

Presentation-Nantes (adapted from Sydney Earth Energies conference presentation, July 2015)

I'm going to present some ancient and 19th C texts about how the earth is both alchemical and electrical, and then bring this into focus as a possible strategy for re-approaching aesthetics. I'm not interested in any truth value of what's being said, I'm more interested in the imaginarium implicit in the ideas than whether they are true or not ...

SLIDE: earth in-circuit 1st SECTION

Presentation is in 3 brief sections

1 – digs into quotations from ancient philosophers to highlight beliefs that the origins of all beings and things of the world are formed in the transmutating circuits made between the sun and an infinitely subterranean earth;

2 – digs further into the ancients to suggest that while human technology appears to have developed in a way disconnected from this circuit, the earth is always in its returns even when it is negentropic with regard to that earth;

3 - suggests the opening up of this Sun on Earth circuit through these re-readings of the Ancients diffracted through their 19th Century descendents so as to make a space for aesthetic operations removed from current self-perpetuating technological circuits in which the earth is remaindered. Some art works will then be briefly mentioned and include what I will attempt as part of my short time in Nantes.

SLIDE: Xenophanes

8. For all things come from earth, and all things end by becoming earth.

9. For we are all sprung from earth and water.

10. All things that come into being and grow are earth and water.

12. This upper limit of earth at our feet is visible and touches the air, but below it reaches to infinity.

The ancients believed that everything was generated from the mud made from mixing earth and water. Add more water and another mud is made that reveals the beings produced in the first mud, and then this 2nd mud itself brings more stuff into the world, and so on.

SLIDE: Plato

As to the kinds of earth, that which is filtered through water passes into stone ... [so] the earth when compressed by the air into an indissoluble union with water becomes rock.

Under this muddy earth, there's a substrate of stone, itself made and remade with each mixing and separating of earth, water, and displaced air. The world and its beings are formed by these cycles of generation and destruction.

For Plato, earth cannot itself be transformed by water or air or fire.

If ash is the earthy residue of wood burning, stone an earth compressed by air, and salt crystals the result of evaporation from the earth, then they are all inherently or residually earthy.

SLIDE: stone/salt video (39 sec)

SLIDE: Avicenna

It is in the nature of water ... to become transformed into earth through a predominating earthy virtue; ... it is in the nature of earth to become transformed into water through a predominating aqueous virtue.

the later Persian thinker, Ibn-Sina (or Avicenna) known as a kind of proto-theorist of geological strata, also suggested that stone is residually earthy. So where a petrifying force is found in a very stoney place it is because an earthy virtue is in contact with water during the drying of any surrounding mud.

SLIDE: Aristotle The Sun on Earth

*... And so the relation of land to sea changes
...The principle and cause of these changes is that the interior of the earth grows and decays, like the bodies of plants and animals ...
Here the causes are cold and heat, which increase and diminish on account of the Sun and its course.*

And for Aristotle, this interplay of water and earth takes place in larger, extended, and more gradual cycles that go unnoticed by all organic life, including humans. For him, planetary changes are rarely because of catastrophes, but rather due to these slowly dynamic and uniform dispersals of energies from The Sun on Earth.

SLIDE: Aristotle Exhalation

We maintain that there are two exhalations, one vaporous the other smoky, and there correspond two kinds of bodies that originate in the earth, 'fossiles' and metals. The heat of the dry exhalation is the cause of all 'fossiles' ... The vaporous exhalation is the cause of all metals ...

Where Plato believed that minerals and metals were formed by the evaporation of a special type of water, Aristotle's Sun on Earth is more of a complex kind of exhalation theory.

Where the sun's heat penetrates the earth it generates what he describes as vaporous or smokey subterranean exhalations, exhalations that accumulate at infinite depths to create all manner of stone, minerals, metals, and fossils.

SLIDE: Brethren of Purity

The human body consists of flesh and blood, bones, veins, sinews, skin and the like; dark and heavy substances originating from the earth and subject to change and decay.

Around the same time as Ibn-Sina, a 10th C secret society of Islamic thinkers, the Brethren of Purity, also considered that the generation of stone involved the mixing of subterranean water with "the earth of its region", but that such mixing under the Sun produces an earthy energy, Al-Tabi'at (Nature), an animistic force that is present in all bodies, organic and inorganic, and is the primary cause of motion, life, and change.

