

# Unheard Stories from Polluted Art

## A Reflection on a Collaborative Contaminated Soil Chromatogram

**ABSTRACT** 'Permeance' is a chromatographic artwork created with the cadmium contaminated soils from the river Dommel. The technique used, chromatography, belongs to the category of alternative photographic practices, distinguishing itself for its camera-less and non-representational properties. Therefore, the current theorizations on photography are insufficient to fully comprehend the processes and results of experimental photography. In this reflection, I propose a review on the discourse of subject-object and objectification in photography and I suggest rethinking the ontological framework in which it operates. Through a post-human approach, I set out to analyze the agency and emancipation of polluted earth, discussing Gell's (1998) and Holbraad's (2011) works. In the final part of the essay I propose how the colors and patterns of the chromatography can talk through Kohn's (2013a) take on semiotics and, with the help of Ingold's (2012) writings, how humans can learn to listen.

**KEYWORDS** subject-object dichotomy, semiotic indexes, agency, speech, TTT, alternative photography, chromatography, cadmium contamination, *permeance*

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**INTRODUCTION** In october 2020 I became interested in a local story of anthropogenic pollution of the Dommel, a river that crosses the Belgian-Dutch border, contaminated by the emissions of the zinc smelter industries Nyrstar. This sudden preoccupation inspired the first attempt of approaching research from an anthropological perspective, which then grew into a larger artistic research and practice: 'Permeance'.

For the purpose of this essay I will limit the analysis of the artifact to the artwork itself, although the prior research delves into the extended encounters of the materials as a form of connecting events across space and time, through the concept of *permeance* (de Gaetano, 2021). I will not analyze the full material stream and the many different forms it has taken on, as the stories to be told would be manifold and too vast to contain in this piece of writing. Also the other materials involved, such as the paper medium, the light sensitive chemicals will be only briefly discussed, as to not overcomplicate this investigation. The focus will lie on the current artistic body which holds the cadmium contamination: a collaborative chromatography. The reflection of this paper will also extend to the material stream of zinc starting from the Nyrstar industries, distilling into cadmium, through the soil river and into the final form of the art piece.

This essay will delve into an initial consideration on photography, how the mainstream anthropological and philosophical conceptualizations thereof are insufficient to describe the art piece 'Permeance' and proceeds to offering an overview of alternative photography practices. (1). Following, I dive deeper into two key aspects: the photographic act (1.1) and the photograph (1.2). Here I will discuss more in detail the subject-object dualism and the process of objectification in representational photography. Next, I will present in detail the chromatographic act during the production of the art work 'Permeance' and will proceed to analyze the agency of soil (1.3). In chapter (2) I will explore the possibility of post-human communication with contaminants, the necessary ontological re-constitution and the role of materiality. Lastly, I speculate on the form in which contaminants might speak, basing my reflection on the use of semiotic indices (3) and their emancipation from humans (3.1).

**POSITIONALITY** This essay represents the reflection upon a one-year project I have pursued in parallel between the CADES advanced master at the KULeuven and the DAAS postgraduate at the Royal Institute of Art in Stockholm. This research 'On Permeance' is positioned between anthropology and art and, as Wright and Schneider assert (as cited in Bartlett, 2018), the interdisciplinary potential amid these disciplines, can lead to a mutually enhancing relationship. Indeed, this research has unfolded rhizomatically, from anthropological roots, through the artistic research process, to this anthropological revisiting the significance thus far created. Therefore, in the following

paper, I will be juggling two positions: a retrospective anthropological lens and theorization on the artistic work, and the artistic considerations, based on the process, inside knowledge and intentions behind the artwork. The presence of two different voices highlights the importance of both perspectives and knowledges, the insider and outsider (both mutually interchangeable in the roles of artist and anthropologist), to offer an holistic understanding of the art piece. Indeed, as Coleman (2018) stresses on the 'hermeneutics of performance', the comprehension of an artistic medium can only be truly understood by its performer since it derives exclusively from the feel for the involved craft.

