

Fluorspar

*Understanding the materiality and
the invisible environmental impact of self-publishing*

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A Bank of England 10/- note, 1940-48. £10-15 NAR



A Nottingham and Nottinghamshire Banking Company Limited £5 note, 1944. £100-125 NAR



A Bank of England £5 note, signed by L. K. O'Brien, 1966. £70-80 WP

This was the last year the white £5 notes were issued.



A National Commercial Bank of Scotland £1 note, dated 16th September 1959. £7-9 WP



A National Commercial Bank of Scotland £20 note, first issue, 1959. £40-50 WP



A Bank of England 10/- note, with D38N prefix, 1960-1970. £20-25 WP

D38N was the last prefix number used on 10/- notes.

Did you Know?

In 1694 The Bank of England was founded by William Paterson. One year later the Bank released its first printed notes. These were immediately copied by a clever forger and were quickly withdrawn. The Bank then used a new marbled paper and also introduced the practice of cutting notes in half. One half was given to the customer and when it was returned to the Bank it could be checked against its twin. Unsurprisingly, none of those early marbled notes appear to have survived! Forgery continues to this day, aided and abetted by the development of the colour photocopyer. If you are unfortunate enough to receive a fake note, it should be given in to the Bank of England.



A Bank of England specimen £10 note, 1980. £700-800 WP



A States of Jersey 10/- note, with Padgham, Treasurer of the States, signature, c1963. £7-8 WP



A Bank of Ireland specimen £100 note, c1980. £80-90 WP



Two Bank of England £10 error notes, miss-cut with extra paper, 1994. £120-140 WP



A Bank of England £20 error note, with inverted serial numbers, 1993. £90-100 WP



The States of Jersey £1 note, dated 9th May 1995, commemorating the 50th anniversary of the liberation of Jersey. £2.50-3.50 WP

Paper Money

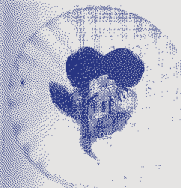
Paper money should be in mint condition with no folds or ink annotations to command premium prices.

PAPERWEIGHTS

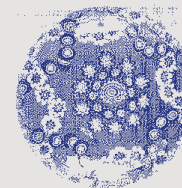
The first recorded glass paperweight was made by an Italian in Venice in the 1840s. It was a millefiori weight, (from the Italian for 'thousand flowers'), formed from cut sections of rods of glass which have been shaped, covered with various colours and then stretched. The French glassworks, notably Baccarat, St.Louis and Clichy, soon improved and developed the lampwork technique, in which flowers, insects, reptiles etc are hand-formed from molten coloured glass. When French manufacture declined in the 1850s, French makers moved to the USA, which became an important

centre of production. The brief golden age of classic paperweights was 1845-55, after which weights were made only intermittently.

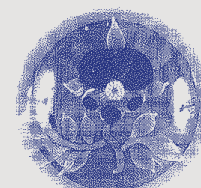
The craft was revived in the 1930s when Paul Ysart, born in Barcelona of Bohemian parents, started making lampwork and millefiori weights in Scotland. Baccarat and St Louis in France regenerated their classic skills in the 1950s, and in 1969 Perthshire Paperweights started producing high-quality weights. Today fine paperweights are again being manufactured by studio glass makers both in Europe and the USA.



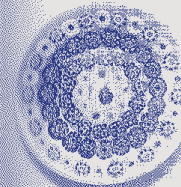
A Baccarat pansy paperweight, with a star cut base, mid-1900s, 2 3/4in (70mm) diam. £180-220 WW



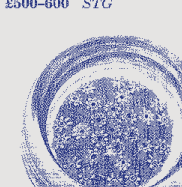
A Clichy paperweight, with 2 linked millefiori garlands around central millefiori, canes broken, c1850, 3in (75mm) diam. £500-600 STG



A Baccarat pansy and bud paperweight, with green leaves and stem, c1855, 3in (75mm) diam. £950-1,200 STG



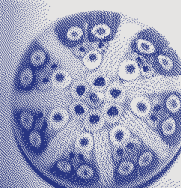
A Baccarat concentric paperweight, with a central white core, 1845-60, 2 1/2in (65mm) diam. £100-150 SWB



