Susanne Kriemann: Ge(ssenwiese), K(anigsberg) – Library for Radioactive Afterlife
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Haldenschafe
Birkenwäldchen
Abraum
Restpflanzen
Gessenwiese
Luftschacht

Susanne Kriemann (and Grit Ruhland)

A meander line defines the margins of a surveyable tract. As such it walks the edge of something detectable, like a lake, balancing on the tipping point between lake versus not-lake, outlining a body in space. This form of meandering carries with it a gauging sensibility, which notices the environment in line with a set of determined aspects. As much as meandering might entail aimlessness, it also pertains to a certain weaving of temporalities, conjoining the physical with cognitive trailings.

With the express aim of encountering a place side by side, Susanne Kriemann organized a walk on 6 June 2019 that would parallel the paths of a number of individuals invested in varying aspects the post-uranium-min-ing landscape. Frank Weißflog[1], Dietrich Berger[2], Grit Ruhland[3], Georg Büchel[4], Daniel Mirgorodsky[5], Mika Schwarz[6], and Astrid Kirchhof[7], each in their own right, could claim a vital understanding of these sites' par-ticularities. For years they have been striving in parallel to achieve decontamination, control, memory, and a biological, geological, or cultural understanding of the first phases of what a society based largely on resource extraction has termed the *Folgelandschaft* (or following landscape, especially in relation to post-mining territories) and *Ewigkeitsschäden* (literally, eternal damages).

After the walk, Susanne Kriemann and Grit Ruhland compiled a list of relevant terms, from which six terms were randomly chosen that would form the nodal basis of their writings: *Abraum* (excavation material some-times translated as overburden), *Birkenwäldchen* (small birch forest), *Gessenwiese* (Gessen meadow), *Haldenschafe* (waste-rock-pile or slag-heap sheep), *Luftschacht* (airshaft), *Restpflanzen* (leftover weeds). Ruhland's text includes excerpts from her on-site research diary.

It has to do with baaaaaaahdiation, radioactivity, places whose shadows have walked on while we

1 Frank Weißflog, former Wismut miner and current director of the visitors' mine, Besucherbergwerk Zinnkammern Pöhla e.V.
2 Dietrich Berger, botanist, associate lecturer, Department of Applied Geology, Friedrich Schiller University Jena.
3 Grit Ruhland, artist.
4 Prof. Dr. habil. Georg Büchel, (now former) Chair for Applied Geology, Friedrich Schiller University Jena.
5 Dr. Daniel Mirgorodsky, Scientific Associate, Department of Applied Geology, Friedrich Schiller University Jena.
6 Mika Schwarz, artist and production assistant to Susanne Kriemann.
7 Dr. Astrid Mignon Kirchhof, research group leader in the project "Visualized Contemporary Witnesses and Multimedia Memory. Uranium miners in East Germany 30 years later" at Humboldt University of Berlin, Department of History, and Saxon Academy of Science and Humanities.

were busy distancing ourselves from the age of facts. Stories related to mining have been enchanting for millennia. Miriquidi, Kanigsberg. Writing, I trace the veins of my memory, wandering inside the pitch-black mountain with Frank and Heike[8], where we entangle image-making, mining tools, and flashlights; I proceed up to the meadow with Dietrich, Grit and Georg, Daniel, Erika, Astrid and Mika, and keep on falling behind.

In the forest ~~looking for mushrooms~~, out in the fields, angels inside the mountain, on the ~~starshower~~ stretch, and a mummified cat. I only know the story from books. I have said it out loud, seen it, and made myself part of it. It's a Krakonos[9] from the Erz Mountains changing shape in the concepts of eternal damage and just as insidious as slow violence.

2012, reading Lutz Seiler's collection of poems pitch & blende. In it, bone becomes uranium. 2019, "are miners' bones really made of uranium?" Frank winks: "On the outside we still look pretty good, but on the inside we shine for eternity." The poem's puzzle makes these confessions bearable. The view through the camera gets larger, grows so large, when the mountain is a body and uranium bone.
"out of the district of his going" … "so we told ourselves, he sniffs out the ore, it is the bone, yes."[10]

8:58 am sitting in a café in Karlsruhe, music is playing as I sip a cappuccino. The acidic liquid heats my throat. I turn to myself in the mirror, and look into my own eyes. Abraum. *History of Uranium Mining in Germany. Today's going to be another good day gauging the course of this summer.*

Gessenwiese. Gsewee, Gseee, Ge. *Luftschacht* Lfshct, Lfht. *Abraum*, Aram, am.
Ra (Radium) 226Ra has a mass of *226 222 218 214.*

It disintegrates after alpha decay; in rare cases it also disintegrates following Beta + Decay, 2 left, 2 below according to the Karlsruhe Nuclide Chart:

Radon 222Rn; Polonium 218Po; Lead 214Pb; Bismuth 214Bi; Polonium 214Po; Lead 210Pb; Bismuth 210Bi; Polonium 210Po; Lead 206Pb (stable!)

