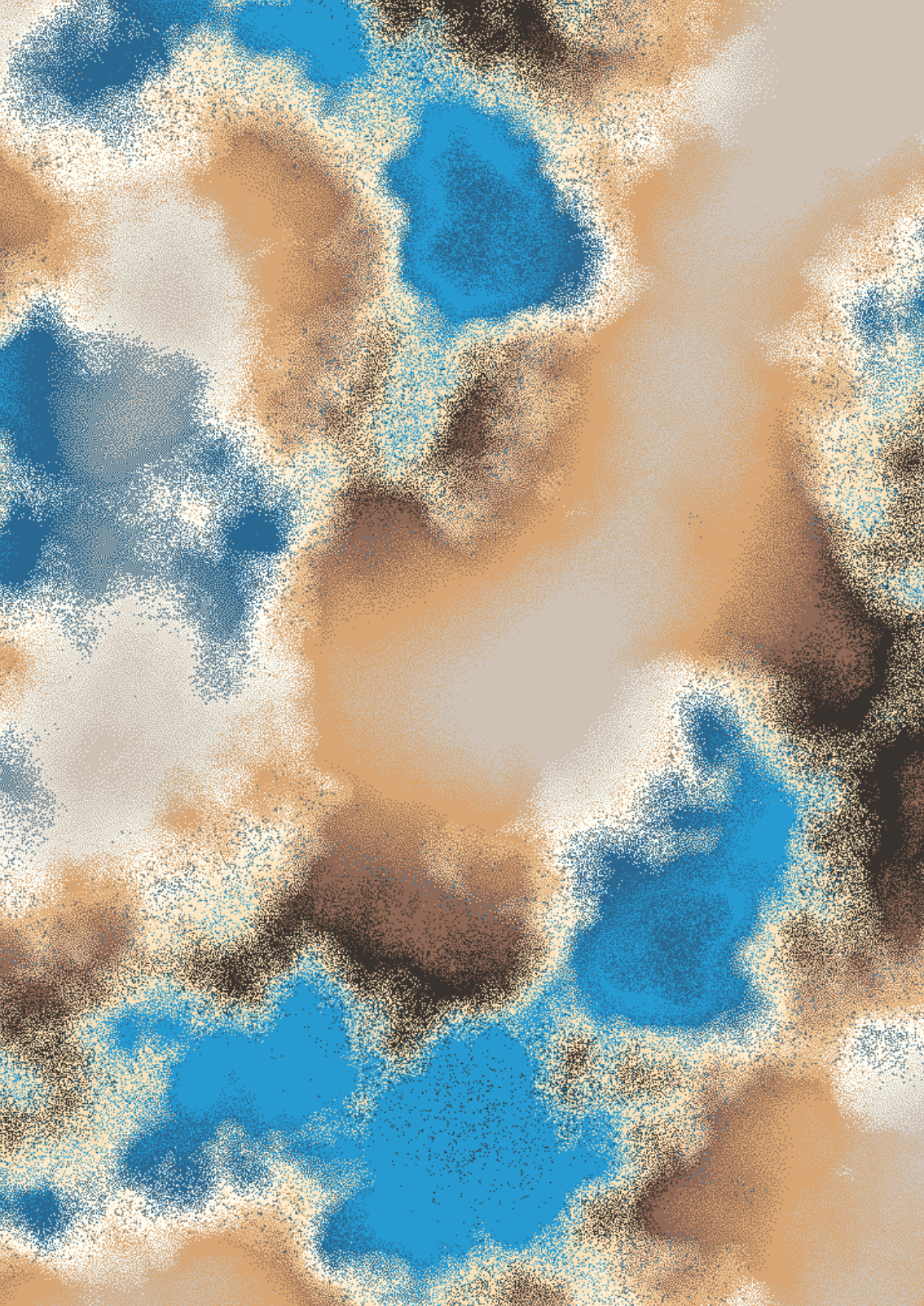
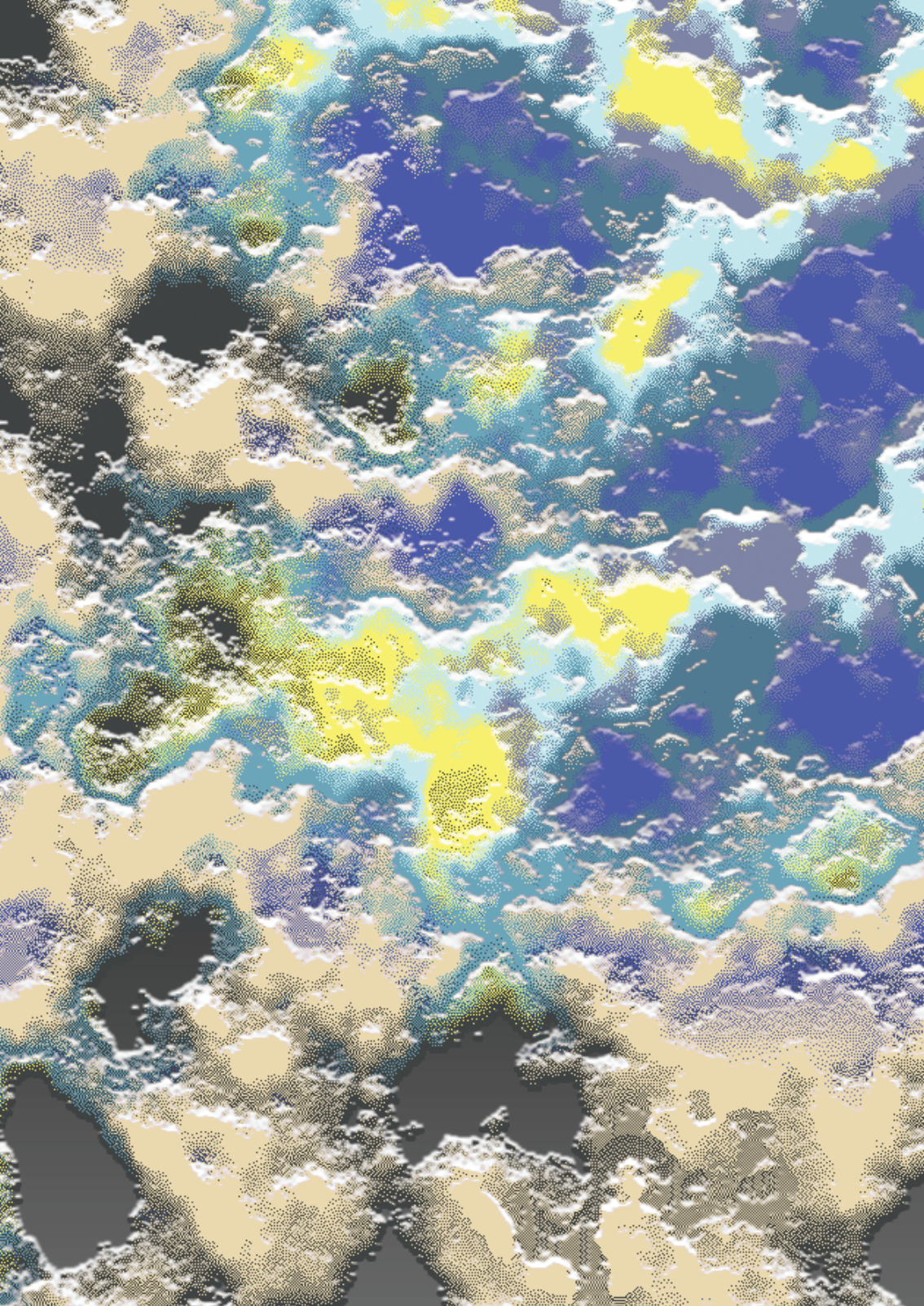


Hackers & Designers
on &/off the grid







Getting Prepped!

Collective Introduction by
Selby Goldemacher, James
Bryan Graves, and Anja Groten
(Hackers & Designers)

In 2017, Hackers & Designers investigated forms of dependence and obedience to technologies embedded in our daily working and living environments. In developing an elaborate hands-on program throughout the year, which peaks around July and August during the H&D Summer Academy (HDSA2017), we posed questions such as: How can we, as modern nomadic workers who often do not differentiate between work and private life, look critically at infrastructure, networks, and systems that we rely on? Are we, as steadily connected (net)workers, capable of disconnecting from existing grids? Can we rethink and build self-sustaining environments that shape our future practices in unexpected ways?

Hackers & Designers reflects on their activities in 2017 in this publication. In particular, we consider the learnings and questions raised during the investigation

of processes of going on and off the grid. Taking this publication as an opportunity to reach out to the amazing beings who have collaborated with H&D in 2017, we aim to push forward self-initiation and hands-on and self-directed approaches to research – and to open up insights and discussions with other individuals and collectives.

As Hackers & Designers bridges disciplines and cultures, we are always looking for metaphors and concepts that address technology critically yet leave space for engagement on different levels. We approach the notion of the grid quite openly – for instance, as a metaphor for social connectivity as well as in the context of straightforward energy grids and information networks. Some of our participants are not experienced with the hands-on hacking approach. We notice that relatable topics and humorous means help lower the barrier to understanding technology as potentially transformable. By adding an accessible yet critical component, makers and thinkers get a chance to meet, work together, and confront each other. The common theme of investigating means of going on and off the grid functioned as a form of glue in that context, holding together approaches and ways of thinking that would usually conflict or disregard each other.

The starting point for developing a program around the notion of getting prepped came about during quite a cliché outdoor experience in California. Cutting costs via camping but not being particularly outdoor-types, we were confronted by our lack of survival skills. This experience spurred some of the following reasons to go off the grid (in no particular order):

- To practice independence
- To self control
- To detect alternatives

- To research alternatives
- To use alternatives
- To train consciousness
- To change the pace
- To count our blessings
- To save money
- To spend money
- To break free from money
- To be agile
- To meet like-minded people
- To eat differently
- To spark curiosity
- To be assertive
- To be responsive
- To change perspective
- To be free
- To be flexible

As a result of the efforts to consciously and critically connect and disconnect, H&D has started questioning some of its own habits as an organization including micro-economies and dependencies. H&D is yet another organization engaging in now-arcane processes, such as writing long funding applications. More developed means of communication have resulted in the perception of H&D as a professionalized or institutionalized collective. H&D is often approached as if it has structural means and steady staff. Furthermore, H&D is expected to grow as an organization. But, what do we want H&D to actually grow into? Is H&D trying to be an educational institution, an agency, a think-tank? And what are the consequences?

This collection of texts addresses the often conflicting routes that influence the questions, actions, and future structure of Hackers & Designers.

DIY ACTIVISM

INTERVIEW WITH
IVANKA ANNOT BY
ANJA GROEN

One of the HxD founders, Selby Gildemacher, met artist Ivanka Annot during the month-long art camp Entre-Nous located in the experimental settlement in Frederiksoord, NL, last September. As HxD had been exploring what it means to be reliant on the systems of big corporations and how to change our dependency on these systems, Ivanka's practice has been influential to us. We were excited to meet her again to discover more about her life and work and how she combines the two in an inspiring way.

Anja: To give some context to how you developed such an autonomous practice, could you tell us about your background? How did you grow up and end up making the work you make now?

Ivanka: Art school fixed everything for me! It taught me that I could shape the world. That's the biggest message I got from it. All of a sudden that made me critical of society and of politics. Because I realized I could affect my surroundings through creativity and creative actions, I started thinking about how I wanted my surroundings look and how this vision differs from reality. That's how it started for me.

It quickly turned into more of a critique of society and culture that has developed over the years. I didn't want to spend time doing a job for something I didn't want to do to get some bucks so that I could pay a house owner who doesn't need the dollars so that I had a place to live. It felt terribly unfair that that's the way that the world is built, with these little spaces that you pay rent for with your life.

My partner has had much influence on my art practice because we share a lot of ideas. We decided to minimize our living costs together - to start living with the lowest expenses possible. We started dumpster diving for our food and we moved in together in this squat community in Groningen, which is also a collective association. Through this, we discovered how easy it is to do things differently. You just have to start somewhere. We started by going to the market and picking up the food that was left over. We found so much that we could feed our entire hallway of up to 12 people. Then we found even more discarded food, so we started a restaurant! It has been little steps by little steps.

We created this place called The Free Café. We thought of it as a social sculpture. It was a socially-engaged work that involved everybody who co-created it. We were the instigators but not the owners of the idea. There was a group of people that was ever-changing who would collect food, prepare food, and hand the food out for free. We built a little clubhouse out of all types of wood with the idea that two angles on the wrong angle make one right angle!

Without prior knowledge, we just started DIYing because we felt the urge to see what it could bring. More and more we were realizing that we were working towards a totally anti-capitalist vision. If you start taking small-scale actions, talking to people, working with people, then you're suddenly doing it. That strengthened and energized my artistic practice.

Anja: What is your method for acquiring skills to do all these things? Are you interested in a certain technique and then you dive into that alone? Or, do you want to create a project and as it develops you figure out the skills that are necessary for its production?

Ivanka: I see my art practice in two parts. One of them is doing the prefigurative politics. This means that you create what you want to see happening in the future. Instead of protesting to what is happening now, you prefigure it. You give it a shape, you make it happen, and then the rest will follow. That's most of my work.

The Free Café is prefigurative. Only by creating this free restaurant have we been able to work on a next level plan that we now have a piece of ground and permits for; it is called De Wandeling. De Wandeling is a plan to use a piece of the local city park in Groningen and turn it into an edible permaculture jungle with a social center for the exchange of knowledge, skills, and free food.

De Wandeling means literally 'The Walk.' We chose this name because we'd like to conjure up an image of nature and focus and learning, like the taking a walk in the woods. It's still in process, but in the meantime, I've built my own house out of local straw and loam. The house will be proper enough to pass laws for new types of construction that can last for 50 years. For me, this is prefigurative politics.

These prefigurative works are all about acquiring skills to be able to reach the goal. It's not like "Oh, I'd like to cut a window. Let's cut a window!" It's more that you need to make sure that you acquire the knowledge and experience necessary to make the project possible.

For example, we had to make a formal permit request for De Wandeling. I'm from the art academy and I have no knowledge of this sort of procedure. Together with my partner, we read all the construction laws, everything about sustainable technologies, DIY methods, local materials of which we made 3D and 2D detail drawings, and made construction calculations. We handed it in to the municipality and it was good! In one year we took this education full on - we did a Google Search crash course for architecture to be able to reach the goal of getting this permit to make a tiny non-capitalist and socially-inclusive society in our city.

That's one approach that is very practical. My other works mostly go into art spaces and galleries and residencies. For these works, it's more about acquiring theoretical knowledge

and reflection. I'm very much inspired by queer theory, for example. Topics that inform politics, like nationalism and borders, are what interest me.

In this sense, these different lines of work have opposite approaches. But, they are both determined by my environment and what I want to influence.

Anja: And you call both of these practices work and not life?

Ivanka: I call it all an art practice. I see my art practice as my life and my life as my art practice. I don't distinguish something as art if it's in an art space. It could equally be in my garden. When I'm building a house with a hundred people who also learned these skills and started living in the house next door, this an art practice.

Anja: I saw a very beautiful drawing of yours, it was of a vehicle – something like a car – but it looked also like a bike.

Ivanka: I had this dream of a bicycle camper with a dual purpose. First, as a solution for transporting large loads of food from one location to another to give it away for free, without having to use fossil fuels. Second, for it to function as a bicycle camper just big enough for two people to sleep in. It would sustain itself by using solar energy and filtering rainwater. Then, I got thinking on how to outfit this thing to go completely undetected. Camouflaging it and coming up with ideas to heat it without it showing heat radiation.

I was playing with a sort of preparation scenario. What if shit hits the fan politically. With right wing populism and with the Sleepnetwet, the law that allows national and international intelligence services to tap, store, and forward all digital and telephone communication, I felt that my way of life is more visibly put in a far corner of politics. Who knows what happens when you are accused of being a dissident.

I ended up not having the time to undergo building it. I still have all the parts though. I hope one day somebody knocks on the door saying, "I'd love to build it with you," and then I'll go for it.

Anja: Do you think that there are people out there that think what you do is threatening to them and to society?

Ivanka: No, not right now. But I do think that this could change. I feel that the new shift in politics is not that you're shifting the politics, but that the politics are shifting you. I feel that I've been pushed in this very extreme corner when in actuality I'm just a person who wants everyone to have a good life.

Anja: Would you call yourself a prepper?

Ivanka: No, not at all. I'm not busy with those things. I think it's a very passive reactionary way of finding the things coming towards you and getting ready for it. I see it completely the other way around, to create what is around us. This is my artist practice and my life - creating changes that I am not undergoing.

Anja: What role does material play in your work? How do you select what you work with?

Ivanka: As uncaptalist as possible. For example, I am building a small sustainable house. Most people would go to the nearest eco-construction website and order everything there, but most of those products are produced in questionable ways. They come from far away with odd materials that aren't locally grown.

It's a combination of uncaptalism, but also I try to find the autonomy to go completely DIY. If you can go to a farmer and ask for straw, do it! It was the farmer closest to me who was farming wheat with the right kind of straw for my project. If a bit further out you can dig out your own loam that can make the basis for your house, then do it! I think in these sorts of practices are huge accomplishments. I would really like it to come straight out of nature as much as possible in construction.

Anja: Do you also reuse materials?

Ivanka: Definitely! My house is built on legs, raising it 50cm off the ground. Those legs are 15x15cm and I got them from a furniture maker who had collected them over the years when he was throwing away his other leftover pieces.

Anja: You were talking about working with your partner and I saw there are a lot of co-creative projects you are involved in. What kind of collaborative forms are you interested in exploring in your work? How do you collaborate? How much do other people play a role in your work?

Ivanka: It depends whether I work for an art space or not. If it's for an artspace, it's usually solo. I almost always conduct travel research to explore other initiatives. Almost every work I have made has been informed by other people in that sense. Whenever it's more collective work, then my main principle is self-organisation. In this case is often still initiated by me, but it ends up being a co-creation of everybody. It's a very interesting balance, between coming up with an idea and starting it with a group of people. You set a framework that can be determined by the self-organisation within the small group. There comes a point where the framework is set and then there's an invitation to a bigger group so that 50 or 100 people can join.