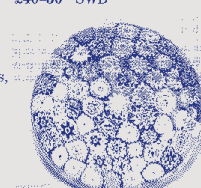
A Vasart paperweight, with flowers set on a green background, c1955, 4in (10cm) diam. £20-30 CSA



A Chinese white painted paperweight, depicting a landscape, c1950, 2in (50mm) diam. £40-50 SWB



A Murano paperweight, with brightly coloured flowers, c1970, 3in (75mm) diam. £35-45 SWB



A Strathern paperweight, with flowers on green and red background, c1970, 2 1/2in (70mm) diam. £15-20 CSA

Edited scan from Miller's Collectables Price Guide, 1998-1999. This guide shows a variety of artefacts and their value. On the left of this page you can see the worth of antique money. A £1 note being worth £10 to 15 pounds sounds interesting to me and raises questions on worth, value and materialism. This image was dithered using the online tool Ditherit. The image size is now 9,22% of the original file size; from 3,9MB to 355KB.

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Introduction

For my thesis I researched the invisible environmental impact of self-publishing. This to document the role as a self-publisher and its consequences on environmental problems. As a self-publisher I feel the need to research on these consequences and solutions inside the field, tools and reflect for my own design practice, which could be interesting for other self-publishers too. In my thesis I wonder on the different aspects in materiality involved in publishing, from energy use to pigments. What is local? What kind of resources do I use as a self-publisher? Can understanding your carbon footprint be achieved by putting the weight in CO₂ pollution of the website on the bottom of the page? To examine these questions I researched alternative publishing projects and delved a little bit in the world of colours.

Thoughts on Value

Sometimes I have these thoughts, thoughts that make me feel efficient. For example, when I push myself to go to my studio, arriving there I realise I have this gigantic place that I can use (when I am home I always forget this). My studio is a place that will be demolished by a housing agency to build more expensive houses to live in. Because of all the turmoil around affordable housing in The Netherlands the housing agency decided to let artists use the empty spaces for free until all original renters have moved out. No costs of rent, energy and water. The thought that comes eminent with using this big atelier for free is: "all the water and heat I use here I don't have to use at home. This will make my life a lot cheaper." Although this seems an efficient idea, resulting in lower cost living situation, in the end I use not less energy and water, I just don't pay for it. This situation is only efficient for my wallet, not for energy use. What does efficiency mean? The definition stated on Wikipedia of efficiency is broad and narrow at the same time: "Efficiency is the (often measurable) ability to avoid wasting materials, energy, efforts, money, and time in doing something or in producing a desired result. In a more general sense, it is the ability to do things well, successfully, and without waste" (2022).

This thought of my atelier reminds me of a thought I had earlier in my life. Around ten years ago I realised when looking at a light bulb, that all the energy used on the planet will not come back and just evaporates. "Even this light bulb is taking energy from the earth, energy that won't come back". Is this true? Is the earth only evaporating energy, water or heat? Would the weight of the earth become lighter? These things are hard to understand. They are too big to understand, too abstract.

The encouraging rant/ manifesto of Marc Fisher (2021) about a self-sustaining publishing model talks about his practise as a self-publisher. It is encouraging in the way he speaks about his practise, sharing golden tips for publishers in practical ways. His manifesto opens up the conversation around transparent publishing models. One of

the things he states in his text is to make use of all the free printing possibilities that you encounter as for example, at work (Fischer, 2021). He compares it with the free food at art openings and conference receptions and pushes on using every opportunity of free printing. But how free are free goods? This suggestion of free products creates less responsibility for the product and the infrastructure or ecology the product comes from.

As a teenager I wondered why I gave more emotional value to a souvenir my elder sister gave me from Brazil than to a product bought in a shop that has made in China engraved in it. What is value? When looking at a single episode of Tussen Kunst & Kitch, a television program where people can appraise and find out the origins about a product, the worth of a thing is decided on the demand of the thing. Something is more valuable if people want it. If nobody wants it, even if it is unique, it is worthless.

How my teacher at art school once described a thought he had at Mc Donalds impressed me. He explained that he ordered a menu, got it real quick, walked over to a square table, ate the food, and threw away the packaging. He realised that the plastic packaging material was used for less than a minute, though it probably was extracted from oil, shaped in a factory and travelled the world to get to be used for a few seconds. Extractivism as modernity.