Piece by piece the *Abraum* is brought back below the earth, many of the old mines flooded. With the help of shiny grey, gruff, and indestructible geo-textiles the mud lakes are slowly dried, the radioactive dust gathered up and driven back into the mountains in barrels. By the former uranium miners, by Frank and Michael, for example. Radioactive volumes are carried out — world peace, and again returned — s(uccesivelandscapes):

Casting a glance across these so-called New Landscapes we see gentle hills, here a golf course, there shy *Haldenschafe*, slag-heap sheep. Only an aware eye can see the visible traces of what takes on new forms in the groundwater, eroding soils, plants and trees, in the people and sealed wells for hundreds, thousands of years. I gathered wild carrot, false chamomile, ox tongue, and *Restpflanzen* and dried them out. In the darkroom the whole volume of collected tufts were exposed. Smart-phone-flashes on analogue processes: developer, fixer, water on the floor, sponge. It represents a fraction of a volume spread throughout the hills and beneath the ground in the Erz Mountains.

"Aluminium (Al), Arsenic (As), Boron (B), Barium (Ba), Calcium (Ca), Cadmium (Cd), Cerium

8 Heike Catherina Mertens, former artistic director of Ernst Schering Foundation, Berlin, accompanied me to these sites as editor of my publication P(ech) B(lende): Library for radioactive afterlife (Leipzig: Spector Books, 2016).
9 A Krakonos is a shape-changing figure in the children's book by the same name. Wieland Freund, Krakonos (Weinheim: Beltz & Gelberg Verlag, 2017).
10 Lutz Seiler, *pech & blende / pitch & blende* (Frankfurt am Main: Suhrkamp Verlag, 2000), trans. Alexander Booth (2015).

(Ce), Cobalt (Co), Chrome (Cr), Caesium (Cs), Copper (Cu), Iron (Fe), Potassium (K), Magnesium (Mg), Manganese (Mn), Sodium (Na), Nickel (Ni), Phosphorous (P), Lead (Pb), Sulphur (S), Silicon (Si), Samarium (Sm), Strontium (Sr), Uranium (U), Ytterbium (Yb), Zinc (Zn)"[11] are, amongst other things, detectable in wild carrot, false chamomile, ox tongue, and others. Georg is ready with his expertise. Thanks to photosynthesis the contaminated plants contain the same chemicals that millions of us use to fix light in digital images. As to my question of whether you could compare the assemblage inside of these weeds to what composes my smartphone, Erika offers a simple " yes."[12] Smarting weeds.

"Plants can accumulate harmful elements and, for example, immobilize them in vacuoles or on cell walls and, if necessary, repel these storage compartments (often the leaves). Another possibility is not to take up the undesirable elements in the plant, to once again excrete them or not to transfer them to the aboveground. Heavy metals such as U [Uranium] or Pb [Lead] are immobilised or excreted on the Casparian strip in the outer areas of the root."[13]

Cappuccino, cantuccini, a chat with R and another with F. Water, metal spoon, porcelain cup, and saucer. Small metal tray. I definitely know more about the manufacturing conditions of the phone to my left than the coffee set to my right. My fingers are burning because of my device's battery.

"So obsolescence happens when a given piece of older technology is no longer capable of efficiently supporting features introduced in newer models."[14] Heike offered a detailed and historically profound overview of the coming of planned obsolescence.[15] More tailings, more metallurgical fairy tales, more transformer-plants. Half-plant.

Half-lifes: how will I travel in the future? I aim to avoid flying; image in Soviet fairy tale films. Wismut, first as a I avoid driving as much as possible. My skype conversation with M roams around the principle of halving. Next year simply fly half of what I/you/we did this year. Sri Lanka. Singapore. Venice, Gothenburg, Karachi. I start with Gothenburg; I'll fly there and take the train back. The train is overbooked. I take a bus. Hope, half-hope, HHHHH. HHH. H. Hopeness.

