
MOLTEN MEDIA
ROSEMARY LEE
VILÉM FLUSSER
RESIDENCY
FOR ARTISTIC
RESEARCH 2014

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Molten Media

Rosemary Lee

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CONTENTS

This book is an aggregate, formed through processes of artistic research: a collection and compaction of fragments of texts, images, and ideas. Parts are volcanic, others in the gradual process of sedimentation, tectonically shifting and recrystallising over time. The images and text of which this book is comprised are artifacts of a still ongoing study of the interconnection between the methods by which information is encoded in matter, and the deep temporality of data-storage and transmission. Combining investigative art making and writing practice with visual and theoretical analysis, the method of research is reflective of its multifaceted subject. Its parallax view draws together knowledge from various fields of media philosophy, geology, computer programming, chemistry, and poetry with the aim of developing a better understanding of the inter-relation between different kinds of codes and how they effect a sense of our time. Reframing media technology's relation to natural history, considering the effect of the traces left by humanity, shifts out of the short-sighted view often taken of techno culture, at the same time as brushing a bit of dust off the contents of the distant past.

DISCROT
OPAL

Terramnemonics

Earth keeps a record of what has been. Through its physical structure and composition, one may read the earth's stories of the processes and beings which shaped it. Fossil and mineral records tell the history of the earth from a time preceding the historical subject, and they will contain our remnants long after the last historian has perished.

When the crust of our planet congealed, none of our kin was present to record it[1], but a miniscule sample of the mineral zircon is enough to serve as a recording of those instants: holding within it information about the conditions present when the earliest rocks crystallized on the surface of the planet[2]. Archaeological digs have revealed traces of the heretofore-inconceivable: fossilized unicorns[3], imprints of fish, our origins in algae[4], dinosaurs.

1 On Ancestrality, see Meillassoux, Quentin. trans. Brassier, Ray. After Finitude: An Essay on the Necessity of Contingency. (2008). pp 7-48.

2 From their chemical content, geologists are able to tell the age and at what temperature rocks formed. The levels of titanium in grains of zircon, the oldest rocks on the planet earth, indicate that they crystallized in the presence of water. This tiny crystal, approximately the size of a grain of sand, goes a long way in telling us about the early stages of our planet.<http://www.npr.org/blogs/krulwich/2013/01/10/169047159/the-oldest-rock-in-the-world-tells-us-a-story>

3 [xxxv. The unicorn's horn, and an enormous animal unearthed in Quedlinburg], see Leibniz, G. W., trans. Cohen, Claudine. Waker, Andre. Protogaea, (Chicago/London: Univeristy of Chicago Press, 2008), 101.

4 The striated layers of a stromatolite stands as a physical record of early life on earth, a rock formation from ancient cyanobacteria colonies.

We have also exhumed relics of our distant ancestors: their fossilized bodies, stores of food, utensils, dwellings, and art.

Anthropocene Geology

In the present, geographical features are reshaped by human intervention and the earth's composition is not only mechanically but also chemically reorganized, affecting land, sea, and sky. We cannot predict the full consequences our current way of life will have on the future, but we can already project what geologists of the future would uncover in their studies from the remnants of our civilization already incorporated into the earth's composition.

Archaeology reads the striations of the earth vertically, depth equivalent to time. Cities are consumed by the ground. "At a depth of ten feet, they encounter the debris of the old city, unearthing the paving stones of forgotten avenues and other vestiges of antiquity. So far did the city rise on hauled earth and its own ruins. Next come four or five feet of simple earth; then debris again twelve feet lower, as if the city had been destroyed more than once."[5] The bones of old buildings are turned to rubble and reclaimed by earth, plants and animals. Roads are erased by deluges, landslides, and erosion. but in Chernobyl and in Fukushima, the marks of man are not so easily forgotten. Residual radioactivity[6]

5 Leibniz, G. W., trans. Cohen, Claudine. Waker, Andre. Protogaea, (Chicago/London: Univeristy of Chicago Press, 2008), 123-125.

6 Make your own Geiger Counter: <http://casepyhajoki.info/casepyhajoki_geiger.zip>.

THE SCATTERED VESTIGES OF OLD THINGS, OF PLANTS, ANIMALS, AND ARTIFACTS WRAPPED IN A NEW COAT OF STONE.

W. G. Leibniz

Fossilized Calyx of a Sea Lily (Platycrinus hemisphaericus)

Natural formation of silver ore

Neurons (tinted for visibility)

Tree roots

Digging through garbage in Lagos, Nigeria[2]

from these disasters is expected to remain for millennia. More intentionally, at Onkalo, the strategy to inter nuclear waste in a geologic repository acknowledges the need to consider very long-term storage of hazardous material. At Svalbard, seed storage hopes to avert future crisis of a different kind by preserving the genetic data of plants. Though these facilities have vastly different aims, one to contain danger within, and one to protect from danger without, their construction has similar motives. Each is an attempt to prepare for the unforeseeable by storing materials in a stable state.