"The increase of trade around the world, especially by large companies producing and trading goods in many different countries" is the definition of globalisation in the Cambridge Dictionary. Because of globalisation actions in production become more and more abstract. In between steps of production processes are getting more dispersed because of outsourcing. The chain of a raw material to a customer holding a product in its hands is long. In some companies, there isn't one employee working anymore understanding the whole product. (Martijn 2021).

When did globalisation occur? Isn't trade one of the most powerful capacities human kind has to distribute knowledge? Without trade no knowledge? Is it because of trading, that humans can achieve eminent (technological) inventions? Talking about trade looks like a whole different topic than talking about the environmental impact of self-publishing but they are intertwined. A publication can be seen as a product, just as a bottle of shampoo but also as knowledge, as a trade itself in the form of a publication.

Efficiency with outsourcing, monoculture and diffracted process to create products looks diametrically opposed to local initiatives and result in the abstractness of how we perceive our materials. The pretended plentiness of materials in our world because it is easy and cheap to purchase resources makes it easy to believe there is an abundance of resources. As a DIY publisher I use a lot of different resources to create objects. Paper, inks, software

and hardware are the basis materials to make a book nowadays. Do I understand all the materials that I am working with? What environmental impact do these resources have? How to grasp the materiality of a computer running Indesign?

In a very broad way of thinking, all acts of production or labour uses energy. Be it in burning fossil fuels for extracting minerals out of a mine, in the process of transforming these minerals into solar panels or be it in the labour of an electrician connecting a solar panel on your roof. The production process can be easy overlooked when using a product simply because you were not there in the whole process. As a self-publisher, I use a variety of materials to create magazines, newspapers or booklets. How much energy do I use in this process? Until how far as a designer should I reduce the environmental impact of my publishing?

To reduce the environmental impact of publishing is first to understand the environmental impact and to know the different options that are available. What is clear is that energy use could be heavenly reduced if we would send less data around and store less data, if we minimise the use of materials like paper and ink and if we could influence production methods of the materials but above all know how the infrastructures work to understand where we could make changes as consumers, users or publishers.

Local

It is amazing and frightening how evolved sharing techniques became in the last years. We live in a time where we have digital nomads, Instagram influencers and students setting up web-shops in their student rooms selling products that they don't have on stock but order directly from Alibaba. These globalisation processes make things abstract. Buy local initiatives sprouted everywhere. Shop local, buy books local, support your local shop. These initiatives are against big companies, but not per se for local products. What is local? What are local methods when publishing a publication?

First of all, it is quite difficult to say what local is. If a tomato is grown in my neighbours backyard in Rotterdam, this gives the impression it is very local, but tomatoes are no local vegetable but originate from South-America. Although all the energy it took to grow this fruit happened within a few meters, are the soil and other ecological systems adapted to tomatoes or any other invasive species here?

If a book is published in a print shop around the corner, the locality of this product is only in it's labour and transport of the final product. How is the paper produced? What are the ingredients of the inks and where do these come from? How far do you go in this local process? Must the Epson printer printing the book be local as well?

Another thing that makes "local" subjective is distance. Lastly; what feels local to me is totally

different than your perception of locality. Around hundred years ago it was quite rare to go on vacation in The Netherlands. Nowadays it is difficult to understand that there were people never coming out of their villages their whole lives. Distance is perceived shorter when the travelled time is shorter as well. Coming from the town Groningen, traveling by train to Rotterdam takes me less than 3 hours which I personally feel like a short distance, but same distance is perceived like a long distance from friends from Rotterdam traveling to Groningen simply because living in one of the most "desolate" places in The Netherlands, one of the densest countries in the world according to population, I was used to travel these distances and perceive them as normal. Just like some people find it normal to go on plane for eight hours to a meeting and others find it normal to get the car to the supermarket that is 200 meters away.

Does the End Justify the Means?

Besides raising the important questions, one of the most important question for me in publishing is; Does the end justify the means? If I make use of a (eco-friendly) search engine, I must be aware I am still using energy. The search engine Ecosia promises to plant a tree after a certain amount of searches, but does it make the search in itself eco-friendly? Paying an extra fee for flying does not make the flight itself less harmful.

If I publish for example about solutions in eco-friendlier ways of publishing, should the publication be eco-friendlier too? Do you have besides a responsibility in about what you publish but also in how you publish as a publisher?