## **1. On photography, drawing realities with light**

To commence this analysis, first we must unhinge some photographic myths. The term photography is generally identified with a specific form of light generated representations through the medium of a (digital) camera, while actually, photography is an umbrella term for many varieties of light art production. Although photography has multiple diverse facets, philosophical and anthropological theorizations have focussed almost exclusively on lens generated photography (Coleman, 2018). This has led to generalizations about the practice as a whole and, consequently, not much has been written on the nuances and profound ontological differences each specific practice implicates, especially with regards to the wide spectrum of historical, postmodern and contemporary photographic practices (Coleman, 2018). Indeed, not all photographs reflect objective truths of the world, nor does the photographer often exercise the sole agency in the photographic process (Barlett, 2018; Coleman, 2018; Lenot, 2021). According to Lenot (2021), photographs are not per se a neutral and objective representation of reality, instead the medium holds the potential to transform and produce a pluralistic portrayal of ontologies according to the intention of the artist (or as an encounter between various agents). Even renowned art critic John Berger (2013) called for a radical rethinking of the photographic practice with the aim to shape alternate futures that resist a capitalistic culture. Although he does not explicitly write about experimental photography, it is my belief that it offers a valid alternative that challenges and questions the bases of current photography. According to Pla-Vivas (2021), alternative photography "minimizes optic unconsciousness, to put into question some of the most controversial concepts on photographic ontology, and to adopt highly critical stances on issues related to representation and communication" (p. 77).

The focus of this art piece stems from a critical reflection on photography and is the result of an alternative photographic practice, namely chromatography. Chromatography can be described as a compound separation method through absorption

which develops the single elements through a light sensitive reaction. This technique visualizes the components of a given solution and, in the case of my artwork 'Permeance', it reveals the chemical composition of polluted soil collected from the river Dommel. Chromatography is part of a photographic branch which covers camera- and lens-less produced pieces, both representational and non-representational works of light sensitive chemicals such as chemigrams, positive prints on photographic or light sensitive surfaces which include anthotypes, cyanotypes and photograms. Many of the practitioners of these experimental techniques have separated themselves from the ontological theories on 'classic' photography (Pla-Vivas, 2021), as deemed insufficient to fully cover their diverse complexities. In the following paragraphs I will dissect two fundamental stages of photography and their respective implications, the photographic act and the photograph.

### 1.1 The object-subject conundrum of the photographic act

Susan Sontag's quote "the camera's twin capacities, to subjectify reality and to objectivize it [...]" (Sontag in Berger, 2013, p. 55), captures the dualism of the photographic gaze. Through the framing of the lens, a photographer views another subject, initiating the process of objectification during the photographic act. As the light reflects from the viewed subject and is captured in the camera, it becomes transferred into an object. According to Sontag (2005), to photograph a person is an act of transgression by turning them into "objects that can be symbolically possessed" (p. 10). But the image which is created actually holds the ambiguity of both object of an external gaze and the imprint of the subject's reality. Indeed, as Berger (2013) states "unlike any other visual image, a photograph is not a rendering, an imitation or an interpretation of its subject but actually a trace of it" (p. 51). Similarly, in Sontag's words, the image "[...] is also a trace, something directly stencilled off the real, like a footprint or a death mask" (p. 51). Therefore, the ambivalence of the image created through a photographic act remains an ongoing topic for discussion in the realm of camera derived images.

Along the discourse on the creation of a photographic image, much has also been said on the photographer's role. In Miller's (2005) words, objectification "is a process in time by which the very act of creating form creates consciousness" (p. 5), the camera thus creates self-consciousness in the subject while distinguishing it from the object. Rather than a focus on the transposition to object of the framed other, the focus lies on the subject, as Miller further describes objectification as "a process of externalization and sublimation essential to the development of a given subject" (Miller in Beaudry & Hicks, 2010, p. 61). Consequently, the object serves as a vehicle for this act of self-consciousness of the subject. Thus, the photographic act involves both the transposition of the subject into



object by creating an image, as well as the photographer's affirmation of his subject consciousness.

The act of chromatography radically differs from the photographic one, both in the role of the artist as in the objectification process. One of the fundamental differences is the lack of the photographer's gaze: there is no camera or lens to frame and look through, there is no capturing of a subject's reflected light, there is no transposition from a subject into its object image. Chromatography is an act led by the agency of two (or more) entities, it is an act of collaboration. The artist's initiative to set up, initiate and end the photographic process on the one hand, and the soil which shapeshifts into its new medium and reacts with the sun on the other. Chromatography inevitably problematizes the dualistic narratives constructed around photography, as it is insufficient to describe its complex ontology.

