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Thomas Feuerstein:

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The crust of erosion is always linked to life.

Vladimir Ivanovich Vernadsky

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Radio play version,
in cooperation with
Ö1 Kunstradio

145 Lp

We live on a thin crust of rock which we call home. But that is only the surface of all life. A much greater force flows underground, obeying different temporal dimensions from the fleeting moment of human existence. What we live on as the Earth is the acne, sputum and excrement of fundamental processes.

— Twenty-eight years have passed since the Prometheus Protocols were opened. The spring starts off mild, and the snow at three thousand metres is solidifying into wet firn. The whiteness of the Caucasus is set off against dark blue, and the meltwater is carving a vertical path through the ice. The tread of the tyres bites and churns up the mountain track. Loose scree is covered by brown slush; below this the permafrost gives stability. From the turn of a hairpin bend a steep track cuts into the rock face. The airbrakes wheeze, and the twenty-five tonnes of the four-axle Kamaz skid and stutter down the narrow dirt road towards the valley. At the wheel is Elis Fröbom. Beside her Mathias Israelsson rolls a cigarette from the last shreds of

Machorka. He's going through the entries in the Prometheus Protocols. All the notes he's added make the lines almost illegible. As it is, he knows the text by heart except for the redactions, which fuel the imagination. There are no coordinates marked, but the directions given are all the more detailed. The sounds of the engine set his recitation engine in motion, and just as water spattering in a shower makes people start singing, Israelsson's voice joins the grumbling of the V8 diesel.

— “The rise of the road increases, the mountains close in more and more tightly, and it seems as though there is no longer any hope ... It has a disheartening effect on us; we are overwhelmed and keep silent. Suddenly, at a sharp turn in the road, a huge chasm opens up on our right, and quite close to us we see the ice-covered peak of Mt Kasbek with its glaciers sparkling white in the sun. It is cheek by jowl with us, placid and mute. A mysterious feeling courses through us – the cliff stands there as if conjured up by other cliffs. We feel as though a being from another world is looking at us.”

— Elis shoots him an enquiring look. She thinks highly of her colleague, whom everybody calls Fet Mats, but as a scientist she's more concerned with facts than literary fiction.

— 'It's a passage from Knut Hamsun's *In Wonderland*. We need literature and art in order to understand nature.'

— 'Fet Mats, what one needs is information. Either impress me or enjoy the silence of nature.'

— Having studied biology in Lund, Elis founded the death metal band Acid Realm in the early eighties and in 1995 took over Falun Ltd, her father's mining company. During her studies she did a placement as assistant to Thomas Gold at the Siljan Ring, a prehistoric impact crater in Central Sweden, drilling granite in search of microorganisms. It was then that she first heard of the Russian Prometheus Protocols and since that time has been obsessed with the idea of unravelling the origins of life. Fet Mats is a geologist, an eternal student who has worked at Falun Ltd. sporadically for fifteen years and made himself indispensable. Falun Ltd consists essentially

of Elis, a number of student interns and Fet Mats. The small company has made a name for itself in biomining, developing customized process technology for microbial bioleaching. In her laboratory Elis cultivates the largest international microbe zoo of chemolithoautotrophic organisms. Thousands of species, many without taxonomic classification, lie on ice or float in bubbling bioreactors. What's special about these organisms is that they feed off metal ores and sulphur compounds which they leach out of the rock. Requiring neither sunlight nor atmospheric oxygen, they are far older than any plant cell and mark the beginning of evolution. Her unique knowledge of the realm of ancient bacteria and archaea has brought Elis to the Caucasus. Microbial samples are to be taken on Mount Kasbek and an expert report for bioleaching prepared. Financially the assignment has little attraction relative to the work it involves; however, for Elis this trip is not a normal job but rather a mission into the depths of her obsession.

— 'Can you see that ridge of

rock at 11 o'clock? Behind the snow cornice you turn left. From there it's only a hundred metres to the entrance of the mine.'

— The track can hardly be made out: scree and snow interspersed with large slabs of schist. Coarse-grained diorite appears in the rock on the upper side of the track. Veined with the trachytic matrix of blue porphyry and glistening moistly with meltwater, the rock face is iridescent with colour. A stockwork of seams leading into the igneous and schistose rock cuts into the mountain. In front of a twenty-metre high fissure into which massive icicles have inserted themselves like wedges stand the geodesic domes of two army tents. Svenja, Hedda, Agmahd and El'Brusskiy's team of five welcome Elis and Fet Mats.

'Kakdilá!' cries El'Brusskiy, forcing his body, inflated to a sphere with down padding, through the zip opening of the tent. 'Everything's ready. The equipment's been assembled, the lab's up and running. It's all new and the best there is. Better than what was on the list of requirements, and we can get going straight away.'

— El'Brusskiy is visibly excited, skipping nervously like a wobbly mass of rubber in his heavy boots from one leg to the other as if he were dancing the kasachok. After the long drive Elis and Fet Mats feel more like hot tea, vodka and sleep. El'Brusskiy stands there like a boiling samovar under pressure, the words shooting like hot steam out of his mouth.

— 'We have a saying: "The day doesn't end until sunrise, and below ground the sun never rises." We can go down straight away, and if we get tired we can sleep for an hour in the belly of Leviathan.'

— Elis wipes the condensed words off her face and gestures to El'Brusskiy's lads to unload the truck. With a hand-operated crane they heave pallets of hoses, a generator, fans, and heavy-duty piston and peristaltic pumps from the truck bed. Hitched to straps, they drag the equipment to the mouth of the adit, which swallows them like the reflecting black at the bottom of a well shaft. Elis calmly endures the hectic activity and assembles her team in the tent.

— 'Svenja, Hedda, Agmahd: this is your first time here. This is not

a field trip or an academic seminar. There's nothing to discuss here. Penetrating the depths of life means going through hell – and you won't get past me.'

— Fet Mats laughs mischievously. 'She's Cerberus. Prone to biting but faithful as a St Bernhard.'

— 'You think that knowledge is to be found in books and universities, and look for life, love and poetry at the theatre and on the stage. But life isn't in words and images – it's in molecules. What we understand as nature is a wafer-thin short film in the phantasmagoria of our limited imagination. The cinema of our culture shows nostalgic images. The 500 million square kilometres of the Earth's surface with its grassy spaces, forests and oceans is a huge screen for projecting our image of nature. In relation to the five billion cubic metres of the Earth's living crust, the visible surface is only a viscous scum of mountains and valleys. Life takes place underground, in the plutonite of Hades, under the few metres of earthly crust.'

— 'Elis is a romantic. She loves the motif of the mine as

an expression of metaphysical yearning. Like Goethe, she sees the highest and lowest in granite, and Hugh MacDiarmid wrote a poem for her: "All is lithogenesis – or lochia, / Carpolite fruit of the forbidden tree." She's interested in literature in the form of goethite and proustite, but at the bottom of her heart she's on stage with Acid Realm singing about human excesses.'

— Svenja and Hedda are growing impatient. They want data for their master's theses, and what they'd like best would be to discover hitherto unidentified species of bacteria. Hedda dreams of finding a whole group of a new species for which she's already thought up names, like with a family constellation. She's reserved Sulforplasma acidarmanussocrus for her caustic mother and Methanosarcina bombulum for her brother, who's a martyr to flatulence. It's not only Elis who suspects that Mount Kasbek in the Caucasus may contain new species of chemolithoautotrophic organisms. The rock strata of this ancient extinct volcano are being insidiously infiltrated by

sulphur and methane, providing habitat conditions that are otherwise exclusively found in the inaccessible depths of the lithospheric mantle.

— Svenja, whom Fet Mats affectionately calls Selenite because of her radiant moon face and flaxen boxer braids, distributes mugs of coffee, biscuits and devilled eggs.

— 'I hope to discover the mysterious vent in the adit described in the Prometheus Protocols. It would be the long sought-after transition axis leading directly to the hot deep biosphere of the Underworld. For me this hell is paradise.'

