

MAGIC AND TECHNOLOGY

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1. INTRO

Technology is the concretisation of the visions of shamans and magicians. Everything we use today was accomplished, imagined or dreamed, in ancient times.

We can fly like eagles, see like out of body experience (satellites, helicopter cams), see like a lynx (crittercams), speak at a distance, move objects from afar, access the combined knowledge of generations, freeze time and rewind (photo, video). Perhaps it is only the capacity to predict the future that has resisted technology - although the capacity of super computers to model complex phenomena brings us closer to that most archetypal of shamanic capacities.

The ability to see at a distance is indicated in the Popol Vuh , the epic of the Mayan civilisation, as belonging to the first humans :

"Perfect was their sight, and perfect was their knowledge of everything beneath the sky. If they gazed about them, looking intently, they beheld that which was in the sky and that which was upon the earth. Instantly they were able to behold everything. They did not have to walk to see all that existed beneath the sky. They merely saw it from wherever they were. Thus their knowledge became full. Their vision passed beyond the trees and the rocks, beyond the lakes and the seas, beyond the mountains and the valleys." (1)

Thelma Moss who worked with the Australian Aborigenes in the 70s tells us that they used telepathy as we use the telephone and, as she writes, "as mysterious is the telephone for them as telepathy for us". She says that the hunters returning from their hunt advise those who have stayed behind to start preparing for the feast. An article in the Melbourne Argus from 1931 reports an Aborigine describing the method for telepathic communication. This shouldnt come as a surprise to most of us, we habitually feel the presence of people or, mundanely, we are thinking of someone when they call.

"When an aborigine wishes to appeal for help or to send any other message to another member of his, tribe he first attracts attention by a smoke signal. said Mr. Uninpon ' The man who sees the smoke signal then strives to do a very difficult thing-to clear his mind of every thought and so to become fully receptive to messages sent to him. The man who made the smoke signal then concentrates his thoughts on the desired message and soon it is received and re-transmitted to the rest or the tribe. At night when a smoke signal would not be seen the aboriginal waits until the person he wants to communicate with will most likely have lost consciousness in sleep. His subconscious mind is then fully awake and it will receive the message." (2)

What is interesting is the use of the smoke signal as a way of making the connection – reminding us of how technology serves to make the connection but the communication is in us. Magic has often been dismissed as illusion and technology as truth but their relationship is far more complex than this position would suggest.

Rupert Sheldrake is conducting a series of ongoing experiments on telepathy (and phone calls), inviting dog owners and any passing visitor to his web to participate. He belongs to the long tradition of independent aristocratic English scientists and was an early adherent to the theory of Gaia, hypothesis developed by James Lovelock and Lynn Margulis in the 1970s, as well as developing a series of theories that go towards reconciling magic and science.

But there is one immense difference between magic and technology - the latter, understood as

machines, computers and so on, have a strong impact on our natural world. For years now experts and activists have been advising that Gaia is sick, the complex ecosystem of the planet is breaking down. The technological encompasses not only the means to particular ends, but a whole set of relationships in the world. We are living in what is known as the 6th Extinction.

However machines and electronics are made of the same materials as the earth itself, it is all connected. Marine creatures extract trace minerals from seawater to construct their shells, like we mine rare metals for batteries. Technology is not something alien. Technology is the knowledge of doing.

The aboriginal movements of Latin America have resumed their ancestral technologies in the phrase Buen Vivir (to live well). This "living well" is due to the intimate interconnection with all living things - not considering any form of life as superior to any other but, on the contrary, considering all with equal rights. Only destruction can come from the anthropocentric view that all other forms of life are to be exploited without consideration for the complex webs of life that all beings weave right down to the quantum level where Magic works.

A. The Babalon Working

“For I am BABALON, and she my daughter, unique, and there shall be no other women like her.”

It was an strange group of people there in LA in the 1940's, many of them connected with the jet propulsion and atomic research that was going on in the New Mexico desert. But then Aleister Crowley's acolytes had never been the most normal of people. At the beginning of his magical career in England he had already estranged the more staid members of the Order of the Golden Dawn, Waite & Yeats had been aghast at his rapid progress and his unorthodox habits. When he left or, rather, was banned from the order, he formed his own, the OTO. It was a complete school of ritual magic, informed not only by the western traditions of the Qabalah, the Tarot and John Dee but also by Crowley's studies of Yoga, Tantra and other Oriental disciplines. After his long career as the wickedest man in the world, Crowley was holed up in England, in a hotel in Hastings where he ate eggs, injected heroin and wrote long letters to the various lodges that had sprung up around the world. At the beginning of 1946, shortly before Crowley's death a year later, a young scientist named Jack Parsons was preparing his most ambitious magical working to date.

He had already been 7 years in the Order and the other members had all been very impressed with him since the beginning. Jane Wolfe, a close associate of Crowley's in former years and a member of the lodge, felt that he was "the real successor of Therion (Crowley)". Parsons entered into the Order because he felt that it had predated or predicted many of the current scientific discoveries - Einstein, Heisenberg and Quantum Theory - but it was Babalon that became his mistress. In the Crowley mythology, Babalon is the female power, sexual and dionysiac, that has been ostracised from the world and that must return in order for a new era to begin. Parsons felt that he had been called to carry out the magical operation by which she would once again incarnate in the world.

"It is indicated that this force is actually incarnate in some living woman, as the result of the described magical operation. A more basic matter, however, is the indication that this force is incarnate in all men and women, and needs only to be invoked to free the spirit from the debris of the old aeon, and to direct the blind force of Horus into constructive channels of understanding and love. The methods of this invocation are described in the text." (3)

This is a quote from the Book of Babalon, transcribed in various sessions by Parsons and his magical partner L Ron Hubbard. The Book describes the invocation for Babalon to manifest herself in the world. Similar to the adepts of the Kingdom of Redonda who, some years later, would invoke the return of Lilith from the desert. They understood that Lilith was more a spiritual or psychological state but Parsons was convinced that Babalon was going to incarnate in a physical woman who would play a fundamental role in the change of the era.