Resolution magazine, Hot Pictures, is focussed on climate impact in pictures/ photography. The subject pictures looks narrow, but involves other processes they touch and question critically in this issue that are interesting for publishers in a wide scale. Interesting in the design of the magazine is that it is using dithered images to use less ink in the printing process.

Inside Resolution magazine they (Cleutjens and Otto, 2021) quote Kris De Decker, the founder and editor-in-chief of Low Tech Magazine:

"Something is sustainable only if it can be sustained. The current use of electronics is clearly not sustainable, but it's much harder to define exactly what sustainable digital technology would look like. A first step would be producing less data with lower bit rates. Limiting the resolution of videos and images would have a massive impact on pollution."

Besides inside the Resolution magazine, I spotted more references to the Low Tech Magazine (LTM), with especially the focus on one part of this magazine that it is solar powered or about the dithered images.

The Dither it website, which was used to dither

can't talk back to the publication. If I would like to index all material used for a publication and provide it with a number in carbon takes a lot of research, calculations, time and energy and is probably not possible at all to find out. For example: I would have to contact the paper factory of my zine and ask how much water they have used to make it, how much energy the paper mill used. Should I also ask what the workers there had for lunch? I should find out where the trees come from and what type of tree or plant is used because it differs how much CO₂ is absorbed per herb. Taking into account what kind of fuel and the distance it took for all the trucks and the energy of the labour of all truck drivers to bring the trees from the plantation to the mill and from the mill to the sorting centre and from the sorting centre to the shop it would be impossible to give a correct estimate.

This number would be symbolical and never true. I can imagine that showing the impact or its carbon footprint can have impact if it would make sense to the reader (and even then it can be seen as guilt tripping) but most probably it would be too abstract to understand the impact of 4,17632 grams of CO₂.

How Joana Moll uses these indications as an artwork is to me understandable as a practice of an artist and partly because she explains it with objects and tools out of our daily life but I can imagine that quantifying every publication in greenhouse gas emissions would lead to a more abstract and restricted view on the climate crisis.

In the experimental publishing project A Nourishing Network (ANN) one article is dedicated to calculating the Carbon Footprint; Can hope be calculated? Multiplying and Dividing Carbon, Before and After Corona by Caroline Sindere & Jamie Allen. The ANN is a project to publish articles. It publishes them online or it could be delivered in your physical mailbox. Instead of receiving one publication you get two as a way to spread the information. This disseminating process and the view on calculators in this particular text is interesting. To emphasise the act of sharing and to give the reader permission to share the article is a subtle way to let the audience know that it is part of this network and of the capacity to network more. It is maybe idealistic but I can imagine that this opens up the thought of buying a book and keep it in your bookcase towards sharing publications more actively. Asking more participation of the reader could result in a broader network for the publisher without printing more books. Inside this text Allen and Sindere give a critique on carbon calculators, and go deeper inside the energy costs of smart meters. This insight of doubting calculators, explaining that it is not that simple to calculate everything and that the calculating itself costs energy too is very interesting. This same critique is given inside the text version of the talk from Maciej Ceglowski (2015). In this talk Ceglowski gives clear examples of published articles talking about using too much data, while the pages that stores the article takes much time to load because

they store big sized images, have a lot of extra data because of advertisement, make use of scripts that are calculated on the device of the viewer or are in other ways data consuming. The talk compares the size of an internet page of a tweet with a whole book which makes it clear that a lot of websites are "obese". Another artwork of Joanne Moll proofs the same. In *The Hidden Life of an Amazon User* she published pages of codes that are happening invisible on the back side when she purchased a book on the website of Amazon. This work shows the complex data structures happening behind a web page and in itself questions this obese use of scripts. Are these lines of code that happen in the background to any use for the user compared to the costs of energy usage?

