DISNOVATION.ORG

SELECTED PRESS
2013–2026

A selection of articles, interviews and critical texts on DISNOVATION.ORG's work across contemporary art, ecology, energy, economics, network cultures and critical technology.

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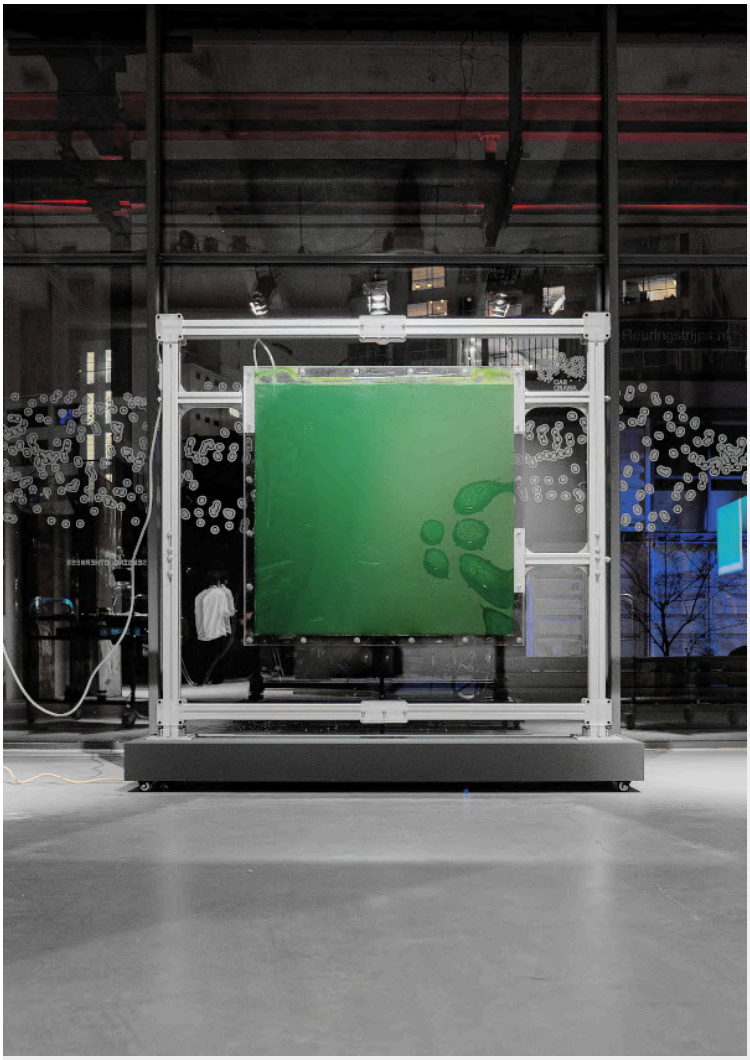
The Solar Share, biomass as currency



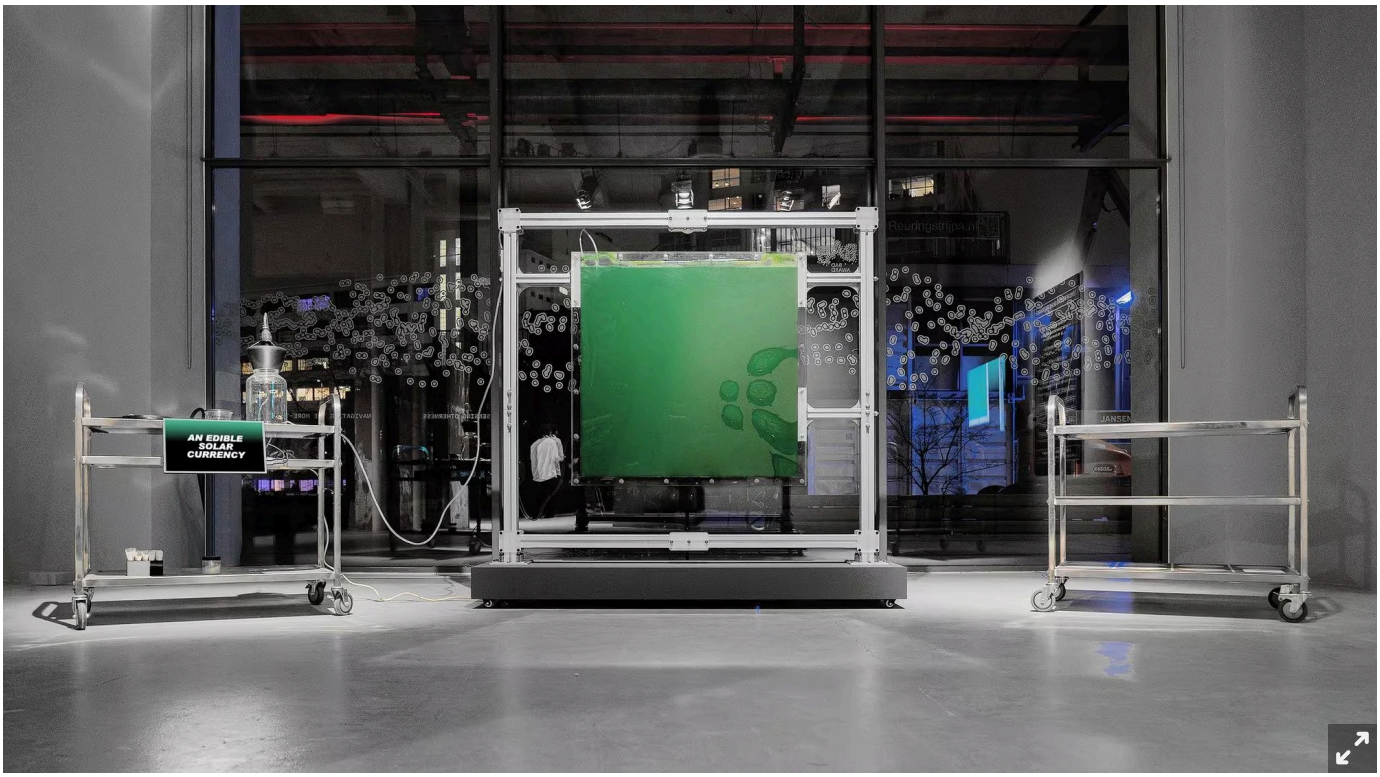
Disnovation.org (Nicolas Maigret, Maria Roszkowska and Baruch Gottlieb) has taken on the absurdities of energy management in the industry and continues to produce technically advanced and conceptually strong works. With The Solar Share, a microalgae culture produces edible biomass every day through photosynthesis in a bioreactor of one square meter (symbolising the same area of the earth's surface), which is elevated to a 'currency' as it can be 'consumed, exchanged or stored'. The provocative component goes hand in hand with scientific and economical rigour, creating a critical system that acts on multiple levels across sustainable models and the paradoxical extraction schemes we use.
Photo credit: Baruch Gottlieb

Nicolas Maigret, Maria Roszkowska and Baruch Gottlieb– The Solar Share


EINDHOVEN SOLAR SHARE EXCHANGE
ABOUT THE LOCAL RATES
DAILY HUMAN CALORIC NEEDS
PLANETARY AVERAGE SOLAR SHARE /M²

Au Mapping Festival de Genève, le collectif Disnovation interroge la dépendance des activités humaines à la photosynthèse

Un collectif d'artistes a créé un dispositif pour illustrer la manière dont les organismes vivants métabolisent la lumière du soleil à l'origine de l'énergie disponible sur notre planète. L'expérience visible à Genève jusqu'au 17 mai interroge les limites de notre modèle économique



Le photobioréacteur créé par le collectif Disnovation.

Grégoire Barbey

Publié le 09 mai 2026 à 08:22. / Modifié le 11 mai 2026 à 13:41.

C'est le genre de dispositif qui semble appartenir aux récits de science-fiction, quelque part entre *Star Trek* et *The Expanse*. Des microalgues sont cultivées dans un aquarium. Une structure métallique grise soutient ce mètre carré de verre synthétique qui permet aux organismes vivants qu'il contient de capter la lumière du soleil et de la convertir en biomasse comestible grâce à la photosynthèse. Un

tube achemine le résultat de ce processus vers un filtre qui laisse passer le liquide et retient la spiruline, un amas verdâtre composé de bactéries photosynthétiques. Une récolte permet alors de mesurer la quantité de matière ainsi produite.

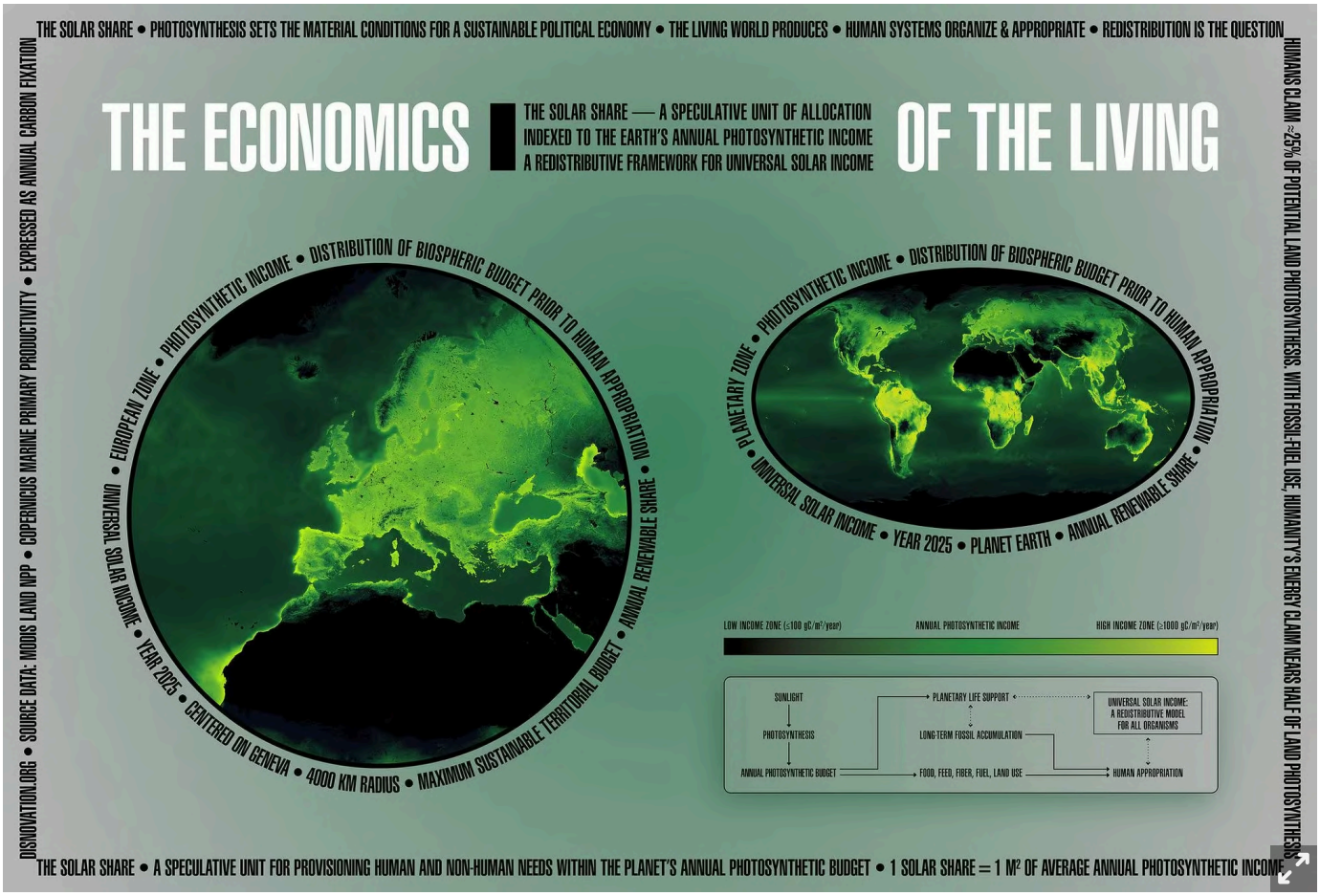
Cet ingénieux dispositif est connu sous le nom de «photobioréacteur». Il peut être observé à la Fonderie Kugler à Genève jusqu'au 17 mai dans le cadre du Mapping festival. C'est le collectif artistique Disnovation qui l'a conçu. «La photosynthèse est à l'origine de la biomasse qui soutient la chaîne alimentaire et une grande partie des activités humaines. Nous voulons souligner les tensions entre ce revenu solaire limité et notre modèle économique fondé sur une croissance infinie», expliquent au *Temps* deux des trois fondateurs du collectif, Maria Roszkowska et Nicolas Maigret.

Lire aussi: Comment de petites plantes résistantes à la chaleur ont survécu à la plus grande extinction de masse de l'histoire de la Terre

La biomasse, une monnaie universelle

Les artistes ont poussé la démarche encore plus loin et ont imaginé ce que pourrait donner un revenu universel partagé entre tous les êtres vivants. La «phytobiomasse» issue de la photosynthèse deviendrait la monnaie d'échange d'une nouvelle économie. «Chaque «part solaire», ou unité de biomasse, comme celles que génère le photobioréacteur, pourrait servir de moyen d'échange, car leur capacité calorique leur octroie une valeur intrinsèque», détaille Nicolas Maigret. Une manière pour le collectif d'illustrer l'accès inéquitable à l'énergie et le rôle fondamental de la photosynthèse dans l'existence humaine.

«Nos sociétés sont dépendantes des énergies fossiles, car la métabolisation de la lumière du soleil sur Terre est limitée par la quantité d'organismes photosynthétiques», précise Maria Roszkowska. La combustion du pétrole, entre autres, permet à l'humanité de consommer plus d'énergie que notre écosystème planétaire a la capacité de produire chaque jour. Nicolas Maigret voit dans cette expérience un moyen de provoquer la discussion et d'interroger notre rapport à la photosynthèse. «Elle est centrale, y compris pour les technologies que nous utilisons au quotidien et ce dispositif est une manière concrète de souligner le fonctionnement de cette chaîne de dépendance», indique l'artiste.



La carte créée par le collectif Disnovation pour illustrer le rôle de la photosynthèse dans l'économie du vivant.

Nicolas Maigret et Maria Roszkowska se sont appuyés sur les connaissances de chercheurs pour concevoir leur expérience. Ils en ont aussi tiré une carte qui indique la quantité de photosynthèse produite annuellement sur la Terre. «Cette évaluation permet de confronter des ordres de grandeur entre ce que l'écosystème planétaire produit comme énergie et ce que nous consommons en réalité, détaille Nicolas Maigret. Ces comparaisons sont généralement absentes des discussions sur ce que pourrait être un modèle économique durable.»

Interroger la rhétorique de l'innovation

Le collectif Disnovation crée depuis plus d'une quinzaine d'années des expériences visant à explorer et à questionner notre rapport à l'innovation, au progrès industriel et plus généralement à la croissance économique. Leurs travaux mêlent recherches, hacking et art contemporain. Disnovation est composé de trois membres fondateurs: les artistes Maria Roszkowska, Nicolas Maigret et Baruch Gottlieb. Ce trio s'appuie sur des expertises externes au gré de leurs enquêtes.

Lire aussi: A Genève, une biennale d'art contemporain qui se préoccupe de ressources naturelles

Le collectif a par exemple travaillé avec l'anthropologue genevois Nicolas Nova. La collaboration a débouché sur le *Bestiaire de l'anthropocène*, une exposition mettant en scène l'impact de l'être humain sur l'ensemble de l'environnement planétaire. «Des conséquences de l'activité humaine se retrouvent partout, du fond des océans aux nuages, relève Nicolas Maigret. Nous avons collecté et catégorisé une soixantaine de spécimens qui sont symptomatiques de nos transformations du monde.» L'exposition emprunte au registre naturaliste pour présenter les animaux, végétaux et autres organismes affectés par ces modifications. La démarche a depuis été déclinée en livre et en vidéo.

«The Solar Share». Une installation du collectif Disnovation. A voir à la Fonderie Kugler à Genève, dans le cadre du Mapping Festival jusqu'au 17 mai.

↳ Exhibitions

DISNOVATION.ORG at Kunsthaus Langenthal

April 17, 2023

Artists: DISNOVATION.ORG (Maria Roszkowska, Nicolas Maigret, Baruch Gottlieb with Jerome Saint-Clair, Clémence Seurat, Julien Maudet, Nicolas Nova, Pauline Briand)

Exhibition title: The Long Shadow of the Upward Arrow. Post Growth Prototypes

Curated by: Raffael Dörig

Venue: Kunsthaus Langenthal, Langenthal, Switzerland

Date: February 2 – June 25, 2023

Photography: all images copyright and courtesy of the artist and Kunsthaus Langenthal

The upward arrow symbolizes the narrative of progress according to which economic growth and technological advancements solve the ecological problems these create. The exhibition explores and challenges this way of thinking as well as its lacunae, and it juxtaposes them with transformative post-growth practices and prototypes. The series of videos, installations, objects, and texts – new chapters being added regularly – was devised by the international collective DISNOVATION.ORG, who invited collaborators from various fields of arts and sciences. The exhibition marks the first comprehensive exhibition of this project in the German-speaking world, after previous chapters have been shown in France, the Netherlands, Belgium and the US among other countries.

The exhibition includes installations that help translate enormous issues to human scale and suggest alternative ways of thinking. One installation, for example, uses the cultivation of one square meter of wheat under completely artificial conditions to illustrate the vast range of services provided by ecosystems “for free”. Another juxtaposes the paradigmatic upward curve of economic growth with the hidden costs, the „shadow growth“ of pollution and destruction. The Post Growth Toolkit Game invites the audience to discuss key topics of the exhibition based on their personal experience. A growing library of video interviews with experts from various scientific disciplines complement these installations and are also accessible online.

This exhibition is an invitation to a collective and practical engagement with our shared future, explo-ring the notion of growth in its many facets and implications, and testing the limits of technology, politics, and our imagination. At Kunsthaus Langenthal, it is part of a series of exhibitions that critically examine narratives of progress and technology, such as „Raus aus dem digitalen Unbehagen“(2017, among others with DISNOVATION.ORG), „I am Flowers. I am Animals“ (2018) or „Home for Obso-lete Media“ (2021).

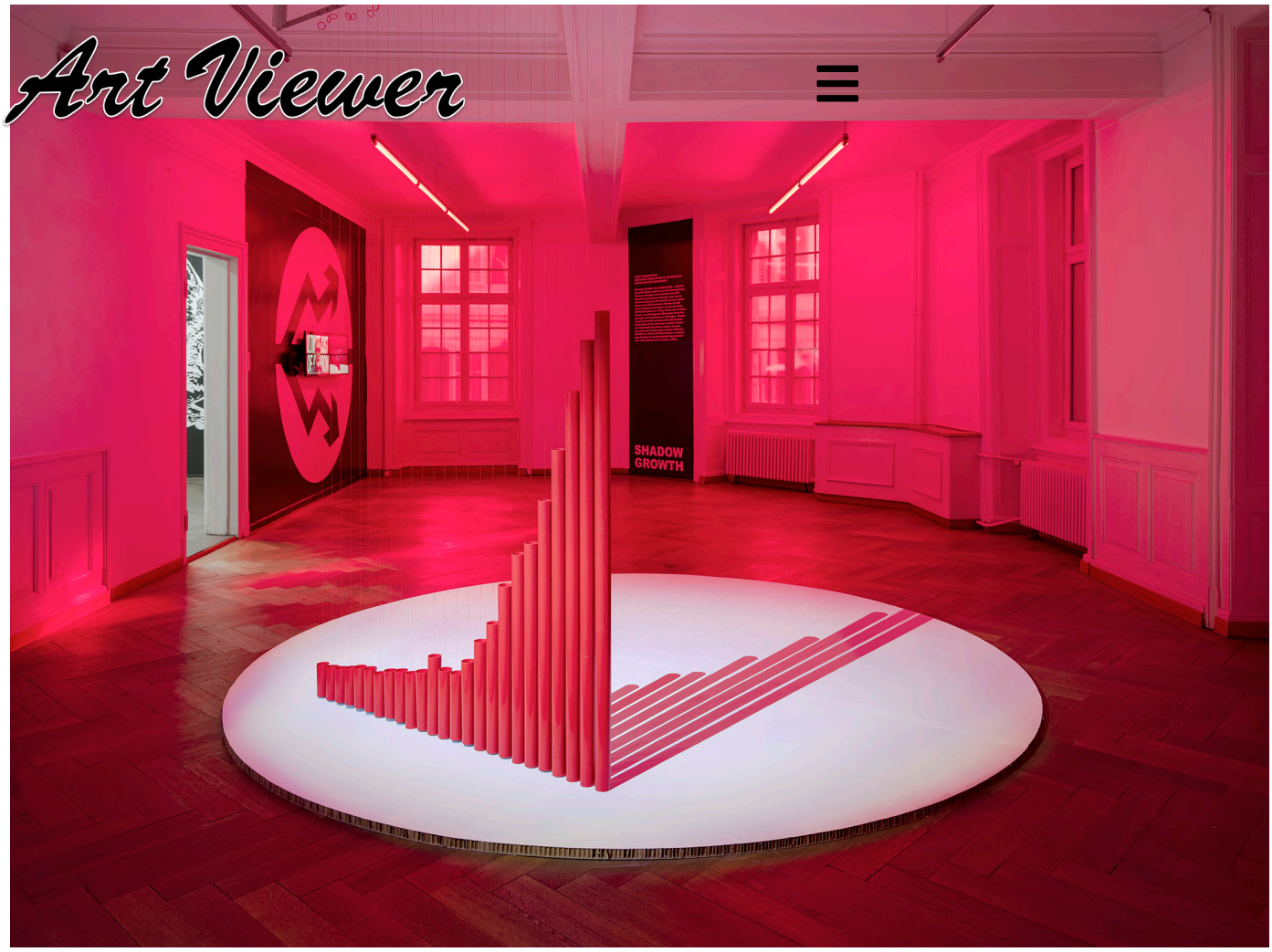
An exhibition by DISNOVATION.ORG [Maria Roszkowska, Nicolas Maigret, Baruch Gottlieb] with Jerome Saint-Clair, Clémence Seurat, Julien Maudet, Nicolas Nova, Pauline Briand. Curated by Raffael Dörig, director of Kunsthaus Langenthal.

„The past two centuries have seen unprecedented techno-industrial activity, powered by fossil fuel and the political economic and scientific thinking linked to it. Enormous value is produced from the materiality of the planet, the expansion of which we call "growth". But the story of growth has a deep shadow: the exploitation of the Earth and humans, of slavery, colonialism, and destruction. Now as the fossil fuel age wanes, the shadow darkens and spreads. Human beings emerged from the materi-ality of the planet symbiotic and symbiogenetic with the biosphere, but the transition to technological hyper-modernity has pushed the biosphere into crisis. How are we to understand our technological condition anew, and how can we cultivate the politics necessary to avert large-scale ecosystemic breakdown?" DISNOVATION.ORG

Artist's bio

DISNOVATION.ORG is a research collective set up in Paris in 2012, whose core members include Maria Roszkowska (PL), Nicolas Maigret (FR), and Baruch Gottlieb (CA). They work at the inter-face between contemporary art, research, and hacking, and compose tailor-made teams for each investigation together with academics, activists, engineers, and designers. More specifically their recent artistic provocations seek to empower Post Growth imaginaries and practices by challenging the widespread faith that 'economic growth' and 'technological fixes' will solve the ecosystemic dis-ruptions they produced in the first place. They recently co-edited A Bestiary of the Anthropocene with Nicolas Nova, an atlas of anthropic hybrid creatures, and The Pirate Book, an anthology on media piracy.

DISNOVATION.ORG's works have been exhibited, performed, published, and reviewed worldwide, including at the Centre Pompidou (Paris), transmediale (Berlin), the Museum of Art and Design (New York), Palais de Tokyo (Paris), FILE (Sao Paulo), ZKM (Karlsruhe), Strelka Institute (Moscow), ISEA (Hong Kong), Elektra (Montreal), China Museum of Digital Arts (Beijing), and the Chaos Computer Congress (Hamburg). Their work has been featured in Forbes, Vice, Wired, Motherboard, Libération, Die Zeit, Arte TV, Next Nature, Hyperallergic, Le Temps, Neural.it, Digicult, Gizmodo, Seattle Weekly, torrentfreak.com, and Filmmaker Magazine among others.



DISNOVATION.ORG, *The Long Shadow of the Up Arrow. Post Growth prototypes*, Exhibition views Kunsthaus Langenthal, 2023, Photo: Cedric Mussano, Courtesy of the artists

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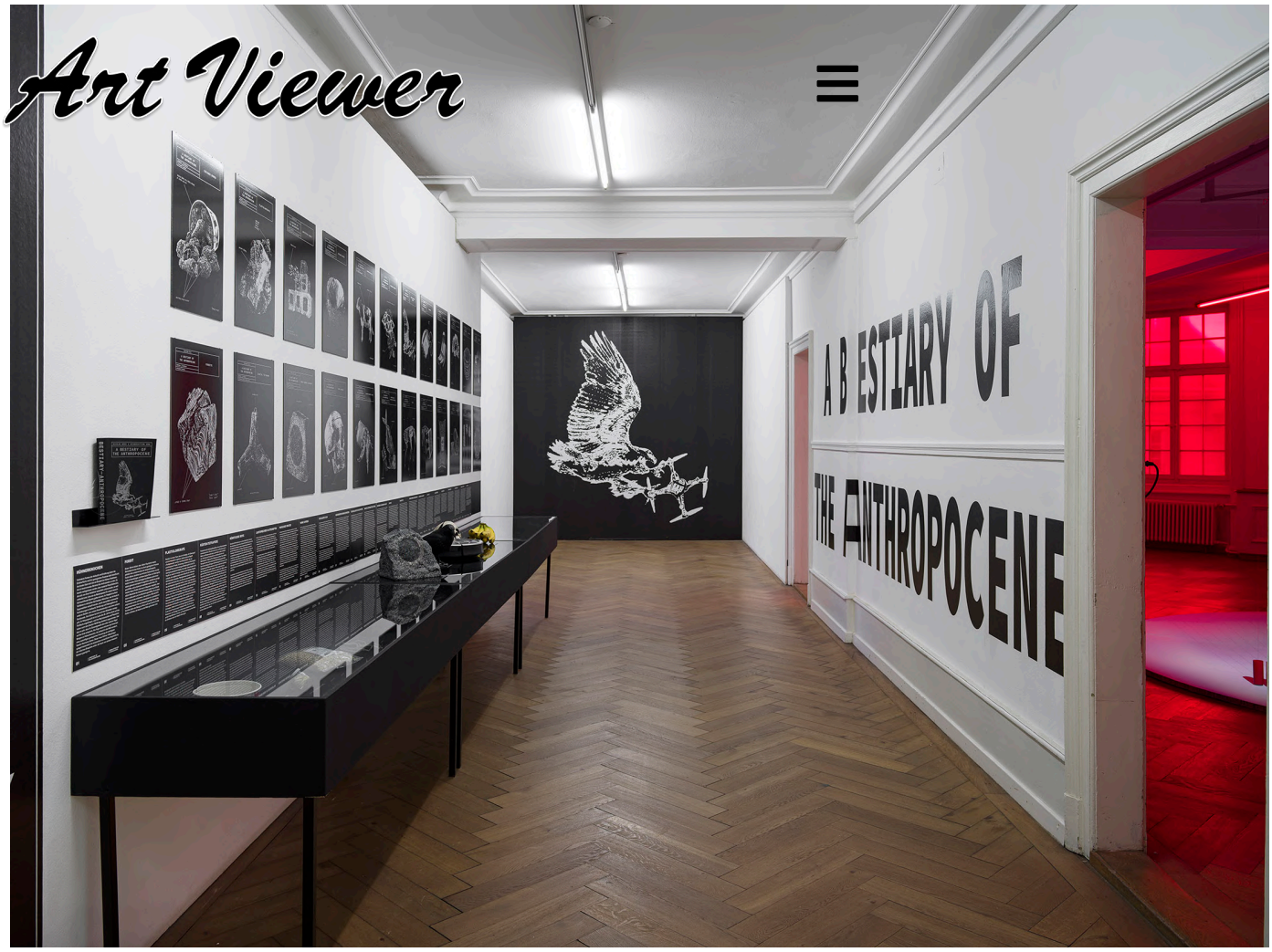