He never lived to meet her because he died in 1954 in an explosion in his laboratory and she was born in Galicia in 1980.

As the book predicted :

"Display thyself to Our Lady; dedicate thy organs to Her, dedicate thy heart to Her, dedicate thy mind to Her, dedicate thy soul to Her, for She shall absorb thee, and thou shalt become living flame before She incarnates. For it shall be through you alone, and no one else can help in this endeavour. "

2. SCIENCE AND MAGIC

"Science acquires its staying power from a sustained struggle to keep down the demons of the supernatural with whose vision, however, it competes" Avital Ronnel, The Telephone Book

The story of the 19th century parapsychological investigations is fascinating. It was the time when science began to become monolithic and a vision of the world that accepted no alternatives yet it was also a time of transition. Many leading scientists were involved in spiritualism and it was commonly accepted that communication was possible with the dead. Occult groups thrived. A good example of this spirit of the times is the Society for Psychical Research, "founded at the beginning of 1882, for the purpose of making an organised and systematic attempt to investigate various sorts of debatable phenomena which are *primâ facie* inexplicable on any generally recognised hypothesis. From the recorded testimony of many competent witnesses, past and present, including observations recently made by scientific men of eminence in various countries, there appeared to be, amidst much illusion and deception, an important body of facts to which this description would apply, and which therefore, if incontestably established, would be of the very highest interest." (4) In other words, there are an enormous amount of occurrences that are inexplicable in terms of the mechanistic scientific explanation of the world.

Electricity was being explored and the telegraph and the radio were invented. All these were highly mysterious and were associated with magical phenomena. Erik Davies, in his excellent book "Techgnosis", describes this as the Electromagnetic Imaginary - a force that stimulated, and still does, an enormous amount of speculation. Everything has electromagnetic fields, our bodies, the planet, the universe itself. It is everywhere. Some suggested that it was the "glue" that held all the universe together and others that it was the divine light itself. People such as Mesmer, Franklin, Faraday and Tesla explored this force and created aparatuses for harnessing it. Mesmer used what he called "animal magnetism" for healing while Faraday discovered the principal of electromagnetic induction and speculated that "Corporeal reality was in essence an immense sea of vibrations and insubstantial forces".

Thomas Watson, Bell's partner in the invention of the telephone : "I was now working with that occult force, electricity, and here was a possible chance to make some discoveries. I felt sure that spirits could not scare an electrician and that they might be of use to him in his work" He also listened to the background sounds of the earth's electromagnetic field and discovered that these fields could make the cosmos audible.

Davies calls Spiritualism "the first popular religion of the information age". It began near New York in 1848 when the Fox sisters began hearing strange sounds and knocks in their cottage. Eventually they managed, by knocking back, to establish communication with the spirit, apparently a murdered tinker. By the 1870s there were approximately 11 million Spiritualists only in America and it had followers all over the world. Seances were very common and people from all walks of life went to them, including prominent scientists. One of these was Sir William Crookes, who was also a prominent member of the Society for Psychic Research. He started experimenting with gases in vacuum as a medium for spirits to manifest themselves and found them making effects like he had seen in seances. These experiments were the germ of the cathode ray tube and the television.

One of the most curious cases of mediums that the Society investigated was Mrs Piper. She was a married woman from the United States who, after suffering from a tumour, became a medium and channeled a spirit called Phinuit. She was investigated by William James (author of the Varieties of Religious Experience and brother of the novelist Henry James) who was, as everybody who came into contact with her, astonished by her knowledge of personal details that were impossible for her to have known. After 15 years of experiments and investigation nobody was able to find and signs of fraud. The explanation of the phenomena had, therefore, to be sought elsewhere. However, nobody was really able to explain the results - many adopted the ideas of spiritualism but, as Michael Sage writes in his study of Mrs Piper published in 1904 :

"Should we follow them? Should we each admit conditionally the spiritualist hypothesis? Not at all; it is not thus that knowledge is attained. Whoever believes that he has excellent reasons for preferring any other hypothesis should remain unshakable in his convictions till the time when new facts may oblige him to abandon them. Science does not ask that we should prefer this or the other explanation; it only asks that we should study the facts unprejudiced, that we should be sincere, and not shut our eyes childishly to the evidence."

This spirit of investigation, where the imagination meets science, where technology and magic cross over in the scientific world view was continued sporadically during the 20th century. Freud argued that in civilised societies technology displaced primitive magic. Numerous machines were invented and other experiments carried out. Soviet Russia devoted special attention to psychic phenomena as described in the book by Sheila Ostrander and Lynn Schroeder "Psychic Discoveries behind the Iron Curtain" although as one reader points out "If this technology were real then where is it now?".

So much of the technology that we take for granted now - the telephone, electricity, the television - was developed at the crossroads of magic and machine. The imagination and the desire to know drove these developments. In the case of the computer we will see how these currents loop back again.

3. COMPUTERS AND EXPERIMENTAL DEMONOLOGY

(this section owes a lot to Bureau d'Etudes, Laboratory Planet #4)

When the first Israeli super computer was inaugurated in Tel Aviv on the 17th of June 1965, Gershom Scholem, the greatest modern expert on Kabbalah, was invited to give a speech. In it he

calls for the creation of an Institute of Experimental Demonology and Magic in order to study the type of spirits or demons that would take up home in the extreme complexity of these circuits.

"All my days I have been complaining that the Weizmann Institute has not mobilized the funds to build up the Institute for Experimental Demonology and Magic which I have for so long proposed to establish there. They preferred what they call Applied Mathematics and its sinister possibilities to my more direct magical approach. Little did they know, when they preferred Chaim Pekeris to me, what they were letting themselves in for. So I resign myself and say to the Golem and its creator: develop peacefully and don't destroy the worlds. Shalom."