When you actually practice self-organization you realize that even though everybody has as much input as the rest, there is first always a framework that has been determined by the first people. In this way, there is a hierarchy when it comes to policy and determining those kind of things.

The De Wandeling initiative has to be the legal entity called a foundation, but only in name. In practice, though, the initiative is completely self-organised. De Wandeling is an foundation because by law we wouldn't be a legal person otherwise. And we must make it a legal person in order to be able to sign a user agreement with the municipality and formally apply for a construction permit. So, the foundation is the only legal shape that allows us to have a fully horizontal hierarchy and forgo on money, a bank account, paid membership, or any form of ownership.

I find it very problematic to set up a legal person. One reason is because a legal person in The Netherlands has more rights than most people anywhere else. That's due to the fact that big corporations are political entities and have privileges over actual humans. Even though I hate it, we had to make De Wandeling a foundation in order for it to function.

Anja: Is De Wandeling creating a cooperative model?

Ivanka: No. We're not an cooperative because there is no ownership to be shared and no set participants.

With the foundation, we have our own framework in which we do not use money. We don't receive it, we don't hand it out. People can't pay donations for the food or any activities.

A foundation with no bank account is not able able to pay taxes, though. We don't have income so we don't need to pay income taxes. But, we are constructing a building and every building, once finished, is taxed. This has turned into a legal battle. I have had to go into the city council to fight about it.

The issue is that if you do a permit request, you must pay a fee based on X% of your construction costs. We shouldn't have to pay this fee because our construction costs are zero!

In legally setting up this organisation, we found a way to not have bank account, to not use money, and to not have ownership, despite being in use of the material.. There is no owner, just use and exchange. We recycle everything.

This has never been done before in The Netherlands. Doing the legal battle at the city council made it very obvious how much tension there is between DIYing and the policies of municipalities.

How to implement one in the other makes you wonder if you shouldn't be going totally off the grid. But, how big can you grow if you are not registered? De Wandeling is a work that has been made for everybody. I want hundreds and thousands of people to come in contact with it. You can't do that if you're a little thing on the fringe of society. The fringes of society also often become owned by the people that reside there, and that is closed – private, not public. We never went down that road because we want to be public.

Anja: All these struggles seem to inform your work. I think it is very generous, because we could say that you are sacrificing your life and investing your time in figuring these things out. At the same time there is an important information pool developing from your work, but many people

don't have the means to do this kind of work and they don't know how they could. How can you share these findings with even more people?

Ivanka: We said that we would stop The Free Café because we got as far as we wanted. But, some of the other organizers said they didn't want to stop and so it continued in a different location. That's something that became autonomous and that is completely self-informed. I have no contact with them. The Free Café became a model that could be copied.

For De Wandeling, I think we're at point zero. All we have done is the procedure. We have pulled a lot of knowledge and experience for the project, but also for other people that want to do similar things. How can you bend the law or find some loopholes in it, how can you convince your local politicians?

We talk amongst each other, and I talk to other initiatives too, to ecovillages. When we can, we share the knowledge that we have gathered and people can build their own projects.

De Wandeling will become a big hub for exchanging knowledge, experience, and ideas. The Free Café was centered around food, which is only a means, not an end. It's a means and it's extremely relevant, but what we really want to create is a place where people come together and where all of the elements of DIY construction and self-organisation can be shared.

Anja: In a way, each project is a start for another project.

Ivanka: It ended up this way because we had the entire framework for De Wandeling written out five years ago. We sent it to the municipality because we had to collaborate with them to get a piece of land and to get the permission on ten different accounts. But, we got an email saying they didn't know what to do with this. So while we waited, we did The Free Café.

It was thought up to be a six months-long project, just to show them that this kind of initiative is possible. We had no record of having done anything this ambitious before, so I can

imagine that they were not ready to support us. Groningen is getting interested, though, and they are starting to talk among different departments of the municipality. This experience taught us million things that I'm very happy to have learned before going into De Wandeling.

Anja: Would you consider yourself an autonomous artist or an autonomous maker, even though at least part of your practice is realized with many people and within government systems to have greater reach? Is it possible to really be autonomous?

Ivanka: Yes, definitely. I have always defined myself as autonomous. That was the one insane urge I had before going to art school. To be autonomous. Not in the sense of being without collaborations or collectivity. And, not in the sense of being individualistic. Rather, to be autonomous is to choose your own structures with which you want to comply. It starts with the luxury of being able to think in these terms of choice. It's definitely a privilege. In that sense, I have a very privileged background where I have had the luxury to have choose autonomy.

Anja: One of your works is a reaction to *On the Road* by Jack Kerouac. You mapped the trip from the book it into a European setting. I was fascinated by the project's employment of scales and borders and accessibility. This book has been read widely and it carries this dream of being on the road and off the grid. It has this romanticism as well as naivety to it. Can you tell us more about why you put this trip into a European setting?

Ivanka: I really don't like this book! I'm very critical of Kerouac. I think he must have been a very narcissistic, woman-hating pig. That's the type of dream that is 100% privileged in a way I don't find socially beneficial or exploratory. Let's take a van and travel around the world. Let's go to pristine places where nobody has been yet and ruin it with our presence. I think this is a very Western way of thinking, that you can go everywhere and you can be king wherever you go. That you'll be able to fit into any place

because your passport will bring you to any place you want to go. That's why I made the work. To be critical of this kind of understanding of going off the grid.

Anja: Do you travel a lot yourself?

Ivanka: I do travel a lot. But when I do, I usually hitchhike, stay at peoples' homes, and visit other initiatives that are awesome in some way. I would never fly to a forest of Peru to rediscover a tribe that does ayahuasca.

Anja: Is there any organisation that you declined to work with?

Ivanka: In a way, the municipality. We asked them for their collaboration and have worked together on finding possibilities. When we gave them our 80-page proposal, they offered us a sum of money. They were up to subsidize us. But, in the end we saw this as them owning us. We still collaborated with them, but on our own terms by refusing their subsidies and their ruling. We are not working with money and donations!

Anja: What are your most low-tech and hi-tech works?

Ivanka: The most low-tech is the one that I ended up making at the art camp, Entre-Nous. I used wool from this local sheep herd and felted it into a bed. I specifically used ancient Mongolian techniques to do this, techniques that were born outside of Western civilization and that are still mostly performed outside of Western civilization. Here, it's not worth it to felt your own felt bed because for 5 euros you can buy a futon mattress in a shop.

Traditionally, the technique is to have a horse pull the wool behind her, but I did it myself. I pulled the wool behind me while walking circles around the camp. I wanted to emphasize how this kind of making is outside of the structure of Western society.

The most hi-tech work was done when I was still an art student and had just come from studying neurosciences and biology. I made really big red and green trust lights and an ICG reader from active electrodes that would read all types of brain waves.

I made a program that filtered the alpha and beta waves, which say something about your state of mind being stressed or being relaxed. The program made the colors pop - red if you had a stressful brain response and green if you were relaxed. I collaborated with Het Noord Nederlands Orkest and a modern dance group in Groningen on this too. They would do performative art and I would ask somebody from the audience to sit in this very big dentist chair and their brain waves would be read right then and there. Their responses

were translated into different colors of light. The dancers and the musician could see the responses to their performance in real time. The work created a dialog between the performers and perceivers.

My next work is a new media piece using globally crowdsourced phone video footage. So, back to modern technology. I genuinely love both high-tech and low-tech methods. They compliment each other in terms of what they can accomplish and the freedom they offer.

Amsterdam - Off the Grid Boat Life Project.

**Vicky de Visser, designer and member
of the H&D community**

**A project about personal actions and initiatives
that question the grids of society, politics,
capitalism, and ethics. Being a do-er activist
rather than an informer activist.**

**Brief: Living on an 8,5m boat in Amsterdam
for 6 months**

Why? What did I want to achieve?

- To not contribute to a greedy consumer-based system that has a mostly negative impact on its ecological/environmental/social/political surroundings.

- To be able to create artistic work without being dependent on common time and money limitations, like:

Money - having to accept assignments for financial reasons rather than artistic ideals.

Time - having to spend most of your time working for a sufficient income rather than the majority of time being used for artistic development.

How did I try to achieve these goals and change these limitations?

- Moved from Antwerp to Amsterdam to be around positive, innovative, and interesting initiatives. Amsterdam enabled me to participate in a fertile place for artists. The city has a less conservative way of thinking than many cities in Belgium.
- Cut rent costs so I didn't need to work as much to be able to sufficiently provide for myself
I bought an 8,5m boat with my savings. It can be compared to a small caravan. The boat was located in Amsterdam Marina and had four sleeping places. The boat had no running water, refrigeration, cooking facilities, or a modern heating system. Showers and toilets were used at a main building of the harbor. The boat spot was already rented and paid by the previous owner for six months.

In what ways did I succeed?

- Managed to live off a very small amount of money in the middle of Amsterdam and opened up my artistic network.
- Ate less meat because of the absence of cooking facilities.
- Was more aware of my water, electricity, and gas usage.
- Reduced my waste by a large amount.

- Met a lot of interesting people with alternative views on society and its grids.
- Was more connected to nature and natural cycles.
- Opened a lot of black boxes: the mechanics of a boat motor, the inner workings of batteries, insulation, circuit bending, solar panels, how to monitor electricity, air circulation, water density...and a ton more.
- Hacked the grid of the Gemeente. Learned the administrative way of working in The Netherlands and how they try to prevent people from living off the grid.
- Found many public and co-working spaces as was forced to work away from home and connected to other nomadic workers.

How did I fail?

- Too many hardships to be managed and controlled without the support of a community equally invested in a shared, off-grid system. Although I had to put less time in working for money, the maintenance and learning process of living independently from the regular water and electricity grids and learning how boats and motors work, among other things, took up all of the time I wanted to invest in my artistic practice.
- Creating momentum was hard. A lot of energy was necessary to maintain myself. It may have been an inspirational story for other people, but when they visited they realized this way of living was actually quite hard. Especially being without luxuries like warm water and a heating system - this can be very difficult when you live in a city where most people can return home to a house with all of these comforts.
- Physical problems arose. Not being able to stand up completely, dealing with being in a cold, moist, dark

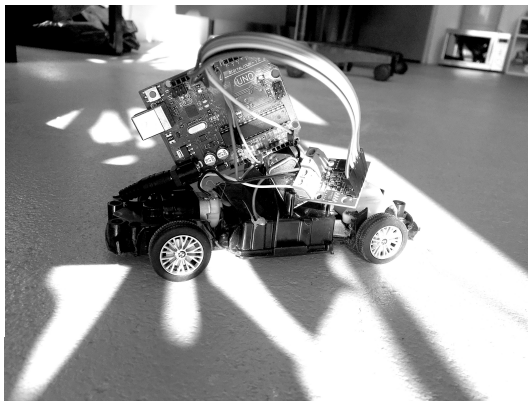
space in the winter with limited battery light and candle light... this affects your body and your mind.

**Question of consumerism. What do I really need?
What now?**

- I rent a room again in the East of Amsterdam.
- I am still finding other ways of reducing my ecological impact and trying to abstain from too-capitalist thinking.

LEVELS OF AUTONOMY by Hackers & Designers

Hackers & Designers aims to create opportunities to collectively investigate the technologies in and around the self-driving car. In addition to the actual making of a self-driving car in workshops, we discuss and investigate ethical and philosophical questions that derive from our reliance on technology today.



We use the five levels of autonomy, as defined by the SAE Automated Vehicle Classification, to work towards a better understanding of the practicalities of conceptualizing and building a self-driving vehicle. The SAE classification system indicates the required amount of driver intervention and attentiveness and serves as a discursive and communication thread while we build DIY self-driving vehicles.

Spearheaded by member Heerko van de Kooij, H&D makes the workshops in collaboration with Waag Society.

So far, we turned toy cars into self-driving vehicles in the theatrical setting of the Frascati Theatre (<https://www.frascattitheater.nl/Self-driving-toy-car>), during which we encountered performative potentials and ethical dilemmas. We also workshopped in the artistic context of Today's Art 2017 (<http://todaysart.nl/2017/program/make-your-own-self-driving-car-with-hackers-designers/> Today's Art). As well, we critically examined future physical and digital infrastructure with the employers of Rijkswaterstaat (the Dutch government agency responsible for infrastructural developments in the Netherlands such as transport, public works and water Management).

While it is hard to grasp and predict how technological acceleration will influence the way we live together, the self-driving car is one element of technological advancement that will drastically change our urban landscapes. In our workshops, we create hypothetical roadmaps of how these rolling robots may inhabit, drive, and influence the urban environment. Despite speculations, it is difficult to imagine how the wide-ranging challenges around the question of implementing the self-driving car may be solved. H&D attempts to point at, discuss, and understand issues that may arise. We aim to do so in a public and inclusive manner by opening up the conversation with diverse stakeholders in the development of autonomous vehicles.

First, let's review the 5 levels of Autonomy that are listed on the Autonomous Car Wikipedia page:

- Level 0: The Automated System has no vehicle control but may issue warnings.
- Level 1: The Driver must be ready to take control at any time. The Automated System may include features such as Adaptive Cruise Control (ACC), Parking Assistance with automated steering, and Lane Keeping Assistance (LKA) Type II. These features may be in any combination.

- Level 2: The Driver is obliged to detect objects and events and respond if the Automated System fails to properly respond. The Automated System executes accelerating, braking, and steering. The Automated System can deactivate immediately upon takeover by the Driver.
- Level 3: Within known and limited environments (such as freeways), the Driver can safely turn their attention away from driving tasks but must still be prepared to take control when needed.
- Level 4: The Automated System can control the vehicle in all but a few environments, such as severe weather. The Driver may enable the Automated System only when it is safe. When enabled, the Driver's attention is not required.
- Level 5: Other than setting the destination and starting the system, no human intervention is required. The Automated System can drive to any location where it is legal to drive and make its own decision.¹

When talking about self-driving cars, the conversation easily shifts to the moral and ethical decisions because cars will have to make them. MIT addresses a range of moral decisions for autonomous cars on its platform *Moral Machine*.

A common example is one that Australian roboticist Rodney Brooks brings up in his blog post *Unexpected Consequences of Self-Driving Cars*:

When the brakes suddenly fail should the car swerve to miss a bunch of babies in strollers and instead hit a gaggle of little old ladies? Which group should the car decide to kill and which to save, and who is responsible for writing the code that makes these life and death decisions?²

Such moral dilemmas are disturbing as there are no easy answers. If we humans are unable to make a consensus to such questions, how can we expect ourselves to implement a legal standard for how cars should harm babies or old ladies?³

Infrastructural change also becomes an issue when thinking of a self-driving future. Let's imagine that at some point we all shift to electric cars. We will all need chargers in front of our houses. Then, after only a few years, we may have fully automated cars that can charge on their own. The previous infrastructure becomes redundant and must be dealt with.

Workshop participants have included students, makers, artists, people from Rijkswaterstaat, and other government employers who are privately interested in this subject or who wanted to get into

electronics and building things. The workshops and hack events bring up contrasting opinions that demonstrate the range of perspectives around the topic and the necessity of pushing the discussion further.

The fact the discussion is happening on a governmental level is very important. It is even more important that people like us (i.e., citizens) also take part in the conversation, voice our opinions, and give feedback to be able to influence the research, which is mostly based on information from government reports and from the industry. Hacking toy cars is a first step into reflection and engaging with the topic. While offering a DIY and hands-on approach to critical exploration, we aim to offer access and possibilities to participation rather than awaiting and undergoing. By only proposing a few lines of simple code you get an idea of how a machine perceives the world, which is much more abstract than the way humans look at the world.⁴

Workshops start with each participant getting a toy car in a box, popping them open, and cutting the wires. We take the car apart enough to add our own parts. There are a lot of interesting things to discover when you have never done something like that before. Real hacking!

The initial code is very simple: the car's sensor can see shades of grey. When the sensor measures a value that is too dark, it reads that it is too far off to one side and the car corrects itself. The car does the reverse process of correction when it measures a value that is too light. It swerves!⁵

Some people find the premise of being able to implement their own code into a self-driving car to be dangerous and unsafe. The level of access could, however, become a very important game changer. As we are sharing an environment with such cars, shouldn't we have some level of control of what goes inside of them? If commercial parties continue to control implementations of self-driving cars, we will be surrendering to the profit motives of capitalist power. This is not only problematic in terms of ethics and morality, but also short-sites the potential of technologies. Big data companies are getting even more powerful, which is starting to become (really) scary. We – as citizens – need to find ways to keep technologies in our hands.

Some scenarios articulate dangers of self-driving cars by imagining the possibilities of cyber attacks. It would be quite terrifying if car users cannot access their car's code because Facebook or Google wrote it. Users should be able to inspect the technology they use, find bugs, and develop solutions that better their

use. If Google owns the software of all the cars in the world, we have no way to know if it's safe or not, if it can be hacked or not, if its enacting decisions that reflect the beliefs of those using it - not just decisions that maximize profits and further the global oligarchical stronghold of data.⁶

The stake of the tech industry in self-driving cars is crucial to address. Users of the product are not central, the stockholders are. We have seen some very negative side effects in the development of the tech industry due to this prioritization. As mentioned in John Naughton's recent article in The Guardian *How a half-educated tech elite delivered us into chaos*, Facebook or Twitter built advertising engines without considering or caring about its possible misuse, such as pushing ideologically-charged content to targeted potential voters.⁷

While these new technologies are black boxes, one can only guess what is going on inside and whether it is in the interest of the public. It is urgent to develop an understanding of what is going on inside these black boxes before they start driving around.

In our workshops, we use four tables with axes to explore different structures for technological development and self-driving cars. Participants place post-it notes on the tables based on their opinions: should the software be open source or owned by a company? Should software be structured by the government? Should the car be smart enough to drive by itself?

At the end of a workshop, we take a closer look at those tables and start a discussion. Surprisingly, there are very different ideas and this is productive for getting to the real issues at hand. The workshop at Rijkswaterstaat, for instance, was an excellent opportunity to pose critical questions at actual stakeholders. The general consensus ended up being that either the government or Rijkswaterstaat should be in control over the code for self-driving cars.

Maker and hacker communities often think that these processes of developing technology should be open source and self-organized. At this particular workshop, the demand was for a set of rules to develop from existing norms, regulations, and some international organization, which should then be implemented by individual governments on a national level. A very strict approach.