The creation of the photographic object and its surrounding discourses on the subject-object dichotomy will be further analyzed in the following chapter on the materiality of physical photographs.

## 1.2 The object-subject conundrum of physical photographs

In his writings Pla-Vivas (2021) denounces the dismissal of the "physicality of the images as objects from the realm of visual experience which embodies the crisis of thingness in photography" (p. 67). The absence of considerations on the materiality of a photograph is an issue noted by many contemporary authors and anthropologists. Indeed, Edwards & Hart (2005) summarize the turn from acknowledging photographs as merely neutral supports for images portraying a subject reality, to recognizing the physicality of photographs as objects in the following quote:

"The prevailing tendency is that photographs are apprehended in one visual act, absorbing image and object together, yet privileging the former. Photographs thus become detached from their physical properties and consequently from the functional context of a materiality that is glossed merely as a neutral support for images." (p. 2)

Continuing the analysis of photographs in the authors' words: "photographs are both images and [original emphasis] physical objects that exist in time and space and thus in social and cultural experience." (Edwards & Hart, 2005, p. 1) Consequently, the materiality of the 'thing', by taking up material space, is drawn to the forefront of their considerations, reframing the representational quality of photography into a physical and tangible object (Edwards & Hart, 2005; Lenot, 2021). This is a significant milestone for representational photography -that is, camera derived images- but is an obsolete step when considering the many diverse forms of alternative photography that exist. Indeed, for chromatography, the conundrum of subject-object in the material thing

becomes even more tangled as the fine line separating subject from object becomes blurry. The articulation of an ontology based on the mutually exclusive dichotomy of subject-object becomes extremely limiting when attempting to describe the complexities encountered in experimental photography. Indeed, when trying to illustrate the chromatographic process using exclusively this dualistic language, I would advance that both the object and subject tend to coincide into the one art piece. I consider this concept difficult to express and restrained by the linguistics of subject-object.

To attempt to grasp a more accurate description of the chromatographic act I would rather propose a reading according to Course's (2010) formulation, from the perspective of a different discipline, namely ergative languages. The author argues that the "distance between an intransitive subject and transitive object is drastically reduced and the two are no longer presented as opposing categories. We could say in fact that ergativity represents subject and object as points on a continuum" (Magnus, 2010, p. 256). The resolution of the object-subject dichotomy by placing them on a spectrum, rather than as immiscible opposites, distangles the complex debate on photography and especially on alternative practices. One might thus argue that during this permeating photographic action, by merging object and subject, the art piece becomes saturated with 'subjectivity', in other words, the photographic surface (on the object side of the spectrum) absorbs the soil sample (more on the subject side of the spectrum).

I will further explore why I place the earth samples towards the subject pole of the spectrum by delving into the agency of soil in the following chapter (1.3). Before this analysis, I now turn to examine the act of chromatography during the production of the artistic piece 'Permeance'.

### 1.3 The chromatographic act and soil's agency

Tratnik (in Pla-Vivas, 2021), in her writings, proposes to subvert from a system of power -the camera- by regaining agency from the apparatus through a *misuse* thereof, in the form of photographic experimentation. The use of chromatography as an artistic practice also *misuses* and reclaims the technique from the scientific realm. Indeed, the method is nowadays mostly used in laboratories under carefully monitored conditions, mainly to assess the chemical composition and health of earth samples. By *misusing* chromatographies, in an photographic artistic performance through contaminations of polluted soil samples, I conduct a subversive act towards a methodology which belongs to a modern scientific narrative.

The artwork in question thus originates from the *misuse* of a photographic technique called Pfeiffer's circular chromatography (PCC) commonly used as a scientific analytical indicator of compounds contained in soil samples (Kokornaczyk et al., 2016). I will now elucidate in greater detail the process for this particular art piece. As was

mentioned, the incipit of this research can be traced back to the historical cadmium pollution emitted by the Nyrstar industries into the river Dommel.



Figure 1: The Eindergatloop with on the left the industrial zinc smelters of Nyrstar.