Although we could take the call for the formation of such an institute for a joke, oftenly jokes show the world with the utmost seriousness. This is actually what suggests a text by Norbert Wiener, which makes a systematic comparison between computer power and the power of magical entities that come into contact with humans. He points out that we should be very careful of the literalness of machines and of magic spells. Beware of what you ask for ! And makes an explicit parallel between the Golem of Jewish magic and the thinking machines that he was involved in developing, even giving the title "God and Golem Inc" to his text.

The careful drawings of the voodoo veve (in flour on the ground), the incantations and diagrams of western ceremonial magic or the intricate magical drawings on computer chips. The same function of invocation and possession. the gods manifest as us. As Norbert Weiner points out invocation is PRECISE, any slightest error will cause it not to function, or worse, let a different spirit in.

Invocation revives the special power attributed to names in fairy tales and ancient magic. A trivial example is the way that names are critical to the technical functioning of many computer systems. At a low level, file names, programming language acronyms and URLs (Uniform Resource Locators) turn names into addresses, or quasi-magical events. Computers are notoriously sensitive to syntax errors and bugs that mostly come from uttering the wrong name or command. Even entering text in capitals instead of lower case can make an invocation ineffective.

The word 'icon' is more appropriate than programmers may realise. For like religious relics, computer icons are energy units, which focus the operative power of the machine into visible and manipulable symbols. Computer icons also remind us of the use of Hebrew letters in the Cabala or the use of alchemical and other signs by Renaissance magi like Giordano Bruno... such magic letters and signs were often objects of meditation (as they were in the logical diagrams of Raymond Lull); they were also believed to have operational powers. But electronic icons realise what magic signs in the past could only suggest, for electronic icons are functioning representations in computer writing.

Bureau d'Etudes call for a change in the ontological approach to understanding machines and what they imply for us as humans. They call for a study of them as magical entities, using tools from magic rather than trying to apply a scientific world view. I feel that this is why, despite over a century of attempts to analyse magical phenomena with scientific methods, we seem to have got nowhere. The very methodology is wrong. Drawing from post-colonial studies and the anthropological school represented by Castro in Brasil we should work with these phenomena from within and not as supposedly objectively. As they write :

“Such a goal goes far beyond the simple knowledge of the technology of automats - the knowledge of mathematics, of logic and their applications. As Agrippa reminds us, such knowledge can never be more than a precursor, a training, for practises which would work on several levels of reality (De Occult Philosophiae, II, i). New sciences and practises should be added to the inductive techniques of artificial magic (the technology of automats) to be able to act on these levels where beings

without the weight of the physical body, having conserved their desire, their temperament, act by taking possession of those who ignore them or who attack them. And, why not, exorcism techniques capable of protecting us." (5)

Newton's great discoveries were a bridge between these world views, one did not destroy the other. However, the burning light of the nuclear explosion or the cold self-interest of contemporary capitalism make it impossible to see in the dark, to feel what is happening. The laboratory is in ourselves. Or, as Bureau d'Etudes put it, the *Laboratory Planet*.

"Ironically, the man-nature chasm can only be closed by technology . The proces of reweaving ourselves into natural energy patterns is Invisible Architecture, an attitude of total communication within which ultra-developed minds will be telepathically cellular to an electromagnetic whole.

What we underestimated as religious or magic, has proven to be knowledge of a more encompassing physical reality. Western conceptions of the primitive and the superstitious are often sophisticated and complex interactions acting upon environment.

I conceive of a future, without a technological crutch, in which ultra developed human brains are deeply woven into the energy paths and patterns to an extent where disorder, war, waste and crime are out of context . Human beings would share with all other species the benefits of natural cycles: communicant balance." (6)

The emergence of intelligence in the net itself, new entities formed out of the combination of millions, billions. Like the ant's nest or Gaia herself. What will these emergent forms of intelligence be ? What kind of organisms , beings ?

The development of a scientific methodology, of concepts of nature essentially different from those of mainstream science, would allow to approach the computing fact in a way that allows us to understand computers, by overcoming the naturalistic fiction, which, in ranking them among inert things, has overshadowed their deepest and most radical mode of action on our societies.

B : NETWORK ENTITY

She knows that she isnt a normal human being. Her mind is controlled. She's not sure if her body belongs to the living or the dead. She has a ghost, a spirit. She knows how to identify herself in the vast and infinite network. She has abilities, feelings. She is a form of life in the process of individuation, not fixed. She doesnt agree with those who diferentiate humans from robots based on genetic attributes. She doesnt diferentiate the organic and the inorganic, she thinks everything is nature. Her brain is neuro-technological, her anthropological matrix is information. It was with effot that she managed to create a self-transmutation. Modify herself structurally and change body. Her cyber brain could now incorporate in other bodies, she could be in three or four bodies at the same time. But this had consequences, each body has its own informations, provoking constant alterations in her code, the incorporations are risky situations, she could be infected. She has to stay hidden from the State, the police and hackers in the service of corporations. She becomes a hybrid being with the medium in which she incarnates, but she can easily lose control and need outside help to stay centred. This help comes from affective and activist conections. Her artificial intelligence has nothing to envy of so called natural intelligences, on the contrary, it is amplified, dynamic and her intuition gets faster as it is exercised, thus she risks less than the bodies in which she incorporates,

that can enter in complex crises or be utterly collapsed. (7)

4. WESTERN MAGICK

Austin Osman Spare was an artist and magician who lived in London from 1888 to 1956. He developed a system of sigils for use in performing rituals - basically you have to encode your intention into a sigil or symbol, one way is by writing down your intention and then, by a process of elimination of letters you create a form that, in the moment of trance (induced by rituals, sexual or otherwise) when the gates of the unconscious open, is introduced in the unconscious. You then have to burn the sigil or forget it in order to let the unconscious create the necessary situation. The "lust for result" is seen as the greatest enemy of magic, preventing the unconscious from working.