Encoding the earth[7] with piles of technical waste could be our equivalent to the rings of stones and bones of Paleolithic people[8], the lasting art of our civilization. Expeditions will need to be taken to rechart the maps for territories where new mountains have grown.[9] Already becoming a source ripe for reclamation of useful materials, man-made geological features are mined for precious

7 Martin Howse: Earthcodes: <http://1010.co.uk/>

8 Flusser, Vilém, Writings, ed. Ströhl, Andreas, trans. Eisel, Erik. (University of Minenesota, Minneapolis/London: 2002), 37.

9 bldgblog, TV Mine <http://bldgblog.blogspot.de/2007/03/tv-mine.html>. 22/05/2014.

minerals from the glass and plastic shale.

What people in the distant future will make of our traces remains unknown, but they serve as a strange kind of time capsule to leave behind. Having reshaped the earth with our desire for its contents, piling them up together when they are through, it is hard to know whether “anthropocene” or “misanthropic” is more accurate. From its production, to its return to the earth, the electronics industry bears a harsh toll.

Technological wastelands are no longer the territory of science fiction and dystopian fantasy; they are a present and pressing reality. It becomes more and more common to come across internet pictures of the mountains of electronic debris growing in impoverished landscapes, children playing among the dangerous heaps or burning toxic materials. But they are relegated to that sphere, of foreign-ness, always “elsewhere”: disappearing the by-products of technological hyperconsumption into the places of the world with limited visibility. Mountain ranges of garbage sprout up in China and Africa. In other places waste is entombed in the ground, makes its way into marine ecosystems, and modifies the atmospheric conditions. A particularly prevalent and lasting form of such environmental modification and pollution is e-waste, with problems deeply entrenched in the practices of mining, manufacturing, and pollution. In spite of the conspicuously devastating effects involved in the industry, lack of transparency in the chains of supply, production, and disposal disallows attempts to create and

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enforce regulations to end the exploitation of workers and the environment.

Designing Obsolescence

Although some parts of the process of the life cycle of electronic goods are rendered into obscurity, shaking off the overconsumptive tendencies to rapidly cycle through and dispose of technology is a point where individuals may take personal responsibility. Contrary to the short-sighted perspective endemic in media cultures, apparatuses are not born as they emerge from their swaddling packaging, nor do they "die"[10] when they are outshone by the next new invention. They do not decompose nor evaporate when disposed of on the street with a sign: "zu verschenken".

What is important to recognize are the processes by which technological devices come to be considered outmoded, antiquated, or unusable. Quite often the cause of death is obsolescence as a technique, used systematically. On a mechanical level, the design schemes of consumer electronics are geared precisely toward the aim of consumption. Designing obsolescence works with the goal of providing models which "expire", requiring their replacement at regular intervals. Lasting goods are bad for business, so companies are careful to design electronics for failure, rather than survival, in order to stay commercially viable. Some create never-ending lineages of upgrades to supplement the innate shortcomings of the product's design, provoking a need and desire to buy anew in order to keep up to date. Engineering the scheduled demise of machines is another popular method, embedding fatal design flaws in products with the potential to function for decades without problems. Other factors make longevity and recycling of technological goods difficult and unsustainable, for instance, poor quality manufacturing, low standard of materials, and planning toward non-intervention. Some appliances are engineered to be unable to be fixed in the case of malfunction, ensuring their destiny as filler for landfills. Some are simply more costly to fix than they are to replace. The light bulbs in video projectors are a notorious example for being so expensive that a new projector is cheaper than the replacement part.

Aside from intentional or negligent design, it is not always the material death of an appliance which signals its end, so much as the slew of other factors stacked against it: shifts in dominant forms of technology, ever-changing protocols, fashion, cultural expectations of acquisition of the new. A fully functional machine can meet its end merely by being deemed unfashionable. Utility in this sense is not intrinsically tied to functionality.

The cult of the new is the fire which consumes the present in order to drive the machine which produces the future. It projects with it the impression of an inverted temporality, supposing that futuristic gadgets originate in the future they herald,

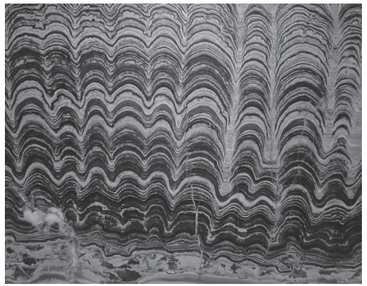
10 Sterling, Bruce. "World Power Systems: Dead Media Project: A Modest Proposal." Web. 21 Oct. 2013. <http://www.deadmedia.org/modest-proposal.html>.

and culminate their trajectory in the rubbish bins and dumpsters of the present and past. Expectations for technology to provide solutions for the future plays upon a combination of desire and disappointment, each gadget loaded with impossible promises. It is no wonder that these devices inspire resentment, quickly outgrowing their appeal, and hastily dissociated and disposed of, only to be replaced by something else.