All life-forms including human's, are always in-circuit with this energy, having been generated in the Earth, vitalised by the Sun, before returning as earth after eventual death and decay.

Such a cosmogony puts many different kinds of things together in-circuit with the constant and modulating mediums of the Earth and Sun. Its a sublunary world populated by a vast panoply of earthy phenomena, with the Sun playing a unifying role in the formation of earth and spontaneous life.

SLIDE: Albertus Magnus stone as dying/living

... For minerals in their own way suffer death just as animals do; but the loss of their essential being is not noticed unless the change is very great ... after a long drawn out change [they] grow dull and begins to disintegrate ...

While for the animal its through sexual reproduction that the generative force of the Sun is dispersed in cascading genealogies, for the deep time of the earth, its the Sun's forces, animistic and transmutative, that are played across an ancestral earth.

SLIDE: human earth returns 2nd SECTION

SLIDE: Bergbüchlein - sweat

... they assume, instead of quicksilver, a moist, cold, muddy matter, without any sulphur, that exudes from the earth as if it were its sweat, and think that all metals are made by its commingling with sulphur.

The 1505 Berg-büchlein, a practical handbook for beginners in mining, the genesis of metals is described as beginning in a “moist, cold, muddy matter . . . [that] exudes from the earth as if it were its sweat.”

Its an earthy sweat where the subterranean sulphides of copper and lead, like chalcopyrites and galena, naturally oxidise to produce the sulphates and sulphuric acid in which their metals are both purified and destroyed.

SLIDE: Mining silver ore illustration

For Georgius Agricola, the 'father of Mineralogy', local matter is absorbed in the downward flows of water to create mineral “juices”, and these juices get excited, combine and precipitate into particular mineral formations because of the Earth's underground heat and vapours.

Thus these formations also accord with the characteristics of the host stone, its cracks and faults, so that, for the miner, only vein typologies and extraction techniques need be systematised to provide the knowhow for capitalising on such earthy valuables. After all, an 'ore' is by definition a material from which metals can be extracted for a profit.

SLIDES: Copper Smelt Brazil (x4)

So crushing malachite and roasting it produces copper oxide that then allows for its smelting to make copper metal.

Douglas Kahn makes an allegory that he calls in his book, *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts*, the 'metallic circuit': its an allegory in which he emphasises how communication technologies have gone in and out of circuit with aspects of the earth during different historical phases, and accelerating the annihilation of space and time in their development from the 19th C to the present day with the pay-off for the earth being its environmental destruction.

In terms of the simple transformation of copper, the first technological metallic-circuits, to expand Doug Kahn's phrase, were copper-based, beginning as local practices of extraction, use, re-use, discard, and return to earth. And with each technological development the rupture with any earthy virtue was exponentially accelerated as notions of value and monopoly mapped across production and looped the Earth now seen only as resource under a benign Sun.

SLIDE: Pliny on the torture of the earth

... But it must be acknowledged, that everything which the earth has produced, as a remedy for our evils, we have converted into the poison of our lives.

... What indeed she endures on her surface might be tolerated, but we penetrate also into her bowels, digging out the veins of gold and silver, and the ores of copper and lead.

Where the ancient Pliny, like Kahn, saw a tortured earth, Aristotle described such technologies as always necessarily decomposing into the earth, as both the products of technology and natural things are composed of the same earthy matter, arguably as though the earth is always transmutative, technological and thus necessarily always in opposition to itself.

SLIDE: Aristotle Homogenous Bodies (minerals and flesh)

By homogeneous bodies I mean, for instance, 'metals', gold, copper, silver, tin, iron, stone ... also the substances found in animals and plants, for instance, flesh, bones, sinew, skin, viscera, hair, fibres, veins ... and in plants, wood, bark, leaves, roots, and the rest like them ... The agents are the hot and the cold, for they constitute and make concrete the homogeneous bodies out of earth and water as matter.

Technology, Aristotle writes, like natural things, cannot resist decay, nor reproduce itself unless attended to by its makers. So, if technology can appear as a conspiratorial expenditure, because of say its negentropic pay-offs being made and played out elsewhere, for Aristotle these technocratic uses of the Earth's resources can only be executed because of the agencies of the earth itself, its heat and cold, agencies which ultimately reduce all such productions, and their producers, to the realm of earthy homogenous bodies, that is, the elementally chemical.