As a publisher I make use of a lot of different methods to create publications, without realising that most of those methods are computing. My website and e-mail is hosted somewhere in Germany. I post regularly on social media to get attention for my published projects. All editing happens on computers. The printing process happens mostly with copy machines and the Risograph. Without electricity I can't type, design, publish and promote. Presently, almost 10% of what we read is in digital format, near to 100% of paper publications are produced using electronic equipment (Escamilla Monell, Panyella Carbonell, J, 2021)

After reading more about JavaScript and other programming languages that make internet pages dynamic as opposite to plain html and css I was getting more doubts on the way I was designing a web archive for my radio shows. The venue where I make this monthly radio show uploaded the audio files on the platform Mixcloud. Because it was already uploaded I thought it would be a better idea to embed the files on the web page then to upload them again. Since each radioshow takes up to an hour, the files are "big" and it doesn't make sense to me to have these big files existing twice on the internet. But when I noticed while embedding the files as an `<iframe>` is that when visiting this webpage you not only use the file from Mixcloud, but that Mixcloud uses the website too to track information. Privacy wise this is not fortunate but it also increases the weight of the page in code, thus calculations, thus energy.

For me the meaning of the word infrastructure is abstract. When I think of infrastructures in logistics like containerships, trucks and sorting centers in my mind an image appears of the transportation systems as (moving) spaces, most of the time square, storing stuff. The stuff could be anything. When I am on the highway just behind a lorry, I sometimes wonder what it is carrying but mostly I just see only the truck itself. In some occasions it gets more gripping on this abstract structure of logistics. When the Ever Given was stuck inside the Suez Canal in spring 2021 news from the retail world popped up that the stock of Christmas decorations would not arrive on time in The Netherlands. Or when the MSC Zoe container

ship lost over 300 containers in the North Sea in the night of 1 and 2 of January in 2019 and all of the isles of de Waddenzee were decorated with all the products that were stored in the broken lost containers. After two years, in September 2021 the last container of this accident was stowed.

The “dirt” of energy does not turn up as litter or rubbish in the same way that Styrofoam containers or plastic bottles do, but rather circulates in the relatively immaterial if no less potent form of CO2 emissions, particulate matter, and other airborne emissions (Gabrys, 2014).

For a few years I’ve worked in an art supply store. Once the owner told me that everything we have stored for a while in our warehouse costs money because it could be replaced with products that are sold. Although this vision sounds very capitalistic, it has also something interesting when comparing a warehouse to a data centre. The warehouse is a flexible thing. When things go out of stock there is room for a new product. When we finally sold the glitter paint we had for a while, we had more room for the white paint which is a top selling product. How flexible are server centres in storing data? When I think about all the data I have stored in the cloud in different ways, different platforms, a fear comes not only about that I would lose data, but a bigger fear up rises that I have data stored that I would never use anymore. What frightens me is the thought of most of the servers containing a high percentage of data that is never going to be used again. One solution to control this issue is hosting your own website on your own server.

Back to the Solar Powered Website

The publishing project of the solar powered website of LTM is interesting on many levels especially in its approach to reduce the environmental impact of the magazine but even more in sharing the in-depth knowledge around the hosting, building and improving the platform.

The website is stored on a self-hosted server. It can be less efficient to have your own server in terms of energy use because it’s likely that (server) companies like Google pay less than you do for power. This is because they use enough electricity to be able to arrange power purchase agreements, which are deals to buy the power from a renewable energy project over a multi-year period that helps it get built (Adams, 2021). The autonomy of hosting your own server, the knowledge of maintaining a server and the sovereignty of having your own data centre can outweigh this energy efficiency or it could even turn into an approach in running a server in a more sustainable way.

When surfing on the web and visiting a website most of the time the information shown is stored in a fossil fuel powered data centre. When hosting your own server you have more power in choosing the energy supplier thus the energy source which the server is using, although when having a contract with a “green” energy supplier it doesn’t mean the energy you use come from an eco-friendly source

be it in that it is debatable because windmills, hydrogen and energy from burning biomass are all equally accounted as “green” energy too. Besides the energy from every power plug connected to the general energy grid doesn’t keep renewable energy separate from the fossil fuel one.

In the case of LTM it is stored on a server located in Barcelona. When visiting the website the first sentence to read is that the website can go offline from time to time because it is solar powered. This vulnerability in accessibility of the website is a beautiful aspect of this project to show energy consumption of the web. Although solar energy sounds like a solution to fossil fuel, the production and durability of solar panels should be taken into account too, but I will go more in-depth about this later. The mentioning of the location of the server makes a server less abstract. There are websites where you can paste a website URL address to see where a server is located that hosts that website (which because of security reasons not always shows you the exact address), but LTM shows also the battery power, the power used and the battery status.