— Agmahd smiles awkwardly. He pictures the girls as the devil's perspiring playmates.

— 'Aren't you afraid of Beelzebub's rod?'

— 'Agmahd, Beelzebub is the Lord of the Flies and as such belongs to the province of entomology. What we're doing here is something like geobiological "endology". Endolithic organisms turn conventional biology on its head. Without sunlight and photosynthesis they derive

their energy from inorganic compounds – from iron, manganese, uranium, arsenic or sulphur. Their metabolism produces acid, and it would be no surprise to discover species that can even survive negative pH-values. It's thought that a good third of the entire biomass is contained in the earth's crust, but little is known about its biodiversity. These microbes are aliens, and among astrobiologists they're regarded as the most likely life form on other planets. So it's not the devil we'll be meeting but microscopic extraterrestrials.'

— Elis notices the sparkle in Svenja's eyes. The idea that the gods have landed on Earth as microbes and contain the mystery of life has ignited her young colleague's enthusiasm. 'Mount Kasbek is an ancient pressure chamber, a chamber of wonders. It provides the evidence that geological processes which until now have been thought to be chemical are in fact biological in origin. For four and a half million years processes have been in operation producing the largest elements – mountains and the atmosphere – from the smallest.

Just imagine microbes that are the foundation of biological life and still exist today. To make them talk is the passion of microbiology.'

— Fet Mats crams the last biscuit into his mouth and interrupts Elis's flow, crunching audibly.

— 'Maybe the everlasting microbes would tell the tale of the perfect Golden, Silver and Bronze Ages. Hesiod and all the poets who followed him were microbes, synthesizing small letters into great stories instead of atoms into molecules. What's certain is that everything is in flux – our ideas and stories as well as the hardest plutonite. Even granite becomes as permeable as a sponge under pressure.'

— Hedda slips into her PVC overalls, shaking her full breasts into place under the tight-fitting garment. Agmahd bites into a devilled egg, his gaze crawling stickily over her body.

— 'Agmahd, I'll take your balls and boil them. The proteins will become denatured, they'll lose their three-dimensional folding and your balls will become hard. In the lab I can stretch the proteins in a centrifuge, and your balls will become 'de-boiled' again.

DNA is extremely robust and can withstand conditions far more extreme than you can imagine. Life has been found ten kilometres down at more than 130 degrees Celsius, and that's precisely where I'm taking you now.'

— 'Zdravstvuyte, zdravstvuyte, the sun's going down. We can go in.'

— El'Brusskiy is standing in full rig in the door of the tent and waving with the whole of his upper body to indicate that they should be off. Smoking papirosas, the lads are waiting at the mouth of tunnel, where the meltwater has accumulated in a shallow pond. There's nothing to indicate this was once a mine. No tailings, no traces of tunnelling, no tubing or cables. From the ancient fissure emanates the Earth's damp, fuggy air, and the walls sweat droplets of icy water. They zip up their overalls, tighten the straps of their helmets and switch on their headlamps.

— Gesticulating, El'Brusskiy trudges ahead with Agmahd, and with each step his voice takes on an increasingly resonant quality.

— 'It'll soon start getting warmer. Normally the temperature

increases only three degrees every hundred metres from the geothermal gradient. Mount Kasbek is an ancient furnace. It'll soon turn the heat up on you.'

— After a few minutes they reach an airless cavern, its piles and crown secured by props and bars. Generator, mine fan, pumps and hoses have been installed.

Behind decayed transport crates a narrow shaft descends vertically into the mountain, and a ladder disappears into a black hole.

— Along the beam of his lamp Fet Mats casts a sceptical look down the long drop into the void. 'Descent into hell? What's the total depth if somebody slips?'

— 'Our pressure and ventilation hoses only extend to three hundred metres. No one's been here since the 1970s.'

— El'Brusskiy purses his lips in embarrassment, making a bizarre grimace in the shadow of the lamp.

— 'You go down and get your samples, then we'll drink vodka and go home.'

— Elis pushes her way to the front, places a firm sole on the first rung and shoves herself, rubbing against the

hoses, down onto the depths.

— Fet Mats gets nervous and starts to sing.

— 'I don't know why she's leaving / Or where she's gonna go / I guess she's got her reasons / But I just don't want to know / 'Cos for many years I've been working next to Elis. / Elis, where the fuck is Elis.'

— He slips down after her, and the lads turn the fan to full power. Fet Mats is relying on his 785nm Raman hand spectrometer specified to Military Standard 810G. Concentrations of oxygen, methane or sulphur fumes are measured every second, and if at danger levels indicated by an acoustic signal. The descent into hell down through the vertical silt becomes ever narrower. The hoses and the rock scrape at the coating of their overalls, producing brief overtones that punctuate the rhythm of their movements in an uncanny melody. After what seems an eternity it becomes abruptly warmer. The surface of the rock matrix starts to become first leathery then slimy and slippery. Like in Gulliver's Travels, where marble is softened for use as

pillows, the rock seems to change its aggregate state. Finally the shaft releases them into a bulbous vug covered in an iridescent secretion. Layers of crystalline minerals, chiefly marcasite and pyrite cubes gleaming like gold, alternate with proliferations of a gelatinous mass. On the muddy floor greigite and magnesite form shallow islands. From the roof hang milky white threads like stalactites, centimetres thick. Some of them elongate in slow motion, descending metres into the chamber until a drop detaches itself and is swallowed up with a gurgling sound by a scummy puddle. These 'snottites' immediately excite Elis's interest.

— 'Put on your gloves and face masks – we don't want to contaminate anything. And give me the large 250ml-containers. I've never encountered biofilms in such variety, density or extent.'

— 'Let's take rock samples too. Particularly of fine examples of cubic pyrite crystals.'

— 'You can carry the liver pyrite. We're concentrating on microbes.'

— A strange smell becomes noticeable, and Fet Mats checks his silent spectrometer.

— 'Smells like cadaverine. Maybe an animal got lost and fell to its death.'

Only now do they realize that the stench is rising from the scummy puddles.

— 'Decaying liver pyrite. Just as described in the Prometheus Protocols. And I thought the wording was a metaphorical lapse in the reporting of geobiological facts.'

— 'Endolithic microbes don't produce biogenic amines such as cadaverine and putrescine. Oxidative decarboxylation of amino acids is wholly impossible here. No glycolysis takes place here. There's no glucose and no ptomaine.'

— 'Blah blah blah – for fuck's sake, it reeks of decay in here. The liquid in the puddles is viscous and oily. We'll take samples and let the lab decide.'

— A brief signal interrupts the concert of drips. Random characters are dancing on the display of the spectrometer and the device malfunctions. Elis whips round and stares mesmerized at the ground.

— 'Something just hit me on the leg.'