So the earth's 'sweat of decay' (remembering the earth's own creative/destructive processes of here acid production) necessarily falls across both the natural and the technological. And although technology can reconfigure natural materials or produce new compounds through human design, all such things are ontologically equivalent to rocks and plants because they are all products of an earthy chemistry of energetic exchanges ultimately derived or driven by The Sun on Earth.

What is suggested here is that these Sun driven cosmic energies flow into and around the depths of an infinitely subterranean Earth, cocatenating with the manmade and natural, organic and inorganic, and sublimating ¹ all of spontaneous life including psyche. It is the earth that continually conspires against the earth.

And by psyche, I mean that the chemistry of the Sun on Earth condition all those organic beings, including humans as they roam around on the Earth's upper limit, keeping each to 'a limited spectrum in the immeasurable range of frequencies', to twist the late Friedrich Kittler's warning on the dangers of forcing together organic life and natural events as the simulations and predictions of technology.²

¹ Both in the sense of chemically changing into a vapour when heated and forming a solid deposit on cooling; and psychoanalytically, where impulse behaviour is modified.

² Kittler Thunder & Lightning: "access to times that are beyond human thresholds of perception" so "everything that is going on can be transferred into the frequency domain" and thus "In such a world, thunder and lightning are no longer experienced simply as events, rather, they can be predicted and simulated by machines. This gives rise to the possibility of a new, 'third kind' of event that is the product of the 'computer link-up' superior to our restrictions 'to a limited spectrum in the immeasurable range of frequencies'.

SLIDE: earth circuitry 3rd SECTION

SLIDE: Albertus Magnus – stone's powers

... if anyone wished to experiment. he would find that there is hardly any little stone that does not have some power or other...

If Kittler's fear was that all could be machinically made or simulated full-spectrum, its by forcing attention away from such metallic-circuit precipitations of the earth, and even those of an earth made more earth-like again which is the gamble of the anthropocene as ethical planetary engineering, that we can divine something of, here, the earth's earthier and stonier energies.

SLIDE: De La Beche 1839 electro-chemical vein formation

*[either] the filling of fissures formed in rocks [is] by the sublimation of substances driven by heat from beneath upwards;
[or] the filling of fissures in rocks [is] by chemical deposits from substances in solution in the fissures, such deposits being greatly due to electro-chemical agency.*

In looking over some of the history of the technological metallic-circuit, here the writings of gentlemen scientists of the early 19th Cent., like the ancients, theres a similar obsession with the ontogenesis, of the earth, of stone and especially around the formation of different mineral veins.

Where the ancients are inverted - so instead of stones being simple, elemental, mixes of earth and water and metals as second order mixes of sweated sulphur and mercury, stones are now seen as compounds and metals the basic chemical elements – then the mineralization of veins is still related by 19th C experimenters to the earthy character of country rock, with both ancients and moderns remarking on the changes in lode quality and, importantly, minerals or metals, as veins cross from one rock structure to another.

SLIDE: Becquerel – electro-chemical forces

... for a long time it could not be conceived how, with apparently feeble electrical forces, strong affinities could be overcome in order to decompose bodies and produce new combinations; it being considered that the actions of currents more or less energetic should always be employed.

This is more transmutation-in-nature; so while the 13th C. Albertus Magnus was skeptical about the practicality of any claims of success in transmutation made by alchemists, he believed it theoretically possible because it occurred in nature.

To 19th C. minds it is the Sun on Earth's electrical force and not its heat and cold that appear as the crucial agency for such alchemy, with here differences in the electro-chemical conditions seen to materially vary the mineral deposits found along singular veins as they cross different rock types.

SLIDE: Robert Were Fox rocks as voltaic

I am decidedly of the opinion, that the electro-magnetic phenomena which have hitherto been detected in mines, were caused by voltaic, rather than by thermo-electric action.

Robert Were Fox, a 19th C Cornish experimenter, reasoned that as changes in the earth's temperature might produce changes in the direction and intensity of the terrestrial magnetic curves, then terrestrial electricity may have powerfully influenced the existing arrangement of the contents of mineral veins through a strongly voltaic excitement.

SLIDE: x 3 'mine in pot'

Earth mineral electro-crystallizations were examined in a version of Fox's close neighbour Andrew Crosse, some of whose experiments I adapted by using contemporary solutions used in computer processor manufacture and recycling (Aqua Regia, nitric silver chloride, potassium carbonate) in sub-pots filled with gold plated edge connectors and crushed ICs, into a potted earth island mud of silt, pipeclay, sand, and powdered silicon, charged between anode of copper banding (+) around the porous pot, and a silicon wafer cathode (-) stuck into the mud, to provoke what I hoped were semi-conducting lode formations from within its depths.