After learning about the poor ecological status of the fluvial system through multiple scientific researches and discussions with a PhD candidate specializing in biodiversity and ecosystem dynamics, I began developing a theoretical concept which would guide my endeavour: *permeance* (de Gaetano, 2021). In parallel, I began visiting the river in various key points: at its source in Peer among agricultural lands; the juncture between the Dommel and the Eindergatloop; in the ditch where the industrial wastewaters are dumped; the Belgian-Dutch border; near the city of Eindhoven.





Figure 2: The industrial wastewaters are disposed of in the Eindergatloop. Although the content of heavy metals is currently being monitored, a recent report revealed that the contaminants levels are still dangerously high (Vlaamse Milieumaatschappij, 2018).

During my excursions I started collecting riverbed soil samples, scooping up a mixture of earth, clay, sand, but also smelly sludge, orange ferrous deposits, oily films on the water and, inadvertently, also unfortunate insects and slimy algae. At macroscopic level each sample was drastically different from the other, even though collected only a couple of meters apart. At a microscopic level, I only had the scientific knowledge to guide my intuition of what I could find.

As part of the theoretical framework under which I was operating, *permeance*, I set myself to create a photographic project which would have the potential to reveal the river contamination in a sustainable and -crucially- collaborative fashion with the river. *Permeance* is a conceptual vision of reality which emphasizes the permeable nature of membranes, both of living and non-living beings, through which substances can be exchanged in chemical and physics processes (de Gaetano, 2021). In such a way, it becomes possible to trace contaminants, such as cadmium, as they move from the industry, into the river water, the soil, aquatic plants, animals and so on. Considering earth as the ultimate breakdown of both plant and animal based matter, composted soil represented the material which could potentially hold the traces of all these contaminated encounters (de Gaetano, 2021). Having recently learned about chromatography's capacity to separate compounds in an array of differentiated patterns, through absorption and dispersion into a filter paper, and the ability of its photosensitive chemistry to react with the soil revealing a series of bright colors, I decided to make this

the artistic medium through which to investigate at macroscopic level the permeance of the cadmium contained in the river.

Back in my studio with the gathered soils, I prepared the light sensitive paper medium for the artwork. This consisted in diluting silver nitrate crystals ( $\text{AgNO}_3$ ) into demineralized water to create a subtle light sensitive solution, with which I treated a sheet of filter paper. In parallel, I prepared the earth samples by diluting them into a solution of demineralized water and sodium hydroxide ( $\text{NaOH}$ ): this served to further breakdown any organic matter. Once the paper support was dry and all the different mixtures placed in organized containers, the moment for the collaborative photographic act had arrived.



Figure 3: The collected contaminated soil samples from the river Dommel.

One of the fundamental differences between camera derived photography and chromatography is the capturing act. While with the first, the photographer has to act suddenly to seize the ephemerality of an instant, during the chromatographic process, the artist acts in two moments: the 'initiating moment' to start off the procedure by placing the earth solutions in contact with the absorbent paper and the 'decisive moment' which terminates the long duration of the permeating process. The act of agency of the artist is manifested in the choice of placement of the various solutions, informed by the knowledge of previous experimentation on how the solution will -most probably- be absorbed. The will of the earth solution is manifested by the direction of the absorption, how fast the paper will become saturated, how the samples will interact -will they merge or will they repel one another?-, how the wet paper will begin to wrinkle and how this altered paper structure will then affect the absorption of the solution. As Pla-Vivas (2021) writes on a similar prolonged photographic act, the artist "stays fully connected all along with the action of the water on the sensitive paper, with her

subjectivity mirroring the natural phenomena in a symbiotic relationship and her agency fully enhanced by the environment" (p. 72). I would like to specify that, in the case of earth chromatography, I strive to find a balance, by giving space and time to the soil solution, to exercise its own agency. Indeed, even if I wished to intervene in the process of absorption of the earth mixture, to guide it into a particular artistic form or color configuration, I would quickly realize that I simply cannot exercise control over it. My agency as an artist comes second in the moment of the chromatographic absorption: the earth has its own strong will and manifests it in its independent act of agency. The agency of the contaminated soil is actively absorbed and transposed into the chromatography, somewhat 'subjectifying' the art piece as a whole and pushing it towards the subjective pole. Ultimately, in line with Ingold's (2012) words, we are "participants in the process of growth among active materials, joining forces with them. The most we can do is intervene in worldly processes that are already going on and which give rise to the living world which we see all around us" (15:13). Therefore, I see the chromatography as a cooperation of the agency of the two entities, a co-authorship between the soil which draws through its intentional performance and myself who sets its stage. Although Pla-Vivas (2021) does not express his considerations on the agency of other non-human beings, he does classify this collaborative practice as a form of non-human photography. Comparably, my intention as an artist is to conduct the photographic process and, ultimately, I seek to offer an instrument that the contaminated soils can use to communicate with humans on a macroscopic scale and in wavelengths visible to our eyes.