Another server project using solar energy is Solar Protocol (SP) (<http://solarprotocol.net/>). This project, inspired by LTM, consists of multiple solar powered servers running all around the world. The server with the most energy is serving you the website. The websites design and content changes when a different server is running the website. Because SP is using multiple servers and is spreading the labour of the server with the most energy serving the website it puts energy up front instead of speed. It doesn’t choose a server that is the closest. Another interesting thing that they mention in their manifesto is their accountability of energy-centred design. In building the website, they attempted to do the computation work required to generate the visualisations on the server-side, rather than by using JavaScript in the client’s browser. In other words, the servers do the heavy lifting as opposed to your computer. In this way, we are assured that these computational cycles are powered by solar rather than fossil fuels. This inverts a capitalist logic that incentivises us to export costs to someone else somewhere else, a drive that has produced concurrent ecological crises (Brain, Nathanson and Piantella, 2021). In their manifesto they relate to Joanna Moll’s work in the Hidden Life of an Amazon User where she demonstrates this through the case study of buying Jeff Bezos’ book from the Amazon website. In this project she audits the eye-watering amount of computational work and energy expenditure that is outsourced to a user’s computer by the Amazon website (presumably in order to track their behaviors and show them ‘relevant’ ads) (Brain, Nathanson and Piantella, 2021).

Although these solar powered initiatives make these platforms more centralised, more local and therefore more tangible there is a debate on solar panels and other fossil fuel energy replacements. A lot of ingredients of new energy systems and

mainly all computers use specific resources. The increase in the demand in these materials raise the question if they are replacements at all. A specific type of materials used for these products are rare earth metals. They are called rare not because they are rare but because it is hard to get them out of specific rocks and for this process a variety of chemicals are used. These rare earth metals are very polluting to mine, so this happens sadly in countries in the global south that have little to no safety standards regarding mineworkers and the environment to keep the price low and are exported to western economies. The exorbitant growth in demand of certain new materials does not match up to the knowledge on how to recycle them unfortunately (Pitron, 2020). Electronic waste is hazardous and difficult to recycle at end-of-life, and is often processed in harmful ways, which raises consider- able environmental justice issues. (Gabrys, 2014)

These strange metals have special qualities for batteries or are very conducting and have very strange names like Molybdenum, Tantalum, Rutile, Platinoids or Fluorspar. Names I have never heard of. One more commonly known rare earth metal nowadays is Cobalt. Cobalt is used for mobile phones, computers, hybrid vehicles and magnets. Being one of the most wanted resources for a stronger type of magnet, which is used in many electronic devices now, results in poor mining conditions in the Democratic Republic of Congo (Pitron, 2020). The situation around Cobalt mining in the DRC is widely documented in documentaries and articles, but from many other minerals it is not and makes it hard to grasp what scale of impact it has on the environment.

Understanding Colour

Cobalt can also be used as a pigment. It is used in various paints and glazing for ceramics creating shades of blue. Paints for artistic purposes most of the times publish on their packaging the pigment used in a cryptic abbreviation. Since it is not mandatory to mention the origin of the colour and even if they are mentioned, these abbreviations result in a abstract view of colours too. For example, the colour index name of Cobalt is PB28. In this colour code the P stands for pigment and B for Blue. Although many paint factories provide the pigment code, there is only one pigment database with information online that tries to cover all the codes that I could find. The Art is Creation, Colour of Art Pigment Database is a personal project of David G. Myers and I recommend to check it out. The database gives information on the material, on common, historic and marketing names, the chemical composition, qualities used in painting such as opacity, light fastness and if the pigment has any dangerous hazards. This all in Html tables in a design from the early internet world. A quick look on this website reveals that there are a lot of different colours (Myers, 2022).

At the art supply store, I learned more about colour in a few weeks then during the 6 years I spend at art school. At school I never had a lesson explaining

me what kind of materials we actually are using. I was perplexed I never contemplated the materiality of colours I've had hours and hours of lessons on primary colour schemes, complementary colours, I knew a lot about colour use in illustrative methods; using warm colours like red or orange that go more to the foreground, red is quite aggressive, yellow is cheap in advertising, meanings of colours in culture; many different colours have different meanings depending on the region in the world. The colour black in clothing is common for grief, a funeral in western culture though white has this exact meaning in for example Suriname.