1 Autonomous Car. (2018). En.wikipedia.org.
https://en.wikipedia.org/wiki/Autonomous_car

2 Brooks, R. (2017). Unexpected Consequences of Self-Driving Cars. <https://rodneybrooks.com/unexpected-consequences-of-self-driving-cars/>

3 For an interesting project to explore all the ethical issues around the self-driving car see:
<http://mchrbn.net/ethical-autonomous-vehicles>

4 Seeing the world as a self-driving car:
<https://www.fastcodesign.com/90146855/what-its-like-to-see-the-world-as-a-self-driving-car>

5 Another take on hacking self-driving cars:
https://www.vice.com/en_us/article/ywwba5/meet-the-artist-using-ritual-magic-to-trap-self-driving-cars

6 An interesting speculative short story depicts some important questions raised on this aspect here:
<http://this.deakin.edu.au/lifestyle/car-wars>

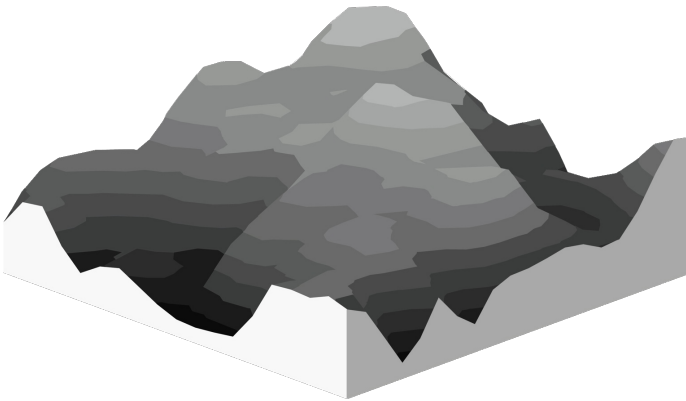
7 Naughton, J. (2018). How a half-educated tech elite delivered us into evil.
<https://www.theguardian.com/commentisfree/2017/nov/19/how-tech-leaders-delivered-us-into-evil-john-naughton>

Autonomous Creativity for Autonomous Energy for Autonomous Future

BY Yin
Aïwen &
P R I
team

In 2017, Strelka Institute in Moscow started a new educational program called The New Normal. They gathered 30 creative practitioners from different fields to produce speculative urban projects that may or may not happen in 30 years. The program is directed by Benjamin Bratton, American design theorist and author of *The Stack: On Software and Sovereignty*. In the book, Bratton introduces both the

concept and design of The Stack, an accidental planetary-scale infrastructure, which illustrates the post-human society in which we are already live. The new normal is not made for us, but will reveal itself to us. Fortunately, as the currently dominant species on earth, humans still have the agency to effect this human and inhuman mega-system. The program at Strelka is about taking into account the changes that have happened, even if accidental, and giving purposeful shape to what changes we would like to develop in the future.



Phi was conceived in this context. Phi is speculated as an AI-facilitated clean energy platform for energy transaction and co-op management for microgrid communities. It has a crypto-token reward system that takes the social advantage of blockchain to incentivize users' contribution for the robustness of the microgrid community. Phi placed itself in a utopian future of Russia. In this future Russia, the regulation and centralization of energy are less severe and there is more possibility for an autonomous energy practice.

From a design perspective, blockchain provides a social structure that is made possible by technology yet also shows that currency is inherently social. Phi built on this design and imaged a token system that incentivized energy communities. Negawatts rewards communities that save energy and seed-rating honors

the strength of a prosumer node. The worth of the token ties to the performance of the community. Hence, everyone in the community is motivated to save energy, design an efficient grid, and make sustainable production.

There are practical reasons for Russia to consider this proposal. Currently, many remote off-grid communities in Russia generate their electricity with imported fossil fuels that are expensive, unreliable, and harmful to the environment. While these areas supply the majority of Russia's natural resources, the people in the far-north struggle with extremely low average temperatures and spend up 50% of their income on energy.

Phi proposes to put power in the hands of people in order to make communities more resilient and self-sufficient. It propels communities from having no cohesive system for dealing with electricity to possessing the tools and knowledge to share energy, accelerate new alternative energy sources, take control of their own development, and improve their living conditions.

Coming from a fully-funded experimental think tank, Phi didn't start off with a minimum-viable-product or a business model like many startup projects will do. Phi was inceptioned from a grand imagination of an autonomous future that thrives on balance, as opposed to the current growth-oriented model. It is our ideal vision for the near future, scripted in a series of UI mockups.

This vision is made of up by a series of interconnected, non-linear modules: an omniscient chatbot assistance, a map-based microgrid management tool, an energy transaction application, a group working environment, a community voting procedure, and a crypto-token reward system. By combining different modules, we are able to make up many versions and narratives of Phi that may travel

to different contexts and tap into various actors in the current market. Hopefully, our ideal future will be injected into the ever-changing body of society.

In a way, how the project structured itself reflects the autonomous future of which we are dreaming. An autonomous and resilient life requires an infrastructure designed to make disputes, flexibilities, and disconnections inclusive.

Yin Aiwen is an Amsterdam-based designer and filmmaker and has curated under the name of Monolithm two film programs as part of the 2017 activities of H&D,

Film & Design Nights #4 Interfacial Creeps:

<http://monolithm.space/post/169262571885/filmdesign-nights-4-interfacial-creeps-hd>

Film & Design Nights #5 (H&D edition) 3DPD:

<http://monolithm.space/post/169262683015/filmdesign-nights-5-hd-edition-3dpd>

Phi team is comprised of Calum Bowden, Cory Levinson, Aliaksandra Smirnova, Artem Stepanov, and Yin Aiwen. More information about Phi can be found here: <http://phi.is>

Social Signals and Blurred Backgrounds

Review of Sjef van Gaalen's
Camouflage Creation Workshop
04/09/2017, De Punt Amsterdam
by Karina Zavidova

During the Camouflage Creation workshop, designer and researcher Sjef van Gaalen presented his recent project, The National Algorithm. The project researches the history of camouflage patterns and its modern use and leads to a visual outcome in the form of a pattern meant for a particular situation. Sjef's camouflage pattern ironically reflects on the tradition of wearing orange during King's Day in the Netherlands. This research studies belongingness by exploring the balance between the desire to blend in and the need to stand out.

Historical Reference and Modern Day's Use of Camouflage

Sjef started his presentation by going through a few historical references to explain the development of camouflage patterns. Camouflage patterns were first used only in practical ways but then quickly became signifiers by being used to describe the identity of the wearer.

An interesting twist in the history of camouflage happened in the 90s, when hip hop artists started wearing camo patterns. They used camouflage as a representation of masculine or revolutionary ideals - not in order to hide, but to show off. The aesthetics of camouflage didn't only manifest itself among civilians during this time, though. With the arrival of digital imaging software in modern warfare, new possibilities of camouflage creation were widely explored and patterns evolved aesthetically in the uniform of tech units and advanced cyber capabilities.



U.S. Air Force photo by Raymond McCoy,
<http://www.af.mil/News/Article-Display/Article/112733/cadets-study-art-of-cyber-warfare/>

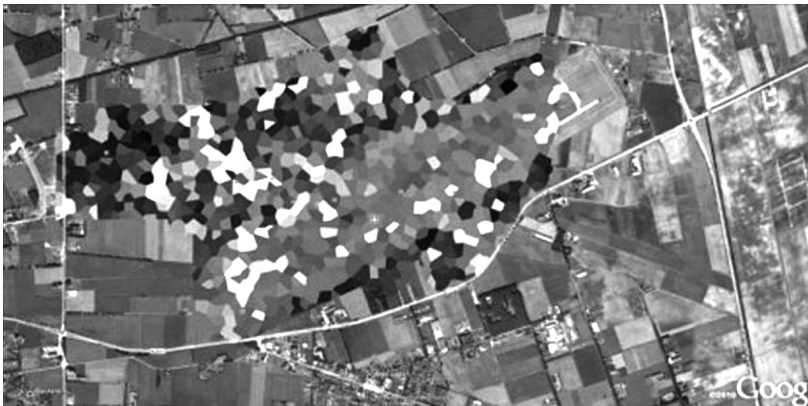
One example is called pixel camouflage. Sjef elaborated and questioned if the pixel camouflage stands out as a symbol of a more effective military.

Meanwhile, the role of camouflage in fashion and advertising grew to represent a tough lifestyle.

From Research to Practical Application

In the second part of the workshop, Sjef explained the process and thoughts behind his camouflage pattern. When the Dutch military revealed its new camouflage pattern Landmacht 2.0, Sjef became interested in the process of how this pattern was made and the identity behind it.

If looking closely, it appears similar to the pixelated secret sites on Google Earth. Is this a new visual identity produced by military forces and secret services? Why was this particular method of image manipulation chosen to design a pattern?



Google Google Satellite imagery of Volkel Air Base, The Netherlands, <http://whatculture.com/technology/10-unbelievable-secret-places-google-earth-doesnt-want-see?page=2>

This intentional glitch hides a dark secret that former Dutch Prime Minister Ruud Lubbers confirmed last summer: there are 22 U.S. nuclear bombs stored in the bunkers of this airbase: B61 thermonuclear bombs, the primary weapon in America's post-Cold War "Enduring Stockpile," and a worrying device four times as powerful as the bombs used on Hiroshima and Nagasaki in 1945. Wikileaks published a diplomatic cable that confirmed the presence of nuclear warheads at this base in 2010, but it had

never been officially confirmed until the former prime minister let the military secret slip. He told a National Geographic program “I would never have thought those silly things would still be there in 2013. I think they are an absolutely pointless part of a tradition in military thinking.”

Looking further into the subject, Sjef used the pattern generation method that is described in the paper Design & Evaluation of urban camouflage by Hogervorst & Toet. This pattern method was also the one used in the creation of the new Dutch military camouflage pattern, NFP (Netherlands Fractal Pattern).

This method consists of deriving a pattern based on the collage of the environment into which the soldier needs to blend. Reflecting on the method, Sjef designed an orange camouflage as an exploration into the idea of Dutchness and what it means to look like an authentic Dutch person.

Creating Your Own Camouflage

During the practical part of the workshop, participants created their own camouflage pattern. Each participant told the background story behind the pattern and shared their social situation when they feel like a camo suit would help. These situations ranged from adventurous scenarios, like blending into a data center to reclaim their data, to practical social avoidance scenarios, like being able to go to a grocery store or being present at your own exhibition without having to interact with anyone. As well, one participant made a camo suit from data collected about skin tone diversity in dating app profiles.

Unlike the hip hop stars in the 90s who used camouflage to project an image of toughness, workshop participants mostly explored the situations of social awkwardness and the temporary and location-based desire not to be seen. Reacting to being visible in physical and digital spaces, participants started by defining the environment into which they wanted to blend and then moved onto the pattern creation, applying instructions to the ‘landscape’ – be it a set of skin tones, a gallery space, or a data center.

The video about the patterns created during the workshop may be found here: <https://www.youtube.com/watch?v=kcZy0hOI0KQ&feature=youtu.be>

Media Choreo graphy

Interview with Joana Chicau
by Anja Groten

Anja: Thank you so much Joana for joining this conversation. Could you introduce yourself and your practice?

Joana: My name is Joana Chicau, I'm a media designer. I've been doing a lot of work with web coding and programming web environments. In parallel, I run a project that investigates different choreographic genres. I try to combine these two worlds and see how one can inform the other, to see how they can be complementary.

I started merging the languages of choreography and coding in live coding performances during my master's studies at Piet Zwart Institute in Rotterdam from 2014-2016. These performances continue now still, but there have been other things that I've become interested in doing. Not just me on stage, but thinking about how choreography and coding together can serve other purposes, other people, other practices, and other forms of discussions. That's how the workshops eventually began and how you and I met in Amsterdam, Anja, with Klasien and the Why Not during first The Body X. The Body X < > at Lava Lab in June.

Anja: What do you mean when you say choreography? You talk about it in different ways. I read somewhere that you thought about it as claiming back the choreography of interfaces.

Joana: My point of departure is choreography in the sense of writing movement and understanding the movement of the body. But, of course, that also gets appropriated to different kinds of contexts. Especially now, as people question what physicality and owning the body means. Eventually, the definition of choreography becomes less strict to the dance world and to the physical world as well.

Anja: You're talking about merging disciplines but also spaces: the browser and your physical body. What is the role of chance or events in these situations?

Joana: Even though I write my own scripts – and there's a lot I write beforehand – it's actually being built while I'm investigating a specific choreographic genre. For example, post-modern dance was the first that I dove into. In that moment, I started to understand the choreographic language and I started to merge that with web coding. This mixture created this sort of

double syntax, where we have very simple web actions that are actually influenced by choreographic discourse. This can be in the layer of meaning and in the layer of methodology. Really understanding the kind of parameters I want to use. It can be more theoretical or more pragmatic. Questions start to rise too, like what it means to relate to web environments. How much of these structures can be fixed and how much of these structures are responses to very extemporary circumstances.

I work a lot with improvisation. It's an interest I have had for a long time in dance performance and it is also something that I use during live coding. I'm not improvising 100%, but because I'm working in existing online platforms such as the Google Search engine, there are a lot of improvisational skills required. I can't rely on Google's structure because it changes, so there is always a sense of contingency and unpredictability that is present everytime I perform a piece.

After I've been working with these languages for a while and get comfortable with them, though, it becomes the challenge to engage in a different path. I don't have a very linear sequence of actions. Something can lead to something completely different, so the audience never sees the exact same piece again.

Anja: How does it make you feel? Do you have a background in improvisation specifically?

Joana: I have a background in classical ballet and in contemporary dance. Improvisation is quite common in both. Contact improvisation is something that I often do in workshops to think of ways of improvising, or using chance operations, for instance, in a group exercise. I parallel this with using randomness when I live code.

If you set certain functions to be random then you're allowing the algorithm to choose for you within a set of parameters. Not everything is random, but you're allowing certain aspects of the performance to act randomly.

Anja: I've seen the possibility of failure in your performances before. When I see an error in my own work, I usually panic. But, is that kind of contingency still in the realm of what you can control and deal with? Or, do you also sometimes deal with trying to fix bugs? Is this a thrill for you?

Joana: There are two things. One has to do with agency. If I set certain actions be random, then that is me acknowledging this randomness and it is the intentional base for a section of the performance. There are other moments, though, in which things can happen, like how you're saying: an error occurs, something fails. Many things that are not under my control or power can happen, and this is either because Google's interface changed a tag or something in the code, or because the internet fails or something crashes in my computer.

That interferes a lot with how the audience experiences the performance, and it contrasts with how a show is typically delivered: neat and smooth, with no errors. The risk and the exposure of these contingencies are what I find quite powerful about performing live code. It is my decision that I am connected to the wifi and that I am using a web browser and Google as my stage. It's still within my agency and I've chosen for this agency to be shared.

In this sharedness, there is a moment where we can see the idea of failure. In terms of web development, we always talk about bugs and solving issues, but for

the users it doesn't always seem obvious. Even in terms of workflow and efficiency, it's interesting when technology is actually playing against you or when things don't flow in the same fast instant rhythm that we are used to. We can actually understand that it is a tool that is being developed.

Both coding practices and the web environments are not static and they are not perfect. They are dynamic and it is actually in our hands to take part and contribute to its evolution and mutability.

Anja: You talk a lot about interfaces when discussing your work. We are constantly surrounded by interfaces, scrolling, swiping, clicking, tagging. Even more so with the body and the interface, there is a new development of (e)motion tracking. By making use of our bodies as devices, are these interfaces starting to control us? Can your work be read as a critical commentary or an alternative proposal to this kind of phenomena happening in this interface society?

Joana: It's funny you say that because I use computer vision in my last piece. The body becomes even more active. It's not just about typing – there are other forms of embodiment that interfere with the web and the environment. I would like to explore even more of that.

In terms of corporeality, it matters how we face these machines. How do our relations become more or less controlled and controllable, more or less choreographed and choreograph-able?

I understand that the lines are blurred between what it means to use an interface and the concept of interfacing. When I say the concept of interfacing, I mean how we engage with information and the systems behind it. The devices at stake go beyond the visual sphere to a myriad of other possible interactions. In the

sphere to a myriad of other possible interactions. In the end, though, the most powerful structures remain. Our experience of the most common devices and interfaces don't necessarily show the complex layers of the interests involved in the making of such systems.

Each time I perform, I'm not really thinking of doing something aesthetically pleasing. I'm more interested in the risks, in the ritual of performing these kind of little

challenges - of having to embed a code in an interface that has many layers to unveil. That's why sometimes my performances can be a bit tiresome for the audience.

Anja: What role does the audience play in your work?

Joana: The spectators are mainly witnesses or observers, not very active in the process. So far I like the tension of something that we are so accustomed to using turning into a spectacle - like a search tool, translation app, maps app.

All these things that they always rely on, on tool usability, and then suddenly the tools become the center of a performance piece and it's about performing the tools instead. I like the tensions that arise from enacting the code in the tools and creating a different kind of narrative around them. It feels like pushing the people back from the technology, taking a step back.

In the future I hope to develop different modes of engaging with the audience, and maybe the workshop formats have been a way to both share my methodology and involve people in the process. But, so far in the performance format, I like the fact that you can't really engage with these tools in the performance setting as in their normal everyday use.

Anja: You move in between coding, design, dance; between sensations and knowledges. Do you feel like an expert on some levels, or an amateur on all levels? How do you deal with being part of multiple fields?

Joana: I really feel the two things, web coding and movement. I feel like I'm doing something focused - looking at choreography, which is such a technical language from this more methodological sense, and then looking at web coding, which uses object-oriented programming JavaScript.

If I zoom out, though, it feels like I'm touching every aspect of human living because it's about the internet and how we are related and how we behave with these network systems and how all our interests eventually collapse.

So, I know very particular things, but at the same time I'm dealing with broad ideas. Of course, I'm not skilled at everything, which is also exciting. I can start conversation with people from various interests and fields and there's some kind of common knowledge that ties us together.

Anja: Is there a clear distinction for you when the demonstration ends and the performance starts?