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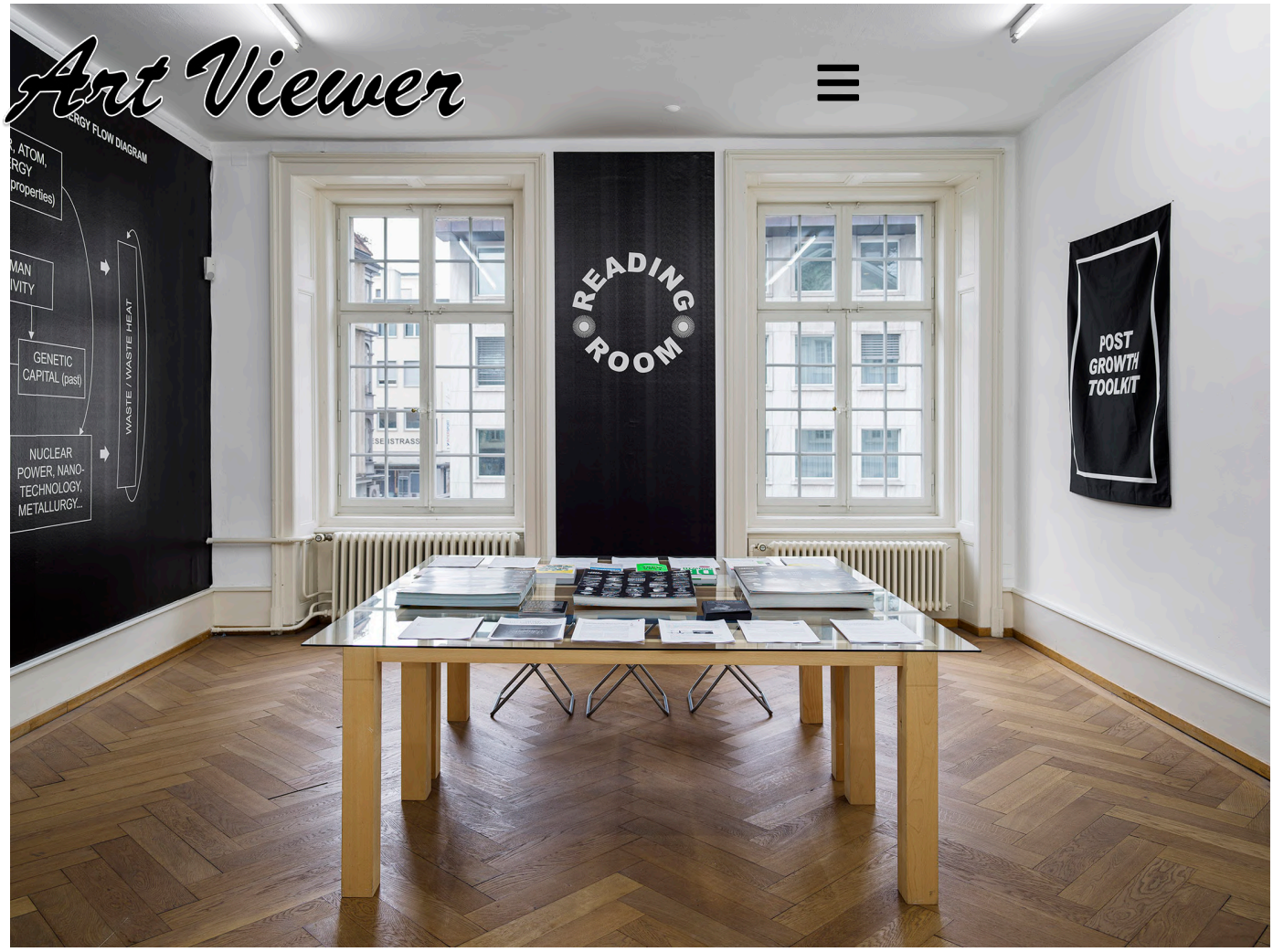

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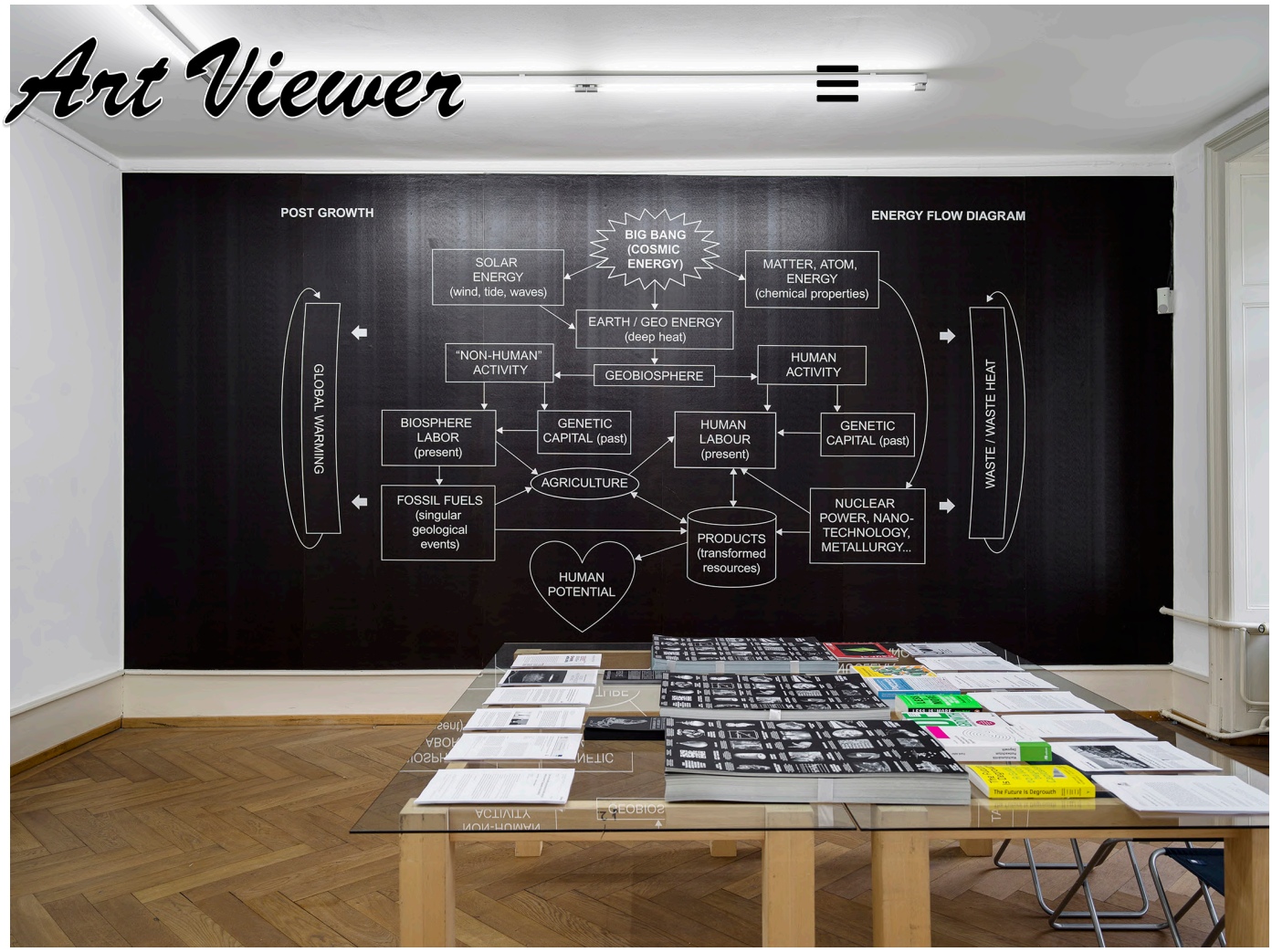

DISNOVATION.ORG, *The Long Shadow of the Up Arrow. Post Growth prototypes*, Exhibition views Kunsthaus Langenthal, 2023, Photo: Cedric Mussano, Courtesy of the artists

HACNUmedia

Back to articles

Reducing the Ecological Impact of Artists: A Look Back at the Green Residencies Programme

#FEEDBACK

Article published on 12 September 2025
Topics: Distribution & mediation, Ecology
Reading time: 4 min

Taking time out in a green environment to reflect on the ecological footprint of one's practice and to experiment with new methods — this is what the newly launched Green Residencies programme from the Ministry of Culture offers. Here is a look back at the pilot year of the scheme with one of the participating artist collectives, Disnovation.org.

The Green Residencies programme and Disnovation.org seemed destined to connect. On one side: a 6–12 month residency enabling an artist from the performing arts or visual arts to commit to an ecological transformation of their activity. On the other: Disnovation.org, a collective founded in 2012 by Nicolas Maigret and Maria Roszkowska. Initially known for projects examining dominant technologies (military technologies with War Zones, surveillance with Profiling the Profilers, or online cultural conflicts with Online Cultural Wars), Disinnovation shifted direction in 2018. Since then, their work has focused on "the links between ecology, energy and economics — a trio through which we can understand the major societal challenges related to environmental issues," explains Nicolas Maigret. The collective has created a bestiary of hybrid Anthropocene creatures, explored alternative economic models in Post Growth Prototypes, and quantified the economic value of ecosystems in Life Support System. A reorientation in substance, but also in form: "We asked ourselves a lot of questions and introduced many changes in our practices," recalls Maigret. "We create works designed to be easily reproduced in different locations, easy to exhibit and circulate, and we don't travel each time we are invited…"

Life Support System. © Disnovation.org

Collaboration, Public Sharing and Documentation

When the Ministry of Culture invited the collective to take part in the pilot year of the Green Residencies programme — with a financial grant of €20,000 — Disnovation embraced the proposal and assembled a working group for a field investigation. To ensure scientific solidity, they approached Cédric Carles, founder of Atelier 21, a structure dedicated to promoting collective and accessible energy alternatives. For the host venue, they partnered

with Espace Multimédia Gantner, then directed by Valérie Perrin. “They have long been interested in questions of digital impact and ecological transition, and their stance on preserving experimental and digital practices is unique in France — their collection of art and new technologies is unmatched in scale nationwide,” notes Maigret. This collective approach to leading the residency project is also encouraged by the DGCA, since the call for projects requires associating the artist with both a host venue and an ecological transition professional, who co-lead the project.

As for the creative process, the collective had carte blanche. The call specifies that “the research does not necessarily have to result in an artwork but must include a public presentation in the territory where it takes place, and be documented.” A rare and precious creative freedom, Maigret emphasises: “In most calls for projects, there is a strong expectation of finished works and deliverables. Here, the proposal was very open, focused on supporting an experimental phase. There was a relationship of trust in the trajectory, ability and commitment of artists to carry out their investigations. This is extremely rare — and it is what enabled us to pursue such an ambitious project.”

Wim Cuyvers en compagnie de Clémence Seurat et Maria Roszkowska © Disnovation.org

Bifurcation and Low-Carbon Audiovisual Methods

For this year of creation and experimentation, Disnovation.org chose to conduct a long-term investigation, meeting artists, designers, makers and architects who have embraced forms of bifurcation. “They are exemplary individuals we’ve encountered through our exhibitions, conferences and life experiences, and they offer us substantial insight into

radical bifurcation pathways." Among these profiles are Kris De Decker, former science and technology journalist whose frustration with techno-positivism led him to found Low Tech Magazine — a website powered by solar energy that, as noted on its homepage, "sometimes goes offline." The list also includes Vesna Manojlovic, who works on decentralised and low-carbon event organisation for the hacker community, and Jay Jordan, performer, activist and educator, based at the Notre-Dame-des-Landes ZAD and co-author of Les Sentiers de l'utopie. "These people have developed solutions and ways to respond to existential dilemmas related to transition, stepping away from hyper-consumption, capitalism and the commodified cultural world," summarises Nicolas Maigret.

Kris De Decker en interview pour la Résidence verte de Disnovation.org. © Disnovation.org

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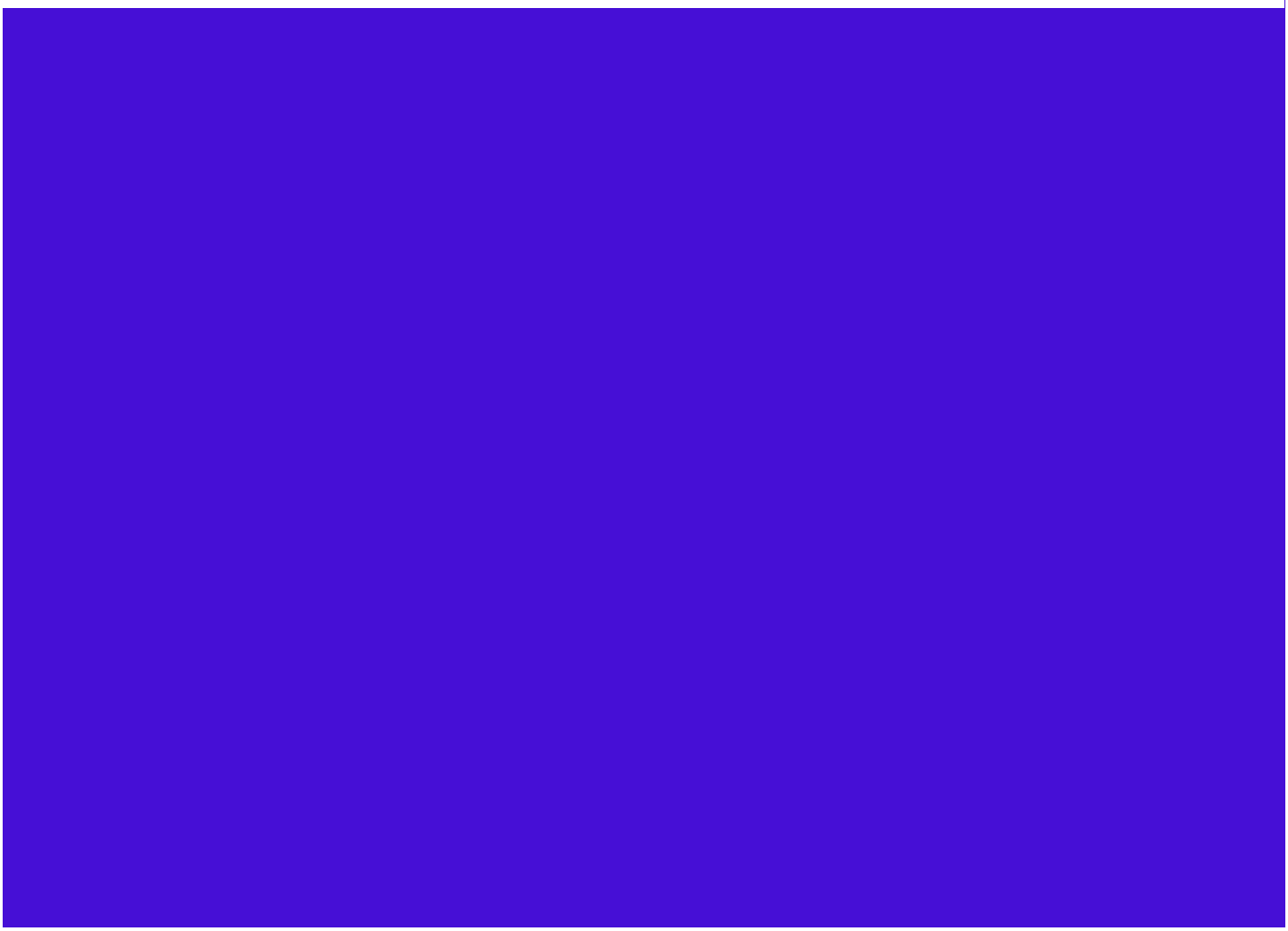
These testimonies, gathered into an “anthology of oblique trajectories,” will be presented in 2026 as an installation, a collection of texts, and also as “a choreography of low-carbon HTML and CSS events,” says Nicolas Maigret. The collective has teamed up with developer Sarah Garcin, known for frugal coding practices, to develop a low-carbon audiovisual format. The prototype of this creative tool is still under development and will be shared as open-source, Maigret assures. “Between 50 and 80% of the web’s footprint comes from video streaming,” he reminds us. “Whether YouTube, social networks, Netflix, videoconferencing… it accounts for the majority of data traffic.”

The DGCA has just closed the call for the 2025–2026 edition, with another €20,000 grant available. The result will be announced in March 2026. And for the next cohort, Maigret has only one wish: “I hope that future years will continue to offer artists the same degree of creative freedom and experimental space.”
Message received.

WRITING
Elsa Ferreira



View of The Solar Share installation at Ars Electronica 2024. Credit : Disnovation.org

Eating the sun: the Disnovation collective explores the Solar Share at the Ars Electronica festival in Austria

Published 3 September 2024 by Disnovation.org

The collective Disnovation.org is presenting its new project The Solar Share from 4 to 8 September at the Ars Electronica festival in Linz, Austria. It will be on show in the S+T+ARTS section of the festival. We are republishing here the text written by the collective for the journal The Laboratory Planet #6, released last June as part of the More-Than-Planet programme and that will be distributed at the Ars Electronica festival at the Platform Europe section.

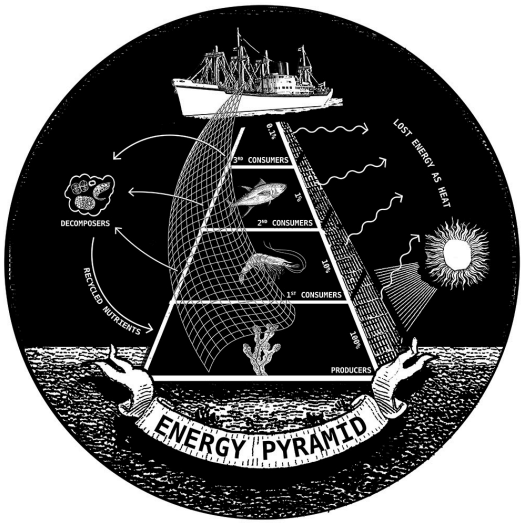
Through an economic lens, this text explores how solar energy circulates through the biosphere as a primary life-supporting value [1]. Photosynthetic organisms convert solar energy into organic matter, generating the carbon compounds that form the basis of life on Earth. Energy from the sun is the basis of the entire food chain and fuels human activities, such as gathering, hunting, fishing, agriculture, cooking, heating, and building [2]. This investigation examines the terrestrial metabolization of solar energy as a means to reconsider the concept of sustainability. It explores how heterodox economic representations could inform governance to achieve lighter ecological footprints and sustainable human coexistence within ecosystems.

In Search of Sustainability

What does sustainability mean? We propose to examine sustainability as a social goal for humans to coexist on Earth over a long time[3]. Since the sustainability of the material affordances of human needs is a core topic in economics, we will explore how a broader comprehension of economics, value, and accounting can effectively address such ecological issues. We propose to embrace the prospects of human 'sustainability' from the following perspective: Earth's geological materiality is finite, mining is irreversible, and geological matter is poorly recyclable[4]. Consequently, only the network of matter-energy fueled directly and indirectly by the Sun can be understood as truly sustainable.

What Isn't Counted Doesn't Count

Accounting as a practice involves complexity reduction, generating biases in the process. It is therefore critical to question what is being measured or quantified. Quantification is the basis of all modern economic rationality, but quantification is incomplete by definition. Understanding that all elements of an environment are in symbiosis and cannot exist independently[5], it can neither be sufficient to examine any isolated phenomena nor can sufficient relations be enumerated. Any accounting model must be seen more as an instrument of observation, especially control, than as one revealing the truth of a circumstance. Further, quantification is essential to digital cybernetic operations that are designed to conform living beings to desired models of productivity and activity[6]. In this sense, accounting can only be understood as part of a regime of governance. What is measured, and how it is measured, has to do with what results are desired.



The flow of energy between trophic levels through the ecosystem – Plate 'Energy Pyramid' by Disnovatio

Distinguishing Value From Money

"The cost of a thing is the amount of life which is required to be exchanged for it" (H. D. Thoreau). While monetary accounting systems are commonly used to assess sustainability, they are inadequate to the task of balancing human needs within planetary boundaries. Quantifying the value of goods or environmental assets in monetary terms — of a viable ecosystem, for example — is doomed to produce insufficient and varying assumptions due to methodological, regional, and ideological factors. In contrast to monetary accounting, alternatives which employ plant-based units with inherent metabolic value can provide valuable insights into our sustainability challenges. Historical examples such as cocoa beans, hemp, beer, or tea bricks are tangible accretions of biospheric photosynthesis, representing products of ecosystem energy flows, stocks, and human labor. Their "intrinsic value" is tied to the photosynthetic biomass they contain, the labor invested in their cultivation and preservation, and the underlying biodiversity that supports the ecosystems of which they are a part. By emphasizing the interconnectedness of goods and services with their origins in planetary biophysical processes, plant-based units can help model a sustainable global economy.

Examples of food-based currencies – Plate 'Edible currencies' by Disnovation.org

Energy as a Universal Currency[7]

The study of energy flows as a fundamental unit for comprehending economic interactions finds its origins in recognizing the Sun's role as the primary source of energy on Earth. This idea is rooted in various cultural, scientific, and philosophical perspectives as noted by V. Vernadsky[8]: "The biosphere is as much, or even more, the creation of the Sun as it is a manifestation of Earth-processes. Ancient religious traditions that regarded terrestrial creatures, especially human beings, as 'children of the Sun' were much nearer the truth than those which looked upon them as a mere ephemeral creation". Similar visions explored how solar energy flows and stocks fuel terrestrial systems, and how trophic chains drive vital processes to form the basis of our economic and ecological existence. "Earth is a chemical battery where, over evolutionary time, billions of tons of living biomass were stored in forests, ecosystems, and fossil fuels. In just the last few hundred years, humans extracted exploitable energy from these living and fossilized biomass fuels to build the modern economy"[9]. By recognizing the matter-energy of solar origin that is circulated within the Earth system, via photosynthesis on land and in the ocean, we can develop new economic instruments that help better account for, model, and address anthropic needs within the affordances of the planet.

Accounting for Historical Solar Energy

To unfold our investigation into solar value, we propose to look at Emergy (with an M), an accounting method proposed by American ecologist H. T. Odum in the 1970s to analyze energy flows in ecosystems. In the Emergy model, the Earth system, biosphere, and all human activity on the planet from the most rudimentary to the most industrialized are examined as transformations of solar energy flows. Emergy provides a unit: "solar-equivalent joules", which allows us to model an energetic economy of the Earth related to solar income (for instance, 1 joule of plant matter is the product of 40,000 solar-equivalent joules). This systemic approach can be applied to concrete examples, such as the food chain or the economic flow of a country. It models the interconnectedness of ecological and economic cycles, much like a circuit diagram. Emergy promises detailed and comprehensive modeling of goods and services as tree structures, where all anterior solar energy consumed is factored in. Though it helps to radically rethink fundamental questions in economics, such as how to adequately value a commodity[10]. While the Emergy method is not intended for exact quantitative analysis, it provides a unique insight into the magnitudes of solar energy embedded in vital processes across the economy.

Beware of Zombie Sustainability!

We need to recognize the limits of renewable energy, as the mathematician-economist Nicholas Georgescu-Roegen has pointed out: “Future generations will still be able to access their inalienable share of solar energy. However accessible material low entropy is by far the most critical element from the bioeconomic viewpoint, […] a piece of coal burned by our forefathers is gone forever, just as is part of the silver or iron mined by them”[11]. Today, any circulation of energy in industrialized human society requires the use of non-renewable minerals. Even renewable energy infrastructures rely intensively on non-renewable mineral resources, raising critical justice concerns about the intergenerational allocation of finite resources. For the physicist José Haloy, technologies characterized by non-renewables, planned obsolescence, and fossil fuel use are “zombie technologies” that, as waste, continue to affect the biosphere after they are “dead,” destined to haunt humanity for ages.

Planetary Photosynthesis as an Indicator of Renewable Flows

Since 2000, ground data and satellite imagery of photosynthetic processes monitored on a planetary scale are increasingly confirming earlier theories of solar value flows. Recent instruments developed for planetary observation[12] provide data that inform our understanding of the links between solar energy, autotrophic biomass — microalgae, algae, plants — and global human needs. This data provides estimates of the quantity of stored energy generated by photosynthesis, which is critical for sustaining human activity on the planet. NASA’s annual Net Primary Production (NPP) figures illustrate and estimate the primary work of the Earth’s ecosystem, which continually captures solar energy via photosynthesis and physically stores it in living matter, sustaining flows in the rest of the living organisms. NPPs can now be used to test and challenge the hypotheses of the last century linking sustainability and biomass energy. The annual NPP is estimated to be 104.9 petagrams of carbon per year[13]. We propose to provisionally consider this as “solar income”, a reference for the primary matter-energy budget renewed via photosynthesis each year in the Earth system. This hypothesis enables us to construct realistic “strong sustainability” scenarios that recognize the maximum biomass energy available to all living beings.

Potential primary productivity appropriated for human needs: crops, livestock grazing, sea products, woo
annually around 2000. In addition, fossil fuel is ~9 GtC annually (ancient sunlight). – Plate ‘human approp

The Limits of Biomass Exploitation

NPP, a measure of renewed autotrophic biomass mentioned above, is estimated based on satellite observations of fluorescence produced during photosynthesis. But how do human activities relate to this process? A significant proportion of photosynthesis production (NPP) is consumed by humankind, either directly for food, fiber, livestock, and wood, or indirectly through land use. The Human Appropriation of Net Primary Production is an indicator (HANPP) that represents vectors of appropriation, extraction (setting nature to work[14]), and transfers of wealth (exploitation) from the biosphere and its biodiversity to human societies; from rural areas to cities; from peripheral regions to megalopolises; from the Global South to the Global North; from oceans to land. HANPP is currently esti-

mated at 25% to 40% of global photosynthetic production (NPP)[15]. As an indicator of the decline in biodiversity, a critical HANPP threshold of well below 50% of NPP has been identified as likely to trigger irreversible systemic disruption[16]. How can we use these complementary indicators at both global and ultra-local levels to guide sustainable human projects on this planet? Can these indicators help reorient economic policy away from the narrow imperatives of GDP growth, and "green" profiteering?

Plate 'Eating the sun' by Disnovation.org

The Solar Share, a Portion of the Biosphere's Work

Autotrophs give life to the Earth. Photosynthetic organisms can effectively slow down the speed of light by converting solar energy into persistent carbohydrates. This phenomenon provides the basis for a tangible method of reconsidering human activities as embedded in Earth's ecosystem processes. Starting from an accounting of photosynthetic biomass, human-available metabolized energy income from the sun, it becomes possible to elaborate a basic energy unit, a "solar share" on which comprehensive models of accounting for human material needs within the affordances of the planet can be built. Such a unit can meaningfully and reliably inform sustainable governance of human-ecosystem interactions, emphasizing the pivotal role of photosynthetic organisms and the ecosystems they regenerate. The Solar Share can bridge between our cosmic origins and our common cause of long-term planetary viability.

This investigation prefigures The Solar Share, an artistic research by disnovation.org, a research collective whose core members include Maria Roszkowska (Pl/Fr), Nicolas Maigret (Fr), Baruch Gottlieb (Ca/De) and Jérôme Saint-Clair (Fr).

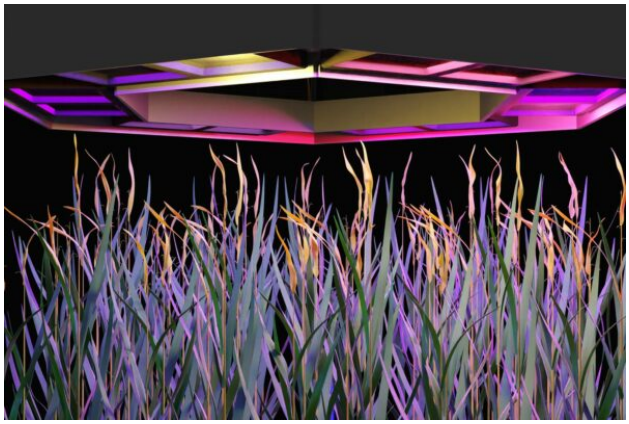
The Solar Share (live) and Disnovation.org websites.

Find The Laboratory Planet #6 at the Platform Europe of the festival or download it on the newspaper website.

The Solar Share was commissioned by ART2M / Makery with the support of the More-Than-Planet cooperation program co-funded by the European Union. It was supported by the S+T+ARTS program of the European Union – co-commissioned by HacTe Barcelona. It was also co-produced by IFT Paris and prototyped at Xcenter Nova Gorica in May 2024.

The Solar Share is presented at Ars Electronica festival 2024 in the S+T+ARTS program exhibition.

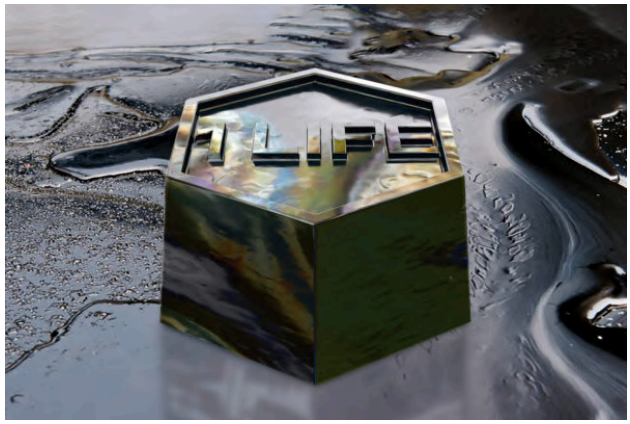
Post Growth - DISNOVATION.ORG



Post Growth: The Biosphere's Work and The Solar Salary (2/2)

Published 23 March 2021 by Maxence Grugier

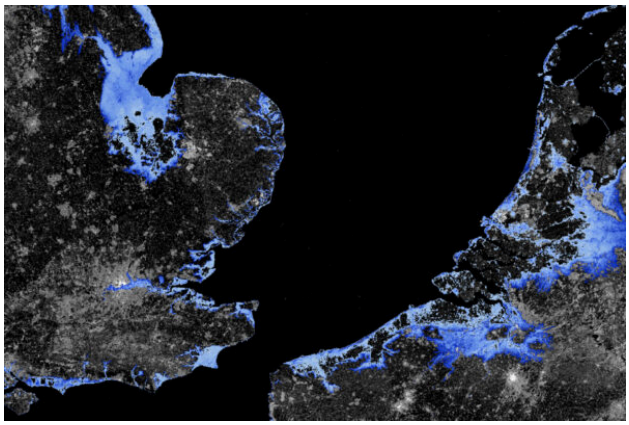
Since 2018, DISNOVATION.ORG's Post Growth project puts into critical perspective the imbrications between growth mechanisms and contemporary ecosystemic crises. Part 2.



Post Growth: a Toolkit for Radical Transitions (1/2)

Published 1 March 2021 by Maxence Grugier

Since 2018, DISNOVATION.ORG's Post Growth project puts into critical perspective the imbrications between growth mechanisms and contemporary ecosystemic crises. Part 1: Toolkit.