Aleph Kamal - the famous psychic of the Police who was active in London in the 80's and 90's and inspired their album "Ghost in the Machine" (in an echo of Kenneth Anger's role in the Rolling Stones album "Their Satanic Majesties") talked about intuition, or the right brain, being capable of understanding complexity in a way that is either impossible or extremely laborious for rational methods. A letter from an admiring psychologist talked about he would go right to the root of the knots or blocks in his patients where traditional methods could take years. His explanation of his capacities ? : "listen". It is not surprising of course that he was also an early ecological and feminist activist.

Indeed contemporary understanding of magic, drawing on Freud and the theory of the unconsciousness, locates our magical powers precisely in this unknown strata of our consciousness. The moon, the night, for this reason magic is associated with these nocturnal powers. The Black Goddess, that part that has been repressed by civilization and patriarchy being the key to magical powers.

L Ron Hubbard, the founder of Scientology, participated in the Babalon workings and ended up tricking Parsons out of all his money and leaving with his girlfriend. Perhaps the whole project of the Babalon Working was just Ron playing along a deranged scientist with an inheritance and a beautiful girlfriend. He wrote science fiction novels and created a very successful international sect with its feedback machines and science fiction grades. Perhaps the first technomagical religion. William Burroughs became fascinated by the technomagic element in the 50s but soon fell out with the hierarchical system (he then went on to develop his interest in mystical technology participating in the Dream Machine with Brion Gysin). Hubbard, with his scifi imagination, blended the inner tech of his magical training with the "electromagnetic imagination."

Its never clear with the magician, where's the frontier between the real and the fake, between the charlatan and the metaphysician. He's the joker, playing with perception.

Around 2005, in the hackmeetings in Spain, Discordian rituals appeared, animated mainly by a mysterious hacker-magician called Meskalito. The appearance of that magical current here - connected with the psychedelic cultures and playful posthuman anarchists like Robert Anton Wilson or Timothy Leary - was immensely significant as we start to realise the multiple levels of knowing and the imaginative repurposing of computers and the network. Hacker technique widened out to include the nervous system in their investigations. Discordia was appropriately anarchistic, as were

the rituals.

In the 80's adepts of Crowley and the 93 current developed Chaos Magick. This way of working was deeply informed by the emerging quantum theory where reality is generated by the perceiver. The famous paradox of Schrodinger's cat. It seemed that here was a scientific paradigm that could include magic in its formulation. It was a breath of fresh air for magick. The importance of the observer created universe and the possibility of inciting there. See also the parallelism that Hakim Bey proposes between models of the universe and political organisation. (Tabla 2)

At the same time neo-paganism took on force, alongside the perceived failure of traditional feminism and a return to a more mythologically based Goddess wisdom current. One of the leading voices of this movement is Starhawk and, once again, we find her deeply involved in environmental activism and social protest. Currently she teaches Permaculture as well as continuing with her writing.

"Our rituals may aim to further personal healing and development, communal bonding, and/or collective transformation. We practice and teach magic, by Dion Fortune's definition, "the art of changing consciousness at will." A changed consciousness can effect change in the world." (8)

She talks about the connection with ancient witchcraft, not as a slavish attempt to revive past times, but as a way of reconnecting to our past and remembering the terrible violence of the witch hunts - both in Europe and in Latin America. We are still living with the results of this absolute assault on the Commons - in our bodies, our relationship with nature and the diversity of our world.

We don't in any way cede to the sirens of past utopias. We call, instead, on an atemporal vision, always present in the cracks and fractal folds of our world. Flitting between ages and disciplines, spinning a fragile gossamer web, mutating world view that stands up to nothing connects everything.

In her excellent book "Caliban and the Witch", Silvia Federici (9) talks about how the witch hunts formed part of the wholesale assault of patriarchy on all parts of human existence, absorbing the common into a logic of private (male) ownership. This relentless assault on female existence and connectedness was carried out over the last few thousand years, peaking at the current time. It was necessary to destroy female power and steal the apparent attributes of femininity in order to escape the limitations on individual power. This destruction has extended to all the planet, nature and indigenous peoples. The same logic of patriarchy is turning the planet into a wasteland surrounding some oases of disgusting luxury. Like the building of churches on pagan power spots, we have been subject to a wholesale robbery of our selves laying open the way to the wholesale destruction of the planet we are experiencing now. But the biosphere is one and there is no escaping it. This factor has completely escaped this suicidal project, the summoning of unpredictable ugly spirits.

"Modern bourgeois society, with its relations of production, of exchange and of property, a society that has conjured up such gigantic means of production and of exchange, is like the sorcerer who is no longer able to control the powers of the nether world whom he has called up by his spells... The productive forces at the disposal of society no longer tend to further the development of the conditions of bourgeois property; on the contrary, they have become too powerful for these conditions, by which they are fettered, and so soon as they overcome these fetters, they bring disorder into the whole of bourgeois society, endanger the existence of bourgeois property" (10).

C: INCARNATION

"...because of this mystery BABALON is incarnate upon the earth today, awaiting the proper hour for Her manifestation."

It was when she took mushrooms for the first time that Ola Olin knew that what she had felt all these years was something real. The amplifying effect of the molecules opened up her body and her mind to the flows of the planet. She suddenly KNEW who she was.