Joana: In a performance, I feel different in my body and mindset. There's something that switches in how you have to behave as a performer. Demonstrations are usually smaller, and the way I talk about things may get wider or I may interrupt. They are two distinct formats.

Anja: Where do you find your ideas for browser hacks in opposition to dance moves? When do you get ideas? When does it become a move and when does it become a hack?

Joana: I don't feel that there's a pattern. I read a lot about how people have moved throughout history. I read about various choreographic perspectives. I take classes and I talk with choreographers. Eventually, there's always a moment in which something shines in my head and I really need to explore that concept and then I go to the browser and I see what that can mean in the web context.

It can also be that I find a coding concept that resonates with something within the choreographic field and then it goes the other way, from code to choreography. It is very much about exploring and letting yourself be influenced by these languages and ways of seeing the world.

Anja: You invest in free and open source software and in your choreographic work you use your own body. Is there a link to using what is available? What is the idea of using your own body?

Joana: It all started very experimental. What I had available was me in front of the computer so it became very much a solo experiment. I first tried something beyond this at the Choreographic Coding Lab, which happened during Fiber last spring at the IOK Amsterdam. A group of dancers were present and we did an interesting experiment. This was possible because they had a rich and shared choreographic vocabulary and we decided to use some of my scripts in order to generate different associations for their shared vocabulary. Suddenly, there were all these dancers on stage responding to what they were looking at in the projection.

It was intriguing, but it was a particular match because they had a focussed vocabulary that I could embed in my system. I didn't feel like I was imposing something on them.

The fact that I'm interested in free and open source programming tools also means that people are invited to experiment with my coding system, in terms of embodiment and practice.

Anja: Do you consider yourself a critical designer or maker? Do you think that critical design or making is possible using proprietary technology, namely softwares? Do you rely on tools that you don't have a lot of control over and that may govern your aesthetics?

Joana: I've been trying to only use FLOSS tools, even for commission work. The latest I did was a visual identity for an event at V2_ Lab for the Unstable Media in Rotterdam. I used Inkscape and ImageMagick, for most digital material was fine, but for print it is more challenging. There are many compatibility issues when exporting the files and how those are read in different printers. In these matters, FLOSS feels harder than using Adobe.

Designers can be critical in various ways. It can be in terms of tool sets they use or which clients they will or will not work with based on ethics, or because they decide to research contemporary topics. Everyone has their own focus.

It's not easy to be critical in multiple ways in one's practice - using FLOSS, having a client aligned with one's value system, engaging only with research projects dealing with contemporary issues. This holistic approach is hard to find and hard to practice.

I don't know if you have seen the pop up exhibition produced by Mozilla and curated by the Berlin-based NGO Tactical Tech in London last December. It was called The Glass Room and they had these case studies

called The Glass Room and they had these case studies of different technologies and corporations. One case study were the Oyster cards, the cards you use for the subway in London. If you trace back and see who owns that company, it goes back to a war-related corporation - Cubic Corporation. The data from one of the city's most important public transportation is going to a corporation tied to warfare. It's so hard to imagine or even hard to trace back if you don't specifically pursue this information. This was just an example to show that even when you try your best to be ethical, or follow our own values, we will always miss things.

I try to be coherent at every level. It's a learning process and it's about finding forces together with other people. Slowly building a community of people that is interested in FLOSS, starting to map the movement, understanding where we are in the world and making the effort to meet at a few events throughout the year. This is the best to manage, otherwise it just feels like a fight against the waves.

Anja: What's next?

Joana: I started doing a series live coding events where we openly discuss gender issues and inclusion in reference to coding and open technologies. It's about accessibility and a world that tries to not only respond to the commercial needs and commissions, but also how we can find alternative ways of expressing the use of these tools.

ENDING HUNGER WITH FARMING BOTS

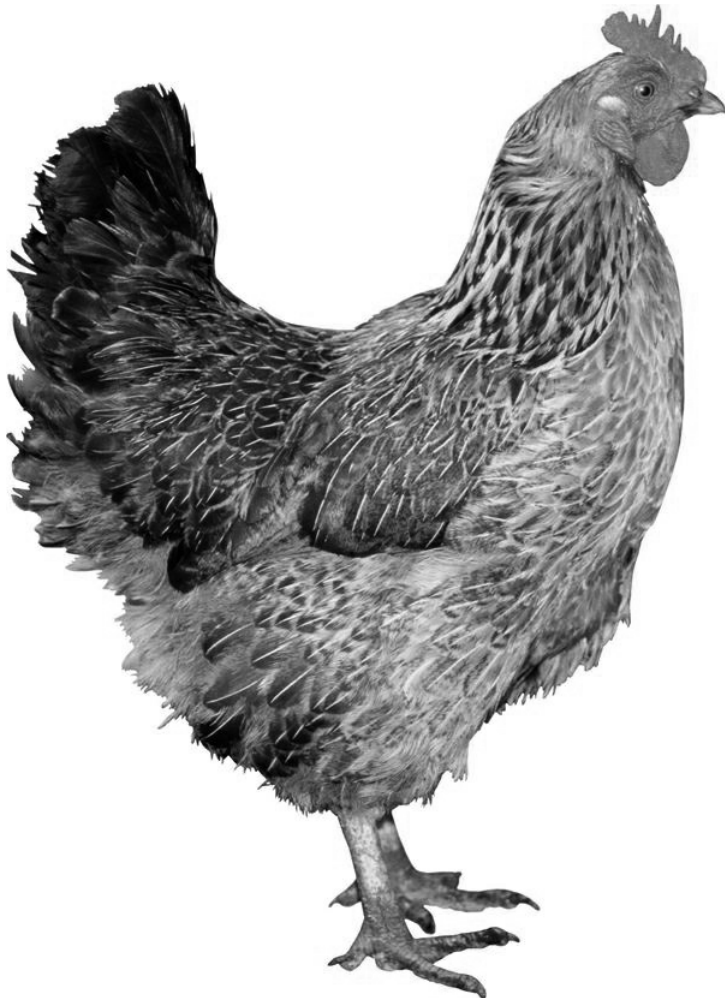
**Interview
with Bongani
Ricky
Masuku by
Anja Groten**

Bongani Ricky Masuku is a Zimbabwean inventor and runs Rera Digital, a start-up that provides automated feeding systems for small- to medium-scale chicken farms in Victoria Falls, Zimbabwe. Bongani was invited as a workshop leader of the Hackers X Designers Summer Academy 2017. His visa request was rejected twice without reason. He was not allowed to travel to the Netherlands and therefore could not lead the workshop. Bongani did, however, participate in the exhibition at Mediamatic. In discussion about Rera Digital, he shared the intricacies of scale and location of being on and off the grid.

We asked Bongani to expand upon his background, project, and hopes for its development.

Bongani: I'm the founder of Rera Digital, where we aim to ease the burden of feeding chickens and offer better tracking and monitoring of feeding activity with an integrated mobile app.

Feeding costs contribute to approximately 60-70% of the overall production of cost-per-chicken raised. Farmers tend to spend a lot of time on frequent fowl run visits in order to inspect the chickens and check on stock feed levels. This is due to the varying appetites of chickens, which are determined by age, number of chickens around them, and weather conditions. During batch progress, the farmer refills a 200kg stock feed storage unit.



A feeding robot is programmed at an hourly interval to automatically collect stock feed from the feed outlet point. It refills the empty feeding troughs hung underneath the feeding runway. When using the smart chicken feeder, the farmer simply inputs data regarding the number chickens and their ages, from which it then computes the daily stock feed limit to be distributed to the chickens. When the daily stock feed limit is reached, the feeding

bot goes into sleep mode and resumes the following day. The daily stock feed limits itself by working in increments according to the age of the chickens. This saves the farmer 2 x 50kg of stock feed per batch of 100 chickens.

The smart chicken feeder is ideal for farmers who can't afford the expensive feeding equipment on the market. They usually have to rely on manual feeding when rearing 50 to 10,000 chickens. Lack of feeding control makes the production per chicken expensive and results in low sales for the farmer.

The smart chicken feeder is powered using a 100 watt solar panel. It is built with a battery stand with a duration of up to three days. This means that the farmer doesn't have to worry about electricity costs, unlike the existing chicken feeding systems on the market.

I started Rera Digital in 2013 during my second year of college. I came up with the concept to help farmers and to maximize their production while working on an assignment to make a community project. I got help with presenting my first prototype and showed it in a congress that is held every two years. I was only a second year student and I was presenting to master students and PhD students - it was a great opportunity. I was happy to take it to the next level and make it into a start-up. It moved from being just academic research to being a tangible business. We are still at the first prototype of the machine and the system, but we should be done by July 2018. We're a team of five people. Some of us do the financial analysis, some work on the code, and some work on the machine.

Currently, we are not funded. There are no institutes here that would fund such a project, so what we do are crowdfunding campaigns. We try to raise money to buy our components and to push the start-up forward to launch. 60% of the material we use is locally-sourced. It's a way of cutting down costs. We recycle material, especially metal. We buy sensors and electronic components from China because it is the cheapest.

The chicken feeder is the core of the project but there are other applications in the agriculture context. What we want to try to do is a blockchain of small-scale farming. There's also the Roko project, which is based on water pumping. It's a solar powered mechanism that automates access to underground water. In Africa, handpumps are the conventional means of accessing underground water for small-scale farms - the irrigation of lands and the water of live stock depends on them.

Roko is designed to produce a linear movement to hand pumps integrated with a solar panel unit. It uses solar energy for powering the pumping mechanism up to four hours. You can schedule the irrigation through a small computer box. The total amount of underground water in Africa is ten times more than the surface water. With the help of Roko, easy access to clean water for rural areas can be implemented for improving sanitation and farming activities.



The vision is that anyone could become a farmer in an efficient way with these tools. If you look at the conditions now for this type of farming, it's quite difficult for someone like you and me to spare the time to do it. The motivation behind the concept of the workshop was what if we could create a farming experience that can do the farming for us.

To me it's liberating. Liberating in knowing that you have your own security in your immediate production, but also because there's an issue with money here. If you put your money in the bank it's often corrupted, so people want to invest in their land and in farming. If it can become more efficient it's good. I believe that we can really make a difference.

Our prototypes also show that this difference is not so consistent. For example, not all of our resources and tools that make resources function in a way that is useful are local, and may have questionable ethics - like, ordering pieces from China. But, this is a part of hacking for me.

I take hacking from a visionary perspective where you break down and rebuild and try to come up with something totally different, unpredicted, but functional. HXD were actually the first ones to call me a hacker, maybe because of the reuse of materials. I would say that I'm more than that.

I grew up in one of the crappiest societies so inventing things took me away from that world and absorbed me to another one where I could do something good and positive. There isn't some consistent ethical approach to doing something good and positive. Maybe this is something that can help grow the idea of hacking. That material conditions, the conditions of life, require you to carve out what your priority is - you must focus on one impact. Realizing that there are limits to what you can do and being content with that decision.

Find more about Rera Digital here:

<https://www.youtube.com/watch?v=33SeEA4beIXt=30s>

Interview with Zack Denfeld, Emma Conley, and Connor Courtney from Center for Genomic Gastronomy (CGG) by Arif Kornweitz from Ja Ja Ja Nee Nee Nee- originally shared as a podcast "Center for Genomic Gastronomy & Oliver Barstow Summer Academy 2017" at: jajajaneeneenee.com

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Hackers & Designer invited Zack, Emma, and Connor to give a workshop called the Rare Endophyte Collectors Club at the 2017 H&D Summer Academy. The workshop's output was also displayed at the Summer Academy exhibition

Arif: To start off, Zack - can you tell us what "looking for endophytes is a new way of seeing" actually means?

Zack: Endophytes are the microorganisms that live inside of plants. It is only since the last decade that we actually understand things about these living microorganisms. So, to see plants like we see human bodies is a new way of seeing.

Now we understand that our human bodies have all these things that live on our skin. Plants also have microorganisms that live inside of them. It is really opening up our eyes to how complex biology is and seeing that we are really just one organism. We have all these smaller organisms that live on us and inside us, as do plants. As we look to nature and to different fields to try to isolate these bacterias and fungi in petri dishes, we are trying to see them for the first time and understanding the complexity of life!

Arif: How do you do that?

Zack: The technical aspects are really simple, which is why we brought them to On and Off the Grid. We don't need much at all. You can do this off the grid - you don't need to be in a science lab. You can be in a basic kitchen. In our case, we just took some agar, some potatoes, and some sugar and combined it all in a pot. Then we put the mixture in petri dishes and placed plant clippings with exposed edges on the growth medium. Then we let the bacteria and fungi grow out onto the petri dishes. After three or four days we saw the colonies of bacteria and fungi increasing in size.

Arif: Before we talk more about the practical side of it, Emma, maybe you can explain to me why we need to engage in this kind of DIY biology.

Emma: Because the participants are mostly designers and hackers, programmers or computer scientists, we asked them if this was a worthwhile practice to learn. They said that they may never use this exact methodology again, but, that they really liked that the workshop demystified the science for them. They could understand these basic ways of doing scientific experiments and processes that before seemed hidden.

I think that when we do DIY biology experiments it democratizes the sciences. People participating feel like they have the tools and knowledge for having a say in how these processes should go.

A lot of times in professional labs the work revolves around patents. We're dedicated to opening that up and questioning it. What can a creative commons for biology look like? If we are all participating in it, how do we share that knowledge together? That's why we think it's important to bring this kind of practice to groups like Hackers & Designers and also to the general public and young people who are starting to engage in the world of expertise. They can have the opportunity to play around and experiment with things that they may never be experts in. That's a very exciting practice that we should all do more of!



Arif: It really feels like there is a link between hacking DIY culture and bio experiments. I makes me think of this quote by Nicholas Negroponte, the founder of the MIT Media Lab, who says that “biotech is the new digital.”¹ What is your view on this idea? I don't think that these two fields are the same.

Zack: A lot of biology gets talked about as if it were code, but life is not code. A lot of the things that happened during the digital revolution, let's say in the last 40 years, are not going to happen on the same time scale. I think this is a mixed metaphor.

What Negroponte is probably right about is that he wants to apply a neoliberal agenda to emerging biotechnologies. And that might happen, because that's what the MIT Media Lab tends to do. It will be different, though, because biology slow and not linear. You can do some things in the lab, some molecular biology that can go fast, but the fantasies of working at the pace of the digital do not take into account the slowness of life and the fact that biology isn't binary. I don't really like Negroponte's metaphor. Computer hacking is also not the best comparison for biohacking either.

I'm looking for new metaphors. That's why it's important to share accessible knowledge, to hack biology for fun and pleasure and not just for profit. To do things based in places we are mostly familiar with and have access to, like the kitchen, where you can ferment and brew beer without an agenda.

We have participants imagining themselves as a biohobbyist like they are in a punk band. Compared to imagining yourself being on track to work at a big pharmaceutical company or founding the next .com start-up, this is a very different way of looking and acting.

Arif: So, the practice of engaging with biology is a way of slowing down...

Zack: Slowing down, but also learning that there's no such thing as a truly sterile or isolated environment. Labs are messy and we want to do biology out in the world. If we only do it in clean and sterile rooms there will probably be problems down the road. We aim to keep the borders between the lab and the world more open and more ready for unexpected messiness to enter back into the world.

By the end of the week, participants wanted to put things in the petri dishes (the potato and agar-medium for the organisms to eat and live on) that were not the things we originally thought they would. At first, we encouraged them to look at leaves and roots and pieces of plants. They found other kinds of organisms that they just stuck into the petri dishes, like mushrooms and lichen. We examined some interesting things that started to grow at the opening of the show. It was cool that participants so quickly started questioning on their own - "oh in this lichen, which is not quite a plant...are there endophytes?"

Arif: Emma, could you also give an example of what happened during the workshop?

Emma: The participants had been working together for a week when we first met them. It was more about us getting to know them and them getting to know us rather than them getting to know each other.

We broke up into groups and one group went directly to the kitchen and made the petri dishes for their plants to grow in. The other group discussed and made a

contract. The contract was a set of questions of whether or not they were willing to give up their rights to their microorganisms. They discussed if they would do anything with their microorganisms after those two days of workshop. Because 20% of the organisms in endophyte research are new, this group also thought about what to do if they found a new microorganism. They asked as well what we, as the workshop leaders, may do with the findings if they did not do anything with them. We discussed, argued, and debated over the ethics of this kind of practice.

People's personal thoughts and desires were a bit conflicted with questions about money and percentage of the profit. Most of them were just happy that there would be new information for anyone to use and that it could be licensed for free, but some wanted 175% of the profit!

Arif: You say new organisms grow and come into being. What does that actually mean?

Emma: They are not new, they already exist of course! Humans just don't know about them. That's why it's funny how we use this word *discovery*. We know that it's a problematic idea. Organisms are living things that existed without us being in control of them or knowing about them or using them. What is interesting about endophytes is that they have lots of applications, specifically in agriculture. The microorganisms that live inside of a plant will help that plant in various ways. Maybe it will help the plant take nutrients. It has been found that plants that grow in drought-tolerant areas often have very specific microorganisms that help them. It can very easily commercialized. Discoveries are exciting and dangerous things!



Zack: The synthesis of life is a huge focus right now in biotechnology research. Some people are trying to sequence DNA of microorganisms from fjords or deserts or all kinds of strange landscapes. In a way, we are replicating that process and bringing it to other venues. People in these other venues can do bio research more critically because they are not embedded in the professionalization of that world. Their job doesn't depend on discovering something.

We talked about patenting and profit and naming rights. Some people are like, "oh it's my baby, you've got to be careful with the naming!" and others are unconformable giving it a name at all. There's a deep history in science of giving Latin names. Now, though, Latin names make less sense. This is because we are moving from a recording information as a tree of life based on observable traits and phenotypes to a tree of life based on data and genotypes.

There are a lot of organisms that don't even have a name, they just have a number. I think this is kind of depressing. We don't want to give on random Latin name, so we give them a long list of numbers like someone in jail? How do we acknowledge that this is a thing that we need to name and do it the right way? That's a big decision for a lot of people!

Follow-up email conversation between H&D and Emma:

H&D: Can you explain a bit more about the way CGG is organized? You guys are spread over Europe. How do you manage to sustain collaboration?