SLIDE: Robert Were Fox flow map of electric, our galvanometer

... My apparatus consisted of small plates of sheet copper, which were fixed in contact with ore in the veins by copper nails ... between two of these plates at different stations, and a galvanometer, a communication was made by means of copper wire ... the intensity of the electro-magnetic action differed greatly in different places ...

and following in Fox's footsteps, by taking galvanometer readings in the manner described, signal tests were then made at the site of a medieval mine in Cornwall.

SLIDES: 3x slides 555 test Cornwall incl. Signal video (1' 35")

and further pulsed signals were sent through a worked out lode of tin-bearing cassiterite and iron-bearing haematite in a quartz gang, with a ground cable making the circuit. A crude induction coil picks up the signal along the worked out vein but not on the surrounding rock.

SLIDE: Psychogeophysics – 4x slides Cornwall helmet/electrodes across lodes

and in these images, after checking across parallel more metal bearing veins with a multi-meter, 4 pairs of electrodes were put between them to amplify voltaic currents and send them into the occipital and temporal brain lobes via amplifier/solenoid circuits to see what affects might transpire in the subject, in what might be called an earth-here-now signalling experiment.

This apparatus, co-conceived with Martin Howse (and who designed the amplifier circuits), is part of the Psychogeophysics project, work involving Martin, myself and several others from over the last few years.

This particular versioning continues a playful exploration of the Canadian neuroscientist Michael Persinger's ideas, that brain states are affected by weak geomagnetic fields as subjects traverse a landscape, such that the interference patterns of those fields cause anomalous experiences.³
I did feel q. strange ...

SLIDE: 1970s lacquer mirror-image peel

As described earlier, everything is always in relation to earth – such as distinct rock colours and stains and in this image of a lacquer peel there are other mineral-related markers that reflect here where common plants get stunted or absent or thrive depending on that earth.

SLIDE: Nantes peel test

There are many methods for reading a technological earth such as dowsing which can be seen as a 2-state switching computation with truth value assigned according to the presence of water or minerals, and the Psychogeophysics method shown above has some part of it derived from a 19th C + geomagnetic technique for prospecting for metal ores under the earth's surface.

So for my time here with APO33 I'll make attempts to take such encoding and decoding further by

³ Fields here are approximately a million times weaker than conventional transcranial magnetic stimulation (1-10 milliTesla) used to stimulate brain function after brain trauma incl. Stroke). 1million nT= 1 mT.

looking the earth for signal transmission and playback, and generating logic and random noise by putting slices of the earth in circuit or as components in some basic electronics fundamental in the history of computing (the diode and the transistor.)

SLIDE: Nebuchadnezzar's Dream CONCLUSION

I wanted to end with this image that illuminates the 14C English poet John Gowers *Confessio Amantis* ("The Lover's Confession") where King Nebuchadnezzar's dream is depicted.

Its an image I like in part because it emphasises whats left out in the way the notion of the anthropocene is put together to emphasise both the polar potentials of creative plenitude or catastrophic fatalism and destruction, defining an axis of self-fulfilling prophecy that put earth under a uniquely anthropogenic lens, elevating the human from the animal, and even geological forces, as the pre-eminant driving force behind earth's planetary system.

In so doing it re-emphasises the way the contingency of human thought is played out over earthy matter.

A statue-like figure made of earth and different metals stands over the sleeping kings bed, and a rough boulder is apparent on the other side of the bed. In Gowers poem, and following the biblical tradition of the Book of Daniel, the boulder is hurtling towards the figure to smash it as a monstrous mutation of human time:

SLIDE: Gowers Poem

With which ston al to broke was -
Gold, selver, erthe, stiel, and bras –
That al was into pouldre broght,
And so forth torned into noght."
And that is of this world the laste,
And thanne a newe schal beginne,
Fro which a man schal nevere twinne.
Or al to peine or al to pes
That world schal lasten endeles

Gower's poem emphasises how the kingdoms of this world, just as they are conglomerated in the statue, have mutated and distorted the perfection of some Golden Age, and its only through this terrific lithic onslaught that human history is ended and a new earth rebooted.

JK/ Nantes/19.01.2016