The knowledge about colours at my bachelor programme was merely based on cultural components and compositional layers, about how we perceive colours, instead of what the colour consists of in material terms. The cups and plates at home were to me just blue ceramic plates, I saw a chair as a red plastic chair or a bench as a pine wood bench. Now, after working in this store and after doing some research on colours I don't think this simply as "red" anymore.

Is our view on materials, thus their care, getting more abstract because of advanced production technologies? For example, the technology to develop LED screens without pixels visible to the human eye makes it harder to understand how the screen of a laptop is working, and how computers are working in essence and that each coloured led uses a pigment to make it colourful. Because products have smaller elements, smaller pixels, a distance is created between the user and the product. This zooming out of our perception on products and the technology makes the materiality less tangible.

It is very logical that technologies improve overtime to make our lives more comfortable. Since the existence of art supply shops it was not necessary anymore for artists to create their own brushes and paints. Making paints from pigments was a required task and the skill of an artist before the 20th century. In the *Secret Lives of Colour*, Kassia St Clair describes an array of colours within historical context and knowledge. The chapter about the colour green illustrates the difficulty that arises when using certain pigments. A lot of colours were unstable back in the days. Mixing yellow and blue to create green could result in a chemical reaction of the pigments. Being a painter required the knowledge on which colours to mix or paint next to each other because otherwise colours could disappear or turn into a different colour (St Clair, 2017). Every colour had its specific manual to use because all colours come from a variety of origin. Sometimes the name still reveals the history of its origin, ivory black used to be made from burned ivory, now this tone of black is made from burned bones and is often called bone black. The database of Myers is showing a long list of pigments and shows the common, historical and marketing names for each pigment as well. For Pbk9, bone black, 26 alternative names exist (Myers, 2022). Since there is clearly no regulation on how

we name colours, the names of colours don't refer to the material a colour is made from. It is strange to think that you can paint without knowing that you would smear burned animal bones or cobalt from illegal mines in DRC.

Although some colours reveal their origin, most of them are created synthetically. In the tables of Myers database almost every colour refers to a name only used and understood in chemical laboratories because they are invented in laboratories as well. When I visited the Royal Talens factory for a tour in their factory where they create all sorts of art supplies, the guide that showed me the pigments in their warehouse told me that the knowledge on colours used in paints and inks nowadays is in the hands of the pharmaceutical industries. When it comes to printing inks, ink suppliers do not even mention what is inside the ink. The safety data sheet on RISO inks illustrates this properly with "trade secret" mentioned in the composition/ information on ingredients section, hiding the information on colours. This document does however shows that petroleum solvent and alkyd resin is an ingredient of their inks, both made from plastics (RISO INC., 2016). Besides RISO ink it is generally not clear what is used inside any printing ink, besides plastics which is already worrisome. The delicate and refined process of printing is very hard to understand in its materiality. This because our technologies are very inventive, but also because companies are not transparent.

This illustration on ingredients of ink showcases the abstractness of ink and adds up to all the abstractness around products and goods in general. Multiply this with the abstractness of how we perceive data and energy and you get a mixture of a total detached understanding of worldwide economies and ecologies. Adam Bobette contemplates the influence on the carbon-based industrialisation on the modern sense of self in *The spirituality of Coal*. He argues that "[...] critiques of extractivism and the way that carbon modernity transformed nature (and humans) into resources and commodities" is a narrow view on carbon (2022). In his essay he talks about the coal miner and spiritual leader John G. Bennett who articulated a grand theory of energy: energy as the primary ontological stuff of the universe, from the lowest (stones and minerals) to the highest (spirit). Bobette does not advocate for Bennett, but merely illustrates how self-help and the new age movement sprung from the thoughts on coal and energy and because of extractivism in historical context (ibid.). To see all things as energy spiritually can be very vague and abstract and can lead to a cornucopian mindset that there is enough for everyone on this world. If this is true philosophically speaking there might be enough energy for everyone but not in the shapes of trees, paper or books but only in greenhouse gas emissions.