Emma: CGG is definitely a decentralized studio. We currently live between multiple countries, have members in Ireland, Norway, Portugal, and the U.S., and work with collaborators from all over the world. Much of the work we do is interactive and participatory, so we are often travelling and working on a different project in a different country every month or two. This allows us to meet in person quite often despite living in different places. We also use a suite of online tools to manage the studio and communicate daily. These tools are used for everything, like basic planning and logistics, applications and proposals, and design and production.

H&D: Do you use any existing models or frameworks, like cooperative organization models?

Emma: We don't use any specific models to structure ourselves, but we do continuously tweak our modes of working to find a unique system that functions well for our needs and missions.

H&D: How much do you rely on technologies in the way you are organized? We rely very heavily on communication technologies, digital design programs, and collaboration technologies. They allow us to work remotely and still share and receive feedback and make new iterations quickly.

H&D: What are the biggest challenges of not being at the same place?

Emma: Occasionally, time zones differences are difficult. Other than that things move pretty smoothly until the fabrication stage. When working in 3-dimensions or with food, it can be difficult when we are not in the same location. To manage this, we do a lot of prototyping and prefabrication work and then spend a bit more time onsite to produce, cook, or build things together.

H&D: How do you find projects to work on?

Emma: We apply for lots of grants and opportunities (both for funding and to show/share work). We collaborate with lots of different people, so sometimes collaborators bring in new opportunities, and more often now institutions ask us to participate in exhibitions, festivals, workshops, etc.

H&D: You are an interdisciplinary and research-driven collective. Your work moves within a wide range of disciplines and fields of knowledge. Are you cautious about being a professional amateur? How do you deal with this position between disciplines?

Emma: We are very aware of our professional amateur positioning, but a lot of times it is an advantage rather than a disadvantage. It allows us to ask unusual questions, bring separate groups of professionals together, communicate with the public, and imagine new ways of being. At the same time, we do consider ourselves to be professionals in the arts, design, and culture. We do have an expertise. It just sits between other groups of professionals and touches on their work in different ways.

H&D: Are there people or organization you would never work with?

Emma: We only do projects that interests us in some way. We occasionally turn opportunities down, but only if the opportunity doesn't fit with our goals as a studio. Generally, the collaborating institution sees the nuances in our work and asks us to participate for a particular reason. Sometimes we work with unusual audiences or collaborators, but we always work with our mission in mind. And in fact, sometimes doing projects in strange contexts can help in imagining very new or different approaches.

H&D: A lot of your projects seem to develop fluidly, morphing into new projects and collaborations. How do you determine when a project is finished?

Emma: We consider most of our projects to be areas of research. In this way, the projects are never done. They can always grow and change formats and develop. Each installation, intervention, workshop, event, and performance is a way to share our ongoing creative research.

H&D: Could you tell what CGG has been focusing on since the Summer Academy? What explorations are coming for 2018?

Emma: We've further developed our *To Flavour Our Tears* concept here: <http://genomicgastronomy.com/work/2016-2/to-flavour-our-tears/> and we ran a new iteration of smog tasting here: <http://genomicgastronomy.com/work/2017-2/smog-tasting-take-out/>

A Circulation of Circuits

REVIEW OF
MARTIJN VAN
BOVEN
CIRCULATION OF
CIRCUITS
WORKSHOP
11/02/2011
PUNT AMSTERDAM
BY KARINA
ZAVIDOVA



Circulation of Circuits¹ is a research-driven initiative by Martijn van Boven, Noortje van Eekelen and Doeke Wartena, with the support of a cross-disciplinary international group of experts. The initiative aims to develop new perspectives on the current European financial system. Reflecting on the possibility to personalize and customize currency, the

group investigates the topic of money and its assigned value.

Using hardware to prototype a new digital currency, the workshop focused on the embedding of value into a physical object – the Raspberry Pi. The first part was dedicated to the idea of a smart contract and the current debates within this topic. The second part was more practical and concerned with developing different ways to upload and store value on the Raspberry Pi.

Assigning the Value through Digital Manipulation

During the first part of the workshop, Martijn van Boven introduced the initiative's research on the potentiality of European financial systems to centralize. As well, he explained the distance between the value assigned at the stock market and the value of a bank note for people to use. The latter form of value in customized currencies is interesting because

it does not relate to the physical properties of the signifying object. Similarly, a customized digital currency functions if users of the currency agree on the conditions of its circulation: this is called a smart contract.

Wikipedia defines smart contracts as

...computer protocols that facilitate, verify, or enforce the negotiation or performance of a contract, or that make a contractual clause unnecessary.

Smart contracts often emulate the logic of contractual clauses. Proponents of smart contracts claim that many kinds of contractual clauses may thus be made partially or fully self-executing, self-enforcing, or both. Smart contracts aim to provide security superior to traditional contract law and to reduce other transaction costs associated with contracting.²

Speaking about assigned value, the documentary *Scratch* covers the subjects of digging – that is, the searching for forgotten (de-valuated) vinyl to use in your own practice, giving it a new value.³

Another documentary *YAP (MICRONESIA)*, its incredible *STONE MONEY (RAI)*, *Pacific Ocean*, tells about different types of value in objects. Large, heavy, and stationary, these currency objects are the opposite of coins or banknotes.⁴

As an exercise in creating a smart contract, Martijn asked the participants to imagine a situation in which they give their smartphone to another person. He then asked what kind of conditions would they introduce.

The imaginary contract pinpoints the concerns of exchanging hardware containing personal content. First, there is the permission to view the content. The owner regulates which content and how much of it

may be seen by others. Second, there is the choice of the method to protect the content. Is a password enough? If so, how should a password be introduced?

In another discussion, some of the participants suggested that the content should only become available at a certain location or at a certain time in order to force the hardware-currency users to meet to finish the transactions.

Trust is another inescapable concern in exchanging digital files. Some workshop participants were willing to trust others to view everything on their device. This approach surfaces the question of how personal information and files on a smartphone may be used, rather than just viewed. Defining and limiting the ability to share files and use for impersonation of the device owner are critical concerns in a smart contract.

Assigning the Value through Hardware and its Physical Limitations

Following up on the discussion, the workshop participants implemented some of the discussed functionalities and limitations of Raspberry Pis.

One limitation was that the Pis only transmitted the content on pre-written conditions while the software defined the functionality of the hardware. Although the software could be re-written, the hardware

software could be re-written, the hardware carrying a contract had limitations that prevented it from being changed. For example, the encapsulation of the Pi in liquid rubber made it impossible to assign it a new functionality.

The act of encapsulating transforms hardware into a computational currency that is also an object. How does this kind of object, with the inconsistencies between hardware and software capabilities, differ from other varieties of money? What are the relationships between these materials and their organizing systems? Bank notes and stones, round and octagonal or shapes with holes in the middle...metal, clay, stone, paper, plastic, hardware? Each are physical objects carrying an assigned value. But, how might a currency system function if value is assigned to each piece of hardware separately by the owner without an issuing authority? The workshop led to an open discussion about how decentralised and hardware-based economies may be structured considering the issues raised in building the hardware-objects as potential currency.

Video about the workshop may be found here:
<https://www.youtube.com/watch?v=Z2zDziKJubQ&feature=youtu.be>

1 www.circulationofcircuits.net

2 Smart contract. (2018). En.wikipedia.org. https://en.wikipedia.org/wiki/Smart_contract

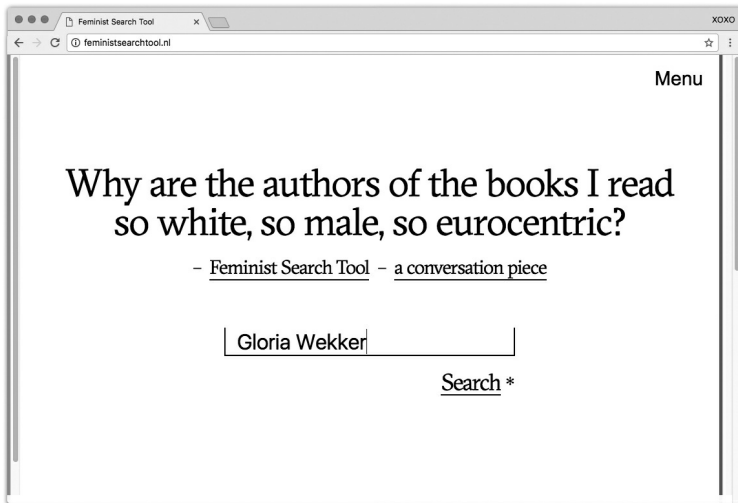
**3 This documentary may be viewed here:
[https://www.youtube.com/watch?
v=YEKRAn-ZleM&feature=youtu.be](https://www.youtube.com/watch?v=YEKRAn-ZleM&feature=youtu.be)**

**4 This video may be viewed here:
[https://www.youtube.com/watch?
v=PmO0g8jTxN8&feature=youtu.be](https://www.youtube.com/watch?v=PmO0g8jTxN8&feature=youtu.be)**

The Feminist Search Tool

by H&D and Read-in

In collaboration with Utrecht-based art & research collective Read-in Hackers & Designers developed a Feminist Search Tool feministsearchtool.nl – a digital interface that invites users to explore different ways of engaging with the records of the Utrecht University Library². The interface poses the question, "Why are the authors of the books I read so white, so male, and so Eurocentric?"



The tool has been developed in the context of the project *Unlearning My Library*. Bookshelf Research (www.zerofootprintcampus.nl/participants/read-in/), and functions as an awareness-raising tool. It stirs conversations about the inclusion and exclusion mechanisms that are inherent to our current Western knowledge economy. To this end, the Feminist Search Tool invites us all to reflect on our own search inquiries and how these searches may be directed by our own biases and omissions. More broadly, it raises the question about the different decisions taken that influence our searches. *Who is accountable for which parts of the search process? There are many actors involved: we – the users, the researcher, the library, the algorithm? How does this influence our search result?*

The Feminist Search Tool works with a search field, which we all can use to type in a search question. We then search within a selection of the records at the Utrecht University Library published from 2006 to 2016. The selection is made by Read-in and is based on a number of MARC21 fields, to which Read-in poses the question: "How many female non-Western authors and female authors of color are represented in the Catalogue of the Utrecht University Library?"³. The query considers elements like the language of publication, place of publication, type of publisher, etc. Through an interpretation of these fields, Read-in offers different kinds of filters for accessing the records of the Utrecht University Library.

The tool was launched on the occasion of Zero Footprint Campus.

1 All footnotes are written by Read-in for the website of the Feminist Search Tool.

2 Using the term Feminist Search Tool, it is important to shortly comment on our understanding of the term feminism, to provide a context in which to read the Feminist Search Tool. Our commitment to and understanding of feminism is an intersectional one.

3 MARC21 (abbreviation for Machine-Readable Cataloguing) is an international standard administered by the Library of Congress. It is a set of digital formats used to describe items that are catalogued.

The Making of Hackers & Designers website by André Fincato

Intro

This article shares the development of the H&D website and describes its new and expanded functionalities. It is addressed to readers already familiar with coding, as well as anyone interested in learning about using Mediawiki as an infrastructure, H&D's work process, and our approach to making and breaking things. The new website reflects the diversity of the H&D activities and proposes an online space for workshopping and a growing archive.

The H&D website runs on a Mediawiki installation. This is the same software on which the free online encyclopedia Wikipedia is built. Wiki websites function as both frontend and backend spaces. The frontend serves and present the content in a selective manner. The backend is used for storage, uploading, and editing. The wiki enables a variety of users to work and expand the wiki database while having simultaneous access to the same resources (e.g. reading through published articles).

Providing the wiki content through a frontend website allows users to easily and quickly access a large amount of information. This is in comparison to having to move through the wiki's idiosyncratic backend navigation architecture, which is more of a search tool than a navigation bar. Still, wiki's architecture is interesting and enables a rethinking of web design, dominant backend systems, and their imposed structures.

Hierarchy & Structure

I spent quite some time getting a sense of how this wiki had been shaped over the previous three years of its existence when I began to work on the new version of HXD website. Wikis often promote a flat hierarchy, such as linking and backlinking between pages. HXD's wiki makes use of that approach while ignoring all those red links that are automatically created when a page does not yet exist. Everything requires to be linked and needs to exist as a page. This process promotes a flat ontology for each piece of data.

HXD's wiki was missing a straightforward way of creating new content. As part of the explorative approach taken from the beginning, you can either make an event page or an article page. Both methods, however, require you to copy-paste particular syntaxes from previously created pages, which is very prone to causing errors. Nonetheless, Mediawiki offers 'forms' and 'templates' as a way to define the content structure of a page. This outlines what kind of information is required to create that page.

An immediate benefit of this is de-duplicating variants of the same tag or token is that you are adding to fill out a field (was it 'meetup' or 'Meetup' or 'meet-up'? Wonder no more). This is not just petty grammar. The wiki engine will otherwise turn that link to 'Meetup' red if it's not spelled correctly! The page is missing! And

then you make yet another page about 'Meetup' but spelled this time as 'meet-ups.'

Considering encyclopedic minds and needs, this all sounds banal. But, what if you are just defining and adding content while you go with it, as in HXD's wiki case?

Manually adding all the information necessary to create the article is cumbersome, especially when the content is being constantly modified. My solution was to introduce built-in fields, where the editor can select metadata such as dates, names of collaborators, and categories. That metadata gives articles a home and makes content creation more intuitive without being too pedantic. This is helpful, as HXD's wiki often does not follow the wiki mindset on how to layout and organize information.

After three years of usage, it was the perfect time to review HXD's wiki structure. There was enough content and trials to work with, making it possible to decide where to leave freedom and where improvements were needed.

Toolkit & Front-End

The frontend runs as a Python app. I never wrote Python before, but the language turned out to be part of HXD's practice, so I just went for it. I opted to avoid frameworks and forced myself to learn almost everything necessary to make a website from scratch. I started with CGI and then embraced Python's WSGI.

Concepts

One of the bigger challenges was how to create a proper navigation menu.

The wiki lies on a flat surface, linking articles between each other. While the wiki gives access to special

search and filter pages where you can look at all the pages with particular categories, templates, properties, etc., there is no way to fetch that view through json.

As I expected, Semantic Mediawiki has an option to create collections of pages with common metadata elements. For example, it gave the option to find and group together all pages within a date range AND with x, y, z properties but NOT with a, b, c properties.

This feature is called Concepts. It was the smartest way I found to let editors define site sections directly from the wiki. These sections would then be fetched as navigation links on the frontend. This avoided the need to set up hard-coded navigation items. As such, it keeps a fluid control of the content in the frontend from and through the wiki.

Tools

A tool that I used extensively for building the frontend was BeautifulSoup. At its core, BeautifulSoup is a web-scraper plugin. In the case of building the wiki, I exploited it as a fine-grain filter tool to clean up undesired html tags fetched by each json call. It worked magnificently, providing a very detailed level of control. This fine control made it much easier to add atomic css classes to all html tags, thus forming a template. Because Mediawiki outputs so much wrapping divs, though, I felt obliged to get rid of them from the final template. I still wonder why this happens. It could be a problem of historical heritage due to maintaining a big and old framework that's being modernised over time, or maybe Mediawiki developers just fell into the div wormhole and never got out.

Using Python instead of, say, Javascript, felt like a better choice for this project mostly because it helped me to dive into data structures. It was my first time

making a restful API app. Although json exists because of Javascript, Python feels conceptually more aligned when learning programming and working with datasets. As Python suggests, use try and see what happens (except) instead of assuming that some particular data might be in there by using if this exist (else...). It is a different mindset that I appreciated and learned to adopt over the three months of the project.

Some Thoughts on Working with the Wiki

Because of HXD's activities and structure, the wiki has a lot of potential in the workshopping context. When needed, a hundred new users can sign up and make use of the space to document, draft, write, and edit content, all at the same time and without a fuss.

The frontend, conversely, becomes an easier place to access and check for upcoming events, as well as for browsing through the wiki content in a focused and well-presented manner. The HXD website becomes both a workshop AND a library.

Repository

→ All the inner workings can be found on the github repo: <https://github.com/hackersanddesigners/had-py>

For those who want to learn more about wiki editing and mark-up, a wiki tutorial may be found here: https://hackersanddesigners.nl/s/Projects/p/Wiki_Tutorial

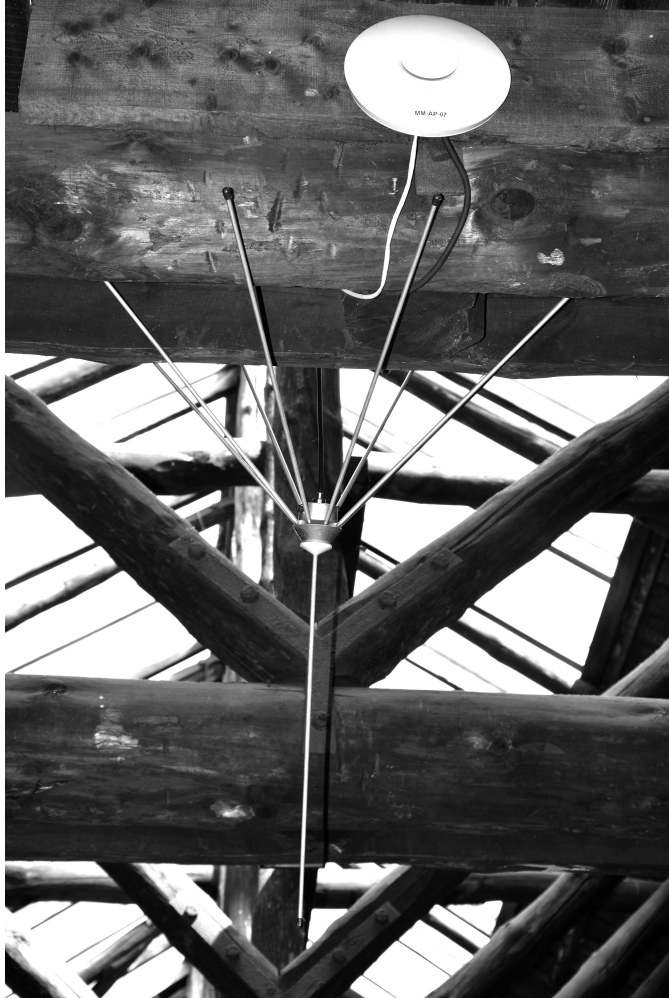
More about restful can be found here: https://en.wikipedia.org/wiki/Representational_state_transfer

Electromagnetic Sobbing

by Oliver Barstow

What happens to a radio transmission?
This question repeats itself as I continue
to research the medium. Since Planck's
Law proposed in 1900, physics provides
many explanations for the behavior of
radiation. The technical aspects of most
of these explanations exceed my basic
understanding of the phenomenon. As
users of communication technology, we
accept that a signal is sent and received.
But, what happens between these two
points of contact? Does the transmission,
measured as a shift in the
electromagnetic spectrum, simply

disappear, dissolve, or evaporate? What if some aspect of a transmission remains, no longer harnessed to a carrier wave? Could it be a residue that we do not have the tools to measure or record?