My first visit to the former Wismut grounds, 2015, Saxony with M, A, V, and Oskar the foxy extended across the states of Saxony and Thuringia; an understanding of the landscapes with their soft hills and windmills begins; research in the archives too. The clay-like, ochre-yellow-grey-bleached-reddish substrate atop the former waste heaps dyes my white sneakers. Let me specify: "red-brown, grey, and ochre-yellow remediation loam in irregularly changing portions."[16]

Over a drink with the former uranium digger, Michael Fischer, *Kumpel*, brother, he looks me in the eye and says: "You don't understand a thing, do you." Was he referring to his dialect? I understand it quite well. Franconian und Thuringian aren't all that different. The other stuff about "super income for god-awful work" and uranium for world peace and so on, however, makes me feel queasy. His lovely house so typical of the Erz Mountains with its woodcarvings and baryte crystals in the cabinets, and the pitchblende buried out in the garden, mind-blowing.
More pitchblende behind the wardrobe… or uranium glitter buried in someone's parents' garden…

11 Katja Nebelung, "Effect of the residual contamination of renatured post-mining areas in Eastern Thuringia on heavy metal uptake (soil-plant) and succession with regard to subsequent use," dissertation for the acquisition of the academic title: Doctor rerum naturalium (Dr. rer. nat.), presented to the Council of the Faculty of Chemistry and Earth Sciences of the Friedrich Schiller University Jena.
12 Prof. Dr. Erika Kothe, Chair of Microbiology, Friedrich Schiller University Jena.
13 Nebelung. See also microscopic images illustrating this phenomena included in this publication, p. 81.
14 Found on www.quora.com
15 Prof. Dr Heike Weber, environmental historian and professor at TU Berlin, former professor at KIT Karlsruhe Institute for Technology. She gave a lecture within my seminar "Slow Violence" for students of Media Art in Karlsruhe, 20 December 2018.
16 Nebelung.

pitchblende (+/- 1 ton) in a private collection in an apartment block in Berlin, on offer to a petrologist of a museum of natural history. New mysteries in the light of pitch-black-blende.

Hermann points out to us a drawing of Wismut's deepest shaft, Shaft 371.[17] Nearly 1,800 metres deep. Innumerable *Luftschächte*, drilled for ventilation. Far underground: 60 degrees Celsius. Inner sun. A miner's gear consists of: Geiger counter, safety lamp, water bottle, lifesaver, helmet, rubber boots, rubber overalls, ore crate, drill. The stuff was packed in an ore crate and shipped to my workspace.[18] "Is it still radioactive?" I was asked by many people visiting me. "I was told it wasn't," was my response.

Slag heaps, mud lakes and mines, calls of "Glück Auf," 46 years. Then, beginning in 1991, taking the waste back into the mountains. A change in the landscape: waste heaps to grass-covered hills, within the aerial photographs: "A tranquil mountain vista."[19] Often: golf courses. ~~"The wife who's younger than her husband and who's vague about which course she's going to."~~[20] Unbowed "Glück Aufs," brothers and sisters. The *Haldenschafe* are grazing; down in the shafts, the ventilators are running. Today, yesterday, for hundreds of years.

While walking on Kanigsberg I see thick green meadow grass surrounded by beautiful blue-green deciduous trees. "This is a hotspot," Dietrich says. It is still very active. They (the farmers) mow the grass, mix it, and in so doing dilute the radioactivity. This is a principle used with almost all radioactive remains, *Restpflanzen*, Rspazn, Rpan, p, pitchblende: adulteration, disguise, dilution reflected in condensation, enrichment, super-power.
Two years later we follow Frank through the former uranium mine in Pöhla. Georg and Daniel take a probe of the "Blue Wonder," and a bit of the "Yellow Wonder" goes with it. Sudden instances of rapidly growing crystals, astonishing even to geologists. "That's vitriol."[21]
Then all of a sudden it smells of mulled wine. Frank smiles, Santa Claus sometimes makes an appearance in June in the Pöhla mine. A buffet set just for us by former Wismutbergleute, former miners or literally "Wismut mountain people," it's incredible. We discuss *Energiewende*, the energy revolution, deep inside the earth.

On our way back out of the mountain, just a short way from where special guests are entertained with laser shows, we also measure a newly formed streak of uranium glitter. Dietrich and I are briefly allowed on the riser to look at the mould that is as thick as sheepskin, and which also appeared out of the blue. "But it doesn't have anything to do with radiation."[22] Spores. Wood. Dampness. Hissing sounds of disturbed mildew. The Geiger counter hangs from the beams, next to it pitchblende, re-applied so visitors get a sense of the working conditions.[23] Equipped with only a helmet lamp and a Geiger counter. It's cramped; it stays cramped. The first dismantling began in 1991 with the Federal Mining Act, which stipulates that the Federal Republic will never again permit uranium mining in the region. The renaturation process will last, as declared, until 2045. Stone's throw away from fact or fiction, hands waiting for heat.

a years d days m minutes

238U has a half-life of 4 468 000 000 a → Thorium 234Th after 24.10 d → Protactinium 234Pa after 1.7 m → Uranium 234U after 245 500 a → Thorium 230Th after 73 380 a → Radium 226Ra