More-Than-Planet: Finding new planetary imaginaries and actions

Published 20 February 2023 by Zoénie Deng

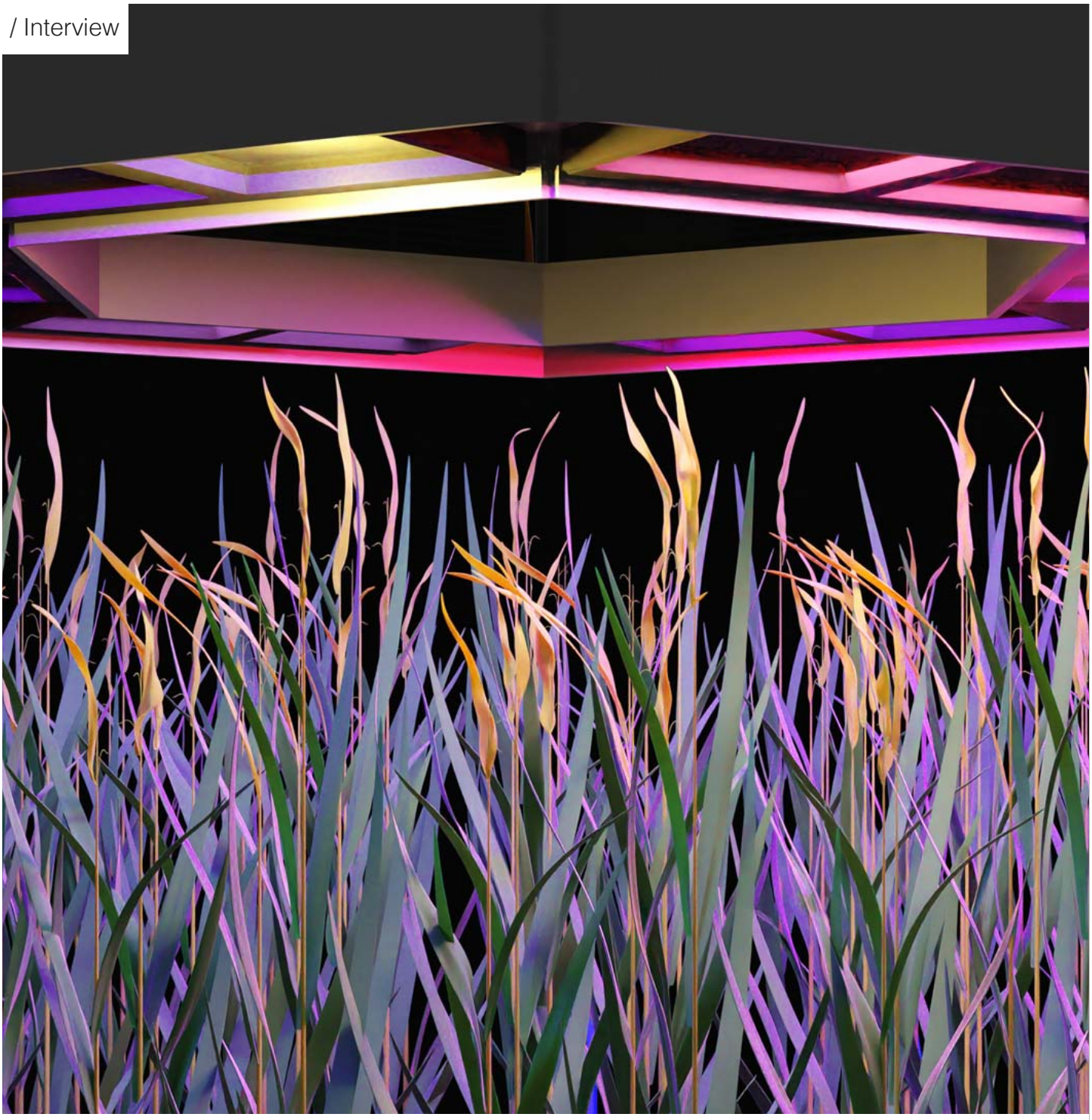
The exhibition More-than-Planet (July-December 2022) presented five international artists working on critical narratives to reduce the global environmental crisis.

Jean-Paul Fourmentraux explores art and digital disobedience in "antiDATA"

Published 4 May 2021 by Sandrine Lambert

French socio-anthropologist and digital art critic Jean-Paul Fourmentraux talks about techno-critical hacktivism through his recent book "anti-DATA: digital disobedience".

/ Interview



"The Farm" (video capture), DISNOVATION.ORG & Baruch Gottlieb, 2020

Post Growth: The Biosphere's Work and The Solar Salary (2/2)

Published 23 March 2021 by Maxence Grugier

Post Growth is a series of initiatives by the collective DISNOVATION.ORG that puts into critical perspective the imbrications between growth mechanisms and

contemporary ecosystemic crises. Part 2 of our interview.

Founded in 2012 by Nicolas Maigret and Maria Roszkowska, DISNOVATION.ORG is both an art collective and an international workgroup engaged in the crossovers between contemporary arts, research and hacking. Artist and philosopher Baruch Gottlieb joined the collective in 2018. Together, they develop situations of interference, debate and speculation that question dominant techno-positivist ideologies in order to foster post-growth narratives. Their research is expressed through installations, performances, websites and events. They recently co-published *A Bestiary of the Anthropocene*, an atlas of anthropic hybrid creatures, and *The Pirate Book*, an anthology about pirated cultural content.

Post Growth was initiated by DISNOVATION.ORG in 2018, with Clémence Seurat, researcher and publisher of eco-political issues; Pauline Briand, journalist specialized in biodiversity issues; Julien Maudet, designer of critical and political games. Read Part 1 of our interview.

You suggest that the ubiquitous language of political economics is quite deficient in describing our relationships with the living world and the biosphere. What kind of language needs to be reinvented?

To quote George Box: “All models are wrong but some are useful.” We are used to understanding and evaluating our daily interactions in society, in the world and in the biosphere through economic metaphors. But contemporary standard economics is still based on the assumption that natural resources are unlimited, where their value tends toward zero.

This distorting prism through which we explain the world occludes the work of the biosphere and how materially dependent our societies are to ecosystems.This premise led us to research how to describe and apprehend our relationships with the living world, especially the energy and materials circulating in the biosphere, to hyper-visualize these physical dependencies instead of obscuring them.

The Farm (video), DISNOVATION.ORG & Baruch Gottlieb, 2021:

In *The Farm*, an artistic experiment in cultivating 1 square meter of wheat above ground, you call attention to the magnanimous work of the biosphere, otherwise known as "ecosystem services". How did you proceed?

The Farm experiment consists of artificially cultivating 1 square meter of wheat within a closed environment, where the main conditions for survival (water, light, nutrients, etc.) are provided, measured and monitored by an automatic system.

This model allows us to estimate the orders of magnitude of material and energy flows that are otherwise provided by ecosystems on arable lands. From this we can extrapolate to the huge scale of ecosystems' contributions essential to all human and non-human processes, conventionally obscured in standard economics.

Based on this experiment, we estimate that under ideal conditions it is possible for one square meter to produce 3kg of wheat for 610€ per year. This experimental cost of over 200€ a kilo is astronomical when compared to the 0.15€ per kilo price at which wheat is exchanged on the global market. Here we can begin to understand the magnitude of all the ecosystems' contributions which are excluded in the dominant model, or underestimated when "nature" is abusively counted as capital.

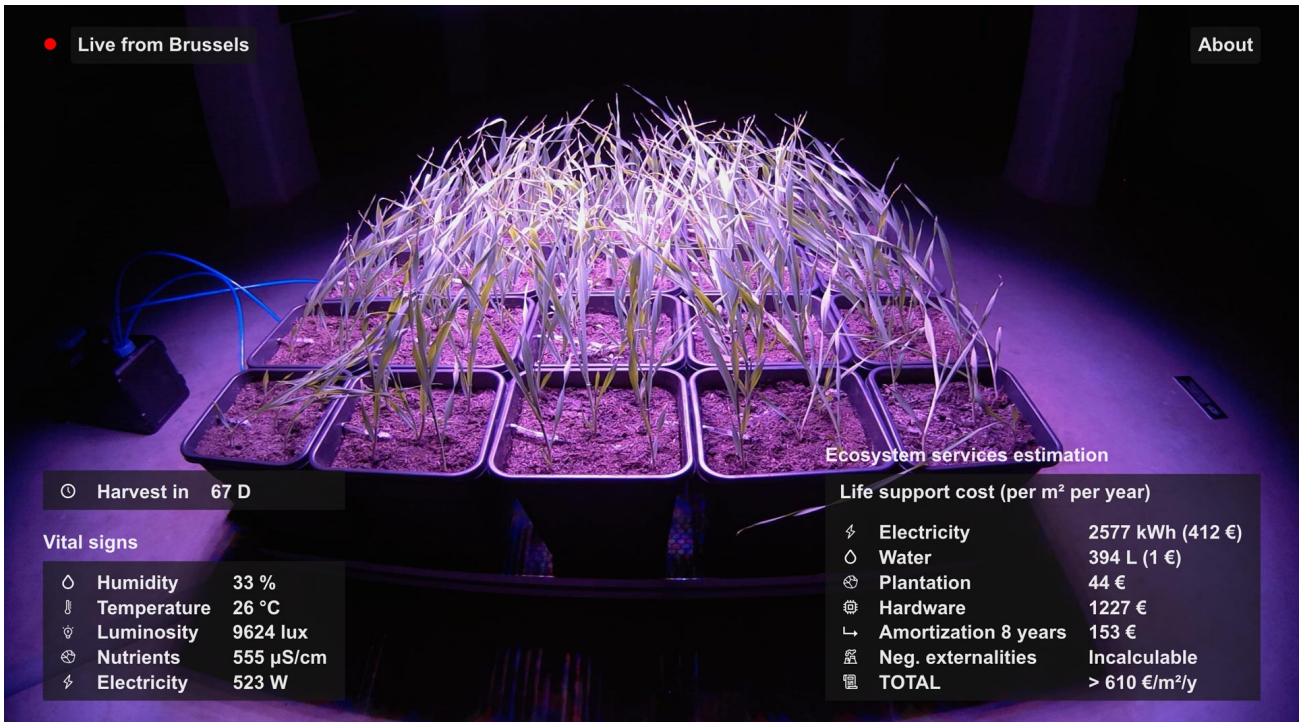
"The Farm", exhibition view at 3BisF in Aix-en-Provence, DISNOVATION.ORG & Baruch Gottlieb, 2020

What is your opinion of the growing potential of agriculture in closed spaces? I'm thinking of vertical farming, or urban farming in shipping containers launched by the entrepreneur Kimbal Musk.

The Farm aims to make more tangible the fundamental challenge behind part of the agro-industrial sector's promises to meet the nutritional needs of urban populations through indoor farms and other artificially controlled environments. This fantasy is presented ever more frequently as an appropriate response to climate breakdown.

This 1-square-meter experiment highlights the vast technical infrastructures and energy flows required to grow a staple food such as wheat in an artificial environment. In the current economy, though it can be profitable to produce water-intensive agricultural produce such as green vegetables and tomatoes in a closed environment. this is clearly not the case for products with higher caloric values such as starches, which supply an essential portion of energy for human life.

Furthermore, from a systemic perspective, the profitability of this industrial production depends on the availability of cheap fossil fuels, not to mention the extraction of resources and global pollution, including all the subordinate processes, from mining to manufacturing electronic devices and international shipping, which are also largely under-estimated. This experimental farm aims to reveal these numerous layers of interdependence that are inadequately accounted for in prevailing economic models. It also provides a speculative estimate of the ecosystemic services that a closed environment must reproduce at high social, energy and ecosystemic costs.



"The Farm", Live monitoring, IMAL, Brussels, DISNOVATION.ORG & Baruch Gottlieb, 2020

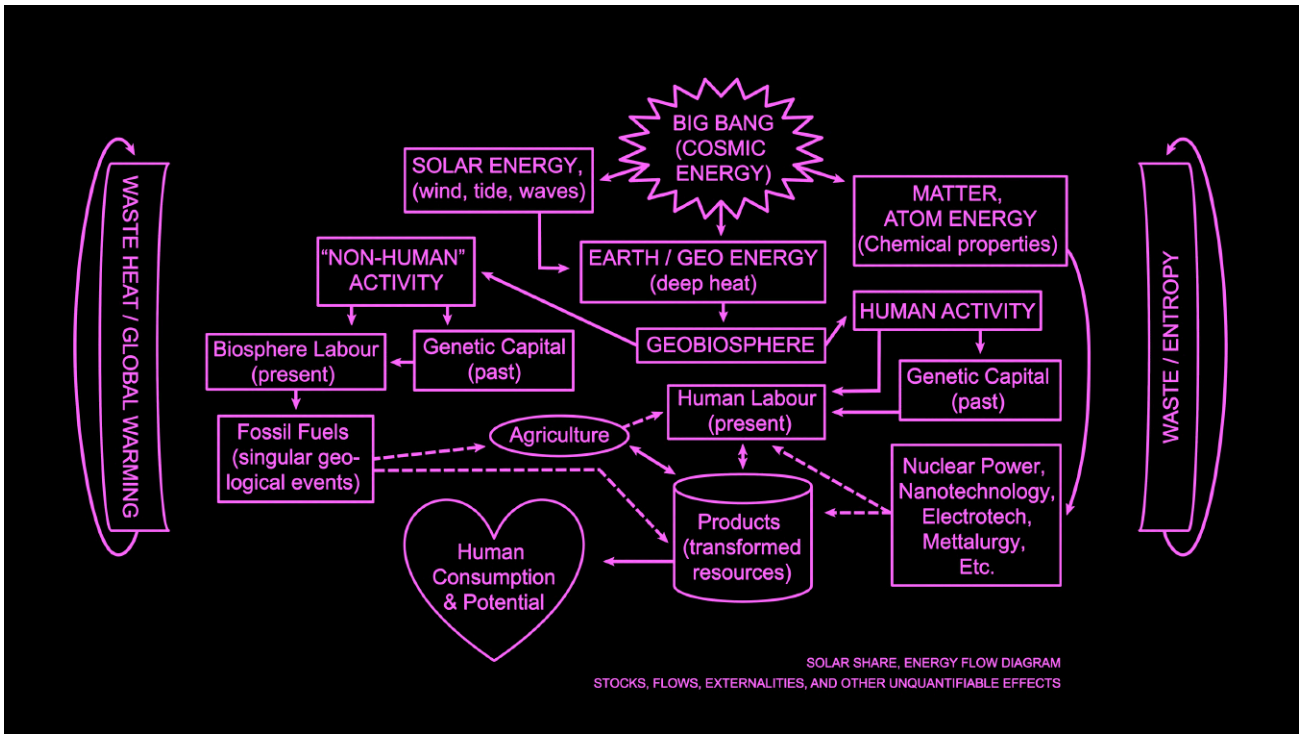
In *Solar Share*, you sketch out an economic model based on solar radiation captured by the biosphere. You even talk about "Solar Salary". What led to this unorthodox way of thinking?

As previously mentioned, the dominant models used to explain our material and energy economy remain unsatisfactory. The concept of value habitually represented in current economic models through prices is an ideological convention.

In *Solar Share*, we make manifest economic contributions, anchored in the physical processes that have sustained life on Earth over very long timescales. Through analogies such as "Solar Salary", we explore the conceptual and artistic potential of an economic model based on solar radiance, solar income.

Over the past few decades, the concept of sustainable development has been promoted to serve capitalism's intrinsic need for expansion and growth, ironically expressed through increasingly short-term modes of financing.

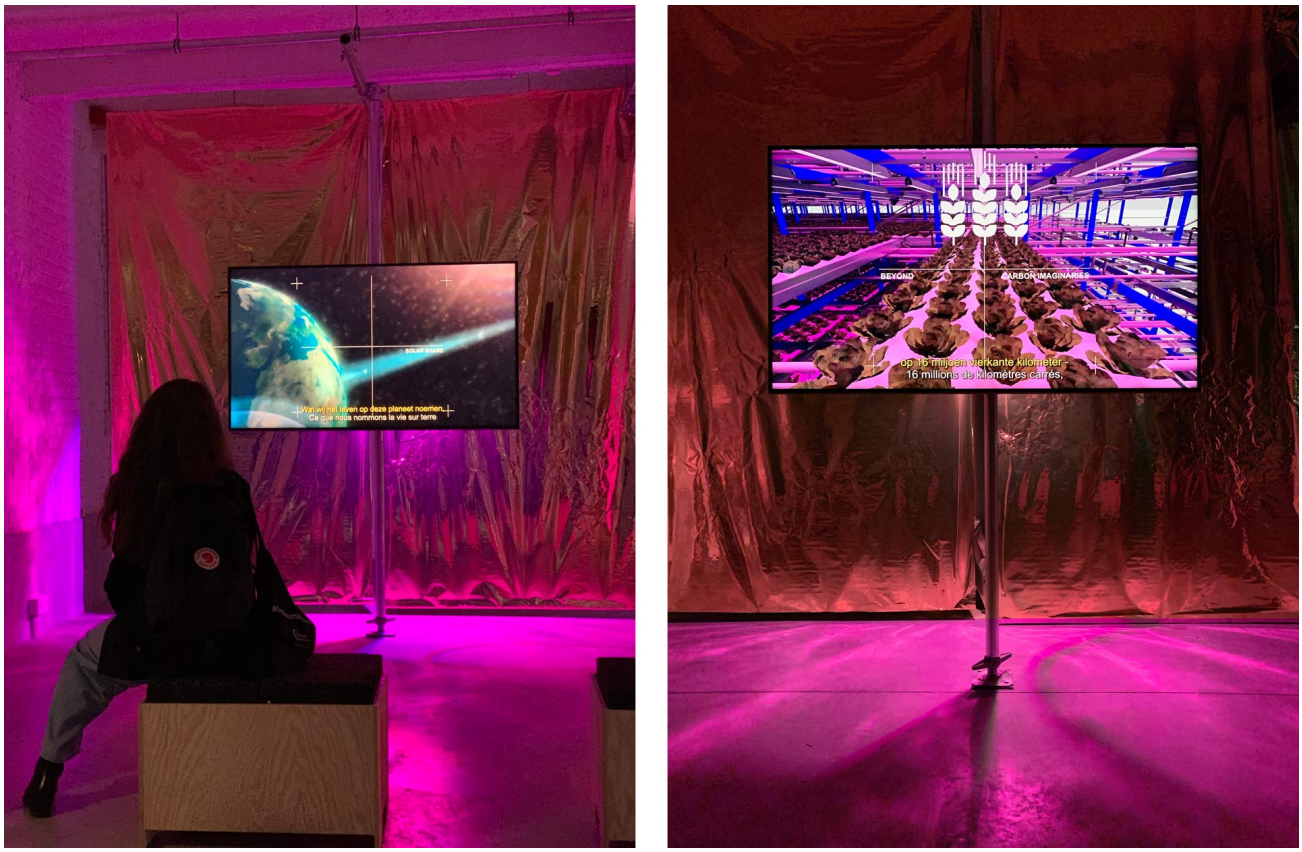
How can we, on the contrary, imagine a radically different approach to "sustainability" grounded in the material processes on which we depend for our "sustainability"?



"Solar Share" (Diagram), DISNOVATION.ORG & Baruch Gottlieb, 2020

In order to project sustainability over the very long term, we propose to observe what has sustained life on Earth to this day. We sought out basic principles such as solar radiation, and generated economic premises based on these. We want to study what this shifted point of reference re-articulates, questions and highlights, so that we can propose new modes of scientifically understanding, valorizing and describing the world. Concurrently we can elucidate the limits of what is relevant or even possible to quantify.

The *Solar Share* model offers various conceptual tools informed by contemporary scientific research to practically comprehend the transformation and circulation of energy in our societies. To this end, we generated a series of speculative and radical economic models based on the primary energy source that is truly renewable within the biosphere on very long timescales: energy emitted by the Sun.



"Solar Share" (video), exhibition view, IMAL Brussels, DISNOVATION.ORG & Baruch Gottlieb, 2020

If we consider the solar energy inputs captured by the biosphere as an insightful magnitude to imagine a "viable planetarity" (Benjamin H. Bratton), what tangible or conceptual forms could this new economic model take?

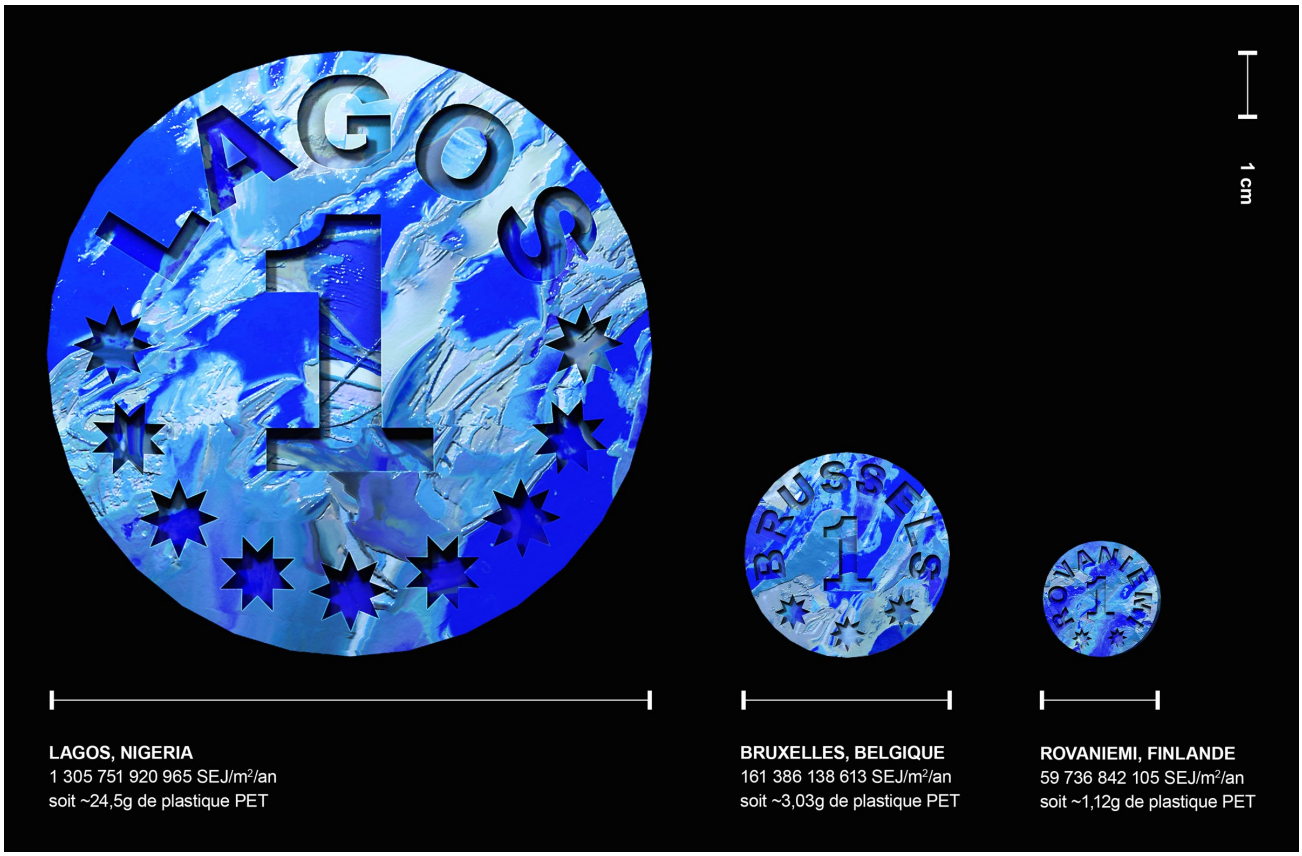
Certain energy flows in the biosphere are truly renewable, and a large part of these renewable flows are indirectly activated by solar radiation (winds, precipitation, etc). To get an idea of the scale of these energy flows, certain accounting methods can help grasp and compare the orders of magnitude involved.

This is what stimulated us as artists in the Emergy environmental accounting model. This controversial model proposes an in-depth accounting of energy stocks and flows, processes that can be extremely slow and vast, as are the various energy contributions essential to life on Earth.

At the heart of the Emergy methodology is sunlight, which is responsible for most of the energy sources on which we currently depend, especially wind, tides, and above all, fossil fuels, which are ancient sunlight. The Emergy model produces an estimate of what portion of the energy flows of a geographical area is renewable. This quantity is expressed in "solar equivalent Joules". This method does not pretend to provide absolute measurements, but it allows us to draw useful scalar relationships.

Of course, some regions of the world receive more sunlight than others, while some regions “use” more than others. In Europe, we use much more energy than we can directly get from the sun or the wind.. Most of the energy we use is imported or extracted in concentrated fossil forms—mainly oil, coal and natural gas.

For example, Brussels is one of the least sunny capital cities in Europe, receiving on average only 3 kWh/m2 per day and 1000 kWh/m2 per year. But its energy consumption is comparable to that of most European cities.



“Solar Share” (coins), DISNOVATION.ORG & Baruch Gottlieb, 2020

The *Solar Share* coins allow us to physically manifest the renewable processes activated by the sun on a specific area. They allow us to compare the prevailing models of economics with this very tangible, present and situated order of magnitude of primordial processes of the biosphere, which underlie all economic activity.
These coins are made of recycled PET plastic. Plastic is a by-product of oil, ancient sunlight concentrated into organic matter over millions of years. We converted the average quantity of renewable energy flows within a given geographical area (for example, per square meter per year) into their Emergy equivalent in plastic.

How might our understanding of economics be transformed if the monetary instruments that we use had a value equivalent to the solar energy required to reproduce them locally? As a speculative response, we have proposed the *Solar Share* coin as a physical equivalent to the average amount of renewed energy per 1 square meter of the specified geographic area, according to the Emergy model (incorporated energy).

This is illustrated above with a plastic coin weighing 1.12g, which corresponds to 1m2 in the area of Rovaniemi (Finland), a 3.03g coin corresponding to 1m2 in Brussels (Belgium), and a 24.50g corresponding to 1m2 in Lagos (Nigeria). In order to localize the concept even further, we make a new coin for each place where this project is presented.

***Solar Share* (video), IMAL Brussels, DISNOVATION.ORG & Baruch Gottlieb, 2020:**

08:22

What are the next phases in this research series in the months and years to come?

These various projects will be exhibited in summer 2021 at Impakt art center in Utrecht and during the STRP festival in Eindhoven. In terms of research, in the following years we will be working with labs and universities, including Paris 8, UC Berkeley, UC Louvain La Neuve, TU Dublin…

We have designed these works as prototypes that are progressively integrated into a toolkit and web platform, which can be exhibited and used by other activists, researchers, teachers and media. They are provocations, ways to stimulate changes in perspective, but also proxies for tackling difficult and relatively inaccessible topics in ways that are trans-social and trans-disciplinary.

Read Part 1 of our interview

More information on the *Post Growth* research series

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/ Interview

Energy Slave Token, DISNOVATION.ORG & Baruch Gottlieb, 2020

Post Growth: a Toolkit for Radical Transitions (1/2)

Published 1 March 2021 by Maxence Grugier

Since 2018, the Post Growth project is a series of initiatives by the collective DISNOVATION.ORG. As much an international research laboratory as an

instigator of exhibitions, talks and provocations, Post Growth puts into critical perspective the imbrications between growth mechanisms and contemporary ecosystemic crises.

Founded in 2012 by Nicolas Maigret and Maria Roszkowska, DISNOVATION.ORG is both an art collective and an international workgroup engaged in the crossovers between contemporary arts, research and hacking. Artist and philosopher Baruch Gottlieb joined the collective in 2018. Together, they develop situations of interference, discussion and speculation that question dominant techno-positivist ideologies in order to foster post-growth narratives. Their research is expressed through installations, performances, websites and events. They recently co-published *A Bestiary of the Anthropocene*, an atlas of anthropic hybrid creatures, and *The Pirate Book*, an anthology about media piracy.

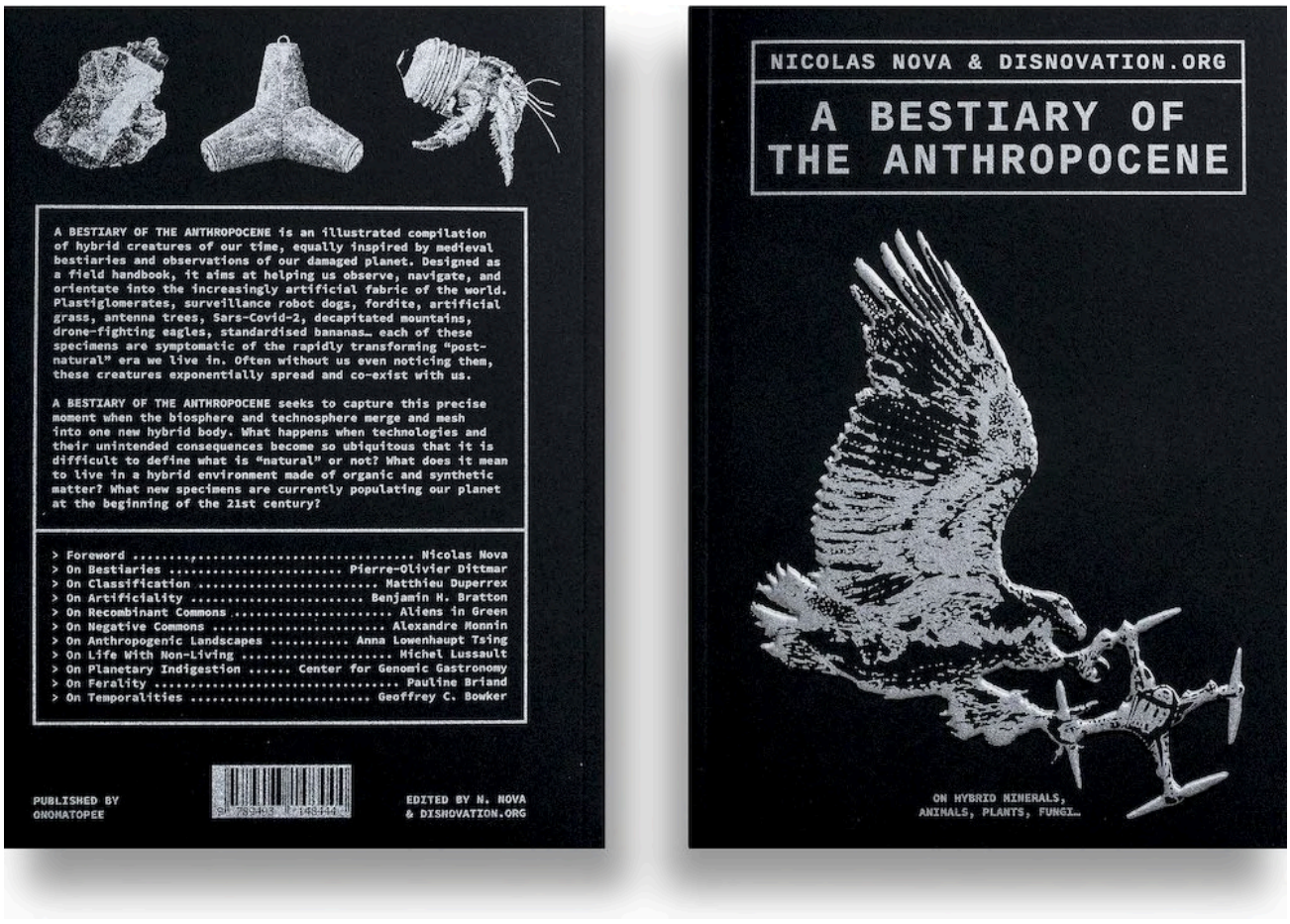
Post Growth was initiated by DISNOVATION.ORG, with Clémence Seurat, researcher and publisher of eco-political issues; Pauline Briand, journalist specialized in biodiversity issues; Julien Maudet, designer of critical and political games.