After my agency over the chromatography has ceased, the developing process of the photography continues independently and well beyond the moment I decide to interrupt the absorption. Over the course of the following days or weeks, the sun's UV radiation will gradually trigger the complete reaction between the silver nitrate and the soil chemicals. This final development of the photography reveals patterns and rings, the traces of the varied chemical concentrations and a range of bright colors generated by the photosensitive reactions.

Figure 4 (next page): Detail of 'Permeance', a collaborative contaminated earth chromatography. All other chromatographies included in this essay are part of the experimentation process for the creation of the final art piece.





## 2. How humans can listen to contaminants

Art or photographic acts can at most be collaborative events. Therefore, when reflecting on the agency of things, such as the chromatographic collaboration with contaminated earth of 'Permeance', one might wonder whether the emancipation occurs solely by association with the artist or if a thing can emancipate on its own, without human affiliation (Holbraad, 2011). Central to this reasoning is the ontological dualism between non-humans and humans, a separation which, according to Latour (in Holbraad, 2011), should be abolished if we wish to reach a post-human discourse, a dialogue with non-human beings.

Rather than a form of ventriloquism -as Holbraad (2011) refers to Tsing's writing 'The Mushroom at the End of the World'- which entails the projection of a narrating voice onto inanimate things that so gain the ability to speak, I propose the following speculation. Instead of 'elevating' (a human-centric word choice we might need to revise) the voice of cadmium polluted soils through translation for our understanding, I suggest humans make the leap to understand the other forms of communication of beings who do not speak through voices. Moreover, Ingold suggests that this emancipation of things should operate under an "inverse humanism [...] according to which, rather than raising things to the power of the human, humans and things alike are factorised down to their primordial material denominator. Life on Earth." (Ingold in Holbraad, 2011, p. 10). Continuing on the path of Holbraad's reflection on 'thinking through things', we shift the focus to the properties of materials, in the concrete manner Ingold (in Holbraad, 2011) urges us to do:

"Ingold sees humans and things as submerged on an equal ontological footing in 'an ocean of materials. [...] Once we acknowledge our immersion, what this ocean reveals to us is [...] a flux in which materials of the most diverse kinds - through processes of admixture and distillation, of coagulation and dispersal, and of evaporation and precipitation - undergo continual generation and transformation. The forms of things, far from having been imposed from without upon an inert substrate, arise and are borne along - as indeed we are too - within this current of materials.' "(Ingold in Holbraad, 2011, p. 10)

Thus, it is not things which elevate to the human condition, rather us humans who come to terms with our physicality and belonging to the material biogeochemical cycles of Earth. This, according to Holbraad (2011), calls for an "ontological re-constitution", a post-human (or for Ingold, an inverse human) approach for the "re-definition of people's and thing's properties" (p. 7), as well as, I might add, their form of interacting.

A material channel for post-human communication might be the colorful patterns of a chromatography. In my photographic practice I set the stage for a collaborative chromatography with contaminated soils by arranging the light sensitive paper and



conducting the photographic process. Together we create the ground for a common language, them, drawing with their presence in visible colors and patterns, and we, reading in their pioneering visual language. In a way, *permeance* is the conceptual frame through which we humans are able to understand the language of contaminated soils, where a permeable vision of the world becomes the 'ontological re-constitution' Holbraad (2011, p. 7) calls for. Indeed, *permeance* entails a vision of material streams which operate through "principles of physics and chemical processes as well as molecular exchanges, biological absorptions." (de Gaetano, 2021, p. 2). The material stream of cadmium -quite literally- passes from the industrial waste into the riverbed, its movement continuing into the ecosystem. Disturbed by my collection, they move into the lightsensitive paper, where the contaminated soils themselves change color to become visible to the human eyes. When handled with bare hands, the contaminants will continue their material flow through the skin, into my body, and so on, *permeating* further.