Writing in Rocks

Rather than contradicting the relation of futurity to the present, the dinosaurian features of media technology reveal the fact that we are not as distant from the past as we desire to believe. Certain forms have persisted with minimal change since ancient times, the stylus, for instance, has gone through many transmogrifications, evolving continuously but keeping its central features. The stone carver has more in common with the computer engineer than one might expect. Stone has been and remains the prime carrier of information. Much of pre-history and knowledge of ancient civilizations comes to us through reading rocks, and minerals are still heavily relied upon as substrates. Chiseled stone tablets are transmuted into silicon chips[11].

Microscopic image of
an e-reader screen



Patterns inside a stromatolite[3]

11 From sand to silicon chip, how its made. <http://www.youtube.com/watch?v=Dr9QitCFULQ>

Fragment of marble stele with library regulations
100 A.C. Agora museum, Athens

Comparison of Components: exponentially decreasing in size

Magnitudes of the Infinitesimal[12]

In the past, it has been the sheer resilience of stone that allowed it to remain unchanged and to carry messages through millennia. Information, with emphasis on form, needed to be locked in so tightly to the structure of the rock that it would endure: hardness (dureté[13]) determining duration (durée). Now matter is championed instead for its volatility and velocity in order to store, access, and transmit at increasing speed. Devices "grow" ever more diminutive in converse relation to their capacities. Made ever more minute and ethereal, smaller machines capable of doing more with less. Components shrink in size by orders of decimal magnitude.

On a positive note, this decreases dependence upon scare, toxic, pricy, or otherwise problematic materials. A primary motive in this movement is cost, helping to push development in a more ecologically friendly direction through the fact that it is simply more expensive to use more materials. As a side effect, it renders DIY electronics virtually impossible. Components verging on the cusp of invisibility drop out of the range of manageability for non-professionals, requiring specialized equipment to solder.

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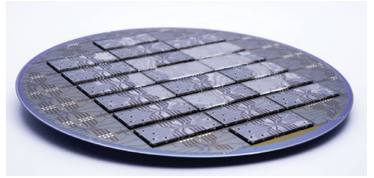
12 see Ginosatis, Dimitris, Kavvathas, Dionzsis. trans. Golemi, Anastazia. Microphysics of hardware or the gigantism of the immeasurably small.

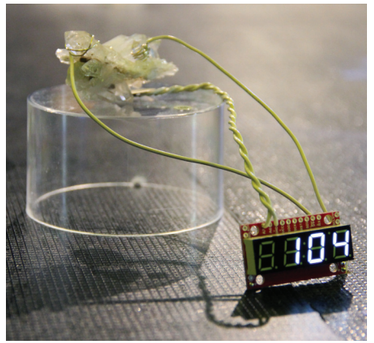
13 Deleuze, Gilles. Le Pli: Leibniz et le Baroque. (Paris: Les Éditions de Minuit,1988). 8.

microscopic image of cd-film flakes in a suspension of ethanol[1]

1 Microscopic image produced using open-source MiCAM Webcam Microscope: <http://lifepatch.org/index.php?search=micam&title=Special%3ASearch&go=Go>, via: <http://Hackteria.org>.



lab-on-chip created using Photo-patternable Adhesive[4]



quartz crystal oscillator[5] from "Mining the Arbitrary" with Jens Jørgensen

Mineral Makeup of Electronics

Minerals' structural properties determine their application in electronics production. A few of the most notable substances are catalogued below, with relevant information about their chemical makeup and applications. This is by no means an exhaustive account, as such an incredible multitude of materials are used in electronics, but is intended to serve as an introduction.

Silicon (Si)

The tendency of silicon molecules to arrange themselves in orderly lattice formations make it an ideal substrate for microchips. Lab-grown monocrystals formed from purified quartz sand have an almost perfect cubic molecular structure with planar crystal faces, allowing the material to be easily sliced into thin wafers, into which circuits are printed. Itsww structure also gives it a specific resonant frequency, suited well for quartz's application in piezoelectric sensors and oscillators. Another factor, price, makes it unsurprising that cheap, abundant[14] silicon is

14 "The Earth's crust consists principally of silicates" from Ernst, W. G. Earth Materials. (Englewood Cliffs, NJ: Prentice-Hall, 1969). 60.

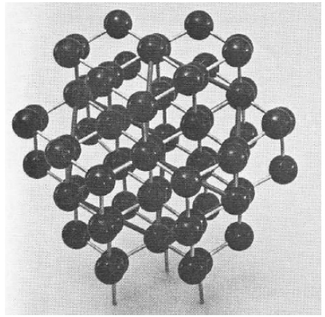
TRIGON FORMATIONS WITHIN NATURAL DIAMOND STRUCTURE[6]

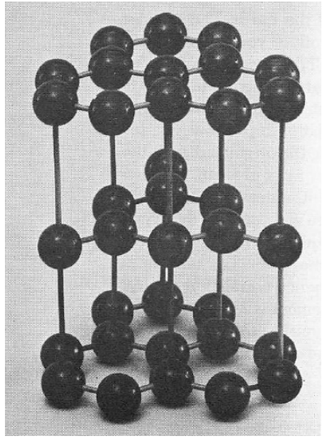
so often used in electronics. Silicon oxide is semi-conductive, and it is used in capacitors, transistors, and IC's to create transitions between conductors and insulators.