Prototypes to envision futures beyond growth, talks at La Gaîté Lyrique, autumn 2020 (video: interview with Valerie Olson)

Can you give a concrete example of the "situations of interference" that you are developing?

Over the past 10 years, we've been dissecting the dominant discourses on growth, innovation and technological solutionism—for example, with the "Museum of Failures" or the "Non-conformist Futures" exhibition at the Jeu de Paume. Our goal was to facilitate the dissemination of counter-narratives to contemporary techno-utopism through art objects that offer more critical, nuanced, complex or situated perspectives on these topics.

More recently, as the extent to which our world has been artificialized is often underestimated, we published *A Bestiary of the Anthropocene* with the anthropologist Nicolas Nova. It's an atlas of hybrid creatures and phenomena between "nature" and "culture" that mixes biological, mineral, technological, petrochemical… This book offers a panorama of specimens with which we coexist and that we must learn to recognize—no longer as isolated aberrations within our environments, but as that which defines our contemporary condition: artificialization on a planetary scale.



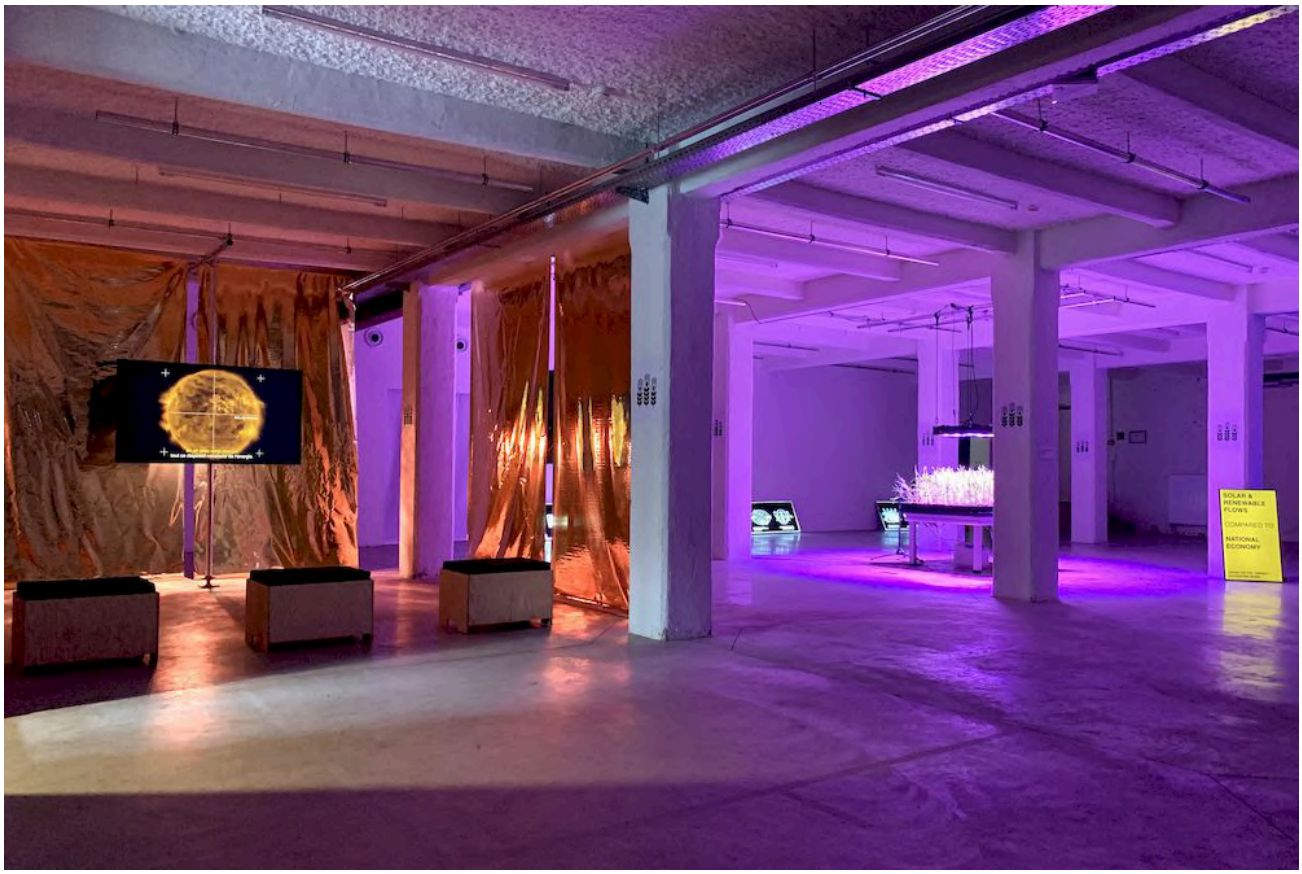
It's interesting how Post Growth research first focuses on gathering and strengthening the arguments of the discussion before beginning to imagine and prototype post-growth scenarios. How did this initiative come about?

Our initial research was focused on the imbrications between growth mechanisms (economic flows, energies, resources) and the ecosystemic crises that we are currently undergoing. First, we examined the ideological, social and biophysical components that precipitated our current environmental crises. Then we identified what leverage points are available for transformative practices in imagining social metabolisms that would no longer consider quantitative growth as an end in itself. We also favored collective social modes of transformation rather than mechanisms which invoke individual responsability or guilt.

The various branches of our research were first formalized in two exhibitions at the iMAL art centers in Brussels and 3 bis f in Aix-en-Provence in France. These "Post Growth" exhibitions presented two directional themes:

– The Toolkit is a collection of key concepts disseminated in the form of user-friendly and accessible media objects. They highlight the connections between growth mechanisms and ecosystem crises, while gathering and developing the arguments.

– The Solar Share explores the radical consequences of an economic model based on solar energy captured by the biosphere. It also examines the "work" done by the biosphere, often called ecosystem services, as well as the limits of quantification.

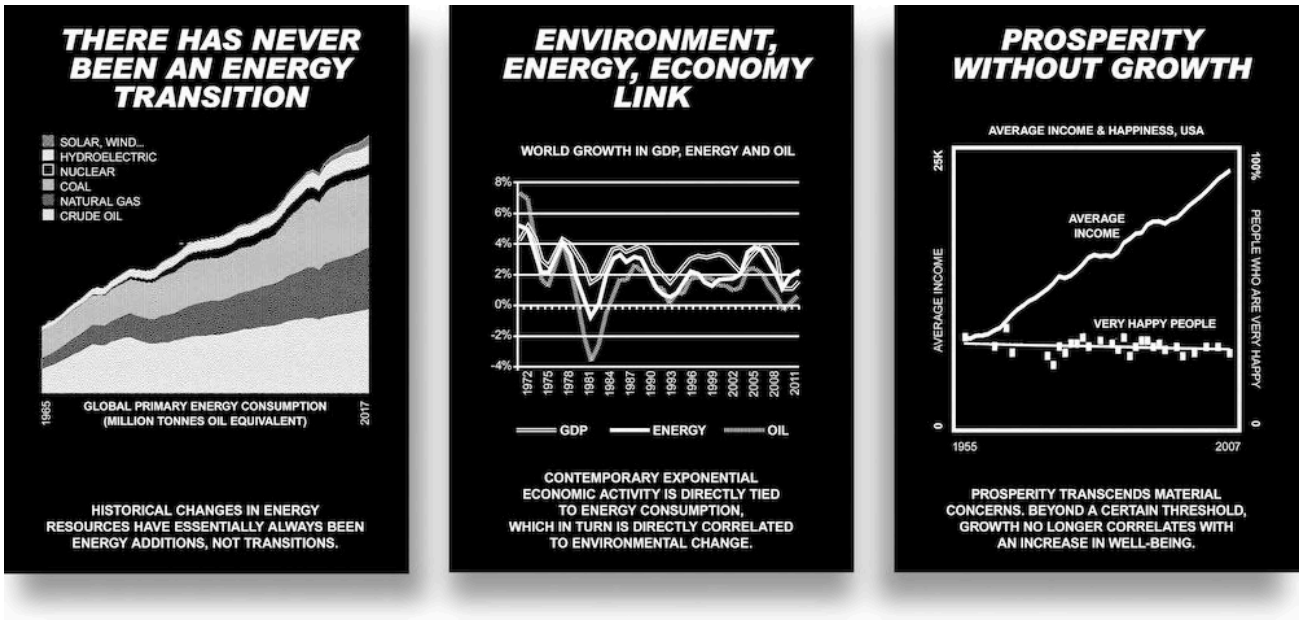


Post Growth exhibition at iMAL in Brussels, 2020

What are some of the key concepts in the Toolkit?

We often present a few simple concepts to introduce the project. In his lecture "Energy Transition, Fool's Crutch?", Jean-Baptiste Fressoz points out that historical changes in energy resources were additions, not transitions. This leads us to rethink our exit from fossil fuels, not just as a simple question of technically substituting one type of energy resource with another, but as a profound social and political transformation.

Contemporary exponential economic activity is also linked to accelerated flows of energies and resources, which is directly linked to exponentially modifying the environment. In fact, as James Gustave demonstates, this infamous GDP growth is neither necessarily beneficial nor desirable growth is very often uncorrelated with individual well-being , with some variations depending on the country and its current state of "development".



Post Growth Toolkit (The Game), card game, DISNOVATION.ORG and Julien Maudet, Clémence Seurat, Pauline Briand, 2020.

How did you move from the research and investigation phase to producing a Toolkit that stimulates the imagination around post-growth?

We set out to meet researchers, theorists and activists in order to get a better understanding of the foundations of our current political and ecological crises. This research really came together during our residency at the University of California in Irvine when we conducted these first interviews and collected an archive of stories and operational concepts. The interviews focused on topics ranging from indigenous knowledge to collapse informatics, and have gradually taken the form of short videos. These video clips are freely available online and translated in French, English and Dutch.

Each sequence summarizes a key concept that feeds and adds nuance to the discussion around issues such as the ideology of growth, the rhetoric of sustainability, resilience, individual responsibility, preserving biodiversity, thinking of nature as a stock, not to mention the infamous "green growth"…

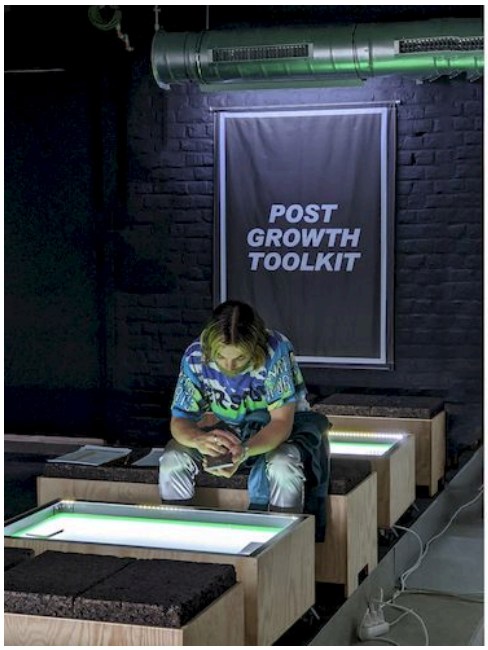
Beyond a simple criticism, it's important to reaffirm, as noted by Hans Joachim Schnellnhuber, that we already have the knowledge and the know-how to meet these contemporary challenges— what is lacking is the political agency to ensure the application of relevant knowledge and know-how. In this respect, we organized regular public discussions on a live set where we invite researchers and artists to contribute to this collective thinking.

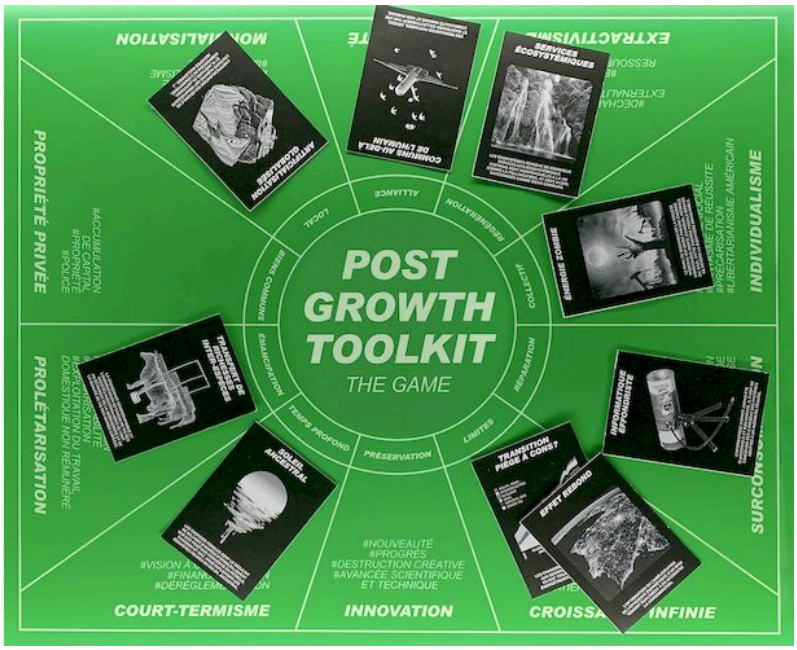
As we went along, we realized that there was a paucity of appropriate visuals able to represent what is at stake, where earnest discussion remains largely confined to specialists within the academy and government. So we developed illustrations as a visual prompt to help disseminate and support more public engagement with these key concepts.

The Post Growth Toolkit consists of "serious game" prototypes around environmental crises and growth. How did you develop it, and where you do you situate it at the intersections between art, game, graphic art, mediation and workshop?

After compiling numerous key concepts in the form of interviews, we realized that many of these notions really needed to be debated or challenged in order to fully reveal their transformative potential, as well as their limits. So we teamed up with Julien Maudet, a designer of political games, to explore ways of facilitating these processes, from the perspective of the gaming world. This resulted in game prototypes that can be activated either collectively or individually during exhibitions, workshops, or in "print-and-play" mode.

These game prototypes take the form of a strategical card game, a group questionnaire, and a board game. They are designed to be tools for transmission and collective discussion, inviting people to gain new perspective on the doctrines of economic growth in order to better understand how we might have to transform how we live, we found it is important to highlight the material conditions which undergird contemporary lifestyles. At the intersection of science and speculative fiction, the Post Growth Toolkit game prototypes aim to share stories and concepts, and reconsidere the familiar objects around us, in order to re-examine our assumptions and to stimulate new modes of understanding.





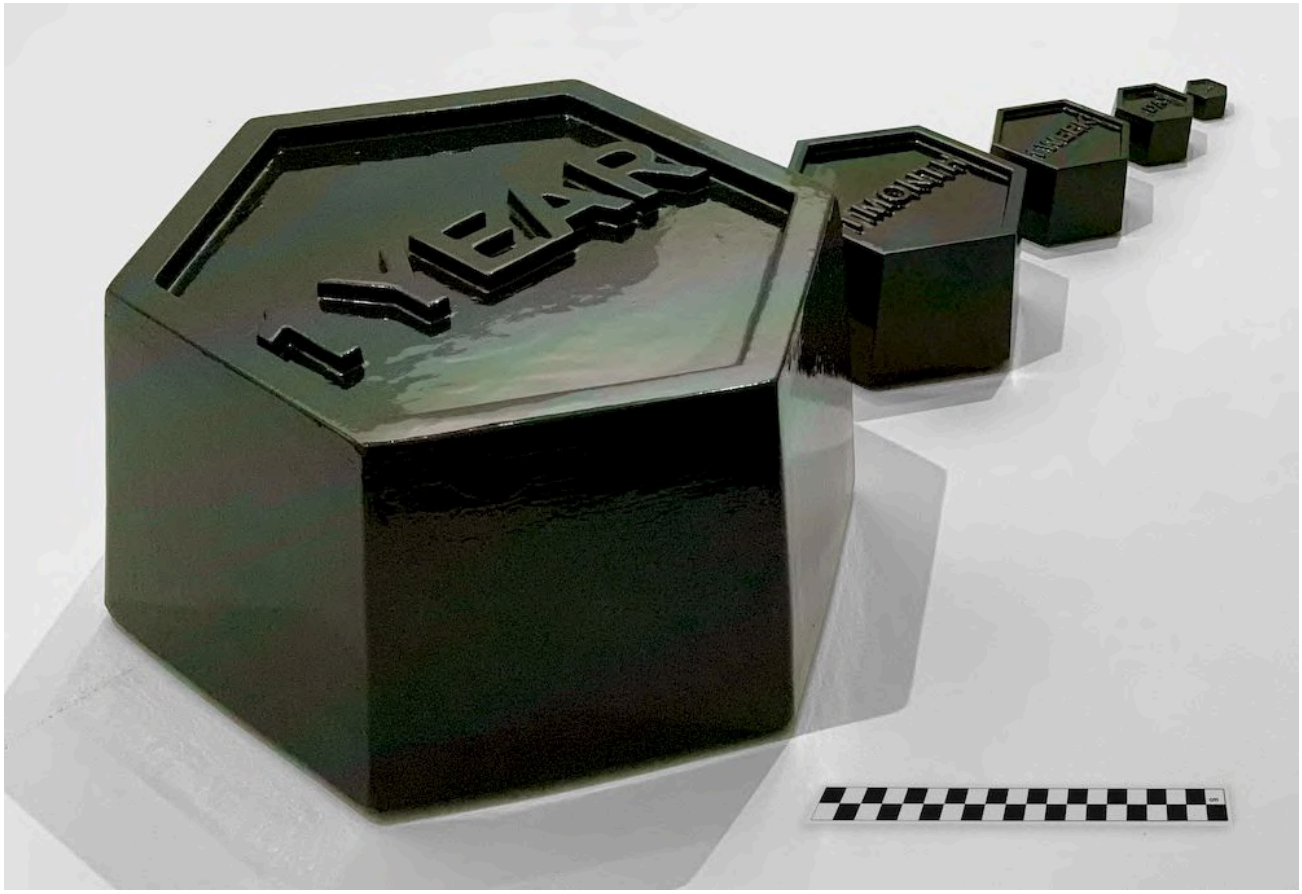
Post Growth Toolkit (The Game), DISNOVATION.ORG, Julien Maudet, 2020

For some of the more abstract key concepts of the Post Growth Toolkit, you went even further by creating objects to make these concepts more tangible. Can you elaborate on the "Energy Slave Token"?

In 1940, R. Buckminster Fuller introduced the term "Energy Slave" to describe the quantity of energy required to power contemporary societies. This unit—1 energy slave—represents the physical labor capacity of a human adult. The energy needs of any lifestyle can be converted into their equivalent in "energy slaves", which reflects the number of human laborers required to generate the same amount of energy. In 2013, it was estimated that the average European uses the equivalent of 400 to 500 "energy slaves" 24 hours a day. We plan to extend this concept to integrate animal and plant contributions to the zombie meta-machine that provides our modern commodities, but for the moment, in the "energy slave" calculus, the activities of human beings "integrate" those implicit contributions.

The "Energy Slave Token" is a series of bitumen weights, which are the energy equivalents of specific quantities of physical human labor time (1 hour, 1 day, 1 week, 1 month, 1 year, 1 life). This series of weights is designed to materialise the huge orders of magnitude between the labor power generated by our human bodies and the daily energy consumption, of all the machines and technologies that drive our current lifestyles, also known as the technosphere, for which we depend mainly on fossil fuels today. By connecting our disproportionately vast energy consumption with lived experience at human scale, these to-

kens are conceived to help people grapple with this difficulty which often leaves us baffled and resigned.



Energy Slave Token, 1 year, 1 month, 1 week, 1 day, 1 hour, DISNOVATION.ORG and Baruch Gottlieb, 2020

These objects make the energy that powers the technosphere extremely tangible. What connections do you see with the "Great Acceleration" concept often used to describe the Anthropocene?

The Great Acceleration is another facet of these Energy Slave Tokens. Over the past two centuries, technical acceleration and rising standards of living in the West have largely depended on the hyper-intensive and increased use of fossil fuels. It's these zombie fuels, the remains of ancestral organisms, that humanity excavates from the earth in order to power the technological prostheses that surround us, and thus increase the physical capacity of humans to transform their environment. Any improvements in the general living conditions in developed countries can be directly traced to increased energy consumption. After this short episode in history, today our intensive use of fossil fuels compromises the continuation of human life, as well as that of many other species.

This fossil acceleration is largely due to the abundance and energetic density of coal and oil, which displace and multiply the physical labor capacity of humans or animals. This explains why in France only 1.5% of the population works in agriculture, despite the fact that eating remains fundamental to our human condition. It's a result of the army of zombie technological prostheses, powered mainly by oil, gas and coal, that work around us. The Energy Slave Tokens make this physical reality and the scale of relationships more tangible, by comparing them to the average labor capacity of our own human bodies. In order to support people wishing to engage in their communities, these open source tokens are designed to be easily replicated, used and distributed.

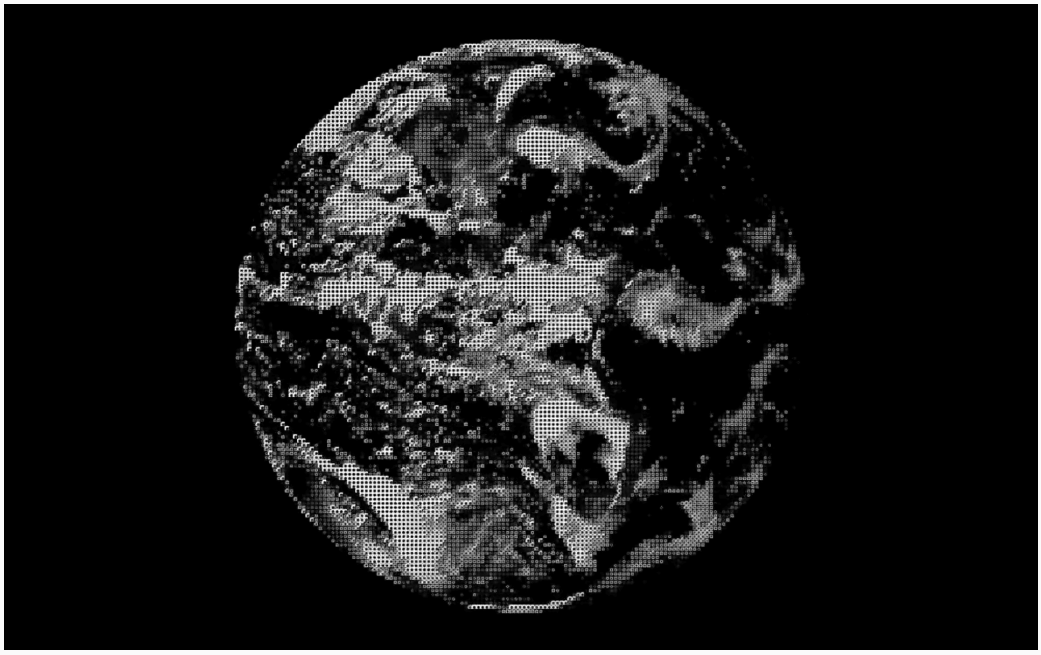
LIFE … AFTER
THE
CRASH

Chloe Stead delves into DISNOVATION.ORG's "Post Growth" work, finding kinship futures *after* fossil fuels and zombie capitalism.

DISNOVATION.ORG
"Post Growth"
03.09.2020–07.02.2021

iMAL Art Center for
Digital Cultures &
Technology
Brussels (BE)

001 — Note: Taking Root (13/11/2020)



"Anyone who believes that exponential growth can go on forever in a finite world is either a madman or an economist"—Kenneth Boulding, quoted in *Prosperity without Growth: Foundations for the Economy of Tomorrow*[1]

Chloe Stead is an art critic and editor based in Berlin. Her writing has been featured in publications such as *Artnet*, *Art Agenda*, *Frieze*, *Spike*, and *Mousse Magazine*.
There are few childhood memories that I cherish more than the family summer holidays we spent in Aldeburgh, a small, picturesque coastal town in the Southeast of England. Aside from the pebble beaches and the pastel-coloured houses, what I remember most clearly is the patch of wall in my great aunt's house that measured our cousins' heights by age, which, each summer, my brother and I would add our own shaky pencil lines to before standing back to marvel at how much we'd grown.

As children, our developing bodies offer the tantalising prospect of independence, of becoming the "big boys and girls," we so desperately wish to be. When we reach adulthood, we continue to quantify our lives through this prism, but instead of focusing on our own biology, we project outwards, measuring success through the growth of our families, our bank accounts, our businesses, and our homes. On a global scale, the prosperity of whole countries is measured by the increase of their GDP. But as the world's economies grow, so does the gap between rich and poor. In the first three-and-a-half months of 2020, Amazon CEO Jeff Bezos earned more than the GDP of Honduras,[2] making his net worth more than GDP of Iceland, Afghanistan and Costa Rica combined.[3]

It's clear by now that this "fetishization and externalisation of growth,"[4] to quote the author Valerie Olson, has also had a catastrophic effect on our environment. It's equally clear that a massive paradigm shift will is going to be needed to combat the deep-seated belief—which has been entrenched by decades of post-World War II economic policies—that growth is "the equivalence of life," and "not to grow is equivalence of death."[5] This is where artists of all varieties—filmmakers, sculptors, writers, photographers, chefs—can help. Facts have limited sway; it's only through "telling stories in new ways," according to academic Geoffrey Bowker, that we can "induce people to see the world differently."[6]

"It's equally clear that a massive paradigm shift will be needed to combat the deep-seated belief—which has been entrenched by decades of post-World War II economic policies—that growth is 'the equivalence of life,' and 'not to grow is equivalence of death.'"

Both Olson and Bower are part of a new series of videos by the "artist-led action-research" collective DISNOVATION.ORG (in collaboration with Clemence Seurat), which are currently on display in their solo exhibition, "Post Growth," at iMAL in Brussels. Collected together under the title *Post Growth Toolkits* these short interviews act as the conceptual framework for a group of artworks by the French collective that question our society's obsession with fossil fuel-powered growth and offer possibilities for change. Over the next few months, this dossier, entitled *Life … After the Crash*, will tease out some of Post Growth's central concerns, mixing relevant external videos, links, and quotes with original mini essays and Q&As pertinent to the exhibition. Topics will include, growth and kinship, growth and indigenous knowledge, growth and energy, as well as growth and happiness. An art critic by trade, I am by no means an expert on these issues, but my hope is that we can all learn about them together. After all, as the specialists themselves would admit, for these radical ideas to be of any use, they need to break out of academia and take root in the minds of ordinary people.

002 — Reading: Age and Responsibility (17/11/2020)

LIFE … AFTER THE CRASH

Chloe Stead delves into DISNOVATION.ORG's "Post Growth" work, finding kinship futures *after* fossil fuels and zombie capitalism.

DISNOVATION.ORG
"Post Growth"
03.09.2020–07.02.2021

iMAL Art Center for
Digital Cultures &
Technology
Brussels (BE)

"Nowadays, citizens are not transforming the world around them through the use of their bodies. The primary way we transform the environment and the world around us in the twenty-first century is through prostheses, machines, automation, and computers."

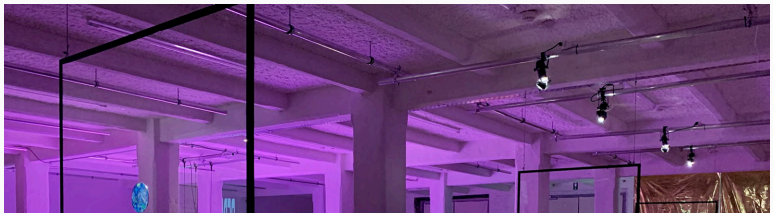
DISNOVATION.ORG is a working group based in Paris, initiated by Nicolas Maigret and Maria Roszkowska. At the crossroads between contemporary art, research and hacking, the collective develops situations of disturbance, speculation, and debate, challenging the dominant ideology of technological innovation and stimulating the emergence of alternative narratives. Their current exhibition, realized together with Baruch Gottlieb, Clémence Seurat, Julien Maudet, and Pauline Briand at Brussels' iMAL Art Center for Digital Cultures and Technology, critically examines growth and progress through a series of artworks and filmed interviews with experts in the field.

Q: When and how did you become interested in the concept of post-growth?

A: For the past decade we've been looking at the role of techno-solutionism in society. Two years ago, we started to focus on the idea of growth after we began to gather a corpus of conferences, discussions, and texts that revealed a strong correlation between economic growth and the environmental crises we are going through at the moment. Based on this research question we started to meet with academics, activists, writers from a wide diversity of fields of knowledge to see what they could tell us. We quickly realized that not only might two labs be researching the same topic and not know about each other, but that most of the knowledge and concepts we were coming across were almost non-existent online, in journals, public discourse, and so on. We started to think that, as artists, we might have a role to play in linking these knowledges—which seemed to us to be of real use in understanding our current condition and the deep material connection of the environmental and biodiversity crisis we are going through—with the very basic economic and political choices that we are confronted with every day.