Conclusion

When thinking, researching and writing about environmental impact, my thoughts go to many places and touch upon many philosophical questions that coincided with this vast topic. Being aware of my choices in material use and the impact it has on the environment can cause reduction in the use of resources but reduction is still using. In this climate crisis I am constantly aware of the influence of my acting on the climate and makes me from time to time wonder if I should publish at all. Embracing I am a human and not a plant or a rock is maybe embracing that I use more energy than fellow kin nevertheless. To me it is debatable how much influence reducing the use of resources has in publishing if you question ethics in a philosophical sense. Being aware of that we live on one ecosystem called the earth (or the universe), and humans are just as equal as a rock makes me feel that I have no rights at all to use this rock. The entitlement of any element in a way is a colonial act and feels wrong (the word good and wrong are debatable too, moral ethics wise). To reduce the most is to stop having a website, to stop printing, to stop creating but this also gives space to guilt and the word wrong. Embracing reduction, de-growth in this is a non binary act, which might be not the best, but goes beyond goodness.

When you start to think of your own infrastructures it can be scary because of the multitude of things you come across that you can take in account. Poor mining conditions, increase use of electronics, the energy consumption and the difficulty to find out on its impact and on how to calculate these problems makes me wonder if we should calculate at all. If we would like to say bye to plastics and hello to a fossil-free future, the way we publish has to change drastically and we don't need equations for that. A fossil-free publishing practice is a process. In the meantime we could decrease impact in sending smaller file sizes with dithering our images if you publish digital. We should try out experiments with fonts that use less ink, print monochrome images to use less colours and ask for transparency from ink manufactures on the ingredients. Another way to reduce environmental impact is to focus on finding alternative ways to circulate our publications within an audience. Instead of printing more we could think of re-using the existing publications in a model that emphasises the sharing possibilities of individual prints.

As a self-publisher I think we should care about our paper use and decrease it. We should think about the digital environments we use and re-think on the ways how we could make different infrastructures that are alternatives to the servers used in common digital platforms. The end doesn't justify the means. It is very difficult to get grip on the ecological environmental impact of publishing practices on our planet, but we should keep trying and find ways to practice it.

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Afterword

The process of writing this thesis started in November 2021 and ended in April 2022. In this half a year I've re-read, re-written and re-thought the thoughts of this thesis. By extending my writing skills I've gotten more insecure about what I had written. Although it could happen I would not agree with my writings over time (on how I wrote or what I wrote) I am still standing behind this publication. It would have been a rabbit hole to only publish things you would be sure of agreeing on the rest of your life, since we merely cannot know beforehand.

At one moment I was doubting the things I've written so far, and through two conversations with fellow students and with Marloes de Valk I've started to understand the concept of writing as an everlasting research. Normally I would treat the things I publish as an original product. Every new piece should be different. I don't want to be a broken gramophone but there is something in between leaning on something existing and always creating something new. What if the old wasn't so bad, but needs some improving? A little bit of update? Or what if I would like to extend my research on one part I'm discussing in Fluorspar. Would it be okay if I would copy a whole chapter? Writing texts could be seen as a remix. In this way of thinking it is surely fine to re-use a whole part, and recycle your own texts.

For now I am sure there are things I could improve in this document and most probably I would recycle texts written inside for a more in depth publication in the future.

On the design

To reduce material impact for printing I have tried to minimize margins. I've adjusted the line height a little. By this and with the use of two columns I could fit the whole thesis on three double sided a4's. I could have made more drastic choices in design to fit this whole text more cramped on the pages, but this would affect the readability too much. Personally I would have chosen for a smaller point for the text, but this wasn't possible due to the restrictions set from the Masters program for handing in thesis's.

The printed versions sent in for archiving purposes were printed with a laser printer on paper partially made from cotton and hemp. Most normal printing paper is made from cellulose, which comes most of the time from (pine) trees. The choice of a different fibre for the paper comes from three reasons. One: the texture of the paper feels different. It feels more open, grainy like fabric. If it would be printed on the classic printing paper, touching the thesis wouldn't felt so soft and to me gentle. Two: paper is produced normally as a throw-away commodity. It is recyclable, yes, but not endlessly. To see a material is to see it's traits. Although comparison isn't key, and should not have the most focus, having a different type of paper could question paper for publications in general. Three: The paper of this publication, with cotton and hemp fibres, is a stronger fibre and therefore more durable than cellulose.

The colour blue is a reference to cobalt, the mineral with many uses in computing, machines and as a pigment.

The typefaces used are: Trattatello, Gideon Roman & Caslon Antique italic.