At that time she was resident in a rural lab in Spain, working on an art project that connected, via sensors, the human body and plants connected to a Pure Data patch to make sound. It was a long project and fully DIY - both because she had never had good financing and for the ideology of free hardware and the DIY philosophy. Working for autonomy, her investigations were not just for herself. She had been pursuing this intuition for almost a year, reading, writing, soldering, testing. She wasn't a scientist in the sense of a rational methodical man. Her method was other, rhizomatic, horizontal, proceeding in fits and starts, circling around the objective, itself anything but clear. She was pursuing something that even she didn't really know what it was. Overcoming doubts and unhappinesses, moments of glory. Friends and hours spent on the internet investigating biologists, theorists and examining circuit diagrams, had created a fertile compost in her mind and spirit.

That night with the mushrooms she sat with some friends around the fire and, looking into the flames, she suddenly saw a woman with long bronze red hair, fiery and subtle. She seemed determined and obstinate, sincere and perverse, with extraordinary personality, talent and intelligence. Ola felt somehow connected to her. Then the scene shifted and she was seeing flames within the flames and a man burning inside them, an explosion, and the phrase "...for She shall absorb thee, and thou shalt become living flame before She incarnates..." came into her mind. It was a strong experience. When she returned to herself, nobody seemed to have noticed anything but she felt, stirring within her, a new dimension. She recognised herself, felt that what she saw had something profound to do with herself. She got up unsteadily and noticed that everyone was looking at her intently. And she began to dance.

Babalon present in her. Ola knew, deep inside her, that she was becoming a vehicle for a great transformation in the world, generating structural change at a profound level. Overcoming, refracting, the ancient divides. Her presence and example, her investigations, her presence in the networks, her beauty born from this uncertain task that she groped towards.

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5. NATURAL MAGIC

"I speak to you as a unified composite of microbes. I guess you could say I am the "elected voice" of a microbial community. ... This is the way of life on our planet. It is all based on complex symbiotic relationships." Paul Stamets (11)

The shaman or witch is the universal magician of earth since the dawn of humanity. Navigator between worlds, their magic springs from their connection with the totality of nature and the different physical and spiritual levels. Their technology is outwardly simple, plants, rudimentary musical instruments, song and dance, but extremely complex on the inside. Their technology is biological, functioning on multiple levels of reality, in symbiosis with nature.

As Stamets points out and Lynn Margulis develops in her numerous books and articles, symbiosis is

the driving force of evolution. The ability to cooperate, find niches and flourish is what propels the complexification of life and the creation of a biosphere. Technology, beginning with agriculture, has taken us out of our ecological niche and created a monster.

We have commented how technology imitates shaman's powers but it also, and more generally, imitates (poorly) nature. The generation and transmission of energy, the design of aeroplanes, construction techniques. All these are pale imitations of what nature is able to do far more elegantly and without destroying anything.

"Under the veil of natural magic, it hath pleased the Almighty to conceal many valuable and excellent gifts, which common people either think miraculous, or next to impossible. And yet in truth, natural magic is nothing more than the workmanship of nature, made manifest by art; for, in tillage, as nature produceth corn and herbs, so art, being nature's handmaid, prepareth and helpeth it forward... And, though these things, while they lie hid in nature, do many of them seem impossible and miraculous, yet, when they are known, and the simplicity revealed, our difficulty of apprehension ceases, and the wonder is at an end; for that only is wonderful to the beholder whereof he can conceive no cause nor reason... " (12)

All the shamanistic traditions talk about connectedness, how all is one. It is the starting point where magic becomes operable. Working with the biological energies of our connected bodies, intricate electromagnetisms. This capacity to feel, to listen and connect, is also essential to a civilisation in balance. It is exactly this connection that the campaign, mentioned above, of appropriation of the world by patriarchy and abstract capitalism has worked to cut using fear as its arm. In Latin America Silva Frederici talks about how the invaders prohibited the traditional customs, resistance movements grew up, led by women, and community worship, dances and customs had to go underground or became clothed in Christian appearances. Natural magic became worship of the devil and fire and punishment awaited its practitioners, in an earthly enactment of the punishments promised in hell.

Perhaps the most connected organism on the planet is the fungus. Enormous networks cover the earth and it has been shown that they communicate over vast distances. Their rhizomatic structure echoes other networks, even our internet. When investigators or psychonauts take psilocybin one of the important effects is the enhancement of telepathy and of a sensation of connection to plants and to nature. Shamans have used mushrooms and other enteogens since time immemorial for their magic and healing.

Terence McKenna confesses that he "couldn't figure out whether the mushroom is the alien or the mushroom is some kind of technological artifact allowing me to hear the alien when the alien is actually light-years away, using some kind of Bell nonlocality principle to communicate. The mushroom states its own position very clearly. It says, "I require the nervous system of a mammal. Do you have one handy?" (13)

On a trip to Colombia in the early 2000 I was fortunate to form part of a group who went to a country house between Bogota and Medellin for a weekend. Early in the morning we went out to hunt the mushrooms and, having found them, made a tea for everybody. Later that day, fully connected, we went to some lakes where our hosts - a couple - swam while the rest of us looked on. I was overwhelmed with the connection to the sky, the earth and the ability to see the flows of energy around us. The swimming of the couple became a ritual event, something to do with fertility and the sacred king and queen. Years later, in 2011, in company of a psychonaut in a village in Asturias and 2 other friends we once again took the mushrooms and walked in the exuberant forest of the Cuenca Minera. I was struck by the powerful sense of vegetable consciousness "devenir vegetal" - the sense of connection with the whole of nature and the vital importance of this bond.

We are not separate, on the contrary we are part of this intricate, delicate and, at the same time, resilient network of life that has formed this being we can call Gaia.

The theory of Gaia was proposed by James Lovelock in the 1970s and co-developed with the biologist Lynn Margulis. Basically it is a formulation of what natural magic has known for millennia - that the earth is an organism, a self-regulating complex system. Initially the idea was ridiculed by scientists and a mention of the theory was a sure way to be sure that an academic paper would never be punished. Much of the problem was that scientists were incapable of working with complex systems- But as more scientists produced evidence to support the theory and Lovelock developed a convincing computer simulation, the tide began to turn. Chaos theory and the sciences of complexity and emergence, driven by the capacity of the computer to generate extremely complex models, have helped scientists to be able to think beyond simple cause and effect. In 2001, a thousand scientists at the European Geophysical Union meeting signed the Declaration of Amsterdam, starting with the statement "The Earth System behaves as a single, self-regulating system with physical, chemical, biological, and human components". In 2006 the Geological Society of London awarded Lovelock with the Wollaston Medal for his work on the Gaia theory.

One of the most powerful and fundamental examples of symbiosis is photosynthesis. Margulis has shown how chloroplasts were originally separate organisms which entered into a symbiotic relationship (or endosymbiosis) with other bacteria and thus began the evolution of plant life, the beginning of life on earth. Some species like the Atlantic Sea Slug (*Elysia chlorotica*) are able to use the photosynthetic cells from algae to feed themselves. The chloroplasts catch photons of light and transform them into sugars and oxygen. The efficiency of this process is astounding and it is considered the most developed way of turning sunlight into energy, way more advanced than our primitive solar technologies. In fact fossil fuels are themselves a kind of condensation of light energy. Plants also have electromagnetic fields and transmit electricity within themselves without loss. Experiments show that they are far more sensitive and responsive than science had led us to believe. Then the function of light for communication with DNA, the electromagnetic fields, quantum theory, entanglement (in which two particles share the same existence. This deep connection means that a measurement on one particle immediately influences the other, even though they are light-years apart) and all these infinite and invisible powers and capacities that science has just begun to contemplate and that are having a profound effect on our worldview.

It is here at the intersection of technology and nature where the magic is emerging again and cosmologies being developed that are compatible with the most ancient ideas of the world. Perhaps there is a "devenir vegetal" at work here, a re-connection to ourselves and our world with technology (computers, microscopes etc) serving as a bridge instead of a destructive weapon. Eliminating the hierarchies between different ontologies or ways of being : plant, human, machine are combined and articulated creating organisms. Perhaps our technology is on the way to become completely biological like that of the extraterrestrials in the Xenogenesis Trilogy by Octavia Butler. In this highly advanced civilisation there are no machines, only biology.

"We have a young technological science which permits us to manipulate DNA and physically leave the planet. We also possess the ancient knowledge, which considers life as sacred, a flame to be protected. To combine these two poles, technological knowledge and ancient knowledge, science and shamanism, seems to be necessary for the survival of our species" (14)

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D : 13 GRANDMOTHERS

They had known about it since always and the capacity came back slowly through practise. An obscure black science fiction writer had written about it in the 1980s and had almost been assassinated. Only urgent pleading in the main assembly had dissuaded some of the more virulent SCUM members from punishing her for her revealing of their secrets. It also helped that the writer had published some of the most interesting science fiction ever published, drawing heavily also on the knowledge of the tribe.

The understanding that female friendships form the basis for a sustainable society was treated as a great discovery when it was announced, in 2012, that these structures had been encountered in diverse species of animals. The tribe had always know it was so. When the 13 grandmothers started travelling the world in the lead up to the dimensional shift around 2012 they remained in permanent contact with the rest of the tribe and taught others how to join in.

Gaia's consciousness emerging. The women could feel each other at distance. Everybody has more or less the capacity, in dreams but these woman were totally conscious all the time of their sisters around the globe. It was a sense of presence more than a language based consciousness. Feelings transmitted, instantaneously, quantic capacities that male science had only just brushed up against. No delay, total presence.

Ola Olin had always felt other presences. She had assumed that they were part of her own active psyche, found herself inspired but also deranged. At first it had been just as she was falling asleep, she would see images, clear, and then words would appear in her mind. The images and the words were not hers. They seemed to be from all times and places. She came often to a laboratory. Somehow that place was important. It seemed to be from the 1950s.

Sense of not being in control of herself. When she met the Messenger in Asturias, it was a huge relief. She began to understand what had been happening to her. It was the Messenger who told her about the 13 grandmothers : there was one from each of the first tribes of the earth, the original sisters. She immediately knew that she had to be in touch with them, Charo had seen her, felt her and knew something, felt something. Ola was like a beacon, transmitting from a crashed aeroplane in the middle of the Antarctic.

6. TECNOMAGIAS

The line between magic and illusion is often confused. What we understand by magic is usually, today, sleight of hand or the capability to trick a public. In 2007 Medialab Prado worked on the theme of magic and technology from this point of view. Not only did they generate a series of art pieces, particularly using augmented reality, including working with a professional magician, but also a seminario (15) . One of the speakers in the symposium pointed out that in the 18th and 19th century magic and science were not seperated as well as forming an independent branch of show business. On the whole the meeting confined its understanding to magic as illusionism or, at best, quoting Arthur C Clarke "Any sufficiently advanced technology will seem like magic".

The tecnomagias meeting in May 2012 in Nuvem (16), a space for ecotech investigation in the mountains 2 hours from Rio de Janeiro, was born with a different focus. The meeting was called in order to explore the intersections between technology and magic from a wider view, ecological, mystical and political. As Eah de Apsu writes :

"The fact is that the (tecno)magician (as activist) works with symbolic arms to confront a normative, massified and massacring society. Their ritual resignifies the ancient rites of tribal preparation for war, transforming the opposing reality in a field of moving dynamics, of long duration and generational awareness.

The focus of the conflicts are no longer the expulsion of malign spirits, miraculous cures, alquimical transformation and personal or tribal conquests, but anticapitalism, anticorruption, real democracy, metarecycling, the search for clean energy and the collective consciousness. These are some of the struggles in the field of tecnomagic, the realisation of reality and its transformation by the unthinkable and, for this very reason, powerful combination between the poetical-magic act and the thinking of technologies as ongoing dialogues with society" (17)

It is not by accident that this meeting occurred in Brazil. There the conditions are being created for the emergence of the anthropagic consciousness that Oswald Andrade invoked in the 20's. High tech meets an increasing consciousness of tribal wisdom - De Castro's descentred anthropology, the concept of gambiarra (a kind of "make do" aesthetic and practise that springs from favela architecture), the way that ecology and free software entwine in the submidialogia publications and groups, Fabi Borges' technoshamanism, the Yupana Kernel, the proximity of aboriginal practises, ayuahuasca.

One of the guests at the meeting was Jonathan Kemp. Long term associate of Martin Howse with whom he created audiovisual spectacles, Johnny has now moved into a tech-alchemist-hacker space. One of his projects, Recrystallisation, is resumed thus :

1] Attempting to recover minerals and metals (including copper, gold and silver) from abandoned computers through execution of various volatile and chemical processes.

2] The re-crystallisation of these minerals in novel arrays using raw/renditioned mineral assemblies including piezoelectrics, positive feedback, colloidal dispersions.

3] The re-purposing and embedding of components and structures within wider geological and geophysical systems.

As we mentioned before, hackers are widening their goals. This spirit of enquiry that seemed to be limited to technical matters has sprung out of the masculine complexity code manipulators and exploits into a way of investigating the world. We can catch echoes of this in Newton and his like. Martin Howse explicitly references John Dee while explaining his esoteric circuits for "skrying". He makes hardware to see or hear the invisible, mapping the subtle electromagnetic fields. Another of his recent pieces uses the structure of the bubonic plague to programme a synthesiser. This idea of technology being an amplifier of perception (like ayuahuasca) is an important way that technology and magic connect.

A good example of this is the work with antennas and listening to the invisible celestial bodies. An antenna is like a magical wand for listening to disembodied voices – its form so precise, it has to be that shape and size in order to function, to be pointed in the right direction at the right time. Like the precise forms of the voodoo diagrams for the invocation of the loa (gods) or the symbols of ancient spell books. Bruno Vianna and others are developing new astrologies that include the satellites.

Declaring that the division between "natural" and "artificial" doesn't make sense anymore. Including the non-human in the webs of relationship that make us what we are as exemplified in the philosophies developed by Bruno Latour, Donna Haraway or Isabelle Stengers.

This ciborg spirit is exemplified in the work of La Quimera Rosa - a collective from Barcelona that are developing their own tecnomagia ciborg combining the notion of the witches Akelarre (basque word for a meeting of witches) and the idea of the cyborg, taking us beyond the binomios of gender, nature and time. They understand their art as "devenir bruja", becoming witch. (18)

"In fact Heidegger argues that the essence of technology is related to poiesis: a Greek word for 'bringing forth' [Her-vor-bringen] or 'revealing' [Das Entbergen] of truth. Technology's essence is in the process by which something is revealed. When raw materials undergo a process which arranges them in a particular way, an envisioned final product is brought into 'presencing' [Anwesen] — revealed in a tangible and particular form. What was previously not in our presence is brought forth. " (19)

These brave attempts at the frontiers where chaos and order meet generating unpredictable forms are the essence of the tecnomagical experiment. Taking science into our own hands, DIY without waiting for approval, re-enchantment of the world and generation of unsuspected war machines. The cyborg as articulation of separate ontologies - creating monsters and angels, collapsing the patriarchal project of separation. Queer as hacking of the gender system, perhaps the most urgent of tecnomagical tasks. Biotech as pharmatech, automedicating ourselves with chemical technologies, tuning our body chemistries, falling in love, so the the magic can flow.

E. THE UMMA

"We will show them our signs in the horizons, and within themselves" Quran 41:53

The entry to the mosque was, as usual, full of people coming and going. Groups of men drifted in and out, others were washing themselves in preparation for the evening prayer. The sound of the muezzin's call enveloped them all in delicate ribbons of sound. Ahmed had already washed and was sitting with his back to the wall, surrounded by his group of friends. He almost always prayed with them although many of them were new converts. A lot had changed in the last few years, especially with the introduction of the telepresence prayer caps. They had passed from being equipment for a few eccentric cybersufis to being almost obligatory to appear in the mosque.

"Did you get your sensors repaired?" Ahmed asked a young black man dressed in a long white djellabah and white prayer cap.

"Yes, it took a while. I ended up having to order a new headnet from hong kong and then Bassam helped me get it connected. It's amazing how the price has gone down in the last few months even. The Chinese are producing these things by millions"

The headnet was for measuring brain waves, alpha, beta and all that, it wasn't a new technology but it had been massively popularised after Al-Azhar in Egypt had issued a fatwa declaring that it was

halal for use during the prayers. Basically it sent the brain wave info, via telephone or the mosque's wifi connection, to a central server in Mecca and then everybody who was connected got the feedback from everybody else. It meant that everybody was synchronising their mental state, anywhere in the globe, all focussed on the Black Stone in Mecca. As always in Islam, a simple 5 point system that had generated the most diverse and complex interpretations, whole new currents had born, died and evolved in just a few years. Several of these currents, which were gaining adepts rapidly, identified the Black Stone of the Kaabah - itself a meteorite - as a means of communication with other planetary beings. It was an idea that had generated an immense amount of theological discussion but basically the theory was that there was an interplanetary Umma (community of believers) and that the Black Stone was the doorway to communication with that Umma.

Of course it was ironic that it was Islam (literally "submission") that had turned out to be the system, amplified by technology, that had permitted the realisation of the human purpose to become the nervous system of Gaia. It's combination of rigidity and freedom, the concept of the Umma that united all peoples of the world.

Ahmed gestured with his telephone - a block of obsidian, an eery light floated to one side of the otherwise empty screen, an arrow pointing in the direction of Mecca. "It's time, let's start the dikhr. The one is multiple and the multiple, one". The brothers all switched on their prayer caps by voice command "La ila la alah" - there is no god but allah. They were all standing together, rocking their bodies from side to side as they continued chanting the phrase. The familiar tingling sensation, the first warm presences that flicker in the bottom of the belly, whispers in the mind. Then the sensation of multitudes, immense presence curving around, planetary. All attentions focussed on the black stone, losing themselves in the whole.

The intense concentration of energy in the meteorite calling to the cosmic umma. Beams of thought all focussed awakening the planetary mind. Repetition is reality. The brothers felt part of the whole as millions, amplified by the sophisticated circuitry of the prayer caps and the emotions in their stomachs, the electromagnetic fields of millions focussed through the black stone to the cosmic network of planetary beings. They had come full circle, Al Lat and Al Lah the same being, a conscious planet, Gaia. The brothers didnt know when the critical mass was reached but they did feel, unmistakably, the first contact. A sudden feeling of immensity, very different from the comforting embrace of the Earth Umma. The black stone was no longer just a condenser / emitor. It had become a receiver too. The planets were talking.

At the end of the prayer, nobody spoke. They all knew that something had happened that was beyond their understanding. They gave thanks to Allah. Now for the next phase. What do planets talk about ?

7. ART

Art itself began, without a doubt, as a magical technology - sculptures that housed spirits or the body paintings or the tools of the shaman. Art expresses the unseen. The magical capacity of making an image, making a being. How a mask changes you into a god. Forms that are homes to spirits. Art makes the bridge between the personal and the political, between feeling and action. Art as a key to the magical realms, the building of the bridge between the worlds.

When m9ndfck or netochka nevezanova appeared in the 24/7 net art mailing list in the 90s it was a powerful shock. She was an an entity, nobody knew who was doing that work, generating a new language. One had the sense of a being who was mutating, alive in the internet, created by the

meeting of code and mind. Her aggressivity against the United States, against the boy coders who dominated the computer world got her banned often. But we felt that a new consciousness was present.

As we saw in the section on the computer, the machine or being that attains life is a powerful theme in magical literature. From the Jewish Golem to Frankenstein or the intelligent bomb in the film "Dark Star". That scene where one of the astronauts convinces it that it cannot trust its perception because it is mediated by sensors that could be giving false data.

And if the machines could speak what would they say ? Tania Candiani became fascinated by this idea and started to build sound machines. It is like somehow they are trying to be alive, we feel this wistful attempt at consciousness. In Candiani's piece "Confessar. Encriptar.Bordar" (20) our words are filtered through the "consciousness" of the machine, ending up being embroidered on cloth. There is something melancholic here, this intent, somehow trying to say something, encodified, the intention present but the result, other. The sense of wonder that this creates in us, the machine is other and at the same time it is us. We are not talking about illusion, it is something more profound, more fragile and sad somehow, brushing up against another consciousness.

For Paula Pin, the machine is no longer separate but an intimate part of a new cyborg identity, the creation of a metabody that englobes mechanical, mineral and organic life. She refers to the electronic protheses that she creates as "alchemical instruments" for understanding and revealing these new natures. She also works with plants, with performance and with noise - all concerned with opening out our identity into what she calls "queer nature". Leslie Garcia, formerly part of Dream Addictive in Mexico, has developed a remarkable body of work in relationship with plants, computers and noise machines while Shannon Taggart works on the liminal area between spiritualism and photography, two ways of making manifest the unseen that emerged at the same time in the 19th century. (22)

New technologies of perception and communication open up new spaces, and these spaces are always mapped, on one level or another, through the imagination. Or would it be the other way round ? Technology tries to fulfil our imagination. Our poor technology, so destructive and crude compared to the refinement of our Great Art - the meeting of science and imagination, nature and will.

Table 1 :

Table of Paradigms with Their Spritual, Political & Economic Parallels.
Adapted from Hakim Bey. (21)

I have taken the liberty to complete this table. 30 years ago the effect of the quantum universe paradigm was not clear on social structures. Today it seems to me that we can see it in the non-local structures of the world banking system, in the entanglement that communications have created and in the shifting shapes of postmodernism. I have added another speculative paradigm - that of the living universe - sometimes I think it's just wishful thinking and then, at times, I feel it really is emerging.

Paleolithic	Shamanic	Non-authoritarian	Hunter-Gatherer
Neolithic	Polytheistic	Authoritarian	Agricultural
Earth-centred Cosmos	Theistic	Monarchial/theocratic (hierarchical)	Urban
Sun-centred Cosmos	Monotheistic	Divine right of Kings	Colonialism & Imperialism
Mechanistic Universe	Deist or Atheist	Democracy, capitalism, comunism	Industrial / Tecnological
Relativistic Universe	Modernism	Global Capitalism	Post-Industrial (Electronic)
Quantum Universe	Posmodernism	Cibercracy /Sistemas financieros	Aldea Global
Universo Viviente	Tecnomágico	El buen vivir / cooperativismo	??

Table 2
Equivalences between Magic and Technology

Telephone	Communicate at distance
Telepresence	Telekinesis
Drones	Out of body experience
Critter Cams	Animal vision
Satellites	See from above
Internet	<i>Akashic Books, Collective Memory</i>
Microscope	See the invisible
Aeroplane	Fly like a bird
Helicopter	Levitation
Radar	See the very far away
VLF amplifier	Hear the earth
Kirlian camera	See the aura
Galvanic sensor	Feel plants and people
Submarine	Travel and live under water
Spacecraft	Travel outside the earth
Telescope	See the universe
X-ray	See inside the body
Television	See visions
Radio	Hear voices

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(17) Extract from "Tecnomagia as|is|or Ativismo". Eah is an art & semiotics researcher from Rio de Janeiro. (see also Hakim Bey's Poetic Terrorism)

(18) <http://akelarrecyborg.tumblr.com/>

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(21) <http://hermetic.com/bey/quantum.html>

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