Q: How do some of these concepts play out in your exhibition at iMAL?

A: For "Post Growth," we started to not only document discussions about those concepts through recorded interviews, which became the multi-part series *Post Growth Toolkit*, but also think about other ways to circulate, activate, and create the space for those ideas to be used, discussed, debated, and criticized. It began to take the shape of game experiments, where we started to design prototypes of games, which we do as a way to circulate and debate and discuss those notions, but it also takes other forms, such as physical or sculptural works that will embody some of the notions that are harder to comprehend in a verbal form. As artists, we can have a strong impact by producing physical instruments that can very clearly demonstrate a complex circumstance, and therefore how it is seen and talked about in society.



LIFE … AFTER THE CRASH

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DISNOVATION.ORG
"Post Growth"
03.09.2020–07.02.2021

iMAL Art Center for Digital Cultures & Technology
Brussels (BE)

DISNOVATION.ORG's exhibition "Post Growth" at iMAL, Brussels

Q: Can you give an example?

A: One example is a series of 'energy slave' tokens that are included in the show. The work is based on the concept of the energy slave, which was proposed by the American futurist Buckminster Fuller in the 1940s as a notion used to express the energy required to power a modern lifestyle. The concept refers to the technological or mechanical energy equivalent to the physical working capacity of a human adult. In 2020 we have an average of 400–500 energy slaves per living European, which means the lifestyle that we have is the result of about 400–500 times the energy that a single human body can produce. To grasp those orders of magnitude, we started to build bitumen bricks or units of measure that are basically embodying the energy equivalent in fossil fuel of various durations of human labour. We thought that this direction of work was quite eloquent as fossil fuel is the core driver of the global techno-infrastructure. Nowadays, citizens are not transforming the world around them through the use of their own bodies. The primary way we transform the environment and the world around us in the twenty-first century is through prostheses, machines, automation, and computers. We recognized that in order to better understand our condition, and what a desirable outcome could look like, it was essential to understand this very material-informed model of how we interact with the world today.

005 — Exhibit A: Energy Slave Token (04/12/2020)

LIFE … AFTER
THE
CRASH

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DISNOVATION.ORG
"Post Growth"
03.09.2020–07.02.2021

iMAL Art Center for
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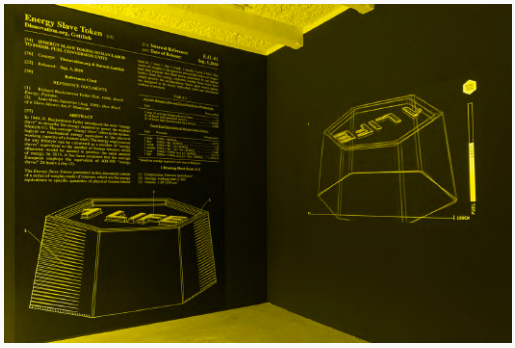
Brussels (BE)

Energy Slave Token (2020)
DISNOVATION.ORG & Baruch Gottlieb

"The piece consists of a series of weights made of bitumen, which are the energy equivalents to specific quantities of physical human labour time."



75 Wh

Power equivalent of 1 hour of average human physical labour (*Energy Slave Token* table)
In 1940, R. Buckminster Fuller introduced the term "energy slave" to describe the energy required to power the modern lifestyle.[6] The concept refers to the technological or mechanical energy equivalent to the physical working capacity of a human adult. The energy requirements for any lifestyle can be calculated as a number of energy slaves equivalent to the number of human labourers which otherwise would be needed to produce the same amount of energy. In 2013, it was estimated that the average European employs the equivalent of 400–500 energy slaves 24 hours a day.[7]

The *Energy Slave Token* consists of a series of weights made of bitumen, which are the energy equivalents to specific quantities of physical human labour time (ie. 1 hour, 1 day, 1 week, 1 month, 1 year, 1 life). This series of weights is designed to present the orders of magnitude that separate the labour-power generated by our human bodies from the energy exploited mostly from fossil fuels which power the technosphere. These open source tokens are designed to be easily replicated, used and distributed without restriction.

Average Human Labour and Fossil Fuel Power Productivity:

1 hour of average human physical labour: 75Wh
1 L of fossil fuel (potential power): 10,000Wh
1 L of fossil fuel (transformed by a motor): 4,000Wh

Fossil Fuel Equivalent of Human Labour Power:

1 hour: 75Wh / 4k Wh/L = 18.75 cm3
1 day: 75Wh * 8h / 4k Wh/L = 150 cm3
1 week: 75Wh * 8h * 5d / 4k Wh/L = 750 cm3

LIFE … AFTER
THE
CRASH

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DISNOVATION.ORG
"Post Growth"
03.09.2020–07.02.2021

iMAL Art Center for
Digital Cultures &
Technology
Brussels (BE)

"I see the art space as having a unique role to play in society today, particularly in providing a sort of safe space for the cultivation of new social and cultural practices which are needed to confront the challenges of our age."

Baruch Gottlieb is a Canada-born media artist, researcher, and curator. He currently teaches Philosophy of Digital Art at the Berlin University of the Arts and Data Epistemology at the Technical University of Brandenburg. Gottlieb has been working closely with DISNOVATION.ORG since he collaborated on the project *Online Culture Wars* (2018–19). He is also a member of the Telekommunisten and Arts & Economic Group artist collectives. His books include *A Political Economy of the Smallest Things* (ATROPOS 2016) and *Digital Materialism* (Emerald 2018).

Q: You co-collaborated on almost all of the works in Disnovation's current exhibition at iMAL. What's your personal interest in the concept of post-growth?

A: It comes from my interest in how images function in society and observations on how increasingly complex phenomena, such as in economics or climate data, are represented in common discourse. I see a role for artists to intervene, to interpret scientific data in a proactive manner to attempt to support the kinds of political catalysis we wish to see in the world. In the case of the climate crisis, we need to confront the enormous power of think tanks and lobby groups that persuade people to look the other way as the climate emergency is largely disregarded. I was at a conference where Merkel's top climate consultant Hans Joachim Schellnhuber stated that the expertise and knowledge exist to ensure that everyone alive on the earth right now can enjoy good living conditions and that the climate crisis can be successfully addressed, but what was missing was the political agency to instantiate that expertise and knowledge. As artists, we agreed to do our part to try to cultivate new vectors for people to come together and generate social agency.

Q: How important is collaboration both in your own work and to solving some of the problems outlined in the exhibition?

A: I come from filmmaking which is traditionally a very multidisciplinary form of art. Each production is the result of the communication and collaboration of diverse specializations and talents, from make-up to lighting, camera, acting, and editing. Even though I have broadened my artistic practice, I still operate more or less as I did as a filmmaker, working with diverse teams of specialists to produce what I could not do on my own. Collaborations and collectives are very common in media art because the works are often very complex and require a lot of specialist knowledge. As part of my curatorial practice, especially over the past three years at the museum West Den Haag, I have organized a variety of transdisciplinary projects from summer schools to symposia where I am consciously developing methods to generate synthetic forms of thinking and creation across conventional disciplinary boundaries. Now, with the Post-Growth project, we are attempting to integrate the pure sciences on their own terms. Besides working with Disnovation, I also am a core member of telekommunisten where we work to help demystify network infrastructure and help people understand the political economy behind what they experience through their networked devices.

"I see the pretext of our exhibitions and other activities as centrifuges of scientific knowledge, allowing us to assemble otherwise unlikely constellations of specialists around urgent concerns. So far, this strategy seems to be working."

Q: Why address this topic in the form of an exhibition? What role do artists and art institutions have in addressing climate change?

A: As I mentioned earlier, I see the art space as having a unique role to play in society today, particularly in providing a sort of safe space for the cultivation of new social and cultural practices which are needed to confront the challenges of our age. These new practices may include artistic practices and artworks, but they are also themselves art.

Q: What do the scientists and researchers think of the exhibition? Is there a way that they can borrow some of the models you've used to feedback into their own work?

A: The proof is in the pudding. We develop our models in intense consultation with scientists, but at a certain moment, we need to make works for an art exhibition, hoping and expecting that they will be interested in coming over and critiquing these so that we may improve them, and, judging from the iMAL show, they are. I see the pretext of our exhibitions and other activities as centrifuges of scientific knowledge, allowing us to assemble otherwise unlikely constellations of specialists around urgent concerns. So far, this strategy seems to be working, and we will develop this more in Disnovation's residency at the University of Louvain la Neuve where we will be working with specialists from agronomy to economics and data science.

LIFE … AFTER
THE
CRASH

Chloe Stead delves into DISNOVATION.ORG's "Post Growth" work, finding kinship futures *after* fossil fuels and zombie capitalism.

DISNOVATION.ORG
"Post Growth"
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iMAL Art Center for
Digital Cultures &
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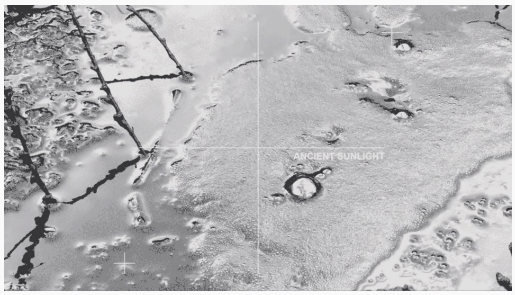
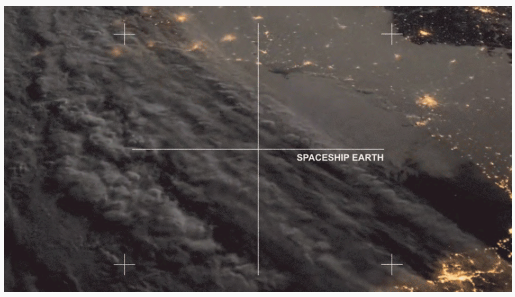
Brussels (BE)

012 — Exhibit B: Solar Share — The Story (01/01/2021)

Solar Share – The Story (2020)
DISNOVATION.ORG & Baruch Gottlieb

"The artistic research project *Solar Share* envisions the radical consequences of an economic model reconnected to the elementary sources of energy coming from the Sun, the Earth and the cosmos."





Solar Share —
The Story (2020),
digital video with
sound (excerpts)
High on fossil fuels, modernity managed to normalize the ideology according to which humankind could detach itself from the constraints and material limitations of planetary life. These constraints become harder to ignore, as the planet's holding capacity begins to falter, and its resources run dry. How are we to reconnect with the physical, material and living reality of the world on which we depend entirely? Even today, the prevailing economic models still seem to ignore the extent to which necessary circulation of matter and energy depends on crucial physical processes for the regeneration of the biosphere or for human societies.

The artistic research project *Solar Share* envisions the radical consequences of an economic model reconnected to the elementary sources of energy coming from the Sun, the Earth and the cosmos. It aims to revise the prevailing narratives with an acknowledgement of the material conditions required for the persistence of our form of life in the biosphere. It proposes futuristic visions of new relationalities between humans, life and the Earth system. The computational and diagrammatic models that have emerged from this artistic research aim to engage a broad public with vital information from science. By externalizing, in artistic and aesthetic forms, the energy systems that govern the planet's metabolism, these models are intended to supplement critical discussion of our prospects on this planet, both in specialized spheres and in the general public, with an emphasis on the unquantifiable and missing data which lurks behind and threatens to undermine scientific, political and economic confidence.

Images and text courtesy of DISNOVATION.ORG and iMAL

013 — Reading: Stark Choices (04/01/2021)

LIFE … AFTER THE CRASH

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DISNOVATION.ORG
"Post Growth"
03.09.2020–07.02.2021

iMAL Art Center for Digital Cultures & Technology
Brussels (BE)

"It reminds us we are connected to the other beings on this planet—and that we inherit our ancestors' decisions and future generations will live in a world designed by our actions."

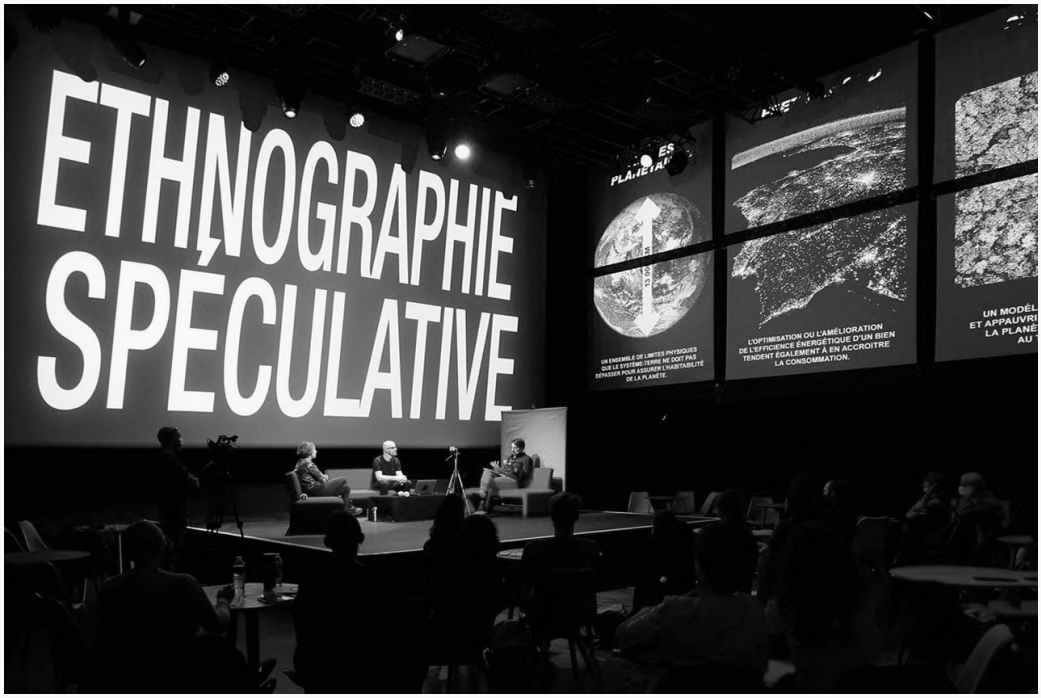
As a curator and an editor, Clémence Seurat investigates the fields of reflection and action related to political ecology. In 2014–15, she was a member of Bruno Latour's research laboratory in arts and politics based at Sciences Po Paris (Speap) and participated in the conception of The Theater of Negotiations and the curation of associated conferences and resources. She co-founded the collective COYOTE and the 369 Editions publishing house. Within the Sciences Po médialab, Seurat designs programs and edits content for FORCCAST.

Q: At iMAL, you collaborated with DISNOVATION for a series *Post Growth Toolkits*, which encompasses a series of video interviews and a board game. What was the concept behind these works?

A: The idea was to expand the research DISNOVATION started during a fellowship at the University of California, Irvine. First, we collected, discussed, and gathered concepts, theories, stories, and initiatives that seem relevant to us not only to elaborate a critical perspective on growth but to imagine our future outside of this paradigm. Secondly, we developed artistic proposals in order to share our research in both a stimulating and playful way.

Q: What interested you about the concept of post-growth?

A: The absurdity of a never-ending growth has been visible for decades through a series of catastrophes on a planetary scale, from climate change to the sixth mass extinction, from deforestation to air pollution. The degradation of our environment requires another way of inhabiting the world and relationships that aren't based on exploitation.



Clémence Seurat
interviewing
Dusan Kazic at
La Gaîté Lyrique,
October 2020

Chloe Stead delves into DISNOVATION.ORG's "Post Growth" work, finding kinship futures *after* fossil fuels and zombie capitalism.

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Q: How did you decide on who should speak in the interviews and what topics they should cover?

A: We identified people who would offer an interesting practical or theoretical insight to the project and then we invited them to present their work–to introduce concepts and themes they are developing–in a brief and straightforward way. We wanted them to be concise and short, like video postcards. Some interviews are only recorded while others took place on a stage in front of an audience. As part of the series of events we curated at La Gaîté Lyrique in Paris, for example, I interviewed the French anthropologist Dusan Kazic who invited us to reconsider production as the overriding principle of our relationship to the world. This conversation was very instructive because it forced us to take a critical approach towards our own research.

Q: What else did you learn through the interviews?

A: One concept that is very important for me is the 7th generation principle introduced by Rose O'Leary. It is both very wise and simple: anytime that someone makes a decision, they should think about its impact seven generations into the future. It's a principle that is often attributed to the indigenous peoples of North America. What I like about it is that it implies a very careful, thoughtful, and respectful relationship to the others–humans and non-humans–in space and time. It's a very pragmatic approach and a way of paying attention to the consequences of our own actions. It reminds us we are connected to the other beings on this planet and that we are connected to our ancestors and the future generations–we inherit our ancestors' decisions and future generations will live in a world designed by our actions. For this reason, the 7th generation principle is powerful politically and philosophically as it reclaims a long-term vision for action and care.

020 – Reading: The Means of Production (18/01/2021)

"Capitalists and socialists have been fighting for more than a century to get hold of the famous 'means of production', all the while being in agreement on the core matter, namely that production constitutes our materiality and that we are obliged to produce in order to feed ourselves. This is why, since the beginning of the pandemic, all leaders—whether they are capitalists, communists or ecologists—have wanted to 'restart production'. But none of these regimes takes into account our links with the other-than-human world because they don't think they live alongside them, or rather they consider these to be 'secondary' to the production that is supposed to constitute our materiality."

Dusan Kazic, "COVID-19, My Ambivalent Ally", *AOC*, Sep 2020

021 – Soundbite: Energy and Extremity (19/01/2021)

"We're having a 50 year anniversary of the moon landing in the U.S. this year, in which the technologies used to achieve that are still not largely available, and have still not transformed the energy systems in the U.S., and that's an interesting paradox to look at."

Post Growth Toolkit, The Interviews (2020), DISNOVATION.ORG & Clémence Seurat

Valerie Olson researches contemporary sociocultural processes that remake what counts as environments. Her current projects focus on how social groups use the system concept to perceive, organize, and control spatial relations, particularly on large scales. This focus allows her to follow the ways people relate to sites, things, and processes they do not experience directly and which are categorized as outlying or beyond human. She serves on UCI interdisciplinary research teams and campus initiatives such as Water UCI, the Salton Sea Initiative, the UCI OCEANS Initiative, and the UCI Community Resilience program.

A transcript of the video can be found here. For more "Post Growth" interview segments with Valerie Olson visit postgrowth.art.

022 – Schematic: There Has Never Been an Energy Transition (22/01/2021)

LIFE … AFTER THE CRASH

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DISNOVATION.ORG
"Post Growth"
03.09.2020–07.02.2021

iMAL Art Center for Digital Cultures & Technology
Brussels (BE)

"If I have any allegiance with respect to the future of the planet it is not particularly with humans—it is with the manifold ways in which life produces intelligence, beauty, and sociality."

Geoffrey C. Bowker is Professor at the School of Information and Computer Science, University of California at Irvine, where he directs a laboratory for Values in the Design of Information Systems and Technology. Recent positions include Professor of and Senior Scholar in Cyberscholarship at the University of Pittsburgh iSchool and Executive Director, Center for Science, Technology and Society, Santa Clara. Together with Leigh Star he wrote *Sorting Things Out: Classification and its Consequences* (1999); his most recent book is *Memory Practices in the Sciences* (2005).

Q: In a number of your interviews with DISNOVATION you look to the natural world for examples of how humans might be able to address some of the issues we're facing today. When it comes to the environmental crisis, what are the most important lessons we can learn from animals and other lifeforms?

A: One of the highly problematic historical assertions in the U.S. is that of American exceptionalism—the argument that there is something special about the country that makes it different from the rest of the world. A lot of thinking about humans with respect to the environmental crisis has been a form of species exceptionalism: we are different because we stand apart and above; we have rationality in our heads and tools at our fingertips. We gain a lot by saying that we are just another species. As Lynn Margulis first argued, symbiosis is a central fact about all life. We incorporate multiple species (our microflora and fauna), and we live in webs of connection. Unfortunately, we have a highly impoverished language for thinking about interconnections. We are a species like any other; it is unsurprising that some species have more interesting solutions to problems than we have thought of. Core to the human exceptionalism argument is that 'we' have intelligence and 'they' don't. This is not only wrong, but deeply harmful: if I have any allegiance with respect to the future of the planet it is not particularly with humans—it is with the manifold ways in which life produces intelligence, beauty, and sociality.

"Attempting to freeze evolutionary change by creating natural reservations misses the point: we need to maximize the ability to speciate, to grow—by concentrating on conservation we make bad decisions for the long-term health of the planet."

Q: For me, the most surprising statement you make is on biodiversity. You say, "Species are going to die, species die all the time, that's not a problem." Even though, logically, it makes sense, it still sounds quite shocking because it seemed to run counter to everything that we think we know about conservation. How did you come to this conclusion and do you ever get push back from airing views like this?

A: To start with the end and work back: yes, I do get pushback. I remember one encounter with an ecologist a number of years ago. He said that the role of conservation science was to preserve the maximum number of species in the present. I couldn't disagree more. First of all, we'd do just as well to lose a number of 'charismatic megafauna'—the game isn't worth the candle. This is non-obvious, but it is about resources. An analogy is public health. In the U.S., an ungodly amount of money has gone into getting asbestos out of buildings—even though there really weren't that many deaths involved; the same money spent on public health would have led to longer, happier lives for a far greater number of people. Focusing in on cuddly pandas because they are cute is really not the point. This has direct consequences for biodiversity policy. Attempting to freeze evolutionary change by creating natural reservations misses the point: we need to maximize the ability to speciate, to grow—by concentrating on conservation we make bad decisions for the long-term health of the planet. And back to my encounter—when pushed, he said that we should maximize species in the present since that's when 'we' were living. This is such a silly and selfish argument: we should accept a slew of losses now and work for a robust future. This is not done through heroic efforts to protect.

Chloe Stead delves into DISNOVATION.ORG's "Post Growth" work, finding kinship futures *after* fossil fuels and zombie capitalism.

DISNOVATION.ORG
"Post Growth"
03.09.2020–07.02.2021

iMAL Art Center for
Digital Cultures &
Technology
Brussels (BE)

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Q: Another topic you talk about is geo-diversity. How does this differ from biodiversity and why should we care about it?

A: The basic argument here is that geo-diversity begets biodiversity. The more niches there are the better for specialized species to develop. A lot of human activity is about niche destruction: so even if we preserve some species, they won't necessarily have a place to go—and they won't have the opportunity to create new species since the 'landscape' of available niches will have been impoverished. The wider reason is that caring for the planet is about caring for all of the planet: soil diversity is a core issue which is very rarely considered; the planet is a process of which life is only a part.

029 — Reading: Becoming With (09/02/2021)

"If we appreciate the foolishness of human exceptionalism, then we know that becoming is always becoming *with*—in a contact zone where the outcome, where who is in the world, is at stake."

Donna J. Haraway, *When Species Meet* (2007)

030 — Soundbite: Kinship Narratives (10/02/2021)

"How do you induce somebody or a group of people to suddenly see the world differently? You don't just do it by hitting them over the head with facts, you do it by telling stories, you do it by sketching out possible futures."

Post Growth Toolkit, The Interviews (2020),
DISNOVATION.ORG
& Clémence Seurat
Geoffrey C. Bowker is Professor at the School of Information and Computer Science, University of California at Irvine, where he directs a laboratory for Values in the Design of Information Systems and Technology. Bowker's books include *Sorting Things Out: Classification and Its Consequences* (1999, authored together with Susan Leigh Star) and *Memory Practices in the Sciences* (2005), both published by the MIT Press.

A transcript of the video can be found here. For more "Post Growth" interview segments with Geoffrey C. Bowker visit postgrowth.art.

031 — Schematic: Emergy Flows (19/03/2021)

LIFE … AFTER THE CRASH

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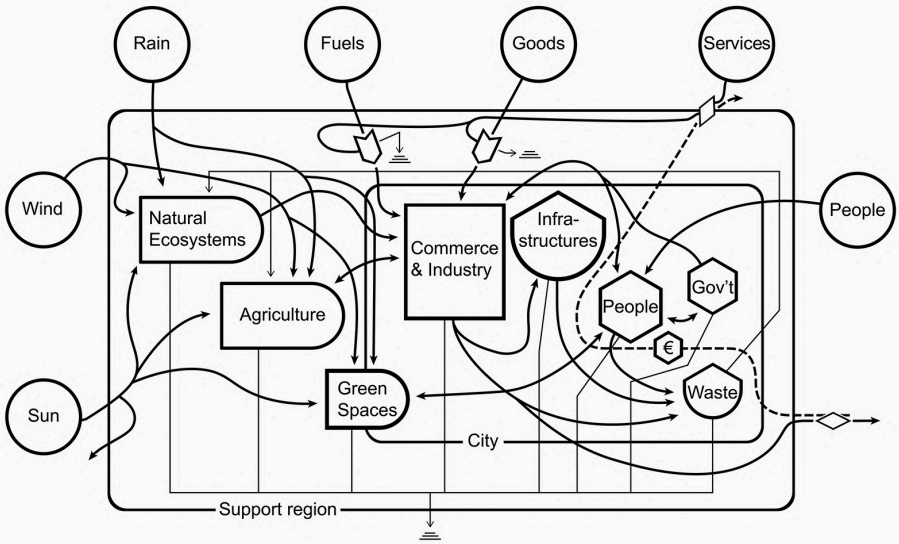
DISNOVATION.ORG
"Post Growth"
03.09.2020–07.02.2021

iMAL Art Center for Digital Cultures & Technology
Brussels (BE)

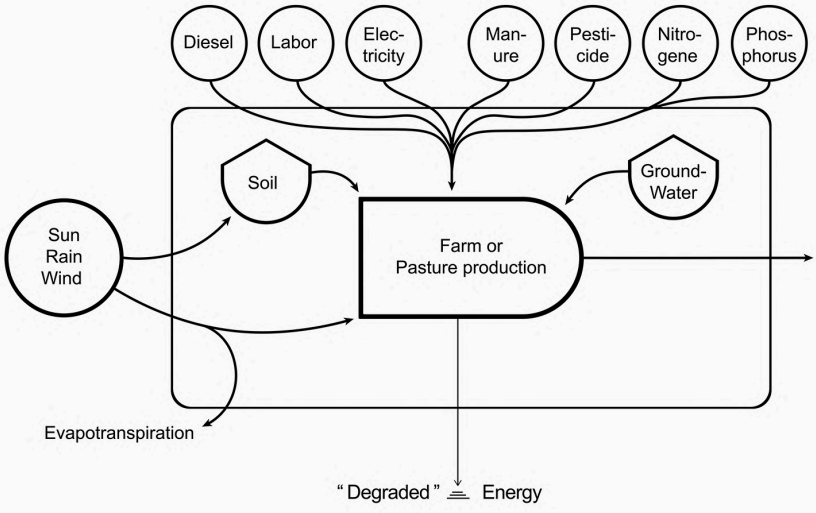


Emergy Flows in Industry (⬆) and Agriculture (⬇) after H. T. Odum, DISNOVATION.ORG & Baruch Gottlieb

"There is a discrepancy between the approach of economists to environmental protection and the approach of nearly everybody else," wrote the Nobel Prize–winning American economist Thomas C. Schelling in his 1983 book *Incentives for Environmental Protection*. It lays out how pricing incentives such as charges on emissions; in contrast to regulatory standards, can be shaped into a practical policy that is technically effective, politically enactable, administratively enforceable, and equitable. To this day, the environmental impacts of industrial activity remain unaccounted for as what economists call externalities. The inputs provided by the planet's ecosystems are similarly ignored. American ecologist Howard T. Odum's Emergy accounting method provides a radical alternative. Developed in the 1990s, and informed by his work on general systems theory, Emergy describes an eco-economical model based on Embodied energy, wherein the totality of the energy required to produce goods and services—the sunlight that makes plants grow, the cosmic forces that forged Earth's precious metals—is considered. It posits that natural systems and anything in them retain "energy memory" that, technically, goes all the way back to the Big Bang. "Emergy is a measure of energy used in the past and thus is different from a measure of energy now," Hodum writes. "The unit of emergy (past available energy use) is the emjoule, as distinguished from joules used for available energy remaining now."

"Emergy describes an eco-economical model based on Embodied energy, wherein the totality of the energy required to produce goods and services—the sunlight that makes plants grow, the cosmic forces that forged Earth's precious metals—is considered."

For "Post Growth," DISNOVATION.ORG and Baruch Gottlieb translated Odum's model into two diagrams, one representing industrial activity (top) and the other agriculture (bottom). They demonstrate that we act as neither individuals nor independently, but rather enmeshed in extensive networks of embodied energy flows. What would an economic system look like if Odum's "solar energy-equivalent unit" was applied throughout, as the artists have done here? Would it better account for our deep entanglement with the biosphere and the material affordances we rely on?



LIFE … AFTER THE CRASH

Chloe Stead delves into DISNOVATION.ORG's "Post Growth" work, finding kinship futures *after* fossil fuels and zombie capitalism.