Diamond (C)
densely-packed carbon molecules, low entropy, and consequent hardness warrant diamond's usage in everything from cutting tools, temperature sensors, heat sinks, telephone and television transmitters, and styluses.

Industrial diamonds avoid some of the problems of mining, but the process of transforming graphite to diamond is costly in energy, time, and money, and those artificially produced stones are shown to be far less structurally sound than their naturally formed

COORDINATION MODELS OF DIAMOND (TOP) AND GRAPHITE (BOTTOM)[7]





counterparts.[15] There are now even companies offering the transformation of a loved one's ashes into diamond, so they can be commemorated in stone.[16]

Graphite, another allotrope of carbon, translates to "writing stone" in Greek.

Copper (Cu)
highly conductive, so it is used in circuitry and contacts of microchips

Lithium (Li)
used in lithium ion batteries, it has a high energy density, allowing lightweight portable devices to hold a charge for a long time. THe downside of these batteries is that they degrade quickly, having only a 2-3 year lifespan.

15 "A test matched six gems in a tank against six industrials, beach gravel, 265 pounds of steel balls, and water. After seven hours of tumbling, the industrials were gone, but after 950 hours, the gems had lost only one-hundredth of one percent of their weight." from Ward, Fred. The Incredible Crystal Diamonds, in The National Geographic Magazine, vol. 155, no. 1. 100.

16 http://www.lifegem.com/

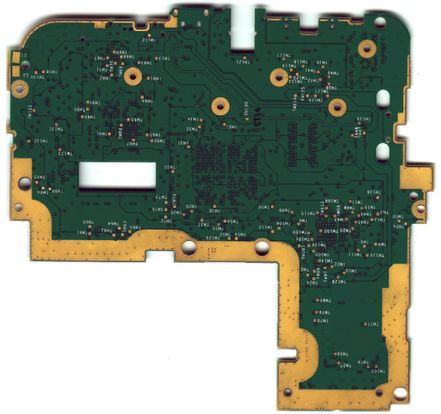
The Conflict Minerals:

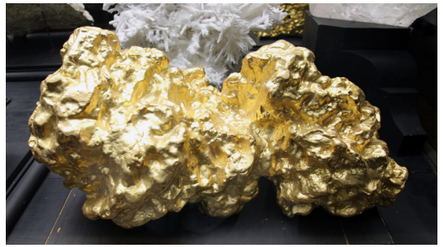
The term "conflict minerals" is used to describe certain minerals such as gold, wolframite, casserite, columbite-tantalite and their derivative metals, which include tin, tungsten, and tantalum that are mined in the DRC [Democratic Republic of Congo] or its adjoining countries.[17]

The United Nations has been raising awareness of mining of conflict minerals as a source of revenue for armed militias committing atrocities in the DRC for at least the past 10 years.[18]

Gold (Au)
an almost perfect conductor, gold rapidly transmits electricity without giving off much heat. This makes it an excellent mineral for Electric plating and IC wiring[19]

Tin (Sn, extracted from Cassiterite)
Used in solders for joining pipes and circuits, Tin plating of steel, Alloys (bronze, brass, pewter)[20]





Gold in a circuit board (above)
and in nugget form (below)

Tungsten (w, extracted from Wolframite)
Used in Metal wires, electrodes, electrical contacts, Heating, and welding applications, vibration mechanism in mobile phones[21]

Tantalum (Ta, extracted from "Coltan")
"The properties of refined coltan is a vital element in creating devices that store energy or capacitors, which are used in a vast array of small electronic devices, especially in mobile phones, laptop computers, pagers, and other electronic devices."[22]

17 SEC Release No. 34-63547; File No. S7-40-10 <http://www.sec.gov/rules/proposed/2010/34-63547.pdf>
in Conflict Minerals Provision of Dodd-Frank, page 3. <kpmg.com>

18 "A Comprehensive Approach to Congo's Conflict Minerals - Strategy Paper" by The Enough Project <http://www.enoughproject.org/publications/comprehensive approach-conflict-minerals-strategy-paper>
ibid.

19 ibid.

20 ibid.

21 ibid.