17 Hermann Meinel, director of Museum Uranbergbau (Museum of Uranium Mining) in Schlema.
18 In my studio there are two ore crates, inside them two complete sets of uranium miners' work gear, on loan from the Museum of Uranium Mining, Schlema.
19 Jayne Wilkinson, curator of Susanne Kriemann: *Pechblende (Prologue)*, PREFIX ICA, Toronto, 2016.
20 ~~Agatha Christie, A Pocket Full of Rye (London: Collins Crime Club, first edition, 1953).~~
21 Georg and I go over everything we saw on our hike again: salts, sulphuric acid, copper, H2O, crystals, etc.
22 Dietrich identifies it as common wood mould.
23 Today, 15 August 2019, I spoke briefly with Frau Weißflog. Frank is back in the hospital.

after 1 600 a → Radon 222Rn after 3,8235 d → Polonium 218Po after 3.10 m → Lead 214Pb after 26.8 m → Bismuth 214Bi after 19.8 m → just as casually as the rest of the fading warning signs. 22.3 a → Bismuth 210Bi after 5,013 d m → Polonium 210Po after 138,376 d → Lead 206Pb stable

GmbH renaturing. WismuttumsiW, WsuusW, WuuW.

230U 231U 232U 233U 234U 235U 236U 237U 238U 239U 240U 2

30,400 tonnes (= 230,400,000 kg) of uranium were mined between 1946 – 1990.

The return of the waste material is carried out by the former Wismut (SDAG turned GmbH) miners. In a documentary aired by ARTE in 2012, YELLOW CAKE: The Dirt Behind Uranium, the journalist reports that for the "re"-transport of these masses (day after day, waste back into the mines), a single dump truck would have to travel around the earth 31 times.[24]

Kauern
Kaimberg Schafgraben, Liebschwitz, Wipsebach, Lietzsch, Kauern
Aue, Annaberg-Buchholz, Schlema, Pöhla, Schwarzenberg

Day and night, bringing the most contaminated material into the deeper regions of the mines; the partially con-taminated material is stored further up top.
Volumes are shifted. And no one knows — traumata —breathdream — waste.
"In certain weather conditions, the fleet of lorries needs around 40,000 litres of diesel per day. The largest uranium mine in the world was once in Thuringia; now it's in Namibia."[25]

Together with Mika I walk through a village in search of *Haldenschafe*, but instead come across a house with a sheepdog in a kennel and three signs on the façcade: "40 Jahre Wismut sind genug," "Windenergie nein danke," "Deutschland meine Heimat."[26] *Birkenwäldchen*, Brewlce, Bele, Bl.

A and I drive back to the meadows this August, to the former mining pit near Ronneburg, and Gessenwiese and Kanigsberg. I gather wild carrot and ox tongue, again, and wilted poppy and foxtail grass. Sheep wool gets caught in the stems, a whole bag full for my collection; in addition, a bag full of sheep shit. Sacks of wild flowers, and their small inhabitants come back with us to Berlin. In the Botanical Museum everything looks like a display.[27] The old air is ousted by the smell of meadows. The stylish vitrines are populated by the tiniest of insects. A journey none of the little creatures could ever cover on their own. Some die, some surrender to the Botanical Garden.

A few days later I am talking on the phone with Thomas from Wismut's technical archive in search of how the Wismuts documented their activities over all those years, before 1989 and after.[28] And all was documented. New landscapes, following remediation and cleansing and meadowing and photosynthesizing, for whom to inhabit? It continues to remain unclear to me with whom I have been talking all these years, which side of this narration is told by the scientists, the workers, the people, us. The difficult questions remain unanswered, ousourcing is the word of this time. It scaled uranium and radon and winged lungs and bones. With *Haldenschafe* tired to death.

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24 *YELLOW CAKE: The Dirt Behind Uranium*, documentary film written and directed by Joachim Tschirner (Berlin: Um Welt Film Produktionsgesellschaft, 2005–2010).
25 Ibid.
26 The signs translate respectively as: "40 Years of Wismut Are Enough," "Wind Energy, No Thanks," "Germany: My Homeland."
27 *Licht, Luft, Scheiße* was curated by Sandra Bartoli, Marco Clausen, Silvan Linden, Åsa Sonjasdotter, Florian Wüst, Kathrin Grotz, and Patricia Rahemipour, and featured group exhibitions at the Botanical Museum Berlin and neue Gesellschaft für bildende Kunst (nGbK), Berlin, 2019.
28 Thomas Hennicke, Head of Archive, Documentation Department, Wismut GmbH.

“I think, therefore I am a part of the labyrinth” resonates from Lisa’s speech last night.[29] I am of labyrinth, Lbrnh, of f.

29 The 2019 Göteborg International Biennial for Contemporary Art, curated by Lisa Rosendahl — Part of the Labyrinth — takes its name from this line by Danish poet Inger Christensen, which responds to Descartes’ “Cogito, ergo sum” (1637), Inger Christensen, Letters in April (1979).