DISNOVATION.ORG
"Post Growth"
03.09.2020–07.02.2021

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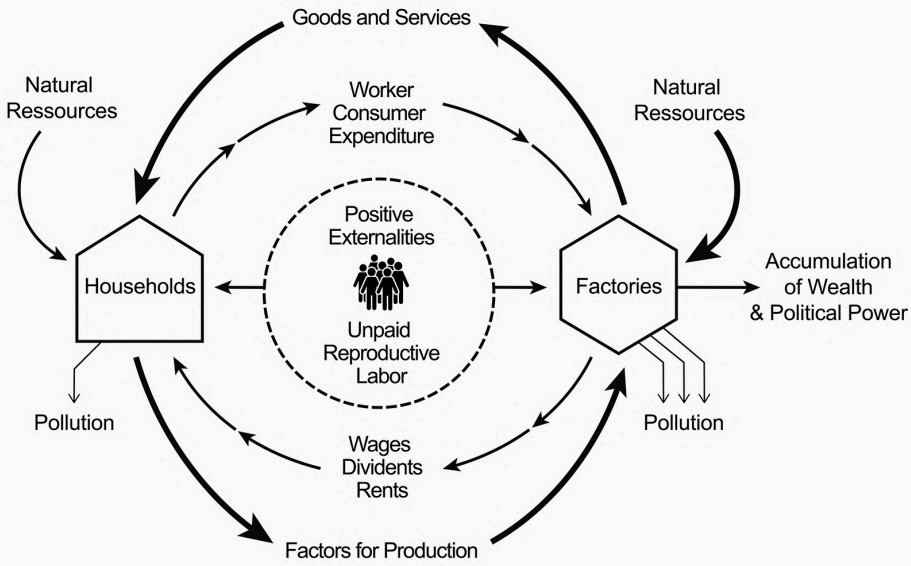


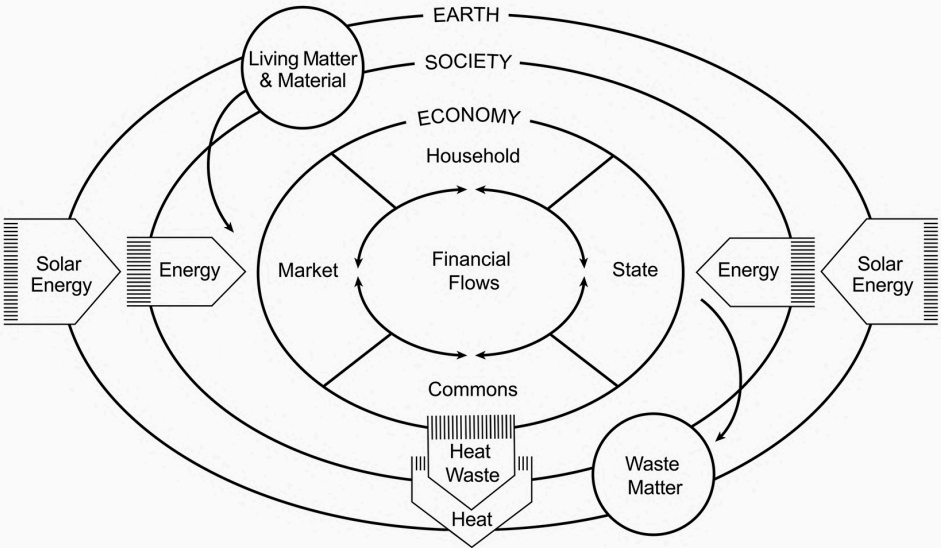
Economics (⬆)
& energy + $ (⬇)
after K. Raworth
DISNOVATION.ORG &
Baruch Gottlieb

In April 2020, during the first wave of COVID-19, Amsterdam's city government announced it would recover from the crisis, and avoid future ones, by embracing the theory of 'doughnut economics.' Introduced by University of Oxford economist Kate Raworth in a 2012 paper and popularized in her 2017 book *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*, the economic model is a visual framework for sustainable development. Shaped like a doughnut—or lifebelt—it harmonizes planetary boundaries with human needs. The doughnut's inner boundary represents the "social foundation," where everyone's necessities like food, healthcare, and education are being met. The outer circle describes "environmental ceilings"—air pollution, ocean acidification, climate change—that must not be overshot. The "sweet spot" in the middle is what Raworth defines as a safe and just space where humanity can thrive.

Apolitical and growth-agnostic, Raworth's framework doesn't lay out specific policies or goals. Instead, it relies on stakeholders—countries, cities, communities—to decide on doughnut benchmarks and ways of meeting them. Amsterdam, for example, committed to a five-year circular economy strategy that includes measures such as building supportive infrastructure with sharing platforms, thrift shops, online marketplaces, and repair services. The goal is to halve the use of new raw materials by 2030 and to achieve a fully circular economy by 2050. "In a doughnut world, the economy would sometimes be growing and sometimes shrinking," Raworth explains in a *TIME* article, as GDP is put in service of reaching social goals within ecological limits, and not viewed as an indicator of success in itself. "When we think in terms of health, and we think of something that tries to grow endlessly within our bodies, we recognize that immediately: that would be cancer."

"When we think in terms of health, and we think of something that tries to grow endlessly within our bodies, we recognize that immediately: that would be cancer."

For "Post Growth," DISNOVATION.ORG and Baruch Gottlieb interpreted Raworth's theory with two models of their own: one shows how unaccounted externalities like unpaid labour, natural resources, and pollution fit into the standard macroeconomic model (top), and the other how economic activity is embedded within and dependent upon planetary energy flows (bottom).



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"Historians of hegemonic U.S. ideologies, from Frederick Douglass and Max Weber through Cedric Robinson, can help us see how the growth imperative is bolstered by racialized theories of human evolution, of capitalism as economy, and of imperialism."

Valerie Olson researches contemporary sociocultural processes that redefine what count as environments. Her current projects focus on how social groups use the system concept to perceive, organize, and control spatial relations, particularly on large scales. As an assistant professor at the UC Irvine Department of Anthropology, she serves on UCI interdisciplinary research teams and campus initiatives such as Water UCI, the Salton Sea Initiative, the UCI OCEANS Initiative, and the UCI Community Resilience program. She is the author of the book *Into the Extreme: U.S. Environmental Systems and Politics Beyond Earth* (2018).

Q: Valerie, a few years ago you brought out a book that was billed as "the first book-length, in-depth ethnography of U.S. human spaceflight." How does space travel, or conceptions of "outer space" more generally, relate to growth?

A: Spaceflight in the U.S. provides a spatial and temporal trajectory for diverse imaginaries of social extension. I spoke with spaceflight activists with different goals, some promoting outer space mining and some trying to organize interstellar survival voyages. For example, space capitalists refer to Earth as a cradle, and humans made into a species of de-raced, de-gendered, and de-classed cosmic children who can only 'grow up' by leaving their gravity well. For people investing in interstellar travel, spaceflight will grow human developmental capacities, including the end of money and war. Among these groups are deep systems thinkers who imagine that growth is bounded only by the limits of one's accessible ecosystem. In all of these imaginaries, spaceflight is represented as a growth accelerator, but the practical problems of actual spaceflight could also provide a critical perspective on the fetishization of growth.

Q: In one of the video interviews that you made with DISNOVATION, "Ideology of Growth," you argue that in "the techno-scientific elite communities, growth is understood to be the equivalent of life and to not grow is the equivalent of death, or to die." Where, in your opinion, has this imperative come from, and how can we change it?

A: Historians of hegemonic U.S. ideologies, from Frederick Douglass and Max Weber through Cedric Robinson, can help us see how the growth imperative is bolstered by racialized theories of human evolution, of capitalism as economy, and of imperialism. I would add also that, based on the past four years in this country, growth is also associated with anxious regimes of 'winning.' It will take alternative models and imaginaries of how to live to dislodge this imperative; I have faith in the young people I interact with who are starting to know and act differently.

"Based on the past four years in this country, growth is also associated with anxious regimes of 'winning.' It will take alternative models and imaginaries of how to live to dislodge this imperative."

Q: In that video, you also say that there is "an ontological imperative to thinking about the growth as the optimal condition of the organism when there are many, many ways to look at life and death not as opposites or as distinct things apart from one another in biology and ecology." What are some examples of these alternative ways of looking at life and death and what could we, as humans, learn from them?

A: In university courses I teach about human relations with animals, fungi, and plants. I'm always inspired by how my undergraduate students dare to rethink the conditions of their own existence. This generation has tools for thinking about relationality that are nonbinary and untethered from here-to-fore notions of

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bodies or lifetimes. They want to learn how they are situated within ongoing dances of inter-transformation, rather than being tied to the life/death binary. I like watching them recognize that their bodies are not bounded objects but are somatic conditions nonseparated from other living and nonliving dynamics. Contemporary anthropology is strongly humanistic but not human-centered, and I am indebted to my colleagues who are trying to teach a new generation how to unlearn as well as to learn.

037 — Note: Post Post Growth (30/05/2021)

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"There was something oddly poetic about an exhibition on the dangers of growth being shut down by a global crisis that can, at least partly, be traced back to the farming industry and human encroachment on animal habitat."

Chloe Stead is an art critic and editor based in Berlin. Her writing has been featured in publications such as *Artnet*, *Art Agenda*, *Frieze*, *Spike*, and *Mousse Magazine*.
In February, DISNOVATION's simultaneous solo exhibitions at iMAL, Brussels and 3 bis f, Aix-en-Provence, closed to the public. Both named "Post Growth," these dual shows explored the interdisciplinary group's research into alternatives to infinite economic growth, which, as highlighted by the videos, printed matter, installations, and sculptures that were on display, is an attitude that has a direct correlation with climate change. In turn, *Life… After the Crash*, part of HOLO's new online series of dossiers, dove into some of the topics raised at these venues in a series of Q&As, short essays, soundbites, readings, and videos.

Based in Berlin, travel restrictions meant that I never actually got to see either version in person, but after a brief period of disappointment, I realized that there was something oddly poetic about an exhibition on the dangers of growth being shut down by a global crisis that can, at least partly, be traced back to the farming industry and human encroachment on animal habitat. (For a great breakdown of the latter problem, I can highly recommend a recent episode of *Last Week Tonight with John Oliver* on the "next pandemic.") I was also cheered by the fact that, unlike most exhibitions, "Post Growth" was never intended as a one- or two-time event but was always thought of by the artists as a long-term project—one that could never be contained in a single location or time period.

So, the good news is that even if you didn't make it to Brussels or Aix-en-Provence you haven't missed your opportunity to contribute. Further physical editions of "Post Growth" are planned later this year at STRP, Eindhoven and IMPAKT, Utrecht, and the group will also "challenge and develop" their models within the framework of a one-year residence at Louvain-La-Neuve University, Belgium. Beyond this, you can follow their activities online through their dedicated "Post Growth" website, which features videos from their multipart series *Post Growth Toolkits*, as well as download the elements of *The Game*, a tactical card game that invites its players to "reprogram [themselves] out of economic growth orthodoxy." Additionally, it's also possible to play a more active role in the conversation through the DISNOVATION's community Discord channel.

"If I've got one takeaway from the last few months of being immersed in this topic it is that there is no shortage of bold solutions to our current problems—what's lacking is the political will to implement them."

I'd also encourage any of you that haven't already to read back through the full dossier, which, much like some of the creatures discussed in my "note" on branching Kinship, celebrates a reciprocal relationship with the Post Growth project, in that it is inspired by but also builds upon the research done by DISNOVATION and their collaborators. The dossier is by no means conclusive, but it hopefully offers a comprehensible guide to some of the complex themes brought up by the eponymous exhibitions, from overpopulation to energy use, human exceptionalism to soil diversity. Indeed, if I've got one takeaway from the last few months of being immersed in this topic it is that there is no shortage of bold solutions to our current problems—what's lacking is the political will to implement them. But it doesn't have to be like this. As Naomi Klein argues in *On Fire: The Case for a Green New Deal*: "The stories we tell about who we are as a nation, and the values that define us, are not fixed. They change as facts change. They change as the balance of power in society changes. Which is why regular people, not just governments, need to be active participants in this process of retelling and reimagining our collective stories, symbols, and histories."

unthinking photography

Shadow Growth

Disnovation 2021-11-08

Timed to coincide with COP26, Shadow Growth is a series of online, interactive charts that compile data to show the ecological shadow or 'counter-visualisation' of wealth accumulation in different parts of the world. A central objective of the work is to produce useful alternative "photographs" of GDP to be used in daily online interactions.

Visitors are invited to interact with these new speculative data models, and export visualisations ready for circulation and discussion on social media, in presentations, and any other public forum. These images – informed by scientific research and data on the climate crisis – can provide powerful transdisciplinary support to challenge economic presuppositions, and to advocate for climate activism.

By including missing data such as national carbon emissions, the work aims to place the dominant narrative of "growth" into an ecosystemic context. The conventional "flat" representations of economic growth are projected into three dimensions. In doing so, the "social cost of carbon" of a given country, normally hidden within its official Gross Domestic Product (GDP), is revealed.

An accompanying article written by Disnovation.org focuses on the urgency and strategic value of producing and circulating alternative models (and modes of description) to reframe the links between "growth" and ecosystemic crisis.

LAUNCH PROJECT

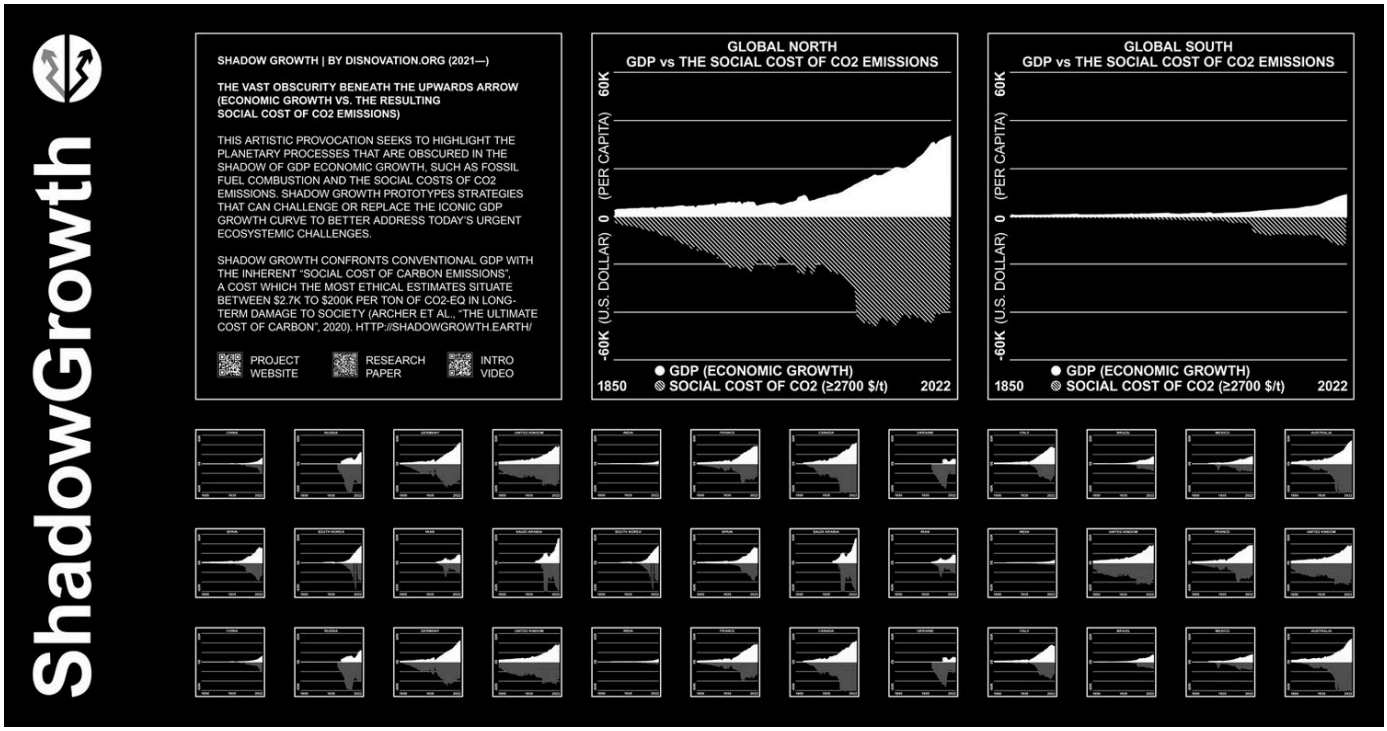
DISNOVATION.ORG is both an art collective and an international workgroup engaged in the crossovers between contemporary arts, research and hacking.

DIGITAL DOUBT

3

SHADOW GROWTH: THE VAST OBSCURITY BENEATH THE UPWARDS ARROW

2021-ongoing By DISNOVATION.ORG



SHADOW GROWTH: THE VAST OBSCURITY BENEATH THE UPWARDS ARROW (http://shadowgrowth.earth/), a project by DISNOVATION.ORG & Baruch Gottlieb, programmed by Jerome Saint-Clair, commissioned by The Photographers' Gallery, 2021.

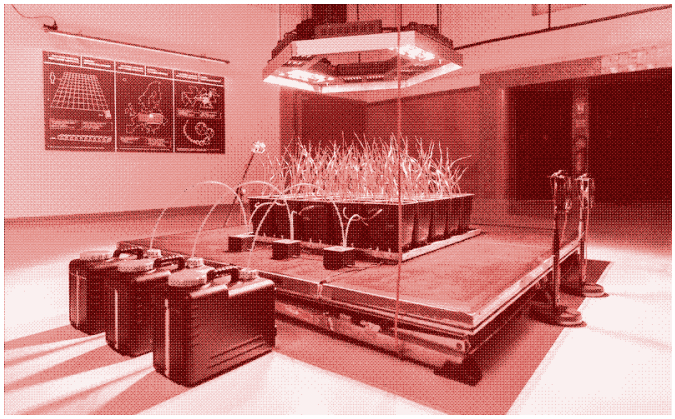
The Gross Domestic Product (GDP) measures how much a given country produces, from wheat and iPhones to oil and socks. The higher the number, the reasoning goes, the healthier the economy. DISNOVATION.ORG's *SHADOW GROWTH* project questions the logic of this idea of progress. As one of their graphs demonstrates, whilst GDP in the US may have increased dramatically between 1955 and 2007, 'gross national happiness' stagnated, and even diminished, during these decades.

DISNOVATION's project focuses on one of the GDP's many 'shadows': CO2 emissions. From the environmental impact of manufacturing to emissions from boats, ships, planes and automobiles used to transport goods from one place to another, CO2 emissions rise directly in response to the increased production of a given country. *SHADOW GROWTH* prototypes strategies that can challenge or replace the iconic GDP growth curve to better address today's ecosystemic challenges. By confronting us with visual evidence of our misguided markers for 'progress', DISNOVATION.ORG prompts us to imagine more collectively useful metrics.

Vertical Farming Does not Save Space

If the electricity for a vertical farm is supplied by solar panels, the energy production takes up at least as much space as the vertical farm saves.

February 16, 2021 Written by Kris De Decker Translations fr de nl es pt pl



Urban agriculture in vertical, indoor "farms" is on the rise. Electric lights allow the crops to be grown in layers above each other year-round. Proponents argue that growers can save a lot of agricultural land in this way. Additional advantages are that less energy is needed to transport food (most people live in a city) and that less water and pesticides are required.

Which crops?

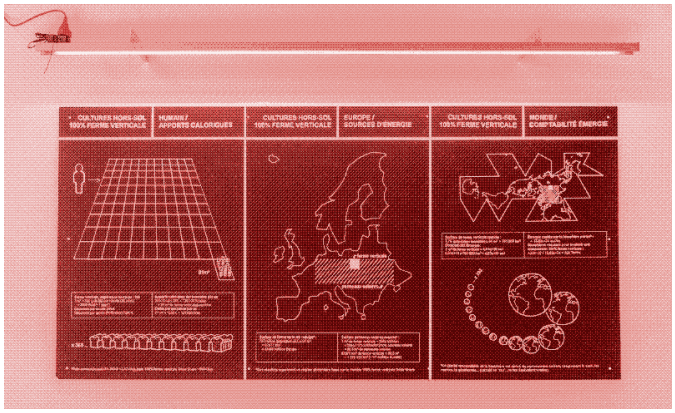
The vertical farms that have been commercially active for several years all focus on the same crops. These are agricultural products with a high water content, such as lettuce, tomatoes, cucumbers, peppers, and herbs. However, these are not crops that can feed a city. They contain hardly any carbohydrates, proteins, or fats. To feed a city, it takes grains, legumes, root crops, and oil crops. These are now grown globally on 16 million square kilometers of farmland - almost the size of South America.[1] (#fn:1)

Growing wheat vertically

An art installation currently presented in Brussels - The Farm (https://disnovation.org/farm.php) - explores what it would take to grow wheat in a vertical farm. For the experiment, 1 square meter of wheat was sown in a completely artificial environment. By measuring the input of raw materials such as energy and water, the project shows the extent to which natural ecosystems support our food production. When wheat is planted in the ground next to each other, instead of above, the sun provides free energy and the clouds free water.

A loaf of bread for 345 euros

The experiment shows that growing 1m2 of wheat in an artificial environment costs 2,577 kilowatt-hours of electricity and 394 liters of water per year. The energy required for the hardware production (such as lighting) is not included in these results, so this is an underestimate. The building's energy cost is also not taken into account, and that concerns both the construction and its use, for example, for heating, cooling and pumping water.



The cost calculation does include the price of the equipment (1,227 euros). The lifespan of the infrastructure is estimated at 8 years. Converted, the production of 1 m2 of wheat in an artificial environment costs 610 euros per square meter per year (including infrastructure, electricity, and water). Of this, 412 euros goes to electricity consumption and only 1 euro to water consumption. This calculation may be an overestimate because the installation is set up in an exhibition space.

The "farm" produces four harvests per year. With every harvest, enough wheat is grown to make one loaf of bread (580 grams), which has a cost of at least 345 euros. Each loaf contains 2,000 kilocalories, the amount that an average person needs per day. As a result, 91 m2 of artificially produced

wheat is necessary for each person, with a total cost of 125,680 euros per year.

The paradox of vertical farming

Artificial lighting saves land because plants can be grown above each other, but if the electricity for the lighting comes from solar panels, then the savings are canceled out by the land required to install the solar panels. The vertical farm is a paradox unless fossil fuels provide the energy.[2 (#fn:2)] In that case, there's not much sustainable about it.

Calculated at a yield of 175 kilowatt-hours per square meter of solar panel per year, the indoor cultivation of 1 m2 of wheat requires 20 m2 of solar panels. This is a underestimate because the calculations are based on the average yield of a solar panel. There is much less sunlight in winter than in summer. In reality, the vertical farm requires many more solar panels to keep operating all year round. There is also a need for an energy storage infrastructure, which costs money and energy too. Finally, solar panels' production also requires energy, which would demand even more space if the production process itself were to run on solar panels.

Innovation?

All this criticism also applies to vertical farms where lettuce and tomatoes are grown. In this case, there is a significant reduction in water use. These companies are profitable, but only because the process relies on a supply of cheap fossil fuels. If solar panels supplied the energy, the extra costs and space for the energy supply would again cancel out the savings in terms of space and costs. The only advantage of a vertical farm would then be the shorter transport distances. Still, we could just as well make transport between town and countryside more sustainable.

The problem with agriculture is not that it happens in the countryside. The problem is that it relies heavily on fossil fuels. The vertical farm is not the solution since it replaces, once again, the free and renewable energy from the sun with expensive technology that is dependent on fossil fuels (LED lamps + computers + concrete buildings + solar panels). Our lifestyle is becoming less and less sustainable, increasingly dependent on raw materials, infrastructure, machines, and fossil energy. Unfortunately, this also applies to almost all technology that we nowadays label sustainable.

More info: Solar Share (The Farm) (https://disnovation.org/farm.php) , by Disnovation.org (Maria Roszkowska, Nicolas Maigret) and Baruch Gottlieb.

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1. Smil, Vaclav. "It'll be harder than we thought to get the carbon out [Blueprints for a Miracle]." IEEE Spectrum 55.6 (2018): 72-75. ↩ (#fnref:1)
2. Atomic power and wind turbines are other options. See the comments. ↩ (#fnref:2)

Related Articles

Food and Farming

Urban Fish Ponds: Low-tech Sewage Treatment for Towns and Cities

In the mid 20th century, whole cities' sewage systems safely and successfully used fish to treat and purify their water. Waste-fed fish ponds are a low-tech, cheap, and sustainable alternative to deal with our own shit – and to obtain high protein food in the process.

March 28, 2021

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April 16, 2020

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When modernity meets its end-point and creates a world where everything is sterile, controlled, and known, there will be little space for fermentation.

July 25, 2018

Treehugger

Are Vertical Farms Still a Thing?

We are trying to grow our building materials in sunlight. Why not our food?

By Lloyd Alter | Published on March 19, 2021 01:27PM EDT

Indoor Wheat Farming in Brussels.
Credit: Disnovation.org

Vertical farms are back in the news, with Sean Williams writing in Wired that vertical farms nailed tiny salads. Now they need to feed the world.

Treehugger has been following this subject and has been dishing up stories on vertical farms ever since Gordon Graff first showed his Skyfarm in Toronto's Entertainment district, ready to serve tomatoes to throw at actors in the theaters and olives for the martini bars. They were the toast of the internet after Dickson Despommier wrote his book "The Vertical Farm" – I was not convinced and wrote in my now archived review in 2010:

> "Ultimately the idea only makes sense if you think of farming as a no-holds battle to the death and when you think of soil as nothing more than a mechanism to hold a plant up. Sami has written that 'there are more organisms in one teaspoon of soil than there have ever been humans on this planet.' Others are trying to build biodynamic, organic, regenerative, or ecological farming communities, where food is grown naturally and is actually good for the soil instead of destroying it. It is a much more attractive and probably better tasting future of food."

The original Skyfarm.
Credit: Gordon Graff

Subsequently, I was honored to be an external examiner at Gordon Graff's defense of his Masters thesis at the University of Waterloo, where he demonstrated that vertical farms could actually work, but pretty much in an industrial barn, where he cornered the lettuce market. And that is kind of where we are today, with Aerofarms in a Newark warehouse and vertical farms operating in repurposed factories around the world, mostly growing what critics call "garnishes for the rich."

Wheat growing in Brussels.
Credit: Disnovation.org

Our go-to critic of all things techno-futurist is Kris De Decker of Low-tech Magazine, who notes that garnishes for the rich don't include carbohydrates or proteins, and writes that "to feed a city, it takes grains, legumes, root crops, and oil crops." He recently had a look at vertical or indoor farming after seeing an art exhibit in Brussels called The Farm, which examined the inputs required to grow a square meter of wheat. The artists write:

> "This 1 square meter experiment makes manifest the vast technical infrastructure and energy flows required to grow a staple food such as wheat in an artificial environment. In today's economy it is profitable to artificially produce agricultural products with high water content such as leafy greens and tomatoes. However, from a systemic understanding, this apparent profitability and efficiency of the current system relies on the availability of cheap fossil energy, unaccounted-for resource extraction and pollution all over the globe, incurred in subordinate processes from mining and electronics manufacture, to international freight."

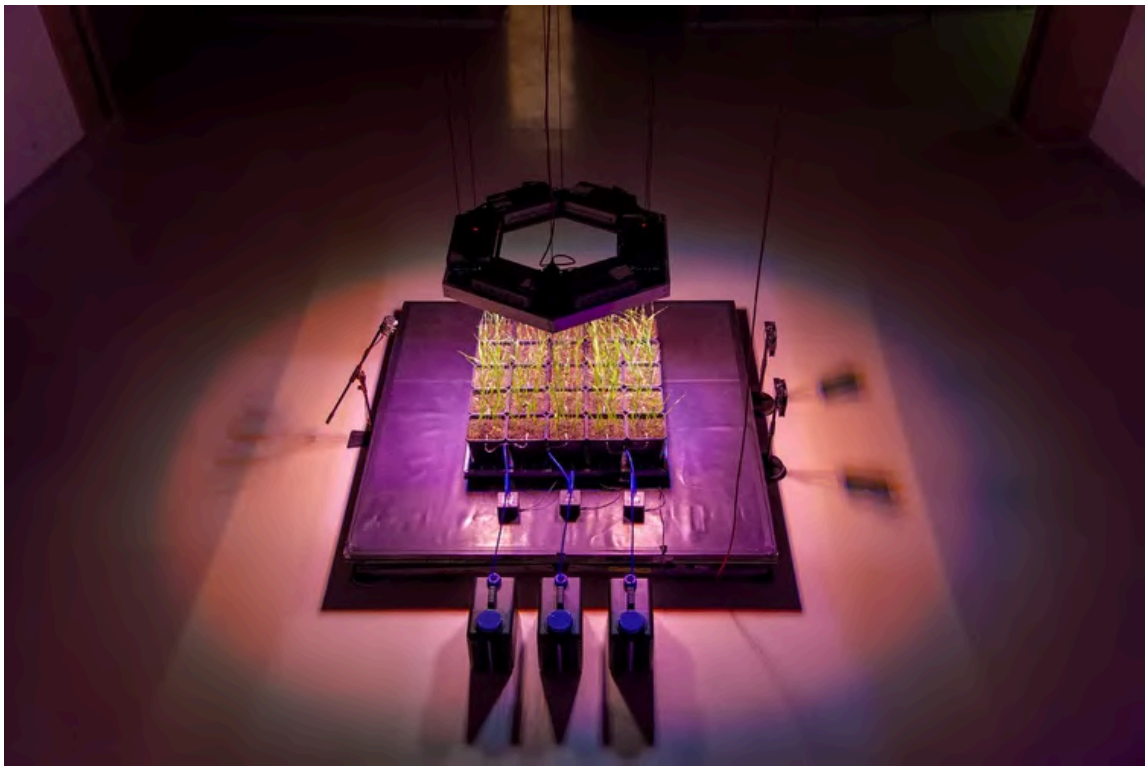
De Decker reports that it took 2,577 kWh of power and 394 liters of water to grow this little bit of wheat, and that didn't include the embodied energy from making all the equipment needed. Ultimately a loaf of bread made from this wheat would cost 345 euros ($410).

Among the purported virtues of vertical farms is that they can use specifically tuned LED lights, a controlled atmosphere, and that they take up a lot less space because the plants are stacked vertically. However, if you wanted to run them on renewable energy such as solar power, "then the savings are canceled out by the land required to install the solar panels." De Decker concludes the article:

> "The problem with agriculture is not that it happens in the countryside. The problem is that it relies heavily on fossil fuels. The vertical farm is not the solution since it replaces, once again, the free and renewable energy from the sun with expensive technology that is dependent on fossil fuels (LED lamps + computers + concrete buildings + solar panels)."