Since the very first radio transmission (reported to be a recording of Handel's Messiah broadcast by Reginald A. Fessenden in 1906), the basis of this

hypothesis is that all radio transmissions continue to exist from the point of broadcast onwards. As artists, we are free to speculate and explore the consequences of this hypothesis as we are not bound by the needs for proof that define scientific research.

Radio Kootwijk is the site of the now-defunct long and shortwave transmitting stations built to establish wireless contact between The Netherlands and the rest of the world. The transmitters were active for part of the first half of the 20th century. This was before the laying of the transatlantic telecommunications cables and the invention of satellite technology. It was through the long wave transmitter, housed in Building A at Radio Kootwijk, that the first wireless telephone contact – the voice transmitted by radio waves – was established with Indonesia and the Dutch East Indies.

The Dutch built a corresponding transmitter in Malabar with the same capabilities. No recordings of these early telephone conversations between The Netherlands and Indonesia remain. Instead, the era is captured by a popular Dutch levenslied, which translates as ‘a song about life,’ recorded by singer Willy Derby. Released in 1929, the song is called Hallo Bandoeng and sold over

50,000 copies, which was unprecedented for the time.

The lyrics tell the story of an elderly woman who spends the last of her savings to hear her son's voice for the first time in four years (a voice call cost as much as a week's worth of salary in those days). At the time, many young Dutch men had relocated to Indonesia for marriage and trade with the Indonesian elite. The woman makes contact with her son and the usual formalities ensue until she hears the voice of one of her grandchildren who she will never meet. The grandchild greets her on the telephone in Indonesian - "tabe, tabe," and she collapses crying. The last version of the refrain is different to the rest of the song. The son calls his mother back months later, but only hears sobbing on the other end. The last sentence describes the old woman's death and her grandchildren calling "tabe, tabe," as if the telephone connection offered a means of communicating with the dead.

Now, walking through the empty buildings at Radio Kootwijk, I wonder about the electromagnetic residue of all that sobbing transmitted between here and Malabar. What kind of effect does it have on the present?

Preserving the Internet Park

Interview with Jon-Kyle Flohr by
Juliette Lizotte, designer and member
of Hackers & Designers

In 2017, Hackers & Designers followed the Peer-to-Peer Web Los Angeles event¹ from Amsterdam. We were really happy to be able to get in touch and collaborate from a distance. We admire how Jon-Kyle does such a great job in documenting and preserving his own and his peers' work.

Juliette: What is your background and how did you become interested in Peer2Peer?

Jon-Kyle: My background is totally improvised. The entry point to Peer2Peer was from a lack of an environment growing up. I was living in the Northeast of the U.S. in a very small town of 2,000 people. The town had a very bad school system, so I stopped going to school. Because

system, so I stopped going to school. Because there were so few people in the town, if you weren't at school, you weren't seeing any kids! But, my family was very involved with making music. So I was just hanging out at home where people would come to record music. There wasn't a set curriculum that I was following. It was totally up to whatever was interesting that day. And usually what was interesting was something I would encounter online.

We had a computer and internet connection very early on. I started through the music. I remember being online and viewing 'view source' and you see what's all this magic that's letting this thing be here. I started to play around with this pretty casually. I got bootleg copies of Photoshop and Flash from my weird uncle who does government contract. That's kind of how I got online. And because you have total anonymity online, I started to freelance when I was really young, doing things like entering design contests. The internet felt really really big. That was around 1998-2001.

I never went back to school, I never went to university, or anything like that. I moved to Los Angeles to work on a project called Cargo Collective. I started contributing to Cargo right after it launched and through it I got exposed to all these psychedelic questions about where the internet comes from. I didn't have any frame of reference for this. The internet was just this thing that was there but I didn't know how it got there.

I worked on Cargo for several years and now I'm **working on Peer2Peer stuff** because I'm

concerned about the health of the internet ecosystem. I think about the internet almost as a park. That's why I want to preserve it. I don't want it to be drilled for oil or something like this. I want to preserve this pristine landscape that I grew up inside of when I was a kid. It's a very naive way of looking at it, but that's the closest thing I can think of. You have this wide open space and you see big industry coming and starting to frack and it destroys the ecosystem. That's how I'm trying to think of the Peer2Peer system, just how I fit into it. Like a park.

Juliette: Can you explain in a nutshell what Enoki2 is about? And who works on it? How does it differ from Torrent?

Jon-Kyle: Enoki is an ultra-light set of tools for publishing on the Peer2Peer web. It's also an experiment. It's not so much like a microwave, where you would just press a button and your dinner is ready. It's something you need to get familiar with before you can use it.

Enoki builds up static files and you are able to use something called dat, which stands for Distributive Archive Transport. It is a protocol that was written for data scientists to be able to share huge data sets with each other. dat is very similar to how torrents work, in that it's a system of peers. There's a swarm and these sort of familiar nomenclature that torrents have but on top of it are a few things that are very handy, like versioning.

One of the people who work on dat is Mathias - he goes by Mafintosh3 and does a lot of work with torrents. There were some shortcomings that torrent files had, so to help the data scientists some of these people working with torrents thought of a new protocol that extends what torrents do.

Juliette: How do you fund projects such as Enoki?

Jon-Kyle: Oh, it's totally not funded! I approach Enoki as a tool in the same way that I would approach what I do with my domestic space. It would sound really funny to say "How do you fund your bedroom?" I wouldn't know, it's just where I am. It's my environment, that's how I relate to it. I think it's closer to what the earlier days of the internet look like with Angelfire and GeoCities. People weren't talking about funding because it was just about themselves online doing these expressions.

I make sites as place-making, not just as informational things. I'm trying to create little environments in the same way that you could consider an installation trying to affect change in an environment.

Juliette: Today in the U.S. the problems around Net Neutrality are getting pretty serious. The idea of Peer2Peer and the way it is promoted has often an ideological taste, but now we see real actions taking place. It is about reclaiming control, empowerment, and countering capitalists modes of production.

Can you elaborate on why you think this it is important to invest in this technology and to what it can function as an alternative? Do you think decentralized models can scale up, spread out, and become more popular? What needs to happen for more makers to invest in Peer2Peer and for non-tech savvy users to gain interest?

Jon-Kyle: Obviously those networks are getting more and more entangled with our daily lives. We depend on them to stay in touch with our friends. If you're a millennial, you're dependent upon these platforms for building your followings and that's how you build your career: by having a public networked face and presence.

It is a problem when that public face and presence is done on a single platform that unevenly applies a certain set of rules and incentives for how the platform grows. It's sort of like being a photographer and replacing photos in the frames at Walmart with your own photos. There's this homogenous interface and people walk down the aisles and nobody is paying attention to anything and meanwhile you're there trying to cultivate a following, a career. It feels weird.

The Peer2Peer thing is about making the internet personal again. On the protocol level, you're circumnavigating large corporations. It's strange to see that everybody uses Facebook because it is a very usable interface. And because everybody else is on it. Facebook provides an easy means of

trying to communicate with someone else. Email is kind of nice, you can send messages but you can't have the photos aligned in the same way or a feed. You can question if those interfaces are providing a healthy experience or not. I often find myself pulling up these apps like Facebook without meaning to - these platforms are pervasive. There needs to be some sort of reference around how people use the internet. I wonder how a Facebook Church would look, for instance. When I went to Europe for the first time I got church-fatigue. But, you think that this was probably necessary to get by. People had to create this mythology of understanding and communities around these ways of thinking. There's a certain richness there. Maybe it's a very poor metaphor, but I grew up in a very religious environment and I always felt alienated by it. As I get older I realize that people were obsessed with this stuff and that was just a way for them to go on with their lives.

We have to move technology outside of being entertainment. There's something nice about the localism that Peer2Peer expects.

Peer2Peer is also not trying to consume all of technology at this point. That's why I like to think of it as parks. The goal of a park is not to become a business center. It's to provide a place to retreat, where you can go and have a picnic. But you can't expect to see parks replace industry parks. It's just an entirely different thing.

Juliette: How do you make these parks safe?
What are some strategies to sustain a Peer2Peer

internet where, by definition, anybody can embrace and spread socio-political values that turn into abuse for other Peer2Peer users or website?

For example, Beaker Browser lets anybody fork a website. Is there a way to fight back from of the abuse of this action, like when it is employed to trash someone's website or Peer2Peer presence?

Jon-Kyle: Technology tries to solve a lot of technology issues with more technology and I don't think it's necessarily the good answer. The people are the ones making the technology.

If you think about Peer2Peer web in the world, it's like a town square. A public space. If you are in a public space you sort of blindly trust being around strangers, but at the same time you wouldn't just leave your front door open.

These are less technological issues and more social issues. If you're able to fork someone's website and change all the content of it, then it's not about how we relate to the technology but how we relate to each other. The role of the Peer2Peer web is to be a person-to-person web rather than a person-to-huge-corporation kind of web.

Juliette: There is the general notion that everything happening on the internet is immaterial and therefore it doesn't have any effect on our environment. Could Peer2Peer platforms contribute to creating awareness about the environmental impact of technologies?

Jon-Kyle: The internet is just another layer in the infrastructure stack. The city has plumbing and water and other layers. The internet is not only resting on top of it all these layers, but it also is going all the way through the whole stack at the same time. What's happening right now with a lot of the cryptocurrencies is that they consume an insane amount of energy.

I don't think of what I do as technological criticism or something. It's much more personal. Just like when I go outside and I'm around my neighborhood, if I see a bit of trash on the street I'll stop and I'll pick it up and try to find a bin for it. How I exist on the internet is by making the things that I do accessible to other people so if they are interested they can replicate it.

These are all very simple ways to think about it, but we have to try to reduce some of the things that are confused as complex technology issues and make them understandable again for people. It's all about how we relate to this network. I don't care about the internet, I care about the people. The internet just happens to be this thing that everyone on the planet uses to communicate.

Juliette: In what way could designers contribute to the growing and development of Peer2Peer?

Jon-Kyle: Quit your jobs! We cannot let Google monopolize or monetize people's attention further. They are the ones baking the crack!

The emphasis on hyper-usability makes it difficult to trust design today. That's really sad. Design is

just an extension of advertising. It's nothing new, but it's at this point where it's not just a billboard or an intermission on TV, it's in your hand constantly and it's shaping people's understanding of everything around them.

Anyone should make the Peer2Peer web however she wants it to be. Sure there are some technological aspects to this, but one of the things I really like about the Peer2Peer web is that it does feel like there's a community there. It can be a bit intimidating to just drop into a community, but I think that people are very eager to help and I know that some of the engineers that work on the technological side of it are desperate for help on the design side of it. If there's something that you are interested in and you think it's kind of confusing and wonder if there's a way to help, that's something to definitely open with Peer2Peer.

I think there's a tipping point with all of this where it's difficult to use and then someone changes this one thing and it's suddenly useable. I think what Beaker is doing is fascinating but there are some issues with it too, like the forking idea - this is confusing some people.

Juliette: Could you make an example of an existing app or use-case of how Beaker Browser manages to keep separated the data and interface layer? How is that relevant in your opinion?

Jon-Kyle: This thing called Fritter
[<https://github.com/beakerbrowser/fritter>], which is

a Twitter clone, has just been released. When you sign up for Fritter, you create a profile but the profile is something that exists on your machine. That is, you have your user data and then there is the application. When you visit the Fritter app, it requests the data from you in their interface.

What's nice about that is that everybody controls their own data and the app controls and updates the interface. At any point the user can also fork the interface and create their own app and interface with its own functionality.

There's a very distinct separation between the data layer and the interface layer here. The data layer relates to you, and the interface can be something that someone else maintains as long as there is a common taxonomy on the structure of the data. Everything is a static file with dat and Beaker. They use a bunch of json files instead of a database. It looks like the type of thing behind a large centralised platform.

There is another app called Rotonde [<https://github.com/Rotonde/rotonde-client>], which is again some sort of Twitter-esque thing. The interface is entirely different. It almost looks like command line and everything is set in monospace type. Alternatively, the Fritter example is really co-opting the design language of Twitter to make it understandable as something you can use.

Juliette: How does Enoki fit in here? Could it be a good app example for Beaker Browser, like a build-your-own-site thing?

Jon-Kyle: That's the idea. When I started working on Enoki, I thought about problems related to scale in comparison to how a platform or service like this would function more traditionally. Those issues became distracting because I was trying to pair tools that go against scaling and there was a lot of friction. The past month has been spent placing those tools that were built inside of Beaker so you can build a full site.

Juliette: You introduce Dropout on your website by explaining how you have been recently going intermittently offline - connecting for a minute to load your inbox in the morning, then going offline, then reconnecting to send them later. Can you explain a bit more about this tool that you made for yourself?

Jon-Kyle: Dropout as a tool is totally broken. It works perfectly for me but I don't expect it to work for anyone else. There's something fascinating about that, I want people to be able to make their own tools in a way, and build tools that make tools that make tools. Dropout is the same as Instapaper which is the same as Readability which is the same as Safari's built in "Save for later" function and there's a lot of different variations. The difference with Dropout is just that I made it!

There's something that is happening right now with functional regurgitation or platform singularities - Instagram is looking like Facebook, which is looking like Twitter, which is trying to become the next Airbnb, which is looking like

Google. All these platforms are just replicating each other and trying to find shortcuts for growth.

What's nice with the Peer2Peer web is that it solves certain things in relation to data storage. You can really just say "I don't care about Instagram stories, I'm just gonna make my own Instagram story and it's gonna be my page" and it can work for you.

It's related to networked localism. What does a neighborhood on the internet look like? How does that exist relative to these things that are more corporate like Instagram? I don't think you're gonna get rid of Instagram as a photographer, but I think you should be trying to use the Peer2Peer web in parallel and consider how you're positioned within the environment of the internet.

When I go to the desert I just dropout. There's no cell connection. Joshua Tree is a national park and acts as a parallel to the internet in the same way that parks relate to it. I'm tired of feeling that when I'm on the internet I'm at the Walmart, these places that have commoditized so many parts that neighborhoods used to have before. You can't go and deconstruct the Walmart down the street. But, it seems like the internet is at this point where it's very malleable and you can put into effect really disproportionate change.

1 <https://Peer2Peer-web.com/los-angeles>

2 <https://enoki.site/>

3 <https://github.com/mafintosh>

**Hackers &
Designers followed
up with HD&A17
participants six
months after the
H&D Summer
Academy 2017 to
hear reflections of
their experience.**

**Participants shared how the
Summer Academy incited the**

rethinking of their relation to technology in the context of the topic of On &/ Off the Grid, the role of collaborative production in changing their perspectives, and how their experience influenced their practice.

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Hannes Hulstaert

Lucia Kolesárová

Amanda Lewis

Dijon Lin

Jasper van Loenen

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O n

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B e t w e

e n

by Eric van Zuilen

In the current digital era, being on the grid has become our default position. Being connected allows technology to provide immediate knowledge, instant solutions, and new ways to communicate and participate. In his book *To Save Everything, Click Here: Technology, Solutionism, and the Urge to Fix Problems that Don't Exist*, writer and researcher Evgeny Morozov argues that technology has pushed us into a state of a single and simple logic. According to Morozov, technology, besides being a force for improvement, has also created solutionism: that is, our need to fix everything and the belief that we can do so by using technology.¹

Morozov is critical of this development of solutionism. He urges us to investigate the struggle between the human and the machine. This is crucial because technology creates problems as much as it creates solutions.

The question to be on or off the grid shows a binary approach developed from our need for instant responses and clear-cut decisions. On the grid, we want an answer and we want it now. Off the grid, we remove ourselves from communication and participation facilitated by technology and by doing so we exclude a certain type of solution. Alternatively, off the grid is a deliberate decision to balance our response to technology. I support Morozov's case to look beyond our technological solutions. That is, to investigate the grey areas between on and off positions containing the poetic alternatives of inefficiency, ambiguity, and opacity. Alternatives that let you drift away and forget about what you were looking for.

When your internet connection is slow, Google Image Search shows results as monochrome rectangles with the shape and predominant color of the corresponding image. These rectangles are Google's quick response to keep our attention and manage our expectations. The rectangles tell us: don't go away, there will be results. At the same time, these colored rectangles create a moment of distraction. You were looking for images and you get something you did not expect. You get something poetic. When the requested images finally show, they might be disappointing. The colors were a surprising result rather than an interlude.

When I was playing around with some JavaScript, I accidentally discovered that I could move the images in Google's search results. I no longer needed a slow connection to enjoy the colors in Google Image Search. This evolved into Googleimagescolorviewer, a Chrome extension that takes out the images and only shows the colors. You can sit down and watch. The extension automatically scrolls through the results and allows you to wander off.





With PageWriter, I made another Chrome extension that provides an alternative to the instant viewing of webpages. It hides the content of a webpage and types the entire source code of a page in typewriter-style at 140-characters a minute. It transforms a webpage into a linear- and time-based medium. It creates a moment to forget about your intention. While you see the page build up its content, the extension shows the source code containing both metadata and content in a separate container at the bottom of the page. As most of the metadata is in the beginning of the source code, it may take a while before the page shows readable content.

With these two Chrome extensions, I invite you to postpone your immediate response every now and then and to embrace some of the non-binary moments neither on nor off the grid.

Both Chrome extensions can be found in the Chrome webstore for extensions at <https://chrome.google.com/webstore/category/extensions> - search for Googleimagescolorviewer and Pagewriter.