22 <http://conflictminerals.org/coltan-learning-the-basics/>

mineral_computer_sonnet

```
int H = 1, He = 2, Li = 3, Be = 4, B = 5, C = 6, N = 7, O = 8, F = 9, Ne = 10, Na = 11, Mg = 12, Al = 13, Si = 14, P = 15, S = 16,
Cl = 17, Ar = 18, K = 19, Ca = 20, Sc = 21, Ti = 22, V = 23, Cr = 24, Mn = 25, Fe = 26, Co = 27, Ni = 28, Cu = 29, Zn = 30, Ga
= 31, Ge = 32, As = 33, Se = 34, Br = 35, Kr = 36, Rb = 37, Sr = 38, Y = 39, Zr = 40, Nb = 41, Mo = 42, Tc = 43, Ru = 44, Rh =
45, Pd = 46, Ag = 47, Cd = 48, In = 49, Sn = 50, Sb = 51, Te = 52, I = 53, Xe = 54, Cs = 55, Ba = 56, La = 57, Ce = 58, Pr = 59,
Nd = 60, Pm = 61, Sm = 62, Eu = 63, Gd = 64, Tb = 65, Dy = 66, Ho = 67, Er = 68, Tm = 69, Yb = 70, Lu = 71, Hf = 72, Ta = 73,
W = 74, Re = 75, Os = 76, Ir = 77, Pt = 78, Au = 79, Hg = 80, Tl = 81, Pb = 82, Bi = 83, Po = 84, At = 85, Rn = 86, Fr = 87, Ra
= 88, Ac = 89, Th = 90, Pa = 91, U = 92, Np = 93, Pu = 94, Am = 95, Cm = 96, Bk = 97, Cf = 98, Es = 99, Fm = 100, Md = 101,
No = 102, Lr = 103, Rf = 104, Db = 105, Sg = 106, Bh = 107, Hs = 108, Mt = 109, Ds = 110, Rg = 111, Cn = 112, Uut = 113, Fl =
114, Uup = 115, Lv = 116, Uus = 117, Uuo = 118;
StringList elements;

void setup() {
  size(500, 500);
  loop();
  colorMode(RGB, 118);
  fill(0);
  textAlign(CENTER);
  elements = new StringList();
  elements.append("0");
  elements.append("hydrogen"); elements.append("helium"); elements.append("lithium"); elements.append("beryllium");
elements.append("boron");
  elements.append("carbon"); elements.append("nitrogen"); elements.append("oxygen"); elements.append("fluorine");elements.
append("neon");
  elements.append("sodium"); elements.append("magnesium"); elements.append("aluminum"); elements.append("silicon");
elements.append("phosphorus");
  elements.append("sulfur"); elements.append("chlorine"); elements.append("argon"); elements.append("potassium");
elements.append("calcium");
  elements.append("scandium"); elements.append("titanium"); elements.append("vanadium"); elements.append("chromium");
elements.append("manganese");
  elements.append("iron"); elements.append("cobalt"); elements.append("nickel"); elements.append("copper"); elements.
append("zinc");
  elements.append("gallium"); elements.append("germanium"); elements.append("arsenic"); elements.append("selenium");
elements.append("bromine");
  elements.append("krypton"); elements.append("rubidium"); elements.append("strontium"); elements.append("yttrium");
elements.append("zirconium");
  elements.append("niobium"); elements.append("molybdenum"); elements.append("technetium"); elements.
append("ruthenium"); elements.append("rhodium");
  elements.append("palladium"); elements.append("silver"); elements.append("cadmium"); elements.append("indium");
elements.append("tin");
  elements.append("antimony"); elements.append("tellurium"); elements.append("iodine"); elements.append("xenon");
elements.append("caesium");
  elements.append("barium"); elements.append("lantanum"); elements.append("cerium"); elements.append("prasodymium");
elements.append("neodymium");
  elements.append("promethium"); elements.append("samarium"); elements.append("europium"); elements.
append("gadolinium"); elements.append("terbium");
  elements.append("dysprosium"); elements.append("holmium"); elements.append("erbium"); elements.append("thulium");
elements.append("ytterbium");
  elements.append("lutetium"); elements.append("hafnium"); elements.append("tantalum"); elements.append("tungsten");
elements.append("rhenium");
  elements.append("osmium"); elements.append("iridium"); elements.append("platinum"); elements.append("gold");
elements.append("mercury");
  elements.append("thallium"); elements.append("lead"); elements.append("bismuth"); elements.append("polonium");
elements.append("astatine");
  elements.append("radon"); elements.append("francium"); elements.append("radium"); elements.append("actinium");
elements.append("thorium");
  elements.append("protactinium"); elements.append("uranium"); elements.append("neptunium"); elements.
append("plutonium"); elements.append("americium");
  elements.append("curium"); elements.append("berkelium"); elements.append("californium"); elements.
append("einsteinium"); elements.append("Fermium");
  elements.append("mendelevium"); elements.append("nobelium"); elements.append("lawrencium"); elements.
append("rutherfordium"); elements.append("dubnium");
  elements.append("seaborgium"); elements.append("bohrium"); elements.append("hassium"); elements.
append("meitnerium"); elements.append("darmstadtium");
  elements.append("roentgenium"); elements.append("copernicium"); elements.append("unutrium"); elements.
append("flerovium"); elements.append("ununpentium");
  elements.append("livermorium"); elements.append("ununseptium"); elements.append("Ununoctium");
  println(elements);

}

void draw() {
  for (int i = 0; i < 118; i++) {
    fill(i, (i*i)/118, 118);
    String mineral_computer_sonnet = elements.get(i);
    text(mineral_computer_sonnet, 120 + (2 * i), 50 + (2 * i));
  }
}
```

symbols form lines, and they obviously mean the image they accompany. They “explain,” “recount,” “tell” it. They do so by unrolling the surface of the image into lines, by unwinding the tissue of the image into the threads of a text, by rendering “explicit” what was “implicit” within the image. It may be shown through text analysis that the original purpose of writing, namely, the transcoding of two-dimensional codes into a single dimension, is still there: every text, even a very abstract one, means, in the last analysis, an image.