The necessary emancipation of things in order to recognize their ability to speak also extends to Gell's (1998) reflection on art, indeed he sees potential for alternate forms of communication:

"In place of symbolic communication, I place all the emphasis on agency, intention, causation, result, and transformation. I view art as a system of action, intended to change the world rather than encode symbolic propositions about it' (Gell, 1998, p. 6).

In Gell's (1998) book 'Art and Agency', the author argues that the agency possessed by things is comparable to that of humans. Holbraad (2011) reflecting on Gell also states, "things may themselves be more like humans than we might assume" (p. 6) and therefore "could be said to be emancipated 'as such' rather than by association" (p. 6). However, Leach (in Holbraad, 2011) points at the limitations of Gell's considerations, as for him the agency of things is merely an indirect attribute of their interactions with humans. In fact, Holbraad (2011) highlights the distinction that Gell makes between primary and secondary agency of indices, further stating that "things for Gell cannot really [original emphasis] be agents" (p. 7). Holbraad (2011) additionally compares Gell's to Miller's theorization on the emancipation of artefacts, and writes that Gell elevates the status of things by 'making them operative in acts of human agency' (p. 7). Therefore, by remaining in a humanist ontology, things can only be emancipated by association to people. Hence, the perspective I advance operates in a new ontology, a post-human one in which we are all agent beings, erasing the line which divided us.

In the following chapter I continue this reflection on post-human communication with things, advancing a perspective through which things could speak.

### 3. How contaminants speak

Proceeding to investigate the question on the language of artifacts, “do things speak?”, Holbraad also raises the question “what counts as a thing that speaks for itself?” (Holbraad, 2011, p. 17). Kohn elaborates an answer in his book ‘How Forests Think’, by beginning with the ability to formulate thoughts, he writes:

“We are colonized by certain ways of thinking about relationality [...] Forests are good to think because they themselves think. [...] The fact that we can make the claim that forests think is in a strange way a product of the fact that forests think” (2013a, pp. 21-22).

Continuing further Kohn’s (2013a) book also advances a perspective to interpret nature’s language. Based upon Charles Peirce’s 19th century study of semiotics, Kohn (2013b) describes the forms of representation which exist between human and non-human encounters, distinguishing them as signs which hold the potential of initiating an interspecies conversation. As stated by Kohn (2013b) an organism’s attunement to their environment is an evolutionary and biological response that is elaborated in semiosis, a manifestation of organisms’ thoughts. Indeed, the author continues, “this fittedness is a representation, it is a thought, [signs are] forms and patterns that propagate through the forest” (Kohn, 2013b, 9:50). The particular signs to which Kohn refers are indices, their characteristic being that of pointing the attention towards what they represent (Kohn, 2013b), although the direct correlation might be unclear at first (Kohn, 2013a). By making us notice the signs which reflect the thoughts of non-human entities, we gain a greater sensibility towards the post-human relationships.

According to Alfred Gell (1998) an artwork can be considered to be an index of the artist’s intention. But following Kohn’s theorizing, I will now illustrate how ‘Permeance’ is more than the mere manifestation of my own artist agency. Indeed, the colors and shapes revealed through chromatography can be read as indices, as they suggest the presence of contaminants and material compounds of the riverbed soil of the Dommel. Patterns can refer to the content of mineral levels, organic matter or humus, the more complex the design the more diverse and healthy the earth (Kokornaczyk et al., 2016). Color deposits indicate the chemical composition, intense warm hues stand for a better quality soil, while cooler colors indicate a poor microbial activity (Kokornaczyk et al., 2016). Therefore, particular gradations of color in the chromatography can be taken as *indices* of cadmium pollution, channelling the soil’s agency rather than the artist’s sole intention. The contaminants are manifested as visible, light sensitive signs we humans can see and understand. But as Kohn (2013a) reminds us, these events occur with or without our human presence, whether we acknowledge the indexes or not: the river environment degrades nonetheless, even if we are unable to recognize the colorful indexes.