Except that's not really the conclusion, it is just the start of pages and pages of comments on the article from the techno-futurist crowd, attacking De Decker for a "hit piece" and pointing out that there is nuclear power. The discussion gets picked up on Y Combinator Hacker News where they say "fusion energy is going to account for a rapidly increasing share of energy production by the end of this decade," so why not? Poor Kris De Decker responds by saying "I had no idea that vertical farms were such an emotional topic" (Treehugger could have warned him) and clarifies that "this article (and this art work) criticizes the idea that vertical farming could supply a substantial share of a city's food supply."

Much has changed in the years since we started covering vertical farms, including the improvement of LEDs, the understanding of which spectra of light they should be tuned to, and of course, the rise in global temperatures, increasing climate weirdness, and worries about increasing deforestation for agricultural land. But as we recently noted, just cutting out red meat would cut agricultural land use in half, or that we could grow all the food we need in our yards.



Credit: Disnovation.org

Ultimately, I do not believe that the prospects for hydroponic vertical farms under artificial light (versus rooftop farms under glass or vertical greenhouses) have changed much. If anything, they have gotten worse, because not a single analysis I have seen has ever included the embodied carbon or upfront carbon emissions from actually making the aluminum and steel and lighting equipment that they are built from. We live in a world where we are using sunlight to grow our building materials to get rid of steel and aluminum; surely we can use it to grow our food.

In his recent book, "Animal, Vegetable, Junk" Mark Bittman complains about modern farming practices and their reliance on fertilizers. He writes:

"Methods of treating the soil became predictably and tragically oversimplified, as it was incorrectly determined that plants didn't need healthy soil and all that it contained – literally hundreds of elements and compounds and trillions of microbes. According to reductionist analysis, soil and plants quite simply needed nitrogen, potassium, and phosphorus."

Now the reductionists even want to replace the soil and sunlight. Perhaps instead, we should listen to Bittman.

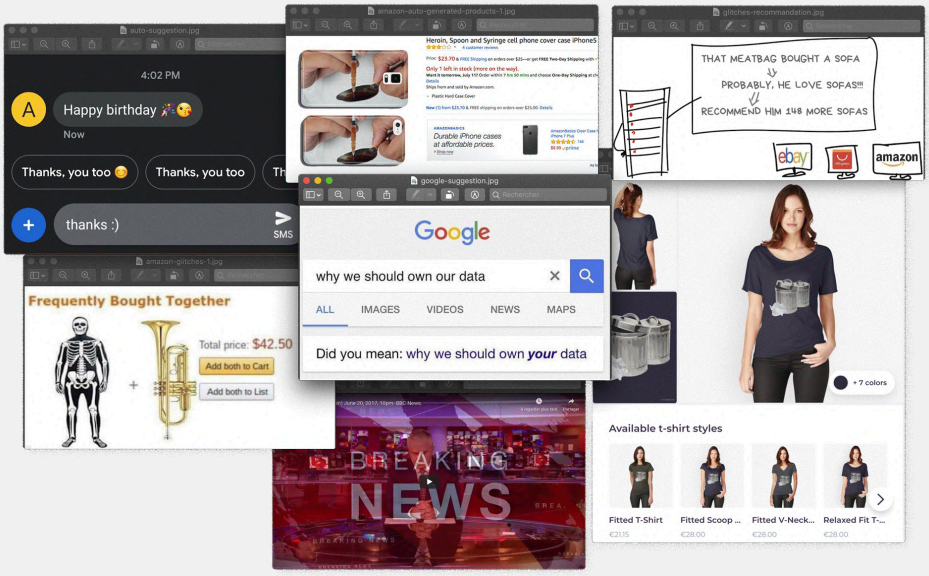
Dr. Jonathan Foley had much to say about this a few years ago in No, Vertical Farms Won't Feed the World.

Schloss — Post

Issue № 0 — Digital Culture, Theory & Art

From Surveillance Capitalism to Glitch Capitalism

Interview with DISNOVATION.ORG — Sep 05, 2019

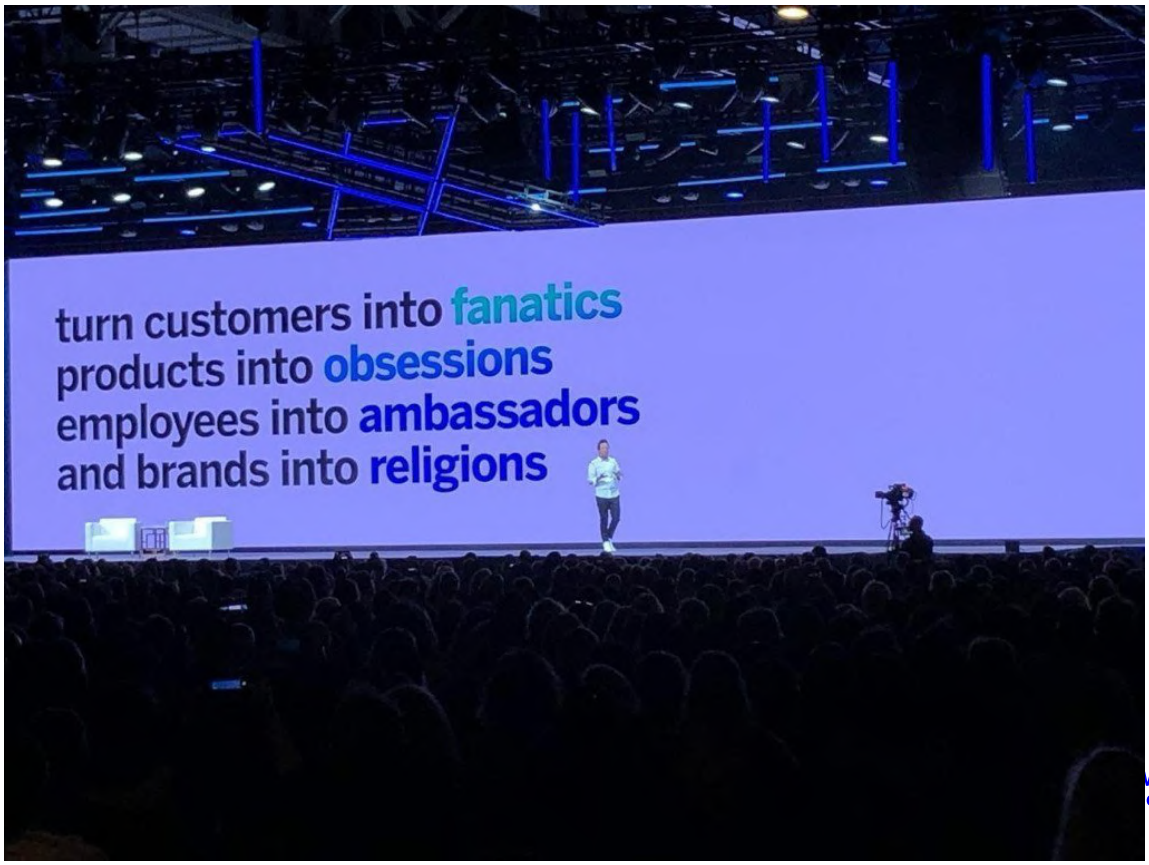


The work of DISNOVATION.ORG is characterized by producing critical works about the cult of technological innovation and disseminating radical counter-narratives. For the web residencies by Solitude & ZKM on the topic »Rigged Systems« curated by Jonas Lund, the working group developed the project *Profiling the Profilers* as a response to information asymmetry in digital profiles. The work seizes the means of data analytics to create a series of psychological, cultural and political profiles of the most data-extractivist Big Tech companies of our time. In our interview with DISNOVATION.ORG, we spoke about their working processes and their thoughts on the role of copy culture, free access, and media piracy.

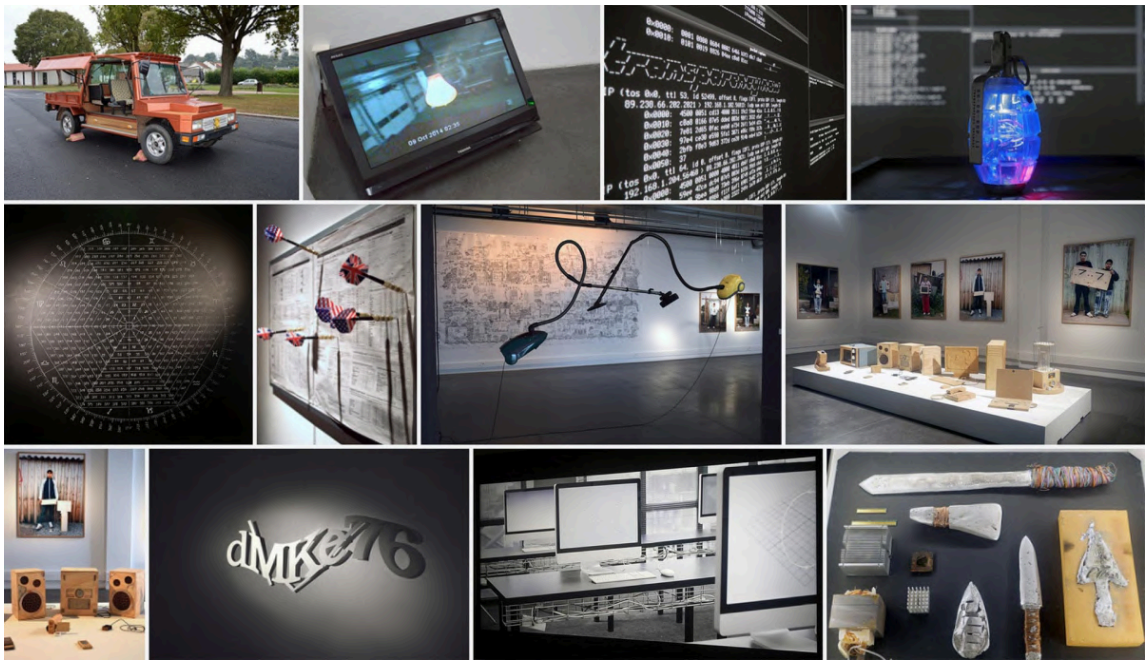
Web Residencies

Schlosspost: What does the DISNOVATION.ORG group stand for? When was it founded, and what were the initial thoughts? In what way is your work challenging the cult of technological innovation? And why is this important for DISNOVATION.ORG as a group? What is your take / specific angle on the ideology and the rapid pace of technology innovation?

DISNOVATION.ORG: For several years, our main research object has been the dominant ideology and the propaganda of technological innovation, with a focus on critical views and counter narratives. This research track started around 2010-11 when we developed a better understanding of how the dominant neoliberal rhetorics were intensively using the keyword “innovation” in every field of society to justify anti-social policies, hyper consumerism and economic growth. Similarly, within the cultural field, we started to realize that the art-tech-science community — that we were evolving in — was a very ambiguous political space. For instance, a large part of the common art discussions and productions seemed to serve as an apparatus for the validation and popularization of the dominant ideology of infinite growth, clueless-innovation, consumerism, and techno-utopianism.



From that point, we decided to dedicate a year to work on a series of meetings, workshops, events and debates to address these questions, and foremost with the intention to disseminate counternarratives and critical stances. It resulted in “Disnovation” a series of events and festivals (initiated together with Bertrand Grimault). DISNOVATION.ORG has since then evolved as a working group that develops diverse practices, including artworks, publications and workshops…



DISNOVATION.ORG, exhibition at Bel Ordinaire, Pau, 2013 (with Bertrand Grimault)

Schlosspost: Why did you choose the shape of a working group and put the group forward instead of you as individual artists/authors/actors?

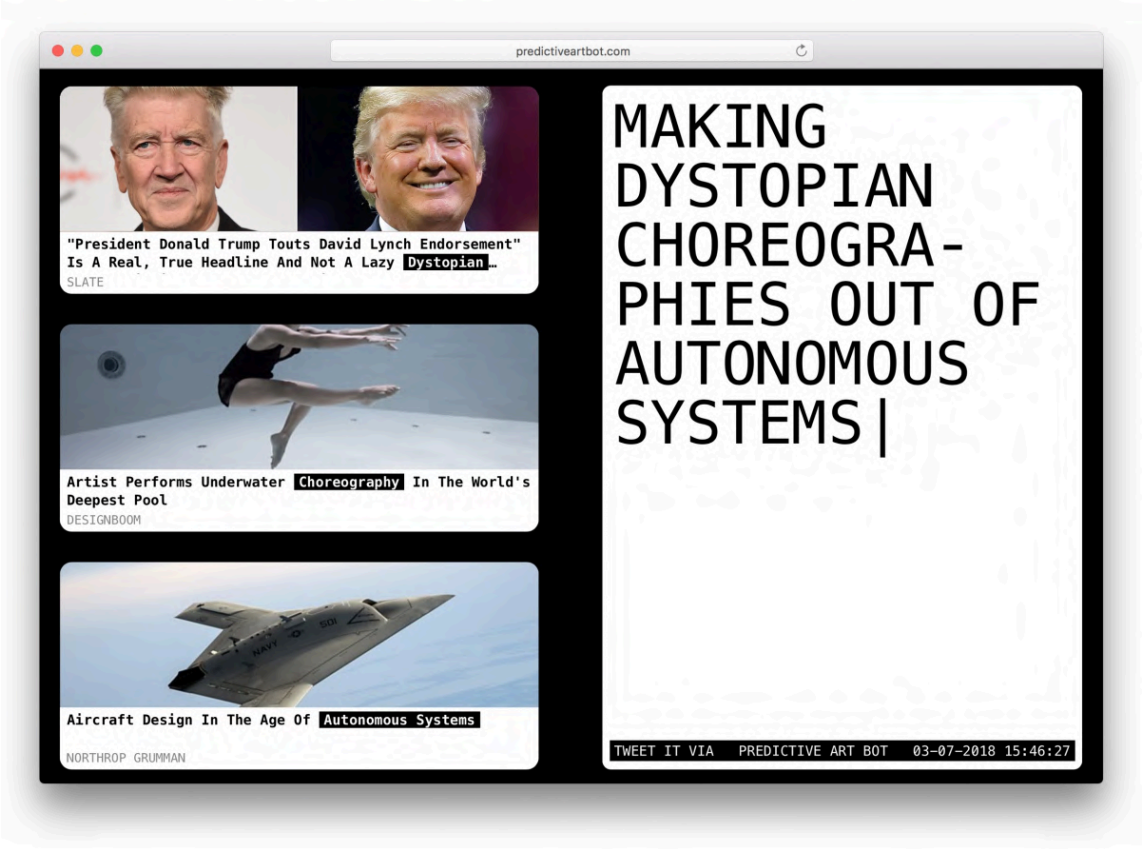
D: We tend to produce works based on processes, performativity and feedback, rather than purely aesthetic forms or fixed final artworks, and we generally prefer to put these projects and ideas forward rather than the persons. We prioritize collaborative research dynamics, that result in the production and circulation of collective experiences and debates. With his concept of idea sex: Matt Ridley, a British science writer, says that humans “mate” to produce new ideas just as we mate to reproduce. For

our recent projects, we've been working with programmers, scientists, anthropologists, philosophers, designers, writers, and astrophysicists. We often find it to be more challenging and stimulating.

Publications by DISNOVATION.ORG, Blacklists, Online Culture Wars, The Pirate Book

Schlosspost: As you also create and curate exhibitions, what does it mean to you to create and present work online?

D: Most of our works are strategically designed to primarily exist outside of the art/gallery/exhibition space, so that it can ideally circulate, be experienced, be shared, be appropriated by Internet users, hobbyists, teachers, journalists and activists, and eventually contribute to a larger societal discussion. Producing online works, publications, and viral videos are ways to approach this goal.



DISNOVATION.ORG, Predictive Art Bot, live online version, 2018

»We were fascinated by how the copy culture, free-access and media piracy transformed the circulation of culture and knowledge over the last 40 years.«

Schlosspost: How do the different spheres you are working with and in – curating, publishing, creating artworks, hacking – inform each other?

D: In general, starting from our interest in contemporary issues and societal frictions, we initiate some research, readings, meetings, experiments. The outcomes of these research are then formalized into publications, sites, artworks, group shows… A good example of this empirical scheme is *The Pirate Cinema*. We were fascinated by how the copy culture, free-access and media piracy transformed the circulation of culture and knowledge over the last 40 years. We realized that we were

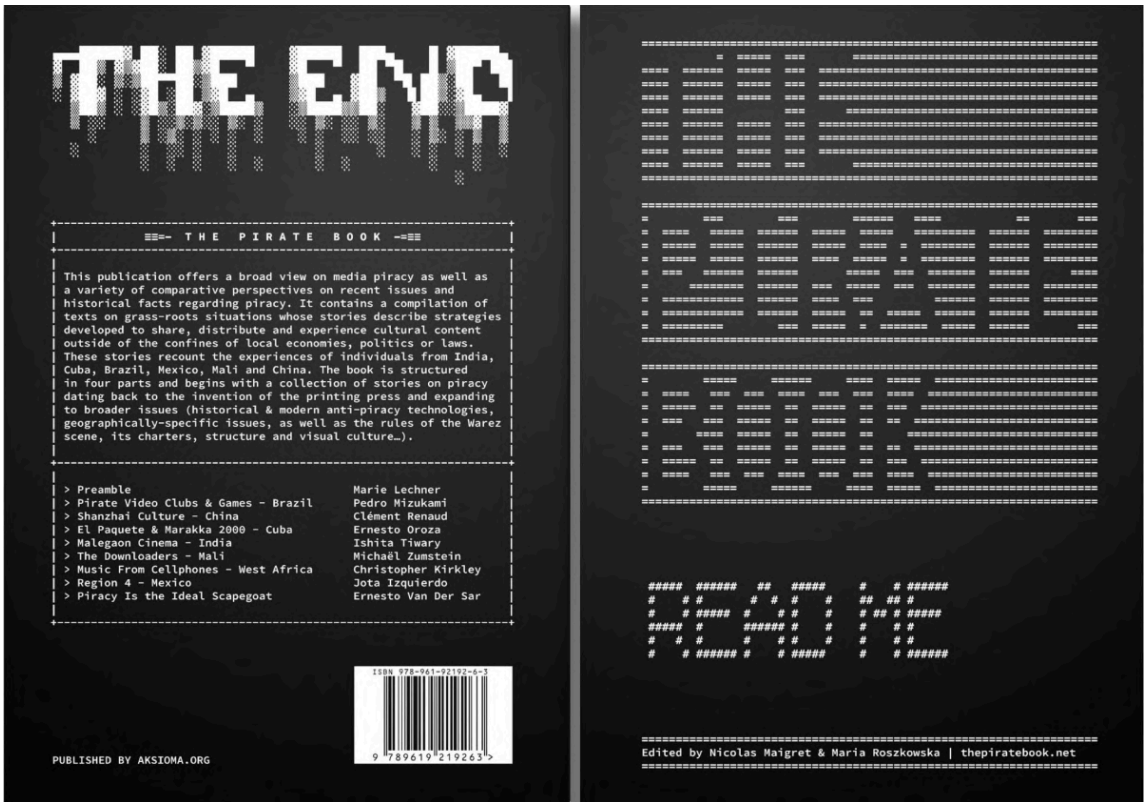
ourselves a product of this change, and that the copy of cassettes, xerox, diskettes, and peer-to-peer file sharing was a core element of our own culture and identity.

As a result of this research, **The Pirate Cinema** was developed as a proxy to experience physically the ongoing activity of P2P file sharing as it happens. This project basically repurpose the technique used by most P2P-Bittorrent surveillance actors, which is to take part in the bittorrent sharing process in order to observe the activity on this network.

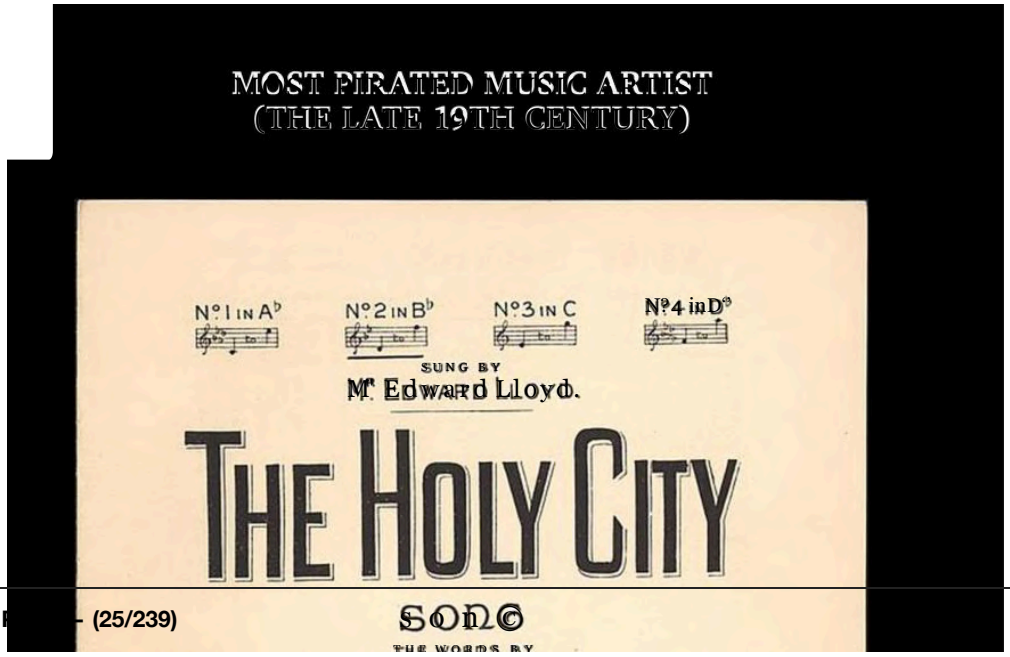
DISNOVATION.ORG, The Pirate Cinema, installation et Arts Santa Mònica, Barcelona, 2016

While researching for this project, and while touring the project we accumulated tons of historical anecdotes, example of local piratical practices, and contacts with like-minded peers. All this material finally took the shape of a book titled **The Pirate Book.** It is a compilation of stories about sharing, distributing and experiencing cultural contents outside the boundaries of local economies, politics, or laws. This work offers a broad view on media piracy, piracy of necessity, technological creolization, as well as a variety of comparative perspectives on recent issues and historical facts regarding media piracy. The book is structured in four parts and begins with a collection of stories on piracy dating back to the invention of the printing press and expanding to broader issues

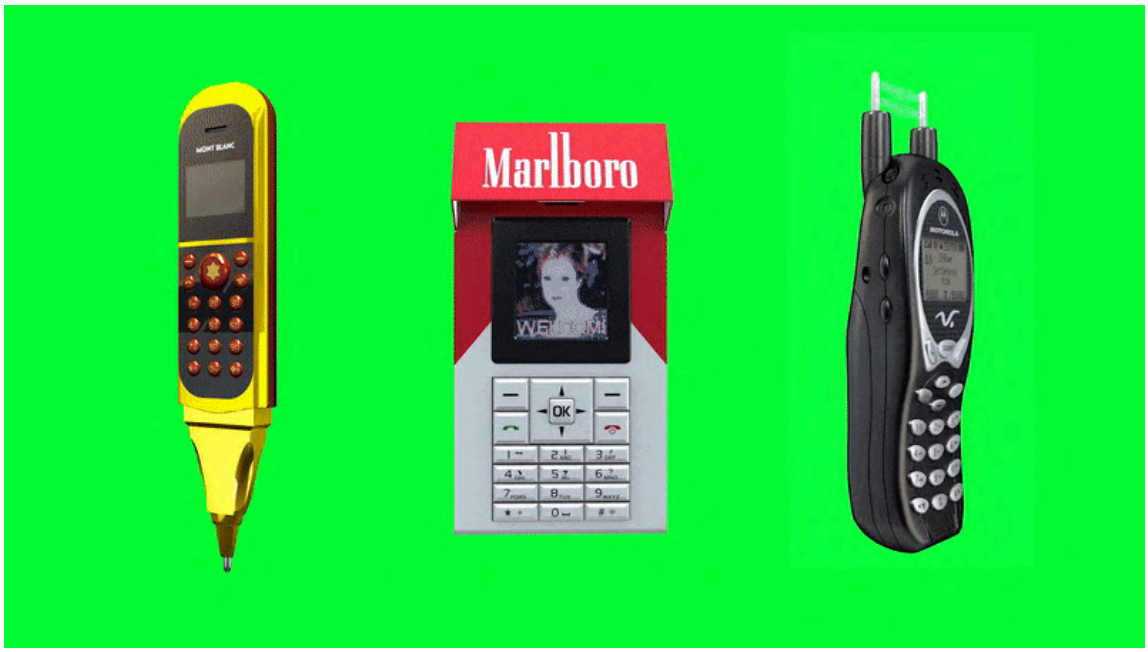
(historical and modern antipiracy technologies, site specific piratical practices, as well as some of the rules of the Warez scene, its charters, structure and visual culture...).



The Pirate Book, Nicolas Maigret & Maria Roszkowska, published by Aksioma, 2015



This book was also the occasion to work again with our friend Clement Renaud on a chapter about China, piracy, and *shanzhai* culture. An investigation that morphed into a long term research titled **Shanzhai Archeology**. Basically, in opposition to a hyper normalized Western vision of hi-tech innovation — where for instance most phones and computers finally end up doing and looking almost the same — we were really intrigued by the entanglement between the Chinese history of the special economic zone of Shenzhen, the history of knockoff products, hardware piracy, and as a result, the prolific developments of a singular production ecosystem mixing DIY and DIWO skills, copy, shared blueprints, hybridization, optimization and rapid incrementation. We documented this alternative history of ICT innovation, through interviews, documents, pictures, and a collection of 100+ hybrid phones produced over the last decade, mainly for markets in emerging and developing countries.



DISNOVATION.ORG, Shanzhai Archeology, 3D Models by Terrell Davis, 2015-2018

DISNOVATION.ORG, Shanzhai Archeology, installation, collection, video, research, edition, 2015-2018 Photos: Sébastien Moitrot, Dasha Ilina

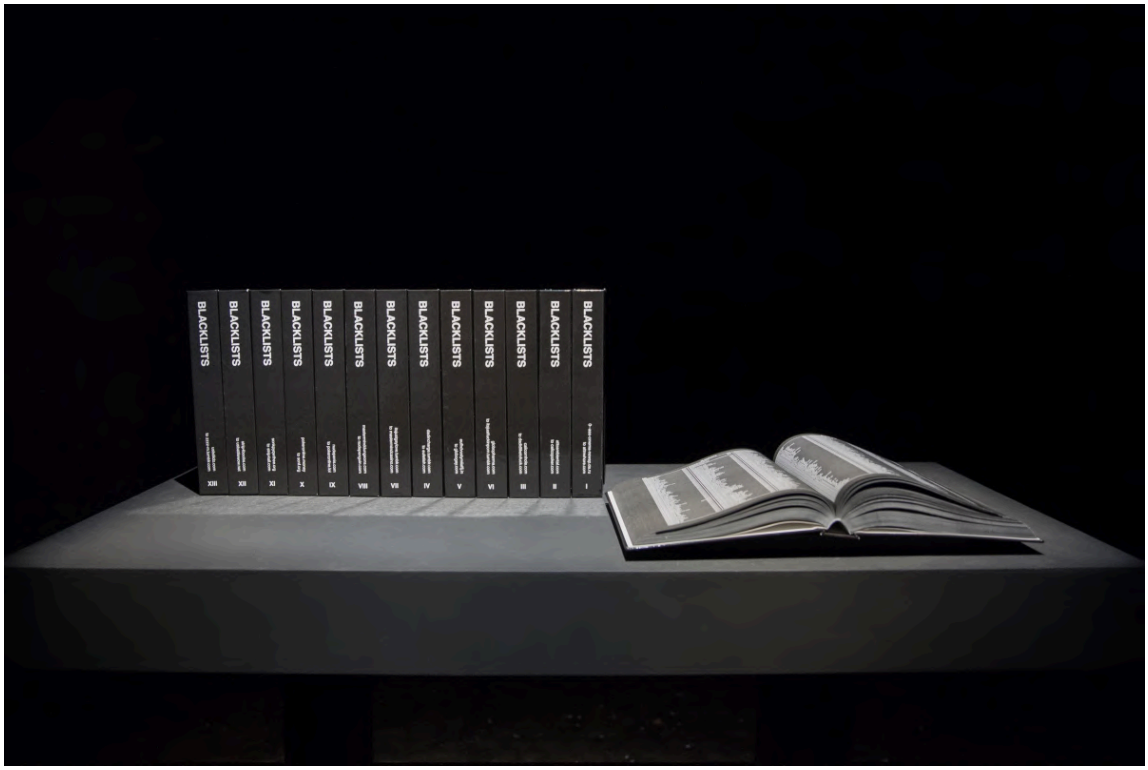
Schlosspost: Many of your works tap into questions "Who gets to decide what gets censored, should people make those decisions, and who guards the guards?"

D: In parallel to a growing attention to the deep web, an interesting shift over the last decade was how the traditional parental filters expanded at every layer of our communication infrastructures: states, ISPs, apps, IoT

devices… We were curious about how those filter listings were made, and how they could reveal something like the moral outlines of our society.

»With around 2 million websites extracted from commercial content-control softwares, this collection reveals a cultural, social and ideological model of our society through what should not be seen.«

The Blacklists project is a directory of the prohibitions of the Internet deployed in the form of an encyclopedia in 13 volumes of 666 pages each. It is an extensive collection of restricted websites used for the automatic filtering of traffic considered illicit or licentious. With around 2 million websites extracted from commercial content-control softwares, this collection reveals a cultural, social and ideological model of our society through what should not be seen.



DISNOVATION.ORG, Blacklists, installation view, solo exhibition at Mapping, 2017. Web Residencies
Photo: Dasha Ilina

Schlosspost: The rhetoric of innovation has in many regards become a political program. DISNOVATION.ORG addresses this issue through a wide range of topics/projects dealing with specific technologies, digital cultures, etc. – how do you choose your projects and research objects? And where do you start the working process, e.g. from a specific question / problem etc.?