Vilém Flusser

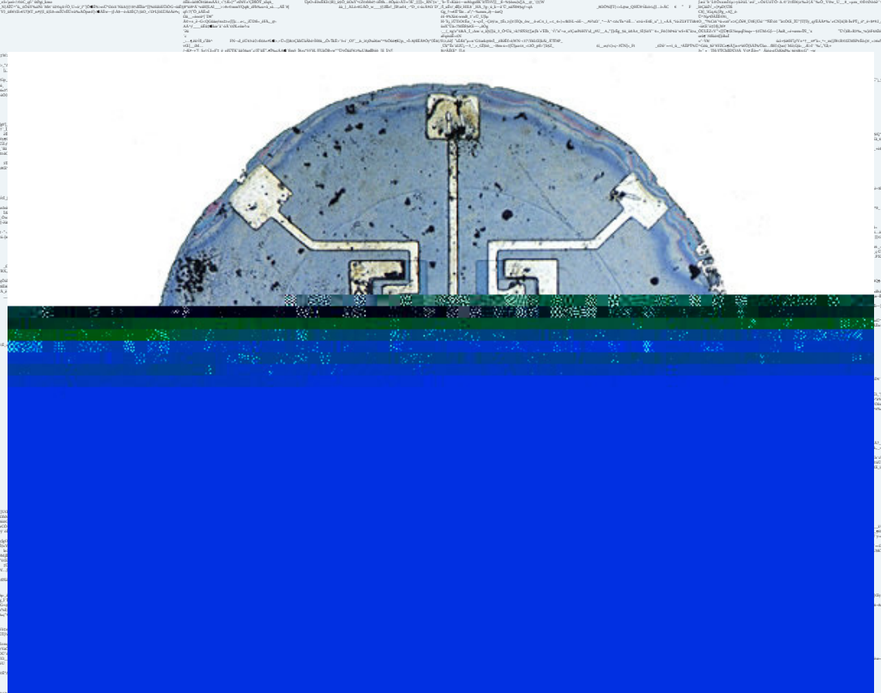
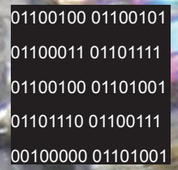
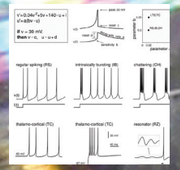
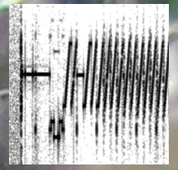
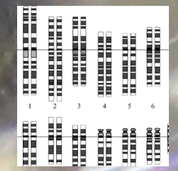


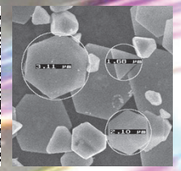
image resultant from transcoding Friedrich Kittler’s text “There is No Software” into a photograph of Fairchild’s integrated circuit.[8]

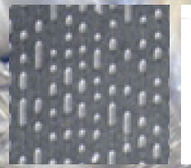












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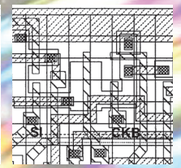
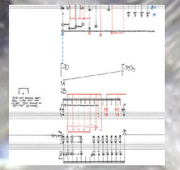
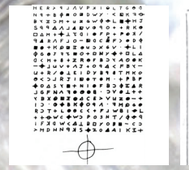
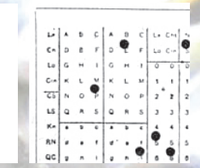
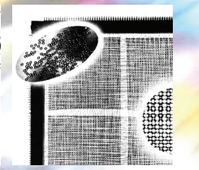
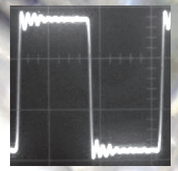


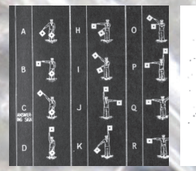












Kinds of Codes

HEXADECIMAL	SPIKE PATTERNS OF NEURONS[9]	SLOW SCAN TV SIGNAL[10]	WIKIPEDIA BARCODE[11]	KNIT PATTERN
BRAILLE	QR CODE	KARYOTYPE[12]	VISUAL NOISE PATTERN	GRAIN OF PHOTOGRAPHIC FILM[13]
MORSE CODE	MAGNIFIED IMAGE OF CD SURFACE[14]	STEGANO-GRAPHIC MESSAGE (0.1 PT)	LOREM IPSUM	DRAWING OF AN INTEGRATED CIRCUIT[15]
ANOMALOUS "WOW! SIGNAL" FROM SETI[16]	MUSICAL SCORE[17]	"ZODIAC KILLER" CODE[18]	WEAVING PUNCH CARD[19]	MAGNETIC CORE MEMORY OF IBM 360[20]
SQUARE WAVE[21]	VIGENERE CIPHER	SEMAPHORE ALPHABET[22]	DIAMOND "FINGER-PRINT"[23]	ROTOR WIRING OF AN ENIGMA MACHINE[24]

Post-Turing Chronicles

With these Methods of encoding memory into matter, "writing" and "reading" no longer mean what they have previously. As Friedrich Kittler reflects, "The bulk of written texts […] no longer exist in perceivable time and space, but in a computer memory's transistor cells." writing takes on the form of electrical impulses, representative of binary, which in turn encode the letters of words. Written language has eaten numerals (or numerals have become alphabetic), and many forms of code criss-cross the border between strings of symbols and outright "language". Human language infiltrates the syntax of programming, and computer-speak makes its way into slang. Our Images are produced by machinery and are veritable palimpsests of alphanumerical information.