Although, I consider Kohn's indices as a form of beyond-human communication, the author does not extend his reflection to directly answer the question 'do things speak?'. The proposition I advance is that indices are a form of beyond-human communication, the speaking of entities without a voice. In the case of 'Permeance', indices speak to humans about the untold story of the river's pollution. As we have seen, alternative photographic practices hold the potential to mediate post-human communication, as they work with indexical signs. Exempted from the photographic gaze, the operational role is fully taken over by earth, who draws with light through an act of self-representation. However, chromatography is more than an indexical reproduction of the world, as the paper also contains the soil itself: it cannot be considered a reproduction of the contamination, it is *the* contamination. The totality of the art piece is composed by both the colorful indexes which indicate the contamination and also the real microscopic contamination of cadmium. For this reason specifically, the dichotomy of subject-object is unable to express the reality of the art piece, rather, as discussed in chapter two, I argue that Course's proposition "as points on a continuum" (2010, p. 256) is better suited to describe the complexity encountered in 'Permeance'.

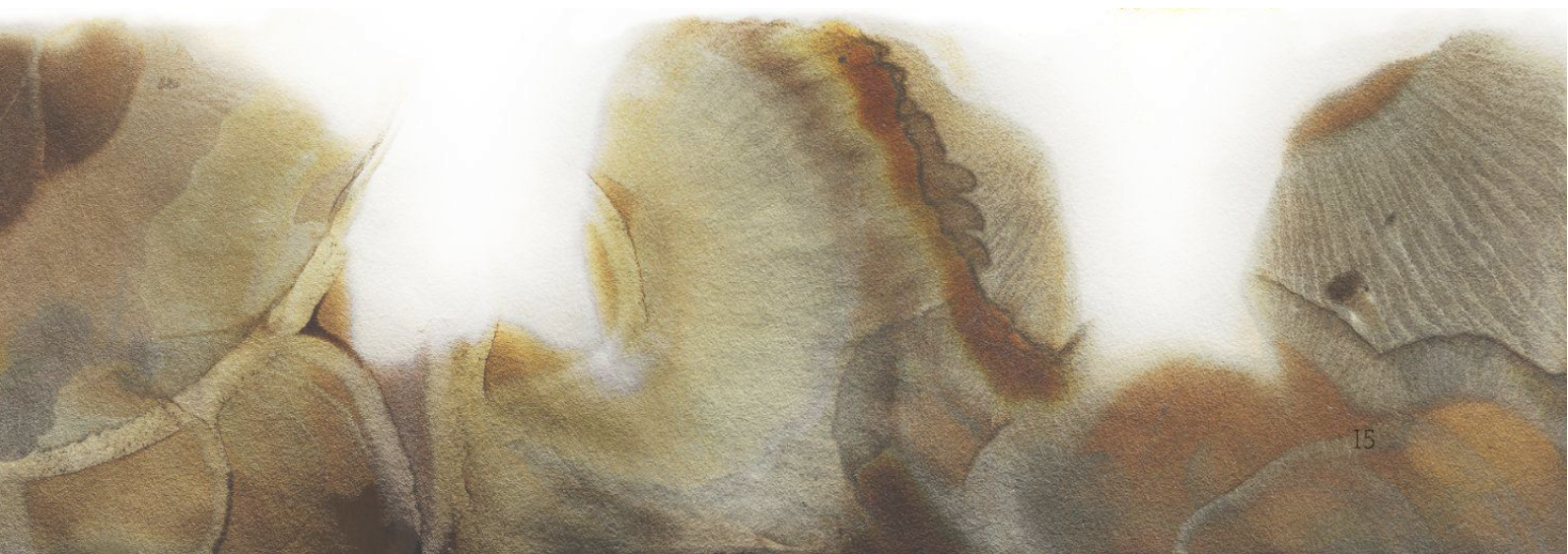
To conclude, I will dedicate the last section of this essay to the reflection of Holbraad's theorization on speaking things.