1 Morozov, E. (2014). *To save everything, click here*. London: Penguin Books.

Contribution by Lacey Verhalen

During the Summer Academy, I became hyper-aware of my reliance on commercial technologies for my work. The H&D environment led me to recognize the value of autonomous modes of production.

After the Summer Academy, I became increasingly interested in what constitutes a society's shared knowledge. My fascination with the commons has resulted in a recent work that reflects on the value of open commons within a national archive.

Through the Open Set Design Lab, an independent education platform in The Netherlands, I've been granted full access to the audiovisual archives of the Netherlands Institute for Sound and Vision. I am from the United States. As a foreigner without a fluent understanding of Dutch, I was compelled to seek an alternative method in which I could navigate the media. Access to the national

navigate the media. Access to the national archives can be restrictive for a foreigner. I decided to use color as a visual means to collect media, which made the the archive more accessible and freed it from the semantic net of conventional associates created by label searching. Color can act as an alternative language to search through foreign media in a more broad and creative way.

Although it is perhaps more universally understood than language, color perception is still subject to different cultural meanings. Languages divide color space differently. For example, the single English term blue can be used to describe a range of twenty different hues, but the Russian language makes an obligatory distinction between light blues and darker blues. This indicates that color perception is influenced by linguistic variations.

I began to focus on the imagery of the blue sky because it represents a common association of the color blue. Despite regional weather variations, it's been a standard belief for centuries that the sky on a cloudless day is truly and simply blue, free from linguistic and visual relativism.

By looking through the archive with a blue filter, I was able to find something familiar in the unfamiliar, which allowed me to create and emotional bond with the other - the foreign archive. This practice of commoning within the Dutch archive became a means for me to breed a willingness to adopt alternative

visions of the world. The sky provides a visual retreat mined from a foreign archive with the potential to elicit feelings of familiarity, closeness, and belonging.

A boundless blue sky is a borderless space where it becomes difficult to differentiate between east and west. On land, the language of location is more relative. Every place lies to the east of somewhere, and the recognition of an Eastern country is unique in the mind of its inhabitants and neighbors. The sky, however, allows the language of location to become more absolute. As a universally-shared environment, it represents the backdrop of every culture's environmental commons.

There is, however, a myth that the Dutch sky is unique. The nation's beautiful light has been celebrated in landscape paintings since the 17th century in a way incomparable to other cultures. If Dutch light is so special, than what is to be said for the idiosyncrasy of the Dutch sky in areas of the Dutch Kingdom outside of the geographically-characteristic Netherlands? If the language of landscape is relative, how do we measure the differing value of an abstract, shared sky? Is there anything that rightfully belongs to our global commons?

I'm continuing to explore the sky as a conception of space in the archive that holds universal significance and allows for shared engagement with the unknown. This allows for a blurring of boundaries and a bridging of the divide between a nation's history and a

the divide between a nation's history and a person's memory.

By using a color-mediated archive search mechanism, the blue sky, I'm hoping to create a language-free method to internationalize the archive and highlight a culture's relatable media heritage. The result of this process of filtered looking and collecting is a Dutch SKY ATLAS, consisting of various sky images and their correlating location coordinates.

How Violent Can Design Be? BY JUAN GOMEZ

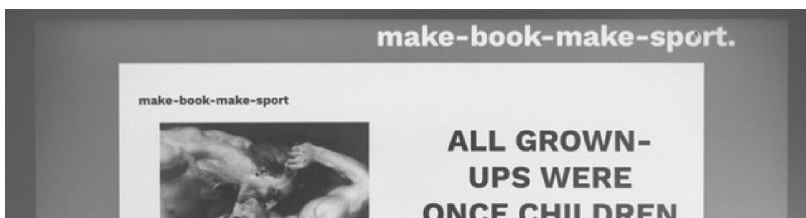
The question “how violent can design be” became very meaningful to me after the On and Off the Grid Summer Academy. I discovered that many of basic service companies who provide things like city-wide water and electricity make great profits from the vulnerability of the citizen who needs these services. The service provider takes advantage of the citizen and this is an act of violence.





There is a defined aesthetic that hides many of the things beneath this violent industry. Two of my recent artworks explore this aesthetic.

The first project, Help Your Government (HYG)¹, is an approach to the uber-ization of violence. Users get a connected tonfa. A tonfa is the weapon baton used by police in riots and for security in private spaces. The use of the tonfa is quantified if the users show up to a riot. They are awarded with a tax reduction for using their tonfa. There is also the premium version of the tonfa, where the user can express herself and be distinguished when in a riot or when securing a private place, like a bank or a nightshop. Most importantly, the user receives general benefits by helping the state.





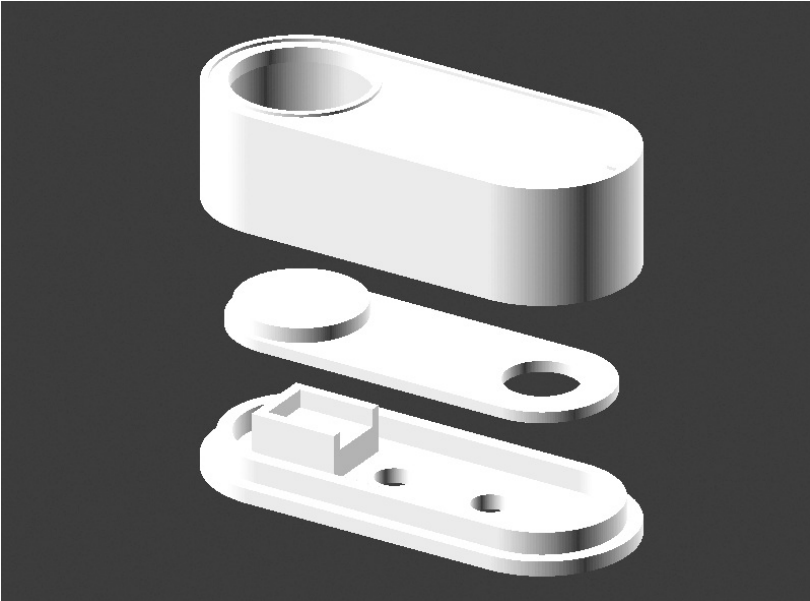
The second project is Make-Book-Make-Sport². Working optimization is the dream of many in the corporate world, but this optimization is about letting our body go. Make-Book-Make-Sport is the perfect machine for designers because it lets you exercise while creating layouts for books. Motivational phrases and images scroll in front of you to create a fun and entertaining ambience while exercising. After each workout, the user can print their own book. The book is a souvenir from this exciting moment. It can be shared with others or kept as a journal of the designer's workouts.

Photo Credits: Raphaëlle Mueller

¹ helpyourgovernment.com

² makesportmakebook.com

Contribution by Jasper van Loenen



The two projects I made during the Summer Academy - the Dashing Button and the Slow Picture Sender - relate to the topic of on and off the grid in different ways. The Dashing

Button [<https://jaspervanloenen.com/dashing-button/>] hooks into existing technologies. It tries to reflect on the use of these existing technologies in relation to the Internet of Things by taking them to the extreme. It uses popular technologies (like Amazon API, object detection, Instagram) to achieve a very shallow goal: finding whatever product celebrities are endorsing in their social media photos and helping you purchase them. It grabs every part of the grid and mashes it together.



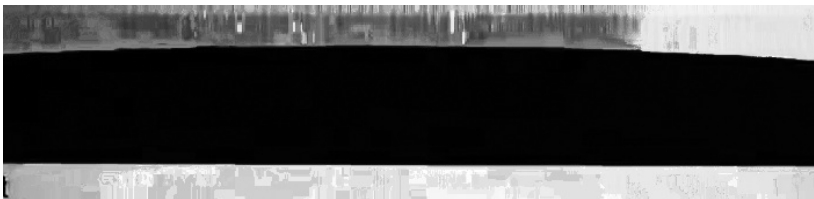
The Slow Picture Sender (which I'd like to develop further) is more related to the grid in terms of devices that are connected into a larger network. With the LoRaWAN modules we soldered during the workshop, you're able to connect to the internet from far away and in places without access to ethernet cables or wifi. With great internet connectivity, though, comes a slow data rate, so you are forced to send your images pixel by pixel.

CONTRIBUTION BY KIMBERLY HALL

During the Edible Computing workshop by Dennis de Bel, we attempted to translate into words the frequencies produced by the train tracks next to the building. We did this by using a computer program and two cans connected by a piece of string. In previous works, I have done things like using data input to create an image. This was always fairly static scientific data that was loaded from a boring file, though. This workshop made me realize that everything around you is possible data input and that the possibilities of what you can create are endless. In this way, it is more fun to create with real life because it is interestingly irregular. Even though we did not have a finished product at the end of this workshop, it encouraged me to think more about using offline inputs as data sources in my art practice.



I thought that the process of collaborating in order to come up with a concept was very interesting. Depending on the people you worked with, it could sometimes take a whole day to come up with a concept. When working with others, we would get started on our piece almost immediately. I think this was because everyone had personal interests that they somehow wanted to work into the concept. Some wanted the piece to be socially critical, some wanted to emphasize the aesthetic, and some just liked the technical aspects to be impressive. This caused the process of reaching a consensus to be very different, depending on who was in a group. This is something I had never really experienced before.





Lately I have been working with emulators - software that can make my computer mimic a much older computer and thus run very old programs. With emulators, I can use the 1992 version of Kid Pix to create images. I distort the resulting images by using glitches in newer programs. Eventually, I hope to incorporate these emulators in my upcoming photography, film, and music projects!

Rethinking Technology in the Context of Going On and Off the Grid

by Loes Bogers, researcher at the Visual Methodologies research group and coordinator/lecturer of the minor Makers Lab: Making as Design Research at the Amsterdam University of Applied Sciences.

Hi! My name is Loes, I work as a design researcher and educator in Amsterdam and have a background in critical media theory and practice. At HDSA17, the most meaningful commonality in each of the workshops was the lateral, hands-on approach to think differently about the basics of communication technology. Our thinking about technology's entanglements with society and the self can get extremely sophisticated. But, this can also detach us from the basic things we experience and need as humans inhabiting an increasingly unstable and vulnerable world. Tinkering with the bare bones of computing and the material properties of everyday

stuff has given me new ways to think in terms of signals. How do we get some information from A to B when stripped of most of the technological affordances we are accustomed to? When you are given the tools to think about which medium to send signals through, like sound waves, water, skin, cables, or light (Edible Computing workshop); or mediums that contain information, such as cells of plants (Endophytes workshop); you can't help but relate technology back to the material lives of things, organisms, people, and other creatures. Questions quickly refocus. How to do more with less, rather than more and and more and more of conceptual sophistication, production value, ease of use?

The workshop Reimagining Smart helped us ask what we most need smart objects for in this day and age. The workshop Build Your Own Node made us consider how we make decisions about what information to send. How would this change if we could only send a byte or two at a time? The value in the program for me was that all the activities enabled me to play around with these themes. I could indirectly reflect on them without being tempted to think in terms of solutions or better ways to do things or coming up with some innovative application. I learned new tricks, tools, and techniques to create. More importantly though, I learned the act of slowing down by building technology in a less straightforward manner. This allowed me to think the material lives of technology on a new level.

Experience of Collective Modes of Production during the Academy

I am a person who generally loves tinkering and building things and learning new skills. But because I am interested in many things, my skills and knowledge never get to the expert-level. Collective modes of

knowledge production and creative production make a lot of sense to me. Collaboration is often the start and finish of how I live, learn, and work. That said, I also experience tendencies and pressures to prove myself as an individual: to prove that I can do it, that I can learn to master something, to be able to say something was my idea, to be a bit rigid about what I came here to do, and what my objectives are. Most of the time, though, acting on those tendencies leads me to be insecure, makes me want to control what is happening, and to be less open to connecting with and learning from other people. Not surprisingly, I often do not like how I handle things and act towards people when this is the case.

I collaborated with many different people during the academy and I think my moments of insecurity, discomfort, and frustration had to do with encountering collaborators who had a different goal or approach. For example, they wanted learn (or be taught) coding skills, where I wanted to apply the skills I already have but don't get to use so often. Or, they wanted to reach a sophisticated conceptual stage before entering the making process, where I might enjoy picking an interesting material and just tinkering my way in without a plan. I noticed my changing moods and tried out a different attitude in each workshop to see if it would bring me different things. One day I offered to explain and teach. Another day I tried to just do what I wanted. And on other days I tried to create more space for others than myself, or I approached things reactively, just doing my thing but not trying to influence others too much. All approaches had varying results and often mixed feelings, haha! The two things I found hard to shake are that 1) I enjoy finishing things and 2) I really value leaving some of the generated knowledge behind in the form of documentation. I like

the feeling of things having come to a natural end for the time being. I also felt this was disruptive to other types of processes going on with other people around me. I made myself uncomfortable, but it raised valuable personal questions about inhabiting shared spaces of learning that I now use in my teaching practice. For example, I recently developed an interdisciplinary minor in Making as Design Research at the Amsterdam University of Applied Sciences. It will run from February 2018. A core element in the daily activities will be students actively reflecting on their emotional states, like discomfort, frustration, and disappointment. As well, they will reflect on how their behavior might afford or limit others to do things differently in a shared and collaborative learning environment. This is to make explicit (and be graded on) what they have done to contribute to others' learning and research processes; their effects on a supportive and safe environment for everyone present (including the teachers!); to be particularly aware and communicative about their own goals and intentions; and, how they might shift throughout.

Touch Screens Make You Fingerblind

by Luciana Kolesárová

Why and How to Bring Touch Back to our Daily Experience

For the last few decades, developments in digital technology have much neglected our hands and bodies. This is a problem because our thoughts and feelings are strongly connected to the gestures, postures, and actions that our hands and bodies perform.

This article discusses the importance of a sense of touch in the current era where physical and digital realities collide. It outlines the differences between carrying activities out in physical and digital worlds that are dominated by screens. The article provides insight into how to design for touch through examples from the design field. It aims to push designers outside of the screen-zone and encourages the consideration of touch and motor skills when designing products.

Less Haptic Stimuli, Less Experience

According to Finnish neuropsychologist Matti Bergström,

The density of nerve endings in our fingertips is enormous. Their discrimination is almost as good as that of our eyes. If we don't use our fingers during childhood or youth, we become "fingerblind," this rich network of nerves is impoverished – which represents a huge loss to the brain and thwarts the individual's development as a whole. Such damage may be likened to blindness itself. Perhaps worse, while a blind person may simply not be able to find this or that object, the fingerblind cannot understand its inner meaning and value.¹

Hold, Push, Swipe, Tap

Many employees spend a significant part of their day looking at a screen without any possibility to physically touch the things they work with. Think about it - how much time do you spend on your computer at work? How much time do you spend on your mobile afterwards? What do you do during your spare time? Hold, push, swipe, tap. The word touch is contained in the word touchscreen. But, tapping and swiping a cold flat piece of one matter basically neglect the sense of touch. You are capable of experiencing only a fraction of what your sense of touch allows you during the long hours of manipulation with touchscreens.

What actions do you physically perform with your body? For a dispassionate observer, you don't look like a very active person. What posture are you usually in? What kind of impact can crouching into the screen of a mobile phone and hovering over a computer all day have on a person?

Pablo Briñol, Richard E. Petty, and Benjamin Wagner claim in their research article *Body posture effects on self-evaluation: A self-validation approach* that your body posture can shape your mind: "We argue that any postures associated with confidence (e.g., pushing one's chest out) should magnify the effect of anything that is currently available in people's minds relative to postures associated with doubt (e.g., slouching forward with one's back curved)."² As the embodied cognition theory emphasizes, your body also affects your behavior.³

Tactile Feedback

Many tangible things are disappearing from our surroundings and reappearing in digital form. They are improved upon and enriched with new functions that are not possible in the material world. Some examples are maps, calendars, notebooks, pens, photographs, music players, calculators, and compasses. However, with the loss of material form comes the loss of the experience exclusive to the physical interaction with such objects. In his book *Where the Action is: The Foundations of Embodied Interaction*, Paul Dourish states that "... a disembodied brain could not experience the world in the same ways that we do, because our experience of the world is intimately tied to the ways in which we act in it."⁴





Fingers are able to sense the progress of a book

(Image by NordWood Themes, <https://unsplash.com/@nordwood>)

Different Activities, Different Movements

In the physical world...

I pay for a ticket - I pull my wallet out of my bag, I open it, and I take out the banknotes. While holding the notes in one hand, I withdraw some coins with my other hand. I give the money to the salesperson.

I confess love - I am standing in front of them. I look into their eyes. I blush. I say: You know, I love you. I am kissed.

I am looking for a recipe - I choose a cookbook from the shelf. I take the book, I flip a few pages, forwards, backward. I find a recipe.

In the world of screens...

I pay the ticket - I fill the text fields. I hit the button.

I confess love - I fill the text field. I hit the button.

I am looking for a recipe - I fill the text field... I hit the button.



(Image by Allef Vinicius, https://unsplash.com/photos/fJTqyZMOh18?utm_source=unsplash&utm_medium=referral&utm_content=creditCopyText)

The environment that surrounds us, the activities we perform, and things we are in contact with help us to more intensely perceive situations.

As so many different activities are being carried out in the same manner in the digital world, their unique experience become less clear. Haptic sense relates to perception when paying with material or by virtual currency. That feeling of something tangible in your hand that you give to someone else is different than tapping a flat surface to confirm that the number on the screen will be deducted from your account.

Try a simple task. If you want to remember something, write it down and see how it affects your brain. Professor Anne Mangen, based at The University of Stavanger in Norway, researches the impact of digital technologies on reading and writing. As described in her article *Handwriting versus Keyboard Writing: Effect on Word Recall*, one of her studies has proven that writing helps the brain process the information and remember it better.⁵ This may be one reason for the

information and remember it better.⁵ This may be one reason for the recent rise in sales of paper planners and paper books.⁶ Think about it - giving a digital book as a gift is much less impressive than giving its paper version. Physical gifts just *feel* much better to give and receive. According to The Guardian, there is a trend for returning to tangible music, which has caused an increase in vinyl sales as well.⁷ But, are such returns to old material media objects enough to satisfy the need for haptic interactions and experiences? Or, can we act also from contemporary opportunities in order to create a more embodied future?