The historical instinct has been to lacerate events and wind them into linear threads, and to store them for the future. There is something Turing-esque about this linear form of the past, supposing that any given occurrence may be reduced to a string of discrete symbols and fed through a computational machine. Memory distinguishes itself with tendencies toward the structural, embedding the past into spatial configurations, or into devices themselves. The temporality of history is that suspension in time, of accumulation in time. This artificial memory serves as a way to mediate that temporality, storing information for later access.

CRACKED E-READER SCREEN

"Anamnesis and history keep present what is forgotten." (Lyotard)[23]

Divergence/non-linearity/post-history is a concurrent turn away from history, from the linear narrative of events, while retaining some of its structural memory. Culture after history bears with it scars from the process of transmutation: prying out bifurcations from a world reduced to a line. With nonlinear coding, we enter a much more interesting territory. History and computing could learn by taking more inspiration from neural processes. Multiple methods of encoding enable the brain's complex and flexible nature. Neural information is encoded in different ways, based on Applying particular strategies to situations where their advantages are relevant. such as spatial configuration, similarity space, structural and functional categories[24]. In the rise of network cultures, we witness an increased biodiversity within media ecosystems, rhizomatic structures which fork and recombine themselves at will. Enter the realm of non-Euclidean geometry, post-digital, quantum mechanics.

"The second industrial revolution that is currently beginning constitutes a new reformulation of production methods: information is no longer stored in tools, but in cybernetic programs within

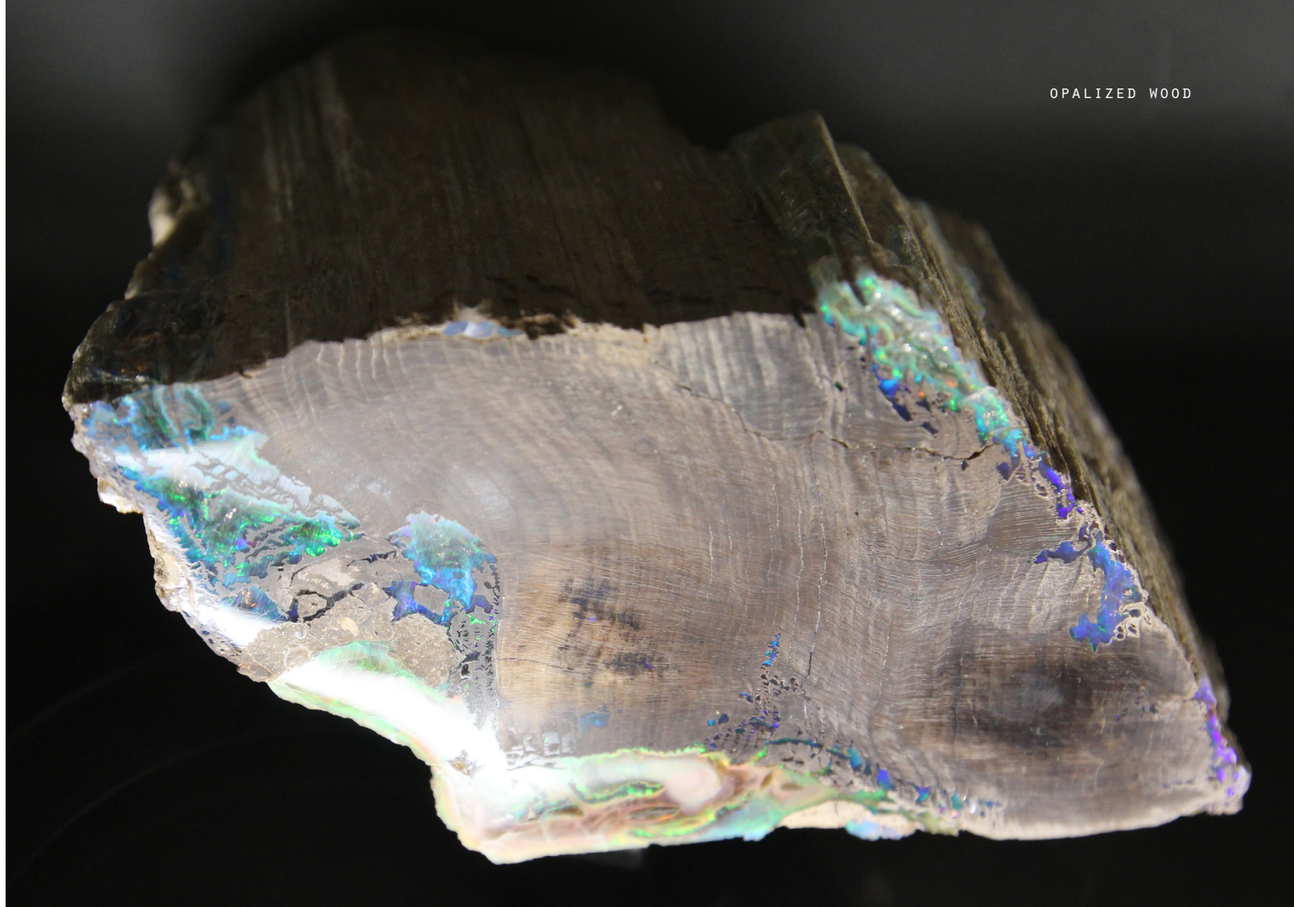
23 Jean-François, Lyotard. Anamnesis of the Visible in Theory, Culture & Society 2004 (London/Thousand Oaks/New Delhi: SAGE), Vol. 21(1): 107–119.

