressive series of new technology crashes around the turn of the millennium (the Dotcom, New Economy, and Telecom crashes) is their sheer volume and the breathless eagerness of multitudes to be part of the game. Also very large institutional investors, consultancy firms, politicians, and the wider public were ready to invest in the myth of growth without end ("The Long Boom") and perpetual productivity gains (which actually turned out not to exist anywhere else than in the high-tech industry itself, and could simply be explained from growing economies of scale resulting exactly from the very willingness of the rest of society to buy into the mythical status of the new technologies). Why did so many people by-pass all sound judgement, and how was this unprecedented destruction of financial and human capital possible in the first place?

It seems that a deeply rooted belief in technology as a compensatory apparatus, a machine that can transcend the limitations of the merely human, has played a crucial role here. Machines have become not only the mediators of the divine, but in their mythological significations the complexity of the new machineries and their extraordinary transformative powers in society and in the private lives of an ever growing portion of the global population, have become the abstract embodiment of the divine. It is a system of belief that assumes a new 'naturalised' status, in which technology is not seen to be driven by will or interest, but is increasingly regarded as a matter of fact, much like the forces of nature. The enormous popularity of biological metaphors in the speculative writings of new technology protagonists of the mid 1990s [24] testifies to this 'naturalised' status of emerging technologies. Society itself is no longer seen as the interplay of strategic interests, conflict, and power, but is regarded as an emerging property of the interaction of abstract forces that operate outside of anybody's will or interest. However, the projection of this public image has been largely a deliberate affair, driven by a variety of strategic interests, so much is clear post-WorldCom, post-Enron, post-World On-line. As Barthes noted long before all this, myth is depoliticised speech, and the politics have been effectively washed away by the metaphor of nature. The purpose of the naturalisation of the mythical object is to make it appear neutral, matter-of-fact, indeed "natural", and thus unquestionable.

Amsterdam, May 2005

Notes

- 1) The ability to register 24 EVEN hours in the day was an important innovation brought about by the mechanical clock.
- 2) Lewis Mumford, *Technics and Civilization*, New York, Harcourt Brace, Jovanovich, 1934 / '63, pp. 13-14.
- 3) Immediacy: according to Paul Virilio electronic telecommunication technology introduces a new precedence of time over distance, where in the immediacy of transmissions with the speed of light distance is dissolved on the level of communication and replaced by the rule of real-time: the immediate.
- 4) The International Meridian Conference Washington DC, USA – October 1884.
- 5) A fairly informative article about the War of Currents can be found here: http://en.wikipedia.org/wiki/War_of_Currents
- 6) Nikola Tesla: “The Future of the Wireless Art,” in: *Wireless Telegraphy & Telephony*, Walter W. Massie & Charles R. Underhill, 1908, pp. 67-71].
- 7) Nikola Tesla, Wardencllyffe – A Forfeited Dream.
- 8) Martin Gardner: “Thomas Edison, paranormalist”, in: *Skeptical Inquirer*, July-August, 1996 www.findarticles.com/p/articles/mi_m2843/is_n4_v20/ai_18535410
- 9) The image of Lethe clearly does not seem to apply in this imagination of the underworld.
- 10) Seeing all, knowing all, realising all – according to Jean-François Lyotard.
- 11) www.longnow.org
- 12) Leading cover story of *The Economist*, July 18, 2002.
- 13) This has yet to happen (March 2005).
- 14) A speculative frenzy in 17th century Holland over the sale of tulip bulbs.
- 15) Edmund Burke, *A Philosophical Enquiry into the Origin of our Ideas of the Sublime and Beautiful*, London, 1757, cited here from: *ibid*, Penguin Classics, edited by David Womersley, Penguin Books, London, 1998, pp. 49 – 200.
- 16) Burke, *A Philosophical Enquiry*, 1757/1998, p. 90.
- 17) *ibid*. p. 90.
- 18) tele – from a distance.
- 19) Presence of the signal is in fact much more important – “Do you have range and credit?”, would be a far more relevant question to ask at the outset of a mobile phone conversation.
- 20) <http://www.sonyericsson.com/experiences>
- 21) 3G: Third Generation or UMTS wireless network communication technologies.
- 22) Peter Blegvad, *On Imaginary Media*, stage play written for the Archaeology of

Imaginary Media project of De Balie, Amsterdam, February 2004.

23) Roland Barthes, “Myth Today”, in: *Mythologies*, Vintage Classic Editions, London, 1993 (orig. Paris, 1957), pp.109-159.

24) Kevin Kelly’s book *Out of Control* (New York ‘94) is one of the most outspoken examples of this trend – see also: www.kk.org/outofcontrol/