One way to bring qualities of the real world to our technologies of daily use is to learn from material things. Another way is to sense the attributes we are missing in interaction with screens. Let your senses lead you and think about the solution that could replace current discomfort. The classic human-centered approach still works. However advanced technologies improve and extend into multiple areas of our lives, we need to think more carefully about what it means to be a human. Our bodies and senses are definitely part of it.

Lucia about her experience at the H&D Summer Academy:

I learned that unplugging my laptop charger when the computer is charged can save energy and money. The Summer Academy made me more sensitive to my environment in general. I am aware that every action has an impact, whether or not it includes technology.

I really enjoyed the possibility to work on a team. Three other participants and I created the Institute for Botanical Linguistics! It was cool because I think everybody on our team was doing something that suited her skills and interests. Team spirit and cooperation make me enjoy and appreciate the process more so than a final outcome.

1 Svanteson, S. (2012). From Chernobyl to Terminator. In The Conference - Media Evolution. Malmo. http://www.youtube.com/watch?v=J_dXLjx-NcY

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3 Further explanation can be read here:
<http://psychsciencenotes.blogspot.cz/2011/11/embodied-cognition-is-not-what-you.html>

4 Dourish, P. (2014). Where the action is (p. 18). Johannesburg: MTM.

5 Mangan, A., Anda, L., Oxborough, G., & Brønnick, K. (2015).

Handwriting versus keyboard writing: Effect on word recall. *Journal Of Writing Research*, 7(2), 227-247. <http://www.jowr.org/articles/vol7 2/JoWR2015vol7nr2Mangenetal.pdf>

6 2017 starts with sales soaring for paper diaries, notebooks and planners. (2017). www.tappi.org/News/TAPPI-News/TAPPI-blog/2017-starts-with-sales-soaring-for-paper-diaries,-notebooks-and-planners/ and Kottasová, I. (2017). Real books are back. E-book sales plunge nearly 20%. <http://money.cnn.com/2017/04/27/media/ebooks-sales-real-books/index.html>

7 Ellis-Peterson, H. (2017). Record sales: vinyl hits 25-year high. <https://www.theguardian.com/music/2017/jan/03/record-sales-vinyl-hits-25-year-high-and-outstrips-streaming>

The Politics of Technology: Means Of Going On and Off the Grid

BY VICKY DE VISSEN

Politics: The principles relating to or inherent in a sphere or activity, especially when concerned with power and status. - Oxford Dictionary

I am an art historian, graphic designer, and a former intern at Hackers & Designers. I am interested the influence of technological grids on my artistic practice, daily life, social interactions, and the fabric of modern society.

Opening the black boxes of technology and changing what's inside is a form of empowerment, so I was excited to hear that the 2017 H&D Summer Academy topic would be On and Off the Grid. Understanding how systems work, how algorithms are used, and how information is analyzed enables us to make informed decisions about whether we want to participate in or abstain from a grid.

It was interesting to re-evaluate the ethics of algorithms, machine learning, and artificial intelligence at the Summer Academy. It was a great opportunity to consider how, as Hackers & Designers, we can position ourselves politically by modifying, abstaining, or participating in these technological grids.

What I missed during the Summer Academy were ethical, political, and social debates directly tied into the workshop topics. While the workshops and lecturers questioned existing grids, a cohesive and guided discussion could have added future value to the program. Participants would have gained a better understanding of how to be independent from traditional electricity systems and how to question their daily lifelines. These understandings could have bolstered more practices of how we can start up our own grid and develop more energy source projects.

Of course, there is only so much you can realize during a summer academy. Introducing participants to electronics, Arduino, Processing, and other programming languages, as well as conceptual design and aesthetics, gives them a powerful kickstart to uncover, manipulate, and create their own grids. The spectral solar trailer was a super nice way of showing the pros and cons of being on and off the (electricity) grid as a hacker, designer, or artist.

Questions that would have been interesting to discuss more: How does this grid or non-existent grid affect our surroundings, society, and workplace? Can we define the black box of this grid? What is it that we would like to learn about it and be able to modify? Is it possible during the workshop? What impact does it have on our surroundings? What are the consequences and pros and cons of technological progression within this field? What are the wanted and unwanted effects and outcomes of this grid? How can we, as pro-tech-minded people, take a well-informed position in this specific technological grid? How can we match our technological curiousness with our political and social positions as designers, hackers, and artists? How is going on and off the grid affecting that? How can change be initiated? What are personal goals?

Auto mati zing PROf essi onal izat ion

Collective Outro by Selby G. Idemacher, James Bryan
Graves, and Anja Groten (Hackers & Designers)

Hackers & Designers has been seeking to challenge organizational concepts by asking questions such as: how can we share differently, what channels can we eliminate, what are the bare necessities? As a result of the past year's explorations, experiences, and challenges, James proposed to deprofessionalize Hackers & Designers. Starting as a mini-manifesto, he turned his provocative proposal into a concrete cooperative model at the beginning of 2018. The Hackers & Designers Coop is a workflow model for collaborative organization based on fiscal democracy and divides and distributes responsibilities among members. The H&D Coop is a hands on exploration of blockchain technologies, leveraging smart contracts as a means to automate tedious processes of administration and tiring assemblies. The administrative overhead had been carried around as an awkward baggage for too long. With the Coop platform running on H&D's private blockchain, H&D gets to experiment with a somewhat popularized and mystified technology in a critical way while experimenting with its own organizational structures and habits.

More about the Hackers & Designers Coop here:

https://wiki.hackersanddesigners.nl/index.php/Hackers%26Designers_Coop

Editor's Note by Genevieve Costello:

I have had the honor of editing this collection of texts, a reflection of Hackers & Designers' activities and occupations in 2017. The range of content is what initially struck me. We have Wiki page process-docs and workshop-sharings, radio-Skype-in-person interviews turned transcript, art statements, art works, and questionnaire testimonials. With the premise of going on and off the grid, there is an overarching investigation of what being together can look like through the objects and systems of basic needs and social exchange - food, shelter, water, clothes, emotional support, community investment, labor practices, transportation, utilities, money and valuation. Questions that many authors of this compilation grasp at are the tensions between work and life as a critical maker, between individual drive and collective actions, autonomy and material realities. Fortunately, these meta appraisals come with a lightness as they arise from doing: inspecting the stuff around us and taking things apart and putting other things together...i.e., hacking.

The H&D community has varying spirits towards the reality of ethics a person can extend. Joana Chicau states that "It's not easy to be critical in multiple ways in one's practice...This holistic approach is hard to find and hard to practice." Alternatively, Jon-Kyle emphasizes how deeply personal the environment of the internet is and encourages designers to jump into Peer2Peer .head on to make locales amongst its over-corporatization. He asks, "What does a neighborhood on the internet look like?" Ivanka Annot refuses to "pay rent with [her] life" and adopts prefigurative politics as her way of life and art, building replicable and scalable

systems within legal loopholes. As Annot puts it, "you create what you want to see happening in the future. Instead of protesting to what is happening now, you prefigure it. You give it a shape, you make it happen." Bongani captures a crucial reality - "There isn't some consistent ethical approach to doing something good and positive...material conditions, the conditions of life, require you to carve out what your priority is - you must focus on one impact...[and you must be] content with that decision."

Ultimately, whatever energies motivate the fight for ethics in our livelihoods and beyond, and however much we can teach ourselves alone and with the aid of internet connection, there is the need for others in making systems that more accurately reflect ways of living that are not yet feasible or envisioned in the grids of society-at-large in which we are positioned. Reliance on popular grids oft reinforce individualist society, yet pursuing to critique and effect change to the systems in which you are embedded can also be isolating. This is a lived obstacle, as experienced by Vicky de Visser's Off the Grid Amsterdam Boat Life Project, in which she found that there were "Too many hardships to be managed and controlled without the support of a community equally invested in a shared, off-grid system."

As many of the experiences from HDSA17 indicate, collaboration is work - the work of mediation, communication, and management of individual drives. Daniela Rota and Meike Hardt (m-d-buero) share that "It is always about the negotiation of disciplinary differences. You push your own disciplinary borders by unlearning habits to make space for the other." From the friction and discomfort of different group member goals, Loes Bogers' developed reflective practices "about inhabiting shared spaces of learning that [she] now uses in [her] teaching practice." Perhaps these are other forms of prefigurative politics in consciousness-raising - the potential for resignation to others as constituting and supporting a grid's weave as civic life.

Another practice of congregation is the language of these texts. The majority of the writings were done in the non-native tongue of the writer or interviewers/ees. In editing, this was felt as an expansion and detailing of a language in common, rather than a flattening of cultural linguistics or universalization. I aimed to retain these intricacies through which the author's essences of thought, presence, and enthusiasm run and with the hopes to highlight a heterogeneous cohesion as the collection's underbelly.

As well, I aimed to point back to how these texts came to be together within a community grounded in web technologies. The texts were written by the tech-minded's formulation of sharing information - with readers with a screen and internet connection. The writings were rich in hyperlinks. I wanted to keep the interchange between the digital and print on the surface by keeping hyperlinks within the texts as much as possible within the parameters of printing using the PJ Machine. Formalities of style and formats are equally sites to be changed to more accurately reflect the use and access of content. Citations are influenced by APA, but have been ridden of redundancies such as "link accessed at." While there is a core goal of sharing enough information to accurately and clearly reference authorship, the formatting, style, and citations of this publication are meant as an adaption to the creative works that constitute it.

More about the style and format guide may be found here:
https://wiki.hackersanddesigners.nl/index.php/Style&Formatting_Guide

Credits

On & Off the Grid

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Design

Anja Groten and Juliette Lizotte using the PJ Machine by Sarah Garcin.

The PJ Machine, Sarah Garcin

Nowadays, the free software movement and the diversity of open source tools encourage designers, artists, and developers to question the nature of the tool they are using and its place in their creative process. They are invited to learn, modify, and create their own tools. Creating tools forms an integral part in the work of a graphic designer. The tool shapes the work. Can we imagine new kinds of publishing tools that change the way we present our works, create printed matter, and more? Sarah Garcin tries to answer this question by creating the PJ Machine (Publishing Jockey Machine), a box with arcade buttons to control web interface for live publishing. The Machine allows the creation of a layout design with text and images and the generation of a pdf to print. The participants of HDSA2017 were invited to imagine and prototype new and open source publishing tools. The tools created during the Summer Academy offer new kinds of interactions and revolutionize the publication process.

Images

All images were taken during the Summer Academy 2017 by Jorge Bakker or provided by the author of the text unless otherwise specified.

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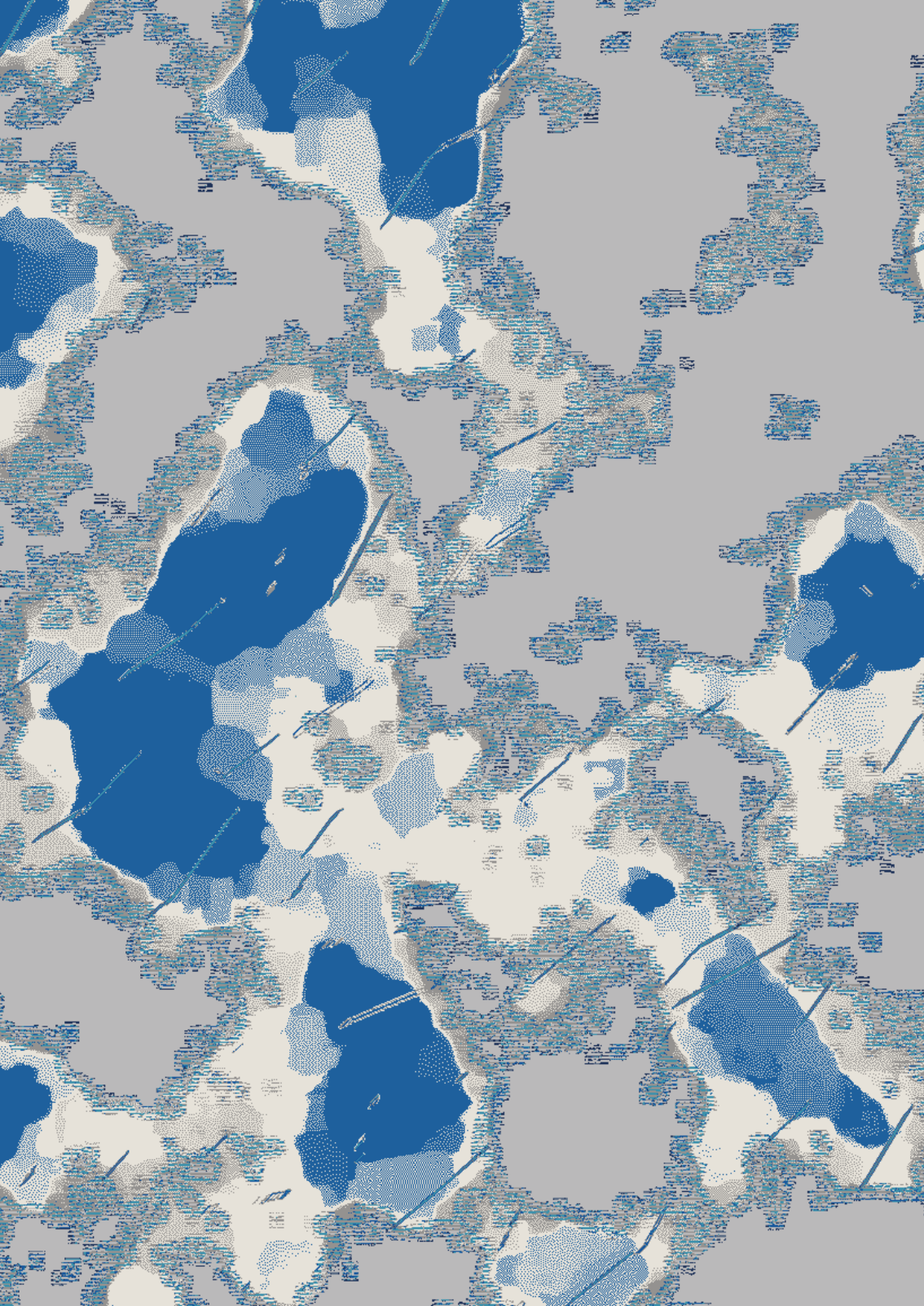
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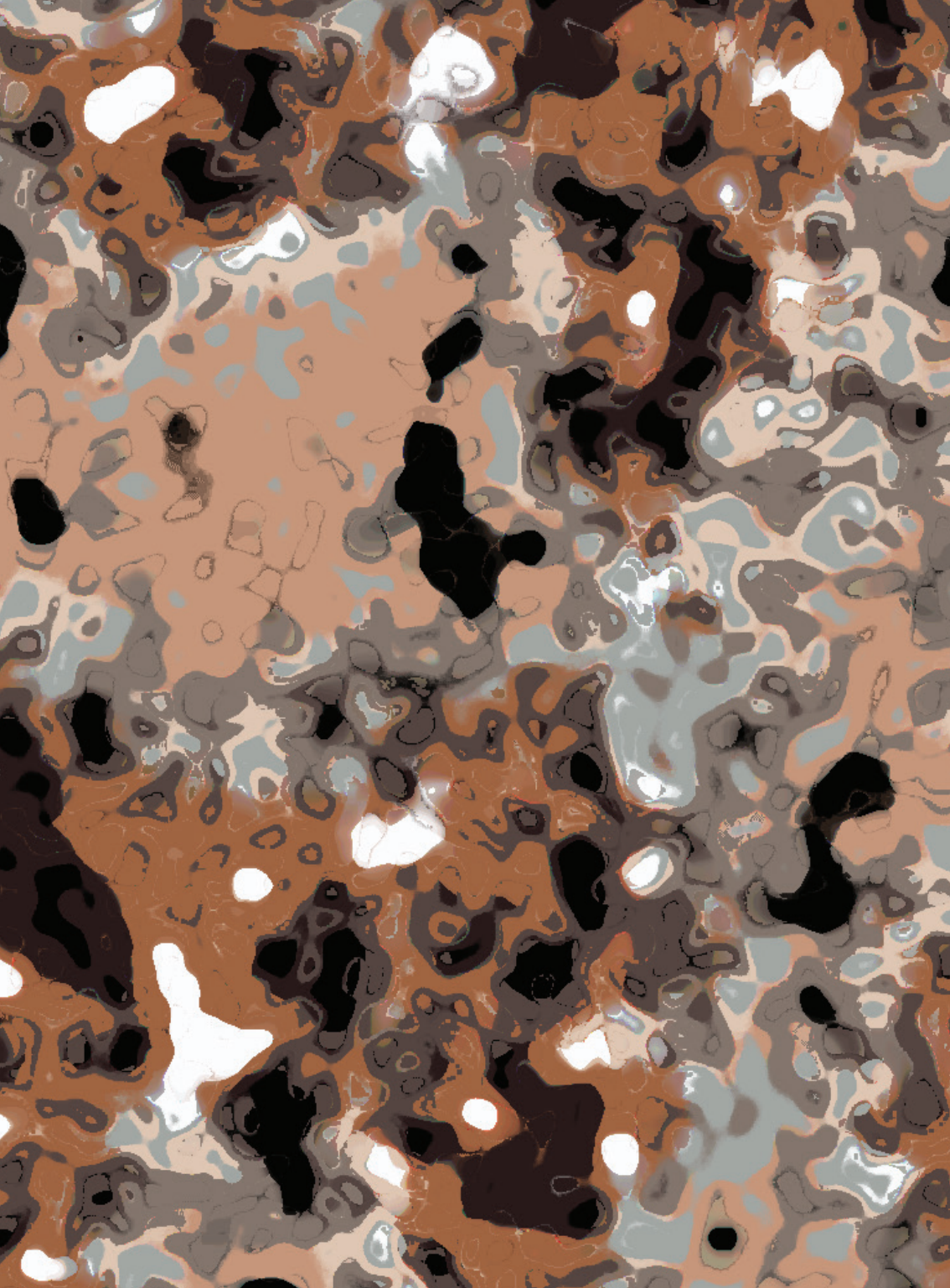
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Camouflage pattern created during workshop with Sjeff van Gaalen, April 2017.

Printed with conductive ink the cover of this book
functions as a controller for layouting.