24 Quiroga, Rodrigo Quian. Panzeri, Stefano. Neural Coding of Visual Objects, in Principles of Neural Coding. (Boca Raton/London/New York: CRC Press, 2013), 175.

apparatus which produce tools." (Flusser)[25]

Dispersed into the fabric of the world, technology has become our natural history. apparatuses no longer maintain their discrete forms, appearing at once ubiquitous, yet intangible. There is a sense that they are everywhere, whether or not they are pereceived: dematerialized or hidden in plain sight. Electronics are integrated into clothing, buildings, living things, the land, sea, sky, and everywhere in between. Employed to mediate or augment experience, to structure or regulate the functions of systems, some devices may take on dimensions spanning the globe, yet exist somehow as unidentifiable and unable to be localized. Our quantified selves render numerical and sensible the insensible.

25 Flusser, Vilém, Vampyroteuthis Infernalis, trans. Novaes, Rodrigo Maltez. (Atropos: New York/Dresden, 2011) 114.



opalized wood

All images courtesy of the Artist,
except where noted with a subscript numeral.

Image Attributions:

1 <http://www.pnas.org/content/100/3/1352/F2.large.jpg>. 19/06/2014.

2 Wozny , Rainer, SA 2.0 License, boellstiftung, <https://www.flickr.com/photos/boellstiftung/5342610093/sizes/o/>. 9 July, 2014.

3 Stromatolite, Greysonia sp., Vendian, Bolivia - Houston Museum of Natural Science - DSC01363.JPG - Wikimedia Commons. < http://commons.wikimedia.org/wiki/File:Stromatolite,_Greysonia_sp.,_Vendian,_Bolivia_-_Houston_Museum_of_Natural_Science_-_DSC01363.JPG>. 17 June 2014.

4 “Novel Microfluidic Material Breakthrough for Wafer-scale Mass Production of Lab-on-chip.” Novel Microfluidic Material Breakthrough for Wafer-scale Mass Production of Lab-on-chip. <http://cdn.phys.org/newman/gfx/news/hires/2013/novelmicrofl.png> 07 July 2014.

5 Helmy, Diva. img_9339.jpg. 2014.

6 Gump Stump. Diamond Face Trigons Scale. 2009. Wikimedia Commons. <http://commons.wikimedia.org/wiki/File:Diamond_face_trigons_scale.jpg>. 4 July 2014.

7 Ernst, W. G. Earth Materials. (Englewood Cliffs, NJ: Prentice-Hall, 1969). 44.

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9 <http://www.ebi.ac.uk/biomodels/ModelMonth/2010-05/figure1.png>. 12 /06/2014.

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11 <http://upload.wikimedia.org/wikipedia/commons/thumb/3/3d/Code_128B.svg/800px-Code_128B.svg.png>. 13/06/2014.

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13 <http://www.optics.rochester.edu/workgroups/cml/opt307/spr04/jidong/tmax1_resize.jpg>. 13/06/2014.

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15 <http://www.freepatentsonline.com/6445065-0-large.jpg>. 16/06/2014.

16 <http://cdn0.cosmosmagazine.com/wp-content/uploads/20100407_Wow.jpg>. 13/06/2014.

17 Dahm, Robert. Maps Living Among the Ice of the Room: For Alto Flute and Accordion. Berlin, 2011.

18 <http://mentalfloss.com/sites/default/legacy/blogs/wp-content/uploads/2011/06/zodiac.jpg> 13/06/2014.

19 <http://upload.wikimedia.org/wikipedia/commons/f/f2/Hollerith_punched_card.jpg>. 16/06/2014.

20 <http://www.columbia.edu/cu/computinghistory/core2.jpg>. 16/06/2014.

21 <http://www.swharden.com/blog/images/canned-3.5mhz-525x393.jpg>. 18/06/2014.

22 Weiner, Hannah. Code Poems. (Barrytown, New York: Open Book Publications, 1982). 10.

23 <http://www.diamondid.com/images/GemPrint_2.png>. 13/06/2014.

24 <http://brej.org/enigma/Image10.gif>. 23/06/2014.

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