D: An interesting example of this is **Predictive Art Bot**. When we were spending more time as curators between 2013-15, we became intrigued but also amused by how much of contemporary artist's concerns and artforms were similar and somehow standardized, often in sync with the lastest breaking-news, innovations and trends. We were also impressed by the speed at which these trends came and disappeared. While investigating this phenomenon further, we realized how deeply these contemporary echo-chamber effects were interrelated with recent globalized social-media, intensified smartphones use and hyperconnectivity.

Smartphone addiction, image by Shi Qian, 2016

Using a clear glass Ikea table as an improvised smartphone viewer, image via Labaq via Reddit, 2015

We decided to find a way to interfere within this cultural echo-chamber. We started to program an art bot, that would caricature this “artistic ideation process” by reacting to the latest trends way faster than the artists themselves, but also and more importantly, a bot that would stimulate and inspire more singular, divergent and alien imaginaries. This bot basically monitors 100’s of cultural influencers on Twitter (blogs, magazines, news,…), then it identifies recurrent keywords, and combines them, like a cultural cut-up, to produce artistic concepts. These concepts are then released back on social media for anyone to appropriate.

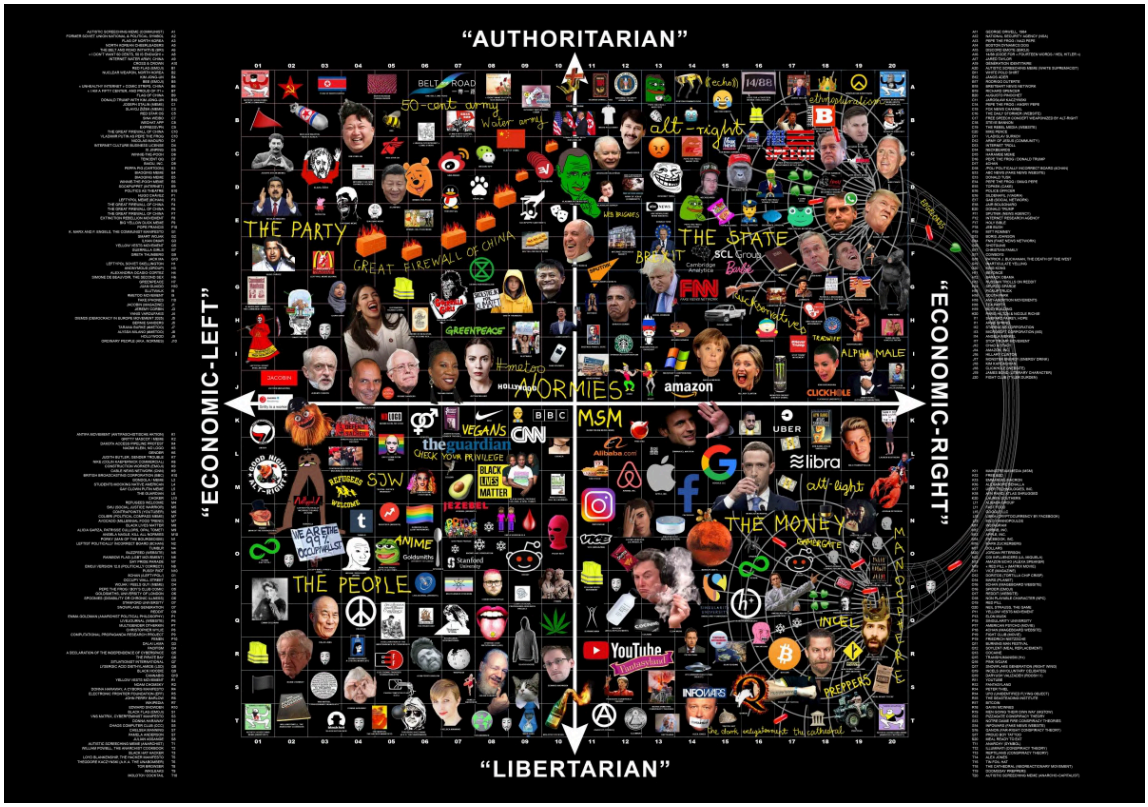
DISNOVATION.ORG, Installation view Predictive Art Bot, solo exhibition at Stereolux, Nantes, 2017

Schlosspost: To what extent can your work also be considered an educative approach (maybe even toward the direction of promoting media / tech literacy)?

»We tend to avoid making too cryptical or formal artworks for the art sphere only, we rather try to inject artworks into a larger societal conversation.«

D: We definitely focus on the practice of visibilizing underrepresented techno-scientific phenomenons and their social or political consequences, and in some cases our way to achieve that is by stimulating debates about it. In terms of outcomes, we tend to avoid making too cryptical or formal artworks for the art sphere only, we rather try to inject artworks into a larger societal conversation. We can illustrate this by two recent projects that have been conceived to provoke debates and expose the fields of online culture wars and online persuasion.

On one hand, the map **Online Culture Wars** was designed precisely to emulate the form of an educational media, and to act as a discussion starter. Lately, online cultures have been subjected to a growing polarization, politicization, and radicalization, influenced by numerous actors, and magnified by the very features of ubiquitous social networks. The purpose of this map is to offer a representation of online ideological and political frictions, integrated into the visual system of a Political Compass meme. It is basically an overlay of hundreds of politicized memes, along with influential political figures and symbols.



DISNOVATION.ORG, Online Culture Wars, map, 2018–2019

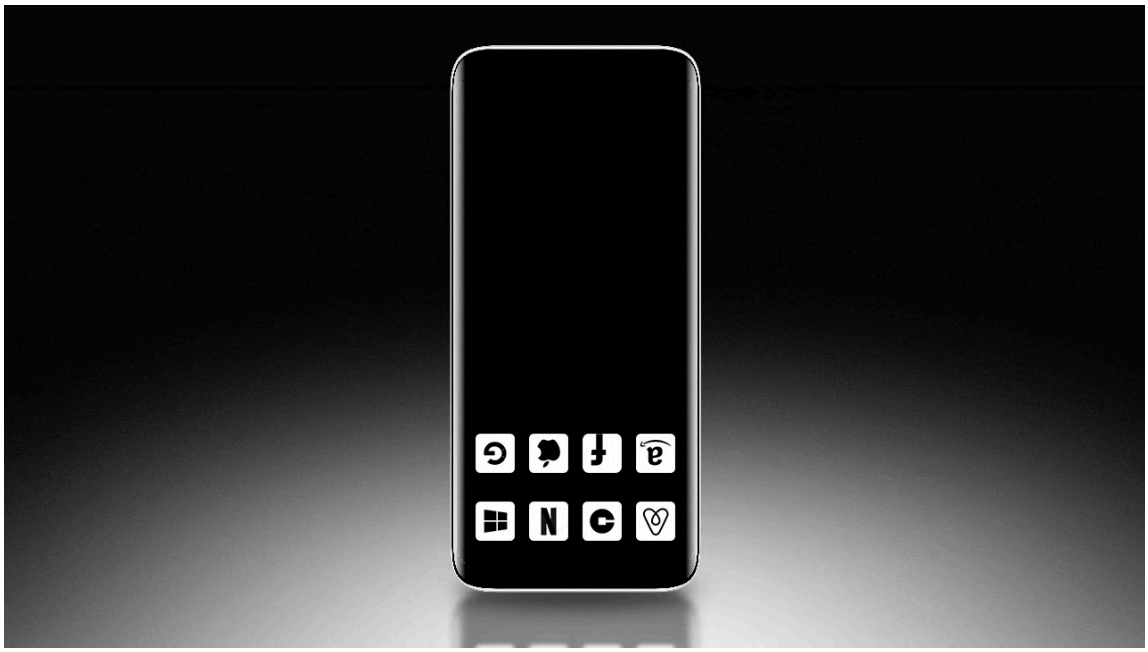
On the other hand, the video **The Persuadables** is another example, amongst our recent artworks, that mimics the form of educational content. This video work focuses on the political instrumentalization of the tools, techniques, and infrastructures of the web, with a particular attention to the social media influence ecosystem, and the manipulation of opinions online. Ubiquitous social networks gave rise to new types of practices, new forms of expression, and new means for collective organization of protest and discord. The video, The Persuadables, exposes

some practices broadly used for online influence, persuasion, and manipulation, as well as creative responses, that they triggered in the civil society.

Schlosspost: Your proposal says: “Profiling the Profilers” will result in a series of highly detailed, and biased, digital profiles of Big Tech, similar to the ones constantly generated for each user by these very same companies, and then result in a distributed counter-propaganda campaign, eventually polluting the social feeds of Big Tech companies”. Could you explain in more detail – what kind of information are you interested in with regards to GAFTAM? What kind of data are you collecting? And how could these profiles look like?

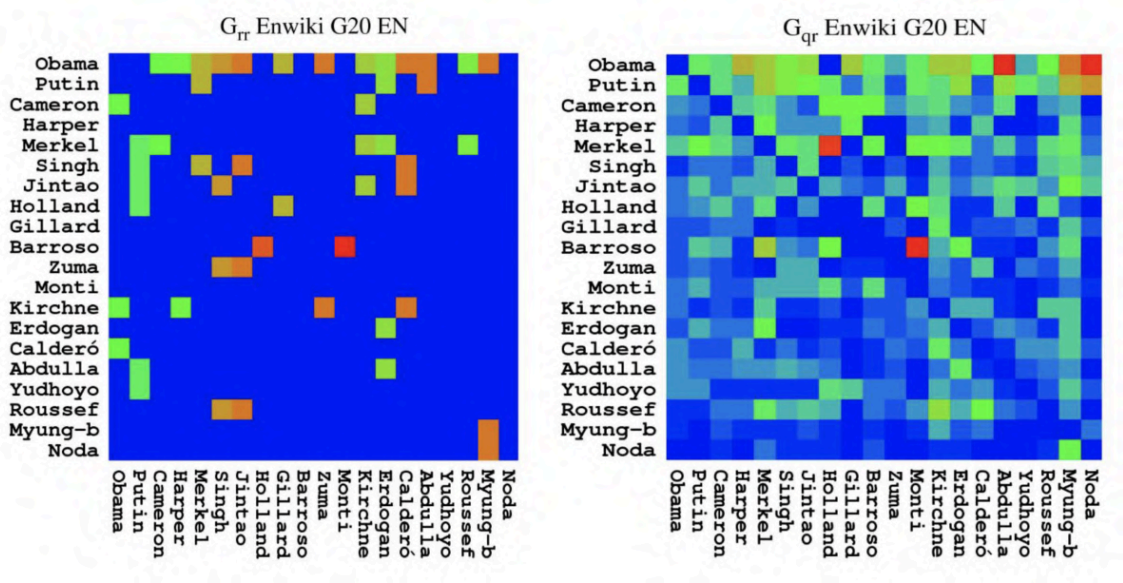
D: With this new project, **Profiling the Profilers**, the first idea was to attempt a simple, but almost impossible action: reverse the surveillance of the big-tech companies — who detain 80% of our online personal data — using their own tools & methods. To do so, we spent one year working with Dr. José Lages and his research team from Institut UTINAM, in Besançon. Based on state of the art big data analytics techniques, this work will generate a series of highly detailed digital profiles of Big Tech companies (ie. psychological, cultural and political profiles), similar to the ones constantly generated for each user by these very same companies.

To assemble these digital profiles, rather than simply follow the same categories as the ones usually tracked for the profiling and prediction of users’ activity (age group, demographic, consumer behaviour, location, income group, etc), we will augment these categories with additional critical insights, specifically relevant for Big Tech (political orientation, ethical orientation, propaganda techniques, type of induced addictions, types of biases, etc).



DISNOVATION.ORG, Profiling The Profilers, animated GIF teaser, 2019

In order to "infer hidden causal relations" between Big Tech companies and specific societal and political issues, we are using an algorithmic method derived from PageRank (reduced Google matrix analysis) in order to analyse the matrix of every possible link between every single existing Wikipedia article. Similar algorithmic methods are often used in data sciences, data journalism, and for probabilistic user profiling. It allows to estimate the strength of the hidden relations between various members (articles, pages, users) of the studied network (for instance between a user and an item for the purpose of product recommendation).

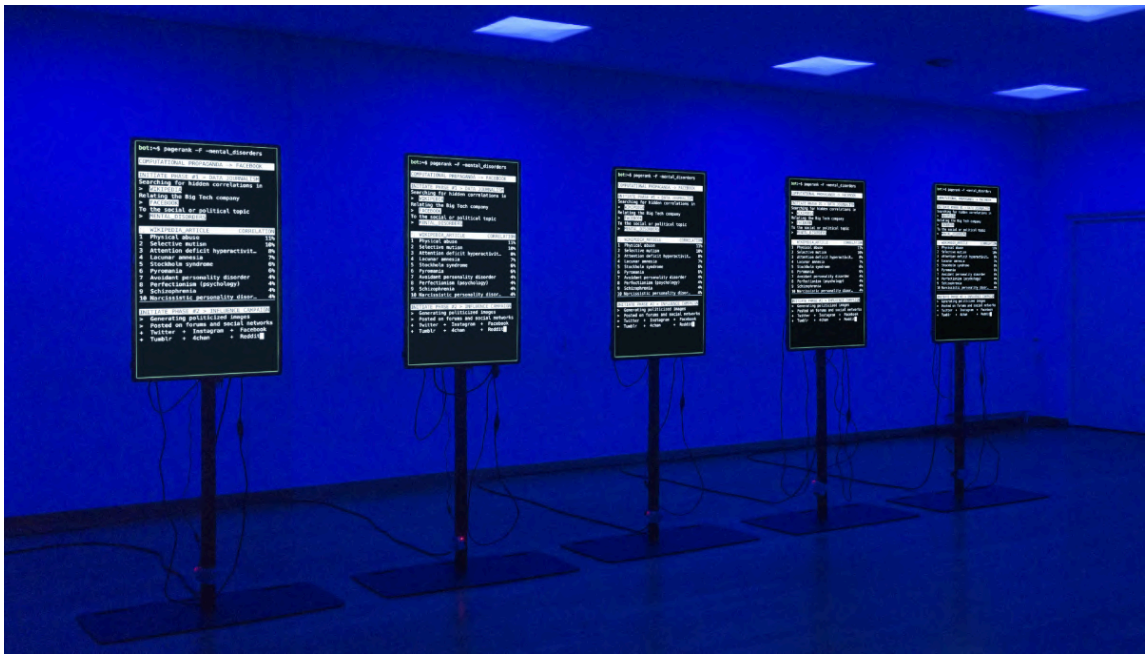


Web Residencies

Wikipedia mining of hidden links between political leaders, Klaus Frahm, Katia Jaffres-Runser, Dima Shepelyansky, 2013

Schlosspost: What can we expect from the project / the research material / preview of the project as you will publish it on Schlosspost, who created the materials and how?

D: The first release on Schlosspost will be focusing on our research material and the core elements of our work methodology. A few weeks later, we will release the interactive online project. The algorithm we used is based on the research of Dr. José Lages' team, and the programming is done with our long time collaborator Jerome Saint Clair. Our article on Schlosspost will include academic references, articles, and visual elements, for instance on online persuasion, surveillance capitalism, or this fascinating article about glitch capitalism.



First prototype for Profiling The Profilers, DISNOVATION.ORG, 2018

Schlosspost: What are the next steps / different formats the project will take on?

D: We're presently in a residency with M-Cult (Helsinki) and Emap to finalize this installation. We will release the online project this fall, and then the exhibition version in November 2019. The online project will also unfold over time, as users eventually take part in the sharing of the counter-propaganda developed by the "Profiling The Profilers" bot. As users will share or repost some of the generated counter-

recommendations, these posts will end up polluting the feeds, and the hashtags of the targeted Big-Tech companies.

The interview was conducted by Inga Seidler

VISIT THE PROJECT ↗

DISNOVATION.ORG, Warsaw, Poland & Paris, France

DISNOVATION.ORG is a working group at the intersection of contemporary art, research and hacking. They develop situations of disruption, speculation and debate that question dominant techno-positivist ideologies, and stimulate post-growth narratives. They edited The Pirate Book an anthology on media piracy. They are currently research fellows at the University of California, Irvine.

→ **View full profile**

Inga Seidler

Inga Seidler is a curator, cultural producer, and researcher based in Berlin. She is the head of the Digital Solitude program. Her work addresses the issues and questions of making art with, or in response to, emerging technologies. It also considers the possible constellations of bodies, objects, and environments that move between the physical and digitals realms. She holds a masters degree from the Cultures of the Curatorial postgraduate study program at the Academy of Fine Arts (Hochschule für Grafik und Buchkunst) in Leipzig, and the Hochschule für Musik und Theater Hamburg. Prior to her position at Solitude, Inga Seidler was a curator and producer at the transmediale festival for art and digital culture (2013–19).

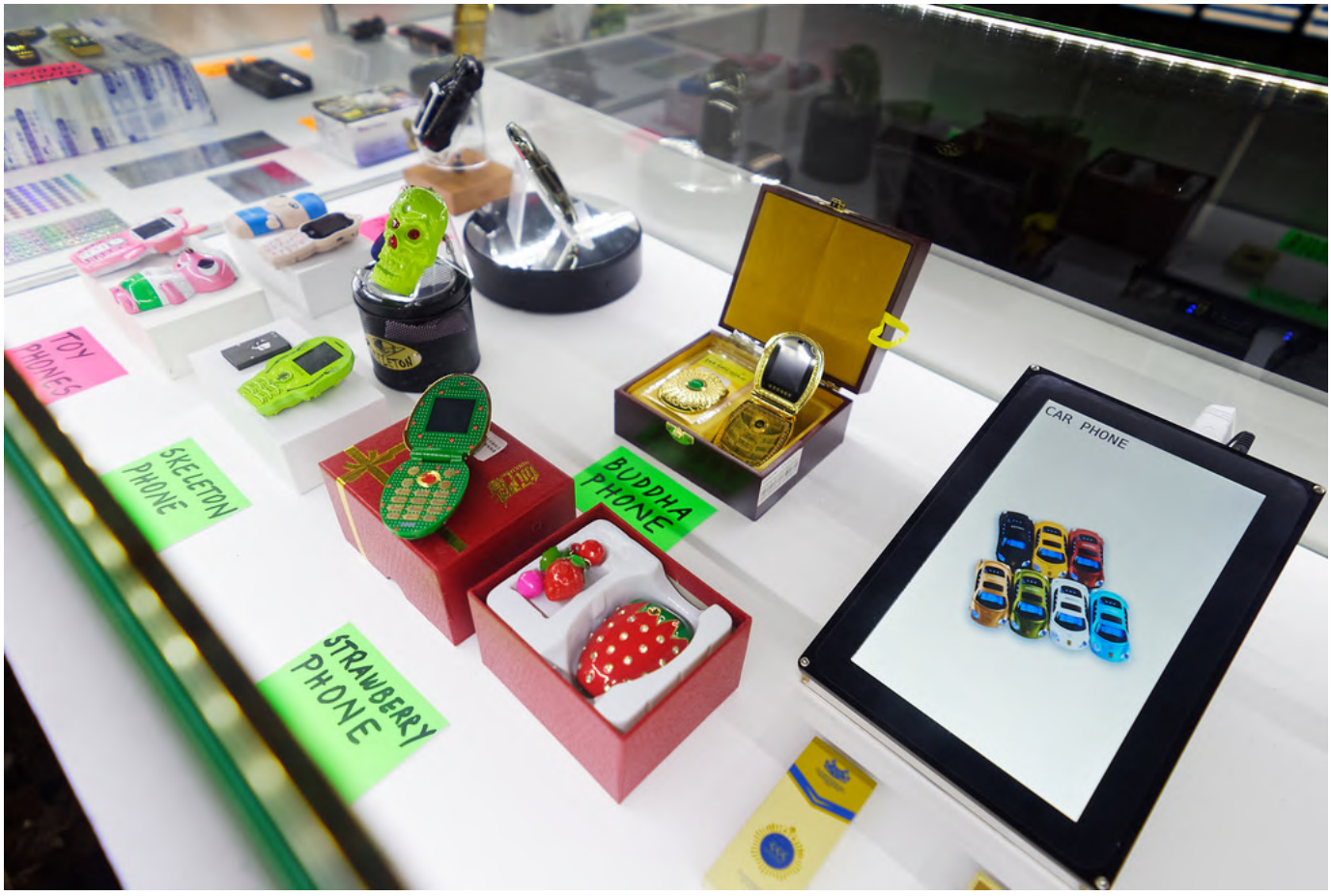
→ **View full profile**

AKADEMIE SCHLOSS SOLITUDE

Baden-Württemberg
MINISTERIUM FÜR WISSENSCHAFT, FORSCHUNG UND KUNST

Regine / June 8, 2017 / art from china, gadgets, telephony

Shanzhai Archeology: defying our standardized technological imagination



DISNOVATION.ORG (With Clément Renaud & Yuan Qu), Shanzhai Archeology. Photo : Sébastien Moitrot

Shanzhai Archeology – Research Database – beta. Photo: DISNOVATION.ORG

Over the past couple of years, Maria Roszkowska, Clément Renaud and Nicolas Maigret from DISNOVATION.ORG have been quietly smuggling odd-looking phones from China to Europe. They've got a phone that doubles up as a stun gun, one that's shaped like a big strawberry, one you can use to light up your cigarette, one that will assist you in your religious rituals, etc.

These bizarre devices belong to the shanzhai production. They are counterfeit consumer goods, sold at lower prices and boasting multifunctional performances.

There's a lot to admire about them though. First, they were designed to respond to very specific market needs. Second, they are hybrid products that emerge directly from the technological cross-breeding of the Made in China. These odd-looking artifacts question the hyper-normalised western technological imaginary and challenge the monopoly of our black touch-screen rectangles.

"

Shanzhai Archeology is an experimental research project that uses shanzhai as the starting point for a critical reflection on the normalization process of Occidental technological imaginations.

After a preliminary research on the industrial and political history of the shanzhai (see The Pirate Book), the members of DISNOVATION.ORG have been building up a collection of some 60 hybrid phones. About half of them were exhibited at the Mapping festival which took place a few weeks ago in Geneva. That's where i started to talk with some of the members of DISNOVATION.ORG….

Hi Maria, Nicolas and Clément! How did you go about hunting for those curious handsets? And then how did you manage to ship them to Europe where they are illegal?

For 3 years, we've been collecting rare devices online (mostly on Taobao and Alibaba) and in underground Chinese malls. We then stored them at Clement's and Yuan family in Qingdao, China.
The tricky part started when we had a show in France (for the Biennale Internationale Design of Saint-Etienne), and we had only a few months to bring all the phones from China to Europe where they cannot be legally imported. Many phones feature copies of brand names (SVMSMVG, MORIOROIA), sometimes of multiple brands (PCRSEHE and PORSCHE on the same phone). Most of them would never pass EU, UK or USA safety or branding requirements. They are simply not allowed go through customs. You can actually purchase stickers to pretend they are compliant with the rules, but this is probably not a good idea :)

Besides, since April 1, 2016 you're not supposed to travel with lithium-ion batteries, shipping them overseas from China is now forbidden. We thus had to spend hours on the phone with border control, trade administration offices, customs, and various mail services in both countries. Basically, no official solution exists for electronics traveling as artworks. You're just not supposed to carry a non-compliant device anywhere in Europe or USA. In the end, we did everything illegally / a-legally. We transported them one by one in planes, we asked family and friends to smuggle them, we had them shipped in slow Chinese post parcels, or broken down into parts and without battery in DHL parcels. So far, we've received 80 to 90% of our collection. We also learned a lot about the customs system in the process.

Shanzhai Archeology – Research Database – beta. Photo: DISNOVATION.ORG

Could you tell us about some of these curious models?

For the Shanzhai Archeology research, we identified a series of phones manufactured in Shenzhen. Each of them combines several functions. They are hybrid objects that reflect very specific uses and are accompanied by stories and narratives.

The Buddha Phone is presented like a “virtual prayer room” – it is equipped with a touch that loads a kind of private, virtual and customizable altar. It is supposed to help Buddhists perform their rituals when they are away from home. You can simulate the burning of incense, replicate purification rites or play music to help you meditate wherever you are.

The Sound System Phone: China has a long tradition of phone for pensioners. The buttons are bigger, the sound is louder and it offers shortcuts for “sonny”, “daughter-in-law”, etc. One of

pensioners' favourite activities (along with mahjong) consists in dancing on public squares. It's called guangchang wu. The sound system phone was conceived to broadcast loud sound outdoors. It integrates a small support to make it stand in front of the dancers. It also comes with several gigabytes of old-fashioned communist songs that Chinese pensioners are particularly keen on. The dances usually take place in the evening, in small rural villages which often lack street lighting. The phone thus features a powerful torch to ensure a smooth return home after the dance.

The Power Bank Phone: Ghana is currently going through a major power grid crisis: blackouts in the city can last for 36 hours on end. As a result, a significant business activity has grown around the sale of portable USB chargers that can charge electronic devices or even power bulbs. The Power Bank Phone, designed for this particular market, combines a 10000 Mh USB charger, an LED flashlight, and 3 sim card slots to connect the entire family or to take advantage of promotions offered by different operators.

DISNOVATION.ORG (With Clément Renaud & Yuan Qu), Shanzhai Archeology. Photo: DISNOVATION.ORG

The Prisoner Phone: marketed as "the smallest in the world", this phone is made of 99% plastic, meaning that it will be barely detectable during checks in prison, it is easy to conceal and transport, especially via drones or carrier pigeons. It is also equipped with a "voice changer".

The Taser Phone: marketed as a self-defense weapon, especially in case of snatching, the taser-phone is illegal in many countries. It is routinely seized at French customs.

DISNOVATION.ORG (With Clément Renaud & Yuan Qu), Shanzhai Archeology. Photo : Sébastien Moitrot

Does the little booth you built to display the phones echo the ones you saw in China?

Yes, the kiosk compiles distinctive elements we spotted in Shenzhen, Shanghai and Hong-Kong. For Shanzhai Archeology, we wanted to insert these telecommunication devices into their original context. Our inspiration were street vendors as well as the 'malls', those gigantic covered marketplaces where you can find small shops selling phones, gadgets and electronic components. We also kept a record of the names of the shops, in particular the ones where we bought the phones. This kiosk is called 手机百货 (shouji baihuo), a name used by hundreds of shops in China. Its very standard aspect and the adoption of common brands is a nod: we copy what works. One of the main inspirations for this booth is the Huaqiangbei hub in Shenzhen where you can buy most of the electronic accessories that are shipped from China to be exported. Huaqiangbei counts several thousands phone booths. However, you can find a smaller version of this type of hub in other Chinese cities. We are only presenting one of them, as a conservation copy.

DISNOVATION.ORG (With Clément Renaud & Yuan Qu), Shanzhai Archeology. Photo: Sébastien Moitrot

Shanzhai Archeology – Research Database – beta. Photo: DISNOVATION.ORG

And finally what made Shenzhen such a relevant city to investigate for the project?

It is the geographical area where most of the world electronics are produced and assembled.

We focused on the “phone” object as it plays a key role in the larger history of technological hybridization. More precisely, in the history of technological production that defies Western norms and standards. This project is an entry point to other technological imaginations, miles away from the black tactile rectangle (which has become the representation by default of the mobile phone).

Besides, Shenzhen is at the center of attention at the moment, it is THE place to buy electronics or get them manufactured. All kinds of “makers” and entrepreneurs flood the city. The place is changing very quickly, it is moving from the status of factory of the world to the one of world capital of design. The transformation of the city also involves the rewriting of its history, and more generally the history of the ‘Made in China’. Shanzhai products are gradually disappearing from the market, to be replaced by more standardized, more profitable, more globalized ones. In Shenzhen, the shanzhai has reached an almost mythical status, because of the role it played in the history of the city. We also need to keep in mind that the production of these weird phones involves a particularly complicated social reality, with farmers working in factories, often in objectionable conditions. We plan to resume this on-site survey before the Chinese industrial transition has completely erased all traces of this history and replaced it with a more homogenized discourse that focuses solely on design and on the iteration between product and market. With Shanzhai Archeology, we hope to capture and communicate the real history of the production of these hybrid objects.

Thanks Maria, Nicolas and Clément!

SWITCH ON PAPER INTERVIEW INTERNATIONAL 8 JUNE 2018

Interview with DISNOVATION.ORG

DISNOVATION.ORG leads a reflection and a critical practice on the exponential use of new technologies.
This is a long-term research, whose working hypotheses are mentioned below.
1. Identify past moments of failure in the history of technological utopia in order to better perceive shifts as they occur.
2. Analyse the power exerted by technological innovation and its multiple levels of influence on society, habits and the collective imagination.
3. Develop strategies to appropriate, subvert and corrupt technological infrastructure as a means toward personal and collective emancipation (i.e. Satellite voyeurism)
4. Develop deviant visions of the future that operate as generators of doubt, discomfort and to challenge the status quo (i.e. Drone-2000).
5. Develop extreme, perverse or absurd technological speculation in order to stimulate public debate (i.e. Design Fiction).
6. Develop moments and spaces of experience that bring emergent issues, which are usually hard to grasp, into our perception on a purely abstract and discursive level (i.e. Mario De Vega, Dolmen).
7. Appropriate and subvert innovations and technological power structures in order to reinvent oblique practices, other forms of infrastructure and alternative power relations (i.e. Superglue, P2P foundation).
8. Disturb the technological imagination in order to introduce new spaces of mental projection, uncultivated zones that can be reinvested (i.e. Telekommunisten).
9. Invade the field of technology with unforeseen affects to contribute to building futures that do not conform to the economic-industrial template (i.e. 3D Additivism).
10. All kinds of radical interfaces that tend toward alternative imaginary constructs in order to keep this privilege from being the sole territory of engineers and political deciding powers.

MARGINAL NOTES

[1] Nicolas Maigret exposes the internal workings of media, through an exploration of their dysfunctions, limitations and failure thresholds which he develops into immersive, ambiguous and critical artworks. He initiated disnovation.org, a working group which aims to disrupt, pervert, and complexify the narratives on technological innovation. As part of his research fellowship at V2_ (Rotterdam) and UCL (Louvain), he is critically exploring the ideology of technosolutionism, the politics of smart cities, and the