### 3.1 Contaminants speak, about us

Before answering the question 'do things speak?', Holbraad (2011) poses the question: how can we hear what things have to say past all that we say about them? The author states that not being able to hear things speak can be traced to people projecting their thoughts onto muted entities: "a thing that is inert and mute invested with varied meanings only by human fiats of representation" (Holbraad, 2011, p. 12). However, importantly for things to be able to speak, they must "yield their own concepts" (Holbraad, 2011, p. 17). Indeed, if an entity can be read through the equation  $\text{concept}=\text{thing}$ , the formulation holds "a promise of so many ways of arriving at alternative metaphysical positions, *whatever* [original emphasis] they might be" (Holbraad, 2011, pp. 12-13). This emphasizes the agency of a thing to be defined by the concept it has attracted upon itself, rather than by a human projection thereof. The proposed equation by Holbraad (2011)  $\text{concept}=\text{thing}$ , would read *permeance=cadmium* if applied to the art work. But to verify the validity of the concept, as stemming from the agency of the thing, Holbraad (2011) argues one should be able to read the equation backwards,  $\text{thing}=\text{concept}$ . By agreeing that the cadmium contamination gives origin to the concept of *permeance*, one could conclude, according to Holbraad (2011), that the thing does speak. "The thing differentiates itself, no longer as an instantiation of a concept, but a self-transformation as a concept" (Holbraad, 2011, pp. 18-19). In line with

Holbraad's formulation, I can confirm -as the artist- that the concept of *permeance* indeed arose as a way to define, and because of, the cadmium contamination ( $\text{cadmium}=\text{permeance}$ ). Simultaneously, *permeance* is intrinsic to the pollution, it helps us grasp how the contamination's agency operates ( $\text{permanence}=\text{cadmium}$ ). Nevertheless, I must argue that without my presence, as the ideator of the concept of *permeance*, the equations  $\text{cadmium}=\text{permeance}$  and  $\text{permeance}=\text{cadmium}$  would not have been constructed. Therefore, I conclude that, not much differently than Gell's (1998) theorizations on the agency of things (which Holbraad (2011) himself criticized for being dependent on the human acts of agency), also Holbraad formulation  $\text{thing}=\text{concept}$  and  $\text{concept}=\text{thing}$  relies on the mediation of a human presence which is capable of conceiving this conceptualization. The question then arises if things can really speak without a human affiliation and independent of their concepts. I believe the answer raises human-centric concerns which fall outside the post-human ontology I initially set to work in. In comparison, Kohn's (2013a) theorizing on indices offers a better framework to set things free from human dependency. In fact, not in the presences of people, things might hold completely different meanings to non-human entities and speak differently to them: cadmium is particularly lethal to river ecosystems, so to its inhabitants, such as diatoms, cadmium might be the conceptual analogous of death. Thus, cadmium communicates very differently to a range of beings, even without the human association.

Although we humans exercise our agency onto things, through Kohn's (2013a) theorization I argued that, beyond-human entities' ability to speak is unrelated to our human-thing relationships and remains uncompromised by our presence. I will also advance that our human engagements with things influences the stories they tell to us. Due to our involvement, they speak (also) about us, our presence becomes visible in their stories. We are recipients of their voices, but so are all other living and non-living entities. If we do not listen, or do not understand what they are saying, someone or somewhat else will instead.





**CONCLUSIONS** Chromatography transcends the general discourse on ontological theorizations in photography, rendering obsolete many of the existing considerations on subjectivity and objectivity. Rather than in a dichotomic form, the discourse should be based on points of a wider spectrum. Additionally, in this essay I have argued that chromatography is a collaborative act between the artist's and the soil's agency, the first conducting the process and the second drawing with light. I have discussed in detail the agency of soil, through Gell's (1998) and Holbraad's (2011) conceptualization and, conclude, that both approaches are insufficient to cover the complexities of chromatography, as in both cases, the agency of things relies on human affiliation. Rather, I have advocated that Kohn's (2013a) formulation on semiotic signs helps to illustrate how the colors and shapes revealed through chromatography are indices of the soil contamination of the river Dommel. However, the artwork 'Permeance' is more than an index of pollution, since, containing the particles of contaminants, it is the contamination itself. Additionally, instead of elevating the voice of a thing to speak in a human language, I invite human beings to be prepared to other forms of communication which might not include speaking through a voice, in a form of 'inverse humanism' where people are reconciled with their materiality (Ingold in Holbraad, 2011). In conclusion, in a post-human ontology and through the use of Kohn's (2013a) indices, the soil chromatography is able to communicate the story of its contamination, both to human and non-human interlocutors.



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