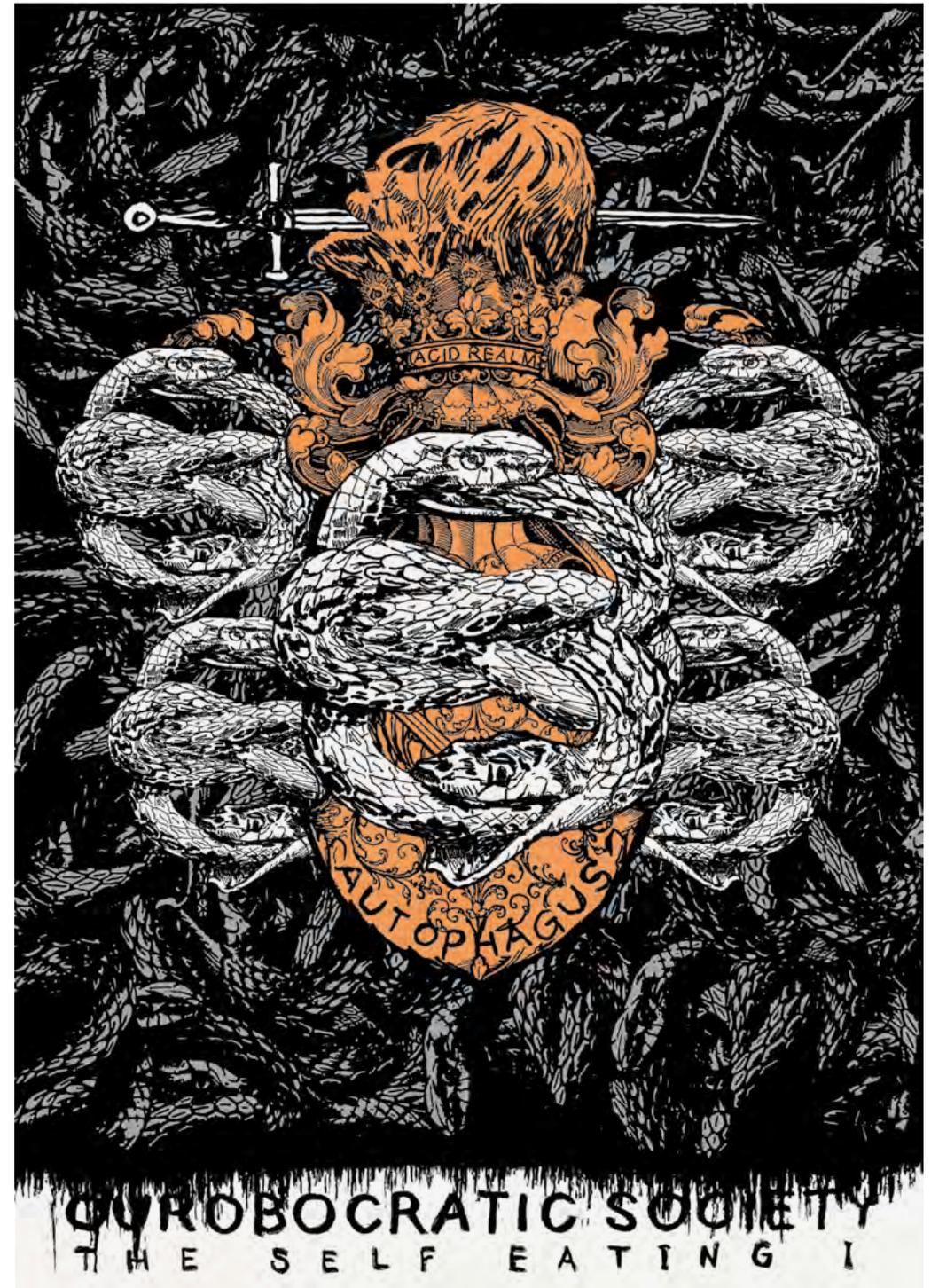
— 'Elis, it's just the atmospheric conditions down here. Movements within the mountain trigger geomagnetism and infrasound. Our frontal lobes react to it and we start to hallucinate. Damn it, now I just felt something too! There was something there.'

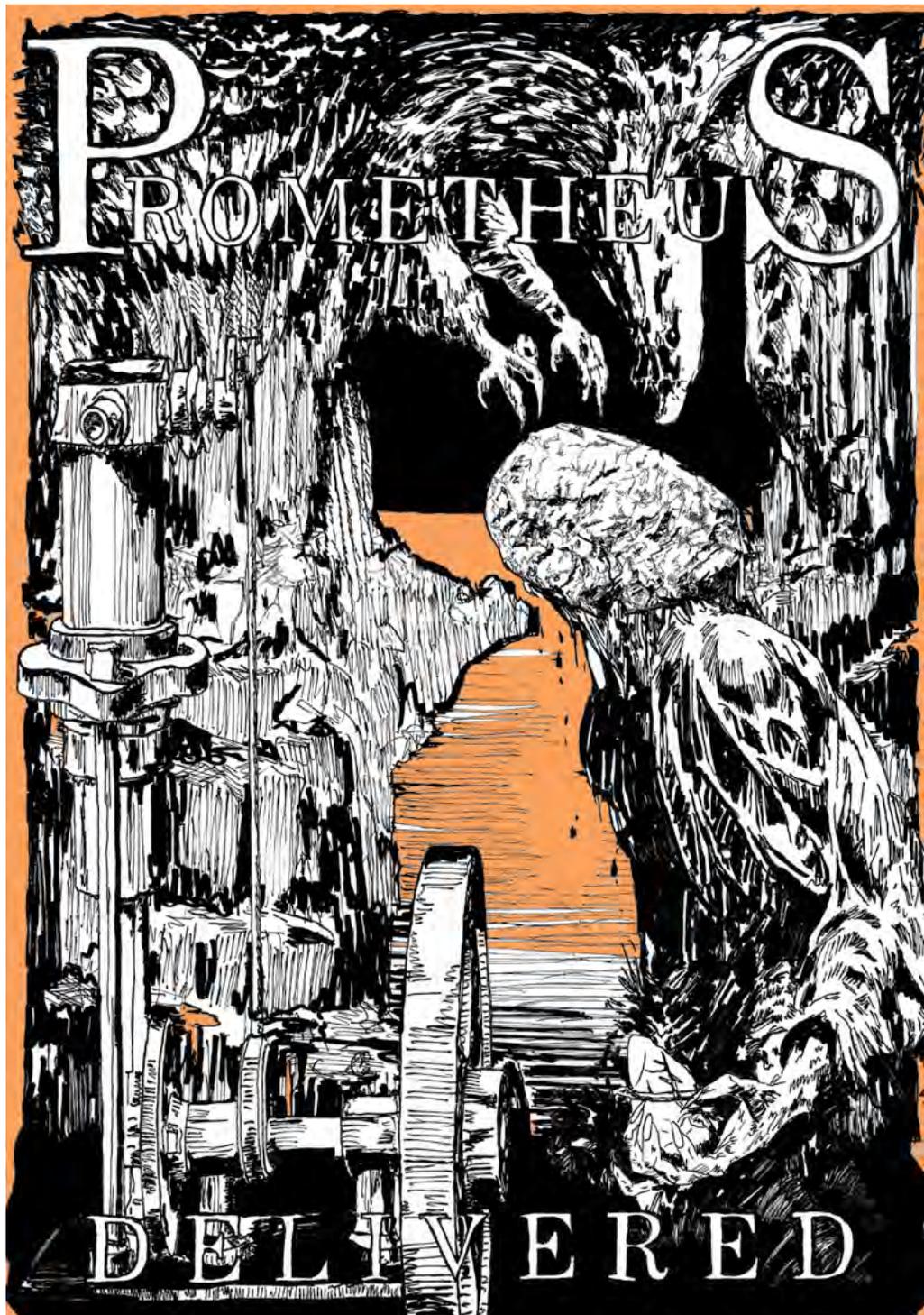
Jens Hauser:

What if we looked for - and discovered - the future of potential life forms in the rear-view mirror of the origins of life? In the greatest of the cosmic forms, in the smallest of the elemental forms - and not as always in the mesoscopic human mediocrity of the wannabe movers and shakers? Whether it's Kasbek or Ararat: Earth-crust bacteria, organic, earthly, cosmic, bacteria that like a microscopic Noah's Ark transpose other, extreme life forms. Underestimated, they outlive us all. Quite apart from just being a supplier of natural resources, they're inherent engineers, pressed right up against the limits of what biologists think living things are capable of doing: 'nature', that constructs and synthesizes itself, beyond Aristotelian 'ladders of Nature' that define hierarchies and special positions on the basis of criteria such as intelligence, perfection or membership of the plant or animal kingdom.

Give me biosemiotics anytime: the interpretation of signs on all levels of the living, aliveness as an autopoietic process producing meaning, not just glucose-wasting cognition and consciousness. Instead: functionally self-sustaining organisms and interaction with the environment: aliveness permeated per se with 'meaning', life - makes - sense. Love, poetry, theatre, molecule.

Thank god the world is extra-large, and biofilms run not on screens but as 3-D cinema. The world is good, the world is bad, I see more than I can grasp. We put on our rose-coloured glasses, the film begins. Oh... I'm seeing in 3D.





Some evenings the lab is a place of friendship. Everyday life recedes, leaving longings in its wake. The ideas of worry and doubt separate out like in a still. Fet Mats opens the bottom drawer of his desk, extracts glasses and bottles, mixes the liquids to make a lemon-yellow cocktail and adds dry ice. Carrying a tray, on which the smoke of carbon dioxide evokes the mist of Scottish moorland, he stands outside Elis's office and coughs discreetly like an English butler. 'Nullius in verba' stands in gold letters on the door. At times Elis takes the Royal Society motto too seriously. 'On the word of no one' is not just the precept that governs her experimental scientific work – social behaviour is also subjected to this strict imperative. 'Elis, we're like the twins Prometheus and Epimetheus. You think about everything first, you're cautious and taciturn. I talk first and think afterwards. We're Titans fighting our way through tunnels and caves, and we often pay the price for this thirst for knowledge. We want to reveal things that are hidden, that make us heretics in the academic Olympus. Promethean beings

like you are needed every day to steal the fire yet again from the establishment, the multinational corporations, politics and academia in order to light the lamp of reason. But we also need poetry to warm ourselves at the fire instead of burning ourselves. In Petrarch's sense you seek the isolation of the laboratory, as Prometheus once sought out the Caucasus, in order to solve the mysteries of the world in your untiring urge to explore. While the liver-devouring bird of the myth was called Aethon, your worries and doubts have many names.'

— 'Well, everyone's cuckoo to some extent. How's your cirrhosis?'

— 'The answer is the misfortune of the question.'

— 'Taking refuge in aphorisms is just bourgeois mimicry. A clever attempt to disappear into language.'

— 'Elis, you're hiding yourself in your work. Just like in Kafka, where Prometheus presses himself ever deeper into the rock until he's at one with it, you're shutting yourself up in the lab. You're searching for the origins of life, knowing that you'll never find

an answer. According to Kant that's an empty use of reason. Science tries to penetrate the inexplicable in the world and take it back to a causal origin. Myth and art on the other hand create the origin and transform the world into the inexplicable.'

— Svenja and Hedda knock excitedly at the half-open door, brandishing two Meplat bottles with cell cultures.

— 'The genetic analyses of the biofilms from Mount Kasbek have just come in. There are new species among them. Our master's theses will be a sensation!'

— 'Calm down – you'd also find new species in my fridge. What about the free DNA in the biofilm – any results there?'

— 'It's not clearly definable. Partly human – perhaps contaminated – partly unidentified and partly similar to the Pandoraviruses salinus and dulcis.'

— 'Pandoraviruses are the last thing I'd have expected. If there hasn't been any carelessness in the sequencing we're looking at something new.'

— Agmahd wedges himself between the door frame and Svenja. He's the lab assistant and is

happiest teaming up with Hedda.

— 'Who's Pandora? When does she start with us?'

— Hastily tossing down the contents of his glass, Fet Mats turns to Agmahd in a mixture of cynicism and paternal benevolence.

— 'In ancient Greek mythology Pandora is the first woman. She brings mankind a Petri dish containing all the evils of the world. Epimetheus opens the dish and all the germs jump out except for antibiotics.'

— Hedda grins, adding patronizingly, 'Pandoraviruses are mysterious creatures that form a link between animate and inanimate nature. To date only two species have been found, one off the coast of Chile, the other in an Australian freshwater lake. They are as big as small bacteria and have the largest genome of all viruses. More genes than many microbes, and over ninety per cent of them have no homology in databases. They usually reproduce in amoeba and not in bacteria.'

— Fet Mats crosses his arms behind his head, enjoying this dialogue with a young person.

— 'Pandora was the first artificial being, created by Hephaestus

to punish mankind. Prometheus wanted to help us poor hapless creatures and stole fire from the gods. He brought us technology, science and civilization. He's the mythical founder of our culture, and for materialists like Marx the highest-ranking saint in the philosophical calendar. In revenge he was banished by Zeus to the Caucasus and chained to Mount Kasbek. And as if that wasn't punishment enough, every day an eagle ripped out a piece of his liver.'

— The alcohol is having its effect, and one of those rare moments arrives in which Elis does not talk about work.

— 'The liver stands for life and the future. With each stab of the beak, the future is taken and at the same time reborn anew. The essence of the torture lies not in the loss but in the renewal, in growth, in life. That's the dilemma that's been displaced from the liver to our hearts. Promethean technology tears us apart between salvation and extinction. Science is plagued by Pandora's legacy. The Prometheus Protocols contain a remark by a German cultural scientist that has etched itself

in my memory: what is evil are automatoi, that is, entities that are self-activating and silent. Zeus has deprived them of their voice.

If they had a voice they would be negotiable, and hope would not be an illusion. My hope is to make the Pandoraviruses speak.'

— Fet Mats pours ethanol from a disinfection bottle into his glass, glancing sheepishly at Elis.

— 'Then there's the matter of the liver pyrite. I put it in the ultrasonic cleaner to get rid of the slime. The stainless steel sink's ruined – completely corroded. But the slime is just fine.'

Jens Hauser:

So: prospecting for liver pyrite in the Caucasus, on the trail of Soviet 'Prometheism'. The programme: progress through science, art and technology, the creation of a world not as it is but as it should be; the creation of new planets; subjecting the processes in the organism to reason and will; the elimination of subjugation to time and space - the tempting promise of human immortality in alliance with astronomy and anatomy. As early as 1922 the geochemist Vernadsky speaks of atomic energy and autotrophy, of human self-sustenance - organic anabolism through energy and elements.

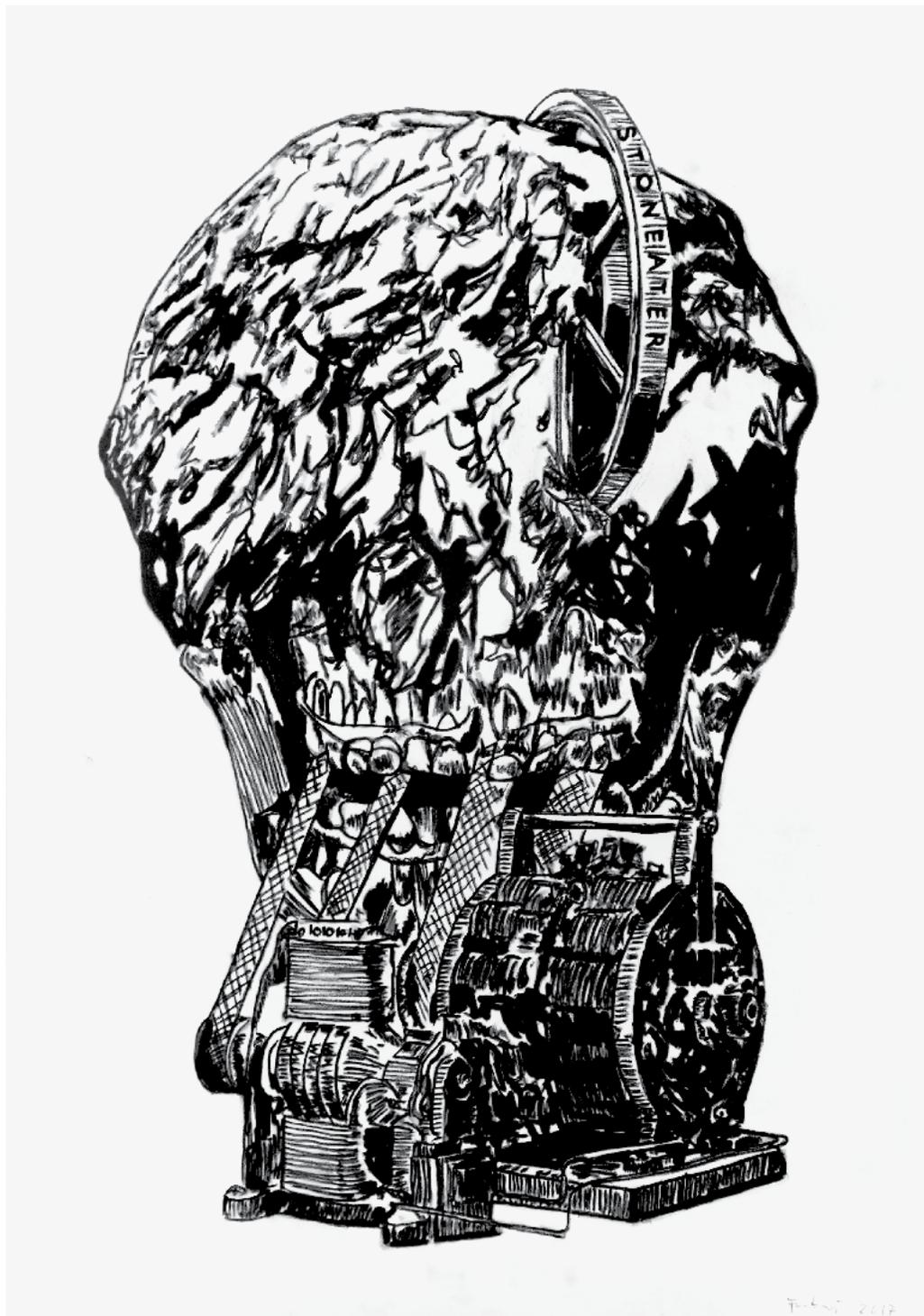
Liver pyrite is just another name for organ-shaped aggregates of iron disulphide, also known as marcasite, a term derived from the Arabic for 'firestone', in German: Feuerstein - nomen est omen, it's all in the name. Liver pyrite is the name used for certain ore minerals and indicates that they will give off sparks when they are struck against harder materials. And if human fire-makers were to subsist on rock-eating bacteria, are they really hoping for perpetual motion? Moreover: apoptosis has not yet killed off any kind of petrofascism, whether it's petrochemistry or petrobiology. Can there be planetary sustainability without death, which the Soviet biocosmists wanted so desperately to finish off, death as subjection to the 'blind force of Nature'?

Nikolai Fyodorov, a century ago - how does he sound today? 'The cosmos (as it is, not as it should be) is power without reason, man however, is (as yet) reason without power. But how can reason become power and power become reason? Power becomes reason when it is ruled by knowledge, by reason. Thus, everything depends on man.'

The deficient being is now optimized, but in the Anthropocene for him it's henceforth a case of ignorance-management on Spaceship Earth... while rocks are still worth a mint.



ALL IS LITHOGENESIS



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Two weeks later the lab is a hive of activity. To Agmahd's joy, Falun Ltd has taken on two eager female biologists. All available bioreactors are in operation. Culture bottles are stacking up in the incubators, and the newly acquired PCR unit for genetic analyses is running 24/7. Elis has taken out a mortgage on her father's house and updated the laboratory. Even the basement has been emptied and equipped with state-of-the-art technology.

The greatest conundrum is presented by the Pandoraviruses. The DNA strands have no beginning and no end. They dock on the genome of microbes and break off unexpectedly elsewhere. In the viscous soup float proteins and DNA sequences of higher species, even of humans. Contamination through sampling can be excluded, since countless genes appear that derive from species which are neither indigenous to the Caucasus nor stored at the laboratory. Elis wonders what order the chaos obeys. Do the genes code the biofilm, or are they the tool of a hidden power?

— In the Prometheus Protocols, compiled in 1930 by Ivan

Alexeyevich Dvigubsky, Rector of the Lomonosov Moscow State University, and presented to the Ministry of Mining and to Alexei Ivanovich Rykov, chairman of the Council of People's Commissars, on 24 November of the same year, there is a remarkable passage. Although names and places have been redacted, an unknown life form is described that eludes all biological criteria. It cannot be assigned to any family, order or class. Even phylum, kingdom and domain remain undefined. The resolution issued by the Council of Labour and Defence of the USSR on 19 December 1930 condemned the Protocols as 'the activity of counter-revolutionary saboteurs and parasites' and suppressed it. The same day Rykov was relieved of his position as chairman for unknown reasons, subsequently expelled from the Politburo, and eventually executed in the Lubyanka in 1938 during the course of the Stalinist purges. Not until the end of the 1980s was a copy of the Protocols discovered by chance in the archives of the Lomonosov University and translated with a commentary by Vassily Agapov, a student of

English. Over long stretches the Protocols read like a Romantic travelogue interspersed with statistics, soil data and detailed sketches. They document the expedition to the Caucasus of a group of geologists from Leningrad and Moscow led by Vladimir Ivanovich Vernadsky to seek out exploitable mineral deposits for Soviet industry. On the north-east flank of Mount Kasbek they discovered eight fissures that all led to a chamber in the interior of the mountain. Christened the 'Octopus', the chamber is described at length as a wondrous lode of minerals. Microbiologists paid particular attention to the early morphological description of biofilms. What is still unclear today is whether the Protocols are genuine. Dismissed by experts as a literary invention by Agapov, they are regarded by conspiracy theorists as the Holy Grail. Elis's attention was attracted by a pen-and-ink drawing. It showed a bacterium floating in ferrous sulphate with the cryptic annotation: 'This bacterium subsists on electricity'. This fundamentally contradicts the state of biological knowledge of

that time. For Elis this is the first description of *Acidithiobacillus ferrooxidans*, a bacterium that oxidizes iron and sulphur and favours liver pyrite as a food source. Only recently has it been known that it can obtain energy directly from electrodes. That a student of English at the end of the 1980s would have connected *Acidithiobacillus ferrooxidans* with electrolithoautotrophy is out of the question and strengthens Elis's belief in the authenticity of the Protocols.

From the basement comes the monotonous humming of the pressurized stirred tank reactors in which high cell density media are cultivated. In their series of experiments Svenja and Hedda inoculate the enamelled steel bellies with various molecular compounds and measure metabolic activity. The results show minor variance except for one reactor in which Agmahd has mixed up a sample from Mount Kasbek with tissue from Fet Mats's most recent liver biopsy. Behind the smeary observation window a gelatinous mass winds itself around the slowly rotating agitator. At first none too happy about

such a careless lapse, Elis orders an examination of this sudden change in the aggregate state.

'Pandoraviruses are neither human-pathogenic nor bacteriophages. It's inconceivable that they can replicate themselves in liver cells or bacteria.'

On her screen Svenja opens a window with a live image of the microscope.

'There's something else going on. The small rock-eating bacteria engulf the large liver cells and integrate them as a nucleus. The Pandoraviruses exploit the cell nuclei for transcription and fill the plasma with seemingly endless strands of nucleic acids. That perhaps explains the high-viscosity agglutination into a gelatinous mass. It seems to be a new lithotrophic life form. A hybrid of human being and biofilm?'

Fet Mats laughs.

'My liver could certainly tell a tale or two, but who would've thought that it would make history! That slimy thing belongs to us and we're going to patent it. None of us will write a paper, none of us will submit a master's thesis. We've propagated a new

organism that changes the global economy from petrochemistry to petrobiology. No longer will we be the slaves of the sun. We won't need plants and animals for food. We can feed ourselves indefinitely from the rock of the Earth and in the future eat up all the planets of our solar system.'

Elis's features freeze. Her skin turns the colour of marble and her head bows like that of Mary in Michelangelo's Pietà. She leafs through a folder of loose papers and quietly reads out a passage from the Prometheus Protocols.

"28 July 1928. Today we encountered an elderly goatherd. He warned us not to climb any higher. Not because of the weather but because of Amirans, the Georgian Prometheus. We laughed, and with great humility the herder handed us a small tattered book. In the evening we read it, and our laughter subsided."

'Since when have you been interested in fairy tales?' scoffed Fet Mats.

Elis reads on.

"The little book is a treasure, a rare incunabulum of probably pre-Christian origin. Written

in Ancient Greek, it tells of the fourfold Prometheus. The first Prometheus creates man equal to the gods. The second gives man the gifts of fire, technology and culture. The third helps man to surpass the gods and create life himself. The fourth teaches man to murder the old gods. Nature disappears with the gods, and man is alone by himself. That is the legacy of Prometheus. According to the myth, the fulfilment of destiny will sleep for three thousand years in the rock of Mount Kasbek until it brings the rule of Zeus to an end. Whoever fulfils this destiny will consume the world by fire.”

— Fet Mats’s laughter has not subsided. He’s pleased that Elis has discovered a love of literature and encourages her.

— ‘Finally you’re not thinking rationally with your brain. Finally you’re speaking your mind. Poetry will save us all. But before that we’re going to make a pile of dough, pay off our debts and live our dreams.’

— In a thin voice Elis reads out the last sentence from the goatherd’s book.

— “When the surface of the liver according to its size

encompasses the world-bladder, and the lower tip overwhelms it and the bladder falls behind the surface and is trapped there, this is an omen, according to which the fourth and last lobe will spread its shadow over the land and conquer the world.”



Jens Hauser:

Humankind 'alone, on its own'? At the centre, at last! Wasn't that what philosophical anthropology had been tirelessly searching for on the ladder of beings? For the special status of the 'prosthetic Prometheus'? Max Scheler: *Die Stellung des Menschen im Kosmos* (The Human Place in the Cosmos). Arnold Gehlen: *Der Mensch, seine Natur und seine Stellung in der Welt* (Man, His Nature and Place in the World). Helmut Plessner: *Die Stufen des Organischen und der Mensch* (The Levels of the Organic and Man).

(Plessner diagram) Centrality is... central. What this means is the autonomous concentration of organisms on themselves via semi-permeable membranes, with simultaneous independence from and expansion of their influence on their environment, which are intended to grow as the organisms become increasingly complex. An organic activity directed from the centre to the periphery is counteracted by an effect of the outer environment directed towards the centre. Organisms are 'boundary-defining bodies', whose differing relations between membrane and centre Plessner describes as positionality.

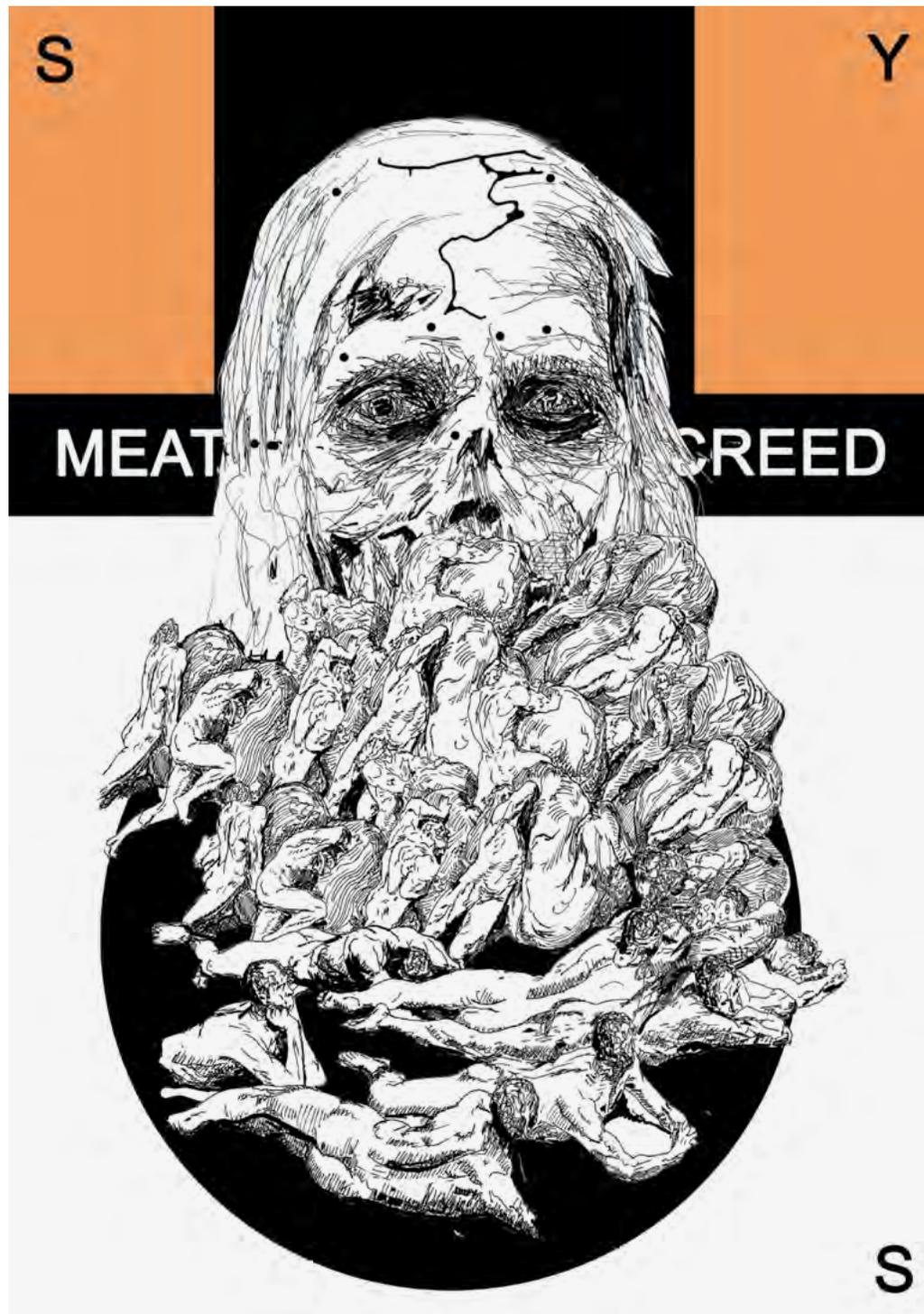
On the outer left are purely inorganic constellations that obey the laws of thermodynamics; the apositionality of the inorganic, whose edges do not evince any boundaries.

Next to this is the 'open' positionality of plants, as a consequence of their lack of central organs, from which follows a dependent embedding in nature as a whole, with limited contact to their environment.

Further to the right is the 'enclosed' centrist positionality in the non-human animal kingdom. It implies inner impulse and central organs that 'express themselves in a pronounced separation of the living creature from its environment', so that this form 'makes the organism ... into the independent section of the life circle to which it belongs.'

Finally, the 'eccentric' positionality of humankind derives from cognitive abilities, tool-using technology and the abstract ability to relate to one's centre and as it were to stand next to oneself and one's experiential centre without leaving oneself. Accordingly, eccentric positionality finds expression in an extended periphery as a self-defined boundary.

Humankind is there. So are the elements. But why did Plessner for-g(e)at the microbes?



Two years later. The laboratory in Lund has closed down. Svenja and Hedda have completed their Masters in biology. Svenja is earning her living as a freelance science journalist, and Hedda has opened a restaurant in Brazil. Agmahd works in her kitchen. Elis and Fet Mats were reported missing when a chartered Cessna vanished from the radar north of Kiruna above the Baltic Shield. Fet Mats's liver is world famous. His Hepa cells that were absorbed by the bacteria constitute the basis of a new phase of civilization. Hundreds of start-ups, multinational pharmaceutical companies and chemical concerns modify the organism, developing materials and foodstuffs and above all producing energy. On the one hand they use an inverted form of electrolithoautotrophy, harvesting the electrical energy directly, and on the other they exploit the biomass extracted from the rock by the organism, whereby glycogen is transformed into fats and sugar. Alcohol and substitute products for mineral oil are not just stored in barrels but produced in barrels from the outset – in unlimited quantities

and with constantly falling costs.

— El'Brusskiy has put on ten kilos and is now Russia's Minister of Natural Resources and Ecology. Having passed off the organism – which he christened octoplasm – as his own discovery and presented it as his gift to the world, he is regarded as the new Stakhanov. At the President's side, his gold incisor flashing, he extols the promises of octoplasmic biotechnology.

— 'Russia is no longer an agrarian state. The Germans have Industry 4.0, we have Nature 4.0. We will liberate ourselves entirely from the tyrannical claims of plants and animals. Terrestrial fauna and flora will no longer hinder progress. In future we will no longer eat bread made from grain. Our flesh will unite with rock, and we will create a new society. This is the carnal revolution. Everything is flesh!'

— Left-wing theory always knew that the most profound techniques are those that become invisible. They grow together with the tissue of everyday life until they can no longer be distinguished from it. But left-wing theory has become redundant, and carnal ideologists

now hold sway. El'Brusskiy has bought up old mines and refineries and made them into potent sources of energy and nutriment. As rich as Croesus, he markets the products under a dozen names.

— 'The advantages to health of meat from controlled production are immense: no faecal contamination, no antibiotics, no stress hormones. We produce bread, protein, sugar, fat, silk and leather without animals and plants. The cellular economy creates unimagined prosperity for all. Hunger and poverty are words we will soon have forgotten. The bosom of Mount Kasbek feeds all Russians. The earth is our wet-nurse, from whose glands flow milk and honey.'

— While in Russia the collective body of the people is committed to an unshakeable unity under the motto of the carnal revolution, companies in Europe and the USA begin to individualize the organism from Mount Kasbek. Inspired by Svenja's master's thesis 'Autophagocytosis and Speculative Corps', Fet Mats's DNA is replaced with personalized DNA in order to cultivate customized products. In the chapter entitled 'Beyond Eater

and Eaten', Svenja speculates on the potential of ethically correct nutrition. According to her thesis, the vegan eating of today is the carnality of yesterday. Instead of feasting on other life-forms the biotechnical scenario is extended: everyone should provide what they need to live from their own body cells without abusing animals and plants. In the beginning the cost and effort of implanting personalized DNA was substantial, but has meanwhile become routine. In a lecture given at the Karolinska Institute that aroused considerable attention and was discussed extensively in the media, Svenja talks about the end of post- and transhumanism and the beginning of endohumanism, ending all exploitation of life.

— 'Aquaponics, growing vegetables on your balcony, mushrooms in the cellar – it's hypocritical. Whether we eat the head of a pig or a head of lettuce makes no difference. Our morality of giving species different places in the hierarchy is completely arbitrary. Life knows no ethical boundaries. The right of determining life ends in us, in the individual body. Authorship,

ownership and copyright only extend to the genome of our body, and not a single protein beyond. The only alternative to the extermination of other life consists in the cultivation of our own individual cells. The possibility of translocating ourselves genetically into the organism using bioengineering techniques creates for the individual the responsibility of feeding themselves inorganically by means of chemolithoautotrophy. The anthropocentric turning point takes place not as the parliament of animals but as a larder inside us.'

— Octoplasmic technology is being continuously refined and differentiated. Octoplasm provides commodities such as food and medicines but also building materials, textiles, plastics, chemical products and a whole spectrum of raw, auxiliary and process materials. And above all it supplies unlimited energy. The cellular economy makes humankind as a factor into an unlimited resource. Humanity no longer exploits nature – it discovers meadows, fields and oceans in the faculty of its own flesh.

— In an attempt at ingratiating

with church-associated circles El'Brusskiy invokes the resurrection of Christianity from the spirit of the communion.

— 'Precious Body and precious Blood of Our Lord Jesus Christ. Octoplasm, you are the Host that was given to us by the resurrected Prometheus, the first Messiah. You transform rock into flesh and blood, just as bread and wine used to be. Hoc est corpus meum. Whoever doubts it is a counter-revolutionary and also a heretic. I say to you as in the gospel of John: "Except ye eat of the flesh of the Son of man, and drink his blood, ye have no life in you."'

— El'Brusskiy's strategy of invoking God as the best of all brands and selling octoplasm as theophagy bears fruit. This new manna takes even the Islamic market by storm. Invoking the tradition of ancient pre-Islamic Arab lithiolatry, octoplasm is interpreted as the legacy of the Kaaba. On Al Jazeera imams announce the coming of the paradise of Jannah and syncretistically conflate the angel Jibreel with Prometheus. 'Amaana-tiaddaituhawamithaadschita-a'hhadtuhu. The deserts of stone

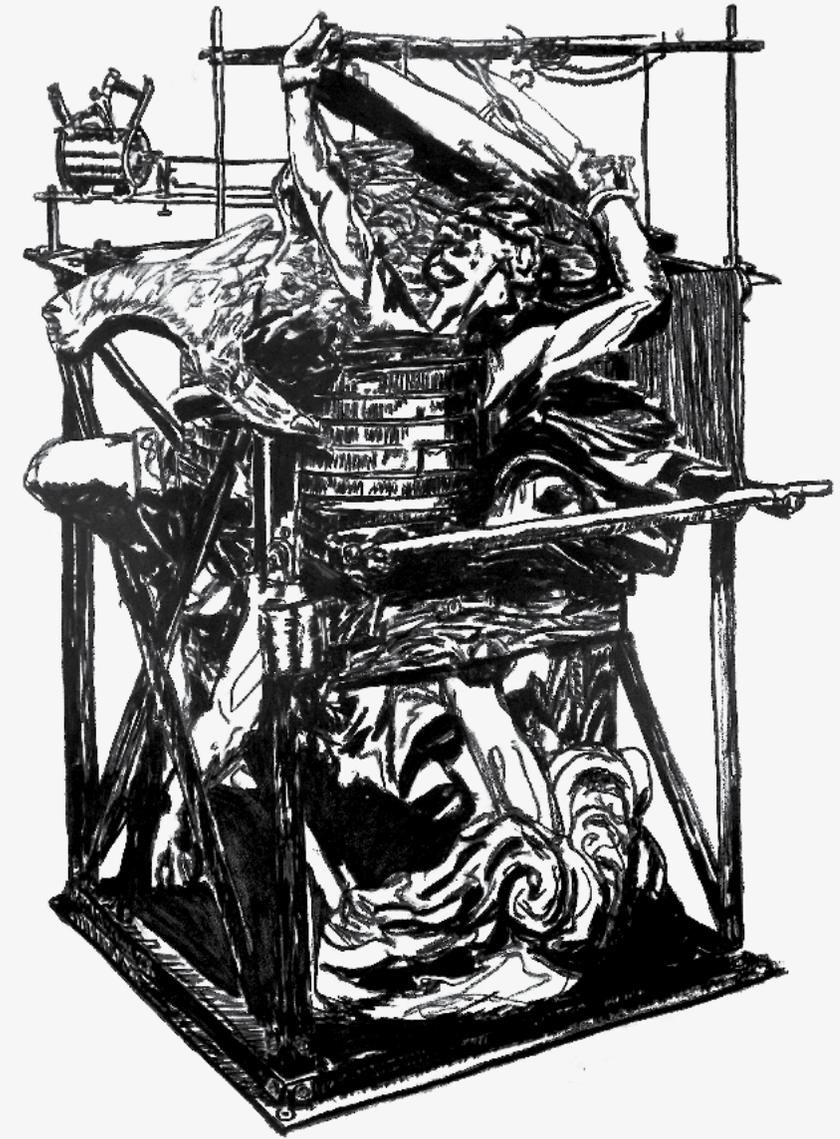
will blossom and become the body of all Muslims. The seed of Jibreel will fall from Heaven and feed the chosen sons of Abraham in all eternity. They who put their trust in it shall not be disappointed.'

— Under different circumstances demonstrations organized by animal rights activists and ecofeminists take place in Paris, New York, Berkeley and Rome. They demand the legal prohibition of animal and plant foods, and the total autarchy of the emancipated citizen. On their banners capitalism is laid to rest and autophagy proclaimed. No politicians are trusted, no ideology, no concept of society: one only trusts and eats oneself. In old-style democracy power derived from the people; in autophagy it derives from the body of the individual. The post-democratic state, where no one goes to vote, ends in a radical autocracy in which everybody elects, rules and exploits themselves. Their political programme invokes Thoreau's *Walden* and Montaigne's *Des Cannibales*. They demand the abolition of heteronomous consumption by making autophagy compulsory,

and urge the conversion of economy to autonomy. This is the only way to get to grips with climate change, pollution and the squandering of resources.

— A few critical intellectuals raise their voices hoarsely, warning about the consumption of human victuals. If the body is in peril, then so is the world. They urge people to be aware of history, citing the examples of soap made from the body fat of Jews or the infamous deeds of Countess Elizabeth de Báthory, who had six hundred young girls exsanguinated in an iron maiden. They condemn octoplasma as global cannibalism and describe the option of cultivating one's own flesh and blood in the organism as culinary onanism.

— In artistic circles this chatter quickly subsides. A brief wave of moral outrage is followed by the last gasp of the avant-garde. The maltreated body of the artist has always been prone to self-destruction. Stockhausen, Hrdlicka and Musil are deployed with dicta such as 'every genius is a cannibal', 'all power in art derives from the flesh' and 'writers incorporate their predecessors'. And that was that.



Jens Hauser:

Allegedly victim-less meat for vegetarians, grown on polymer scaffolds in bioreactors from immortalized cells under microgravitational conditions is now old (artistic) hat from the first years of the twenty-first century – Soylent Green, new and improved.

And the 'elemental turn' proclaimed by John Sallis in the face of anthropogenic effects, with which abiotic elements are to be cobbled together into a total-Gaia, goes hand-in-hand with the erosion of the symbolic and metaphorical as an aid to living. Eating humble pie, the narratives framed from a purportedly critical distance entrench themselves behind the oscillation between techno-Utopia and eco-dystopia. If Jacques Derrida wrote in his 1987 essay *The Retreat of Metaphor* 'There is nothing that does not happen with metaphor and by metaphor', then the metaphor that once guided cognition is henceforth worthless without metabolism.

Animals and plants are now spared, everything takes place at the left and right extremes, and even the microbes have been assigned their place between thermodynamics and eukaryotes. The holistic circle closes from the atomic-submolecular level upwards via the molecules, viruses, bacteria, cells, tissue, organs and body systems to whole organisms, and on to populations, ecosystems, biospheres and cosmos – whose point of reference however remains man as the measure of all things; now it's immortality through self-culture.

The Lost Center appears as a trans-historical undead spectre, and in a new guise the wheel of reactionary cultural theorists such as Hans Sedlmayr reinvented in feigned subversion. Confronted with modern, avant-garde art, Sedlmayr fretted about this 'loss of centre', the tendency of art to become polarized, to go into irreconcilable extremes, to explore the world beneath humankind:

'Art has become centrifugal. Art has in a very definite sense become eccentric. ... There is a disturbance in man's relationship to nature. ... Man no longer feels himself to be the crown of creation, nature's Lord and centre. As against this, it becomes transformed – as we see in the case of the engineer – into something cold and brutal. There is a disturbance in man's relationship to God. There is a disturbance in man's relation to himself. There is a disturbance in man's relationship to time.'

The 'crown of creation'... Let's just wait a few years... de-livered – cheers!



Ls

In São Paulo the Society for Cutting up Men is hugely popular. Hedda and Agmahd's establishment is the hub of the Movimento Antropófago. Their menu features select dishes from the haute cuisine anthropagique.

— 'Olá, what can I get you? This week we're serving dishes from the cannibal communities of the equatorial belt. As hors d'oeuvres I recommend lambal, carpaccio of thigh with a chilli and salt-grain sauce, followed by boto-walai, breast cooked in an earth oven. If you're after good hearty food we have classics such as Fritz Haarmann's Hanoverian Sausages or Greek Lycaon soup with liver dumplings.'

— Hedda struts as if on a catwalk towards the kitchen, from which Cannibal Corpse's 'Shredded Humans' blasts into the steamy atmosphere of the club. Behind the bar made of human bones are row upon row of bottles of Aethon, a high-proof spirit distilled from Fet Mats's fermented liver. It's drunk on the rocks with iced pyrite crystals and flows freely. Although it's only early evening, the place is heaving as more and more anthropophagists pile into

the club. On the stage the bass speakers are stacked up to the ceiling, and a drum kit covered with human skin towers like a sculpture. Svenja, who's in Brazil for a lecture, grabs the mic and welcomes the guests. She's wearing a T-shirt with the symbol of the Man-Eater Movement and a gold chain with an ouroboros the size of the palm of a hand.

— 'Zombies of the night, hear the voice from the boca de inferno. Decide between autophagy and bulimia. Devour the world or spit it out. Eat your brains and become maieuticists for the birth of philosophy from the spirit of cannibalism. Forget your names. You're not post-structuralists – you're ontologists, object-oriented materialists who bring consciousness crashing down and cook Being as a deep, hot biosphere in your own soup. Let your guts burn. Eat your eyes and ears – perception is unnecessary. Eat your arms and legs – progress is unnecessary. Outside your Self nothing exists. There's nowhere to escape to. You circle in and around yourselves and form the circle that is the most perfect of all forms. You are ouroboros!

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Hear the message of my lady and mistress who fell from the sky.'

— The crowd vibrates and the drum kit sends a thundering wave into the room that breaks on the walls and ceiling, engulfing the hungry mob in its surf. A deep woman's voice hurls snatches of lyrics from the stage like a catapult.

*Recycle your brain –
eat it, eat it!*

*Recycle your intestine –
feed it, feed it!*

— The band consists of a woman in a dress of electric leads, plugs and regulators that creep over the stage like tentacles. Her body is a single interface for generating feedback loops. She sings of Prometheus stealing fire and his revenge as Lucifer. The songs tell of self-consumption that hollows people out for so long until it becomes a corrosive acid that eats holes in the earth before petering out there.

*Deep, hot and wet,
it's no reason to be sad.
Born in stone, the heart
of marble is your home.*

*Find the hollowness in you –
beat it, beat it!*

*Swallowed by narrowness –
breed it, breed it!*

— She knows about the legacy of octoplasm, which infects and petrifies all life. The organism will not be satisfied with feeding humanity. It will take possession of it, pulling all life, animals and plants down into the Underworld and devouring them.

*Liverty, liverty,
deliverance is soon.*

*Liverty, liverty,
delivery of doom!*

— The prophecy has come true. The destiny of humankind ends in the birth of the last Titan, mightier and 'deeper than the grasp of day'. The Earth travels as a self-digesting machine seeking the grave of the gods through the darkness of space to the end of time.

*Shatter, shatter,
gall of bladder.
My name is Hepa-Thetis.
Come in my arms
and knock me up.*

*I'm your prophecy,
your octopussy.
I'm your destiny,
your ignominy.*

— The feedback loops cease. The drum kit falls silent except for the pulsing of the snare drum. The black tentacles of the dress entwine the singer, their suckers exuding viscous acid. Swallowed up by the machinery, the final words fill the room like farts.

— 'We think that the most terrifying demon is the demon of ignorance. But the more we know about an object, the more alien and demonic it becomes. At the moment when a human being knows everything, he crumbles into dust. Like Beethoven, who wrote his finest symphonies when he was deaf, humankind blossoms in art at the moment of its dissolution. The abysmal terror of our existence lies in the beforehand of the afterwards, in the knowledge that we determine our destiny ourselves, yet lack the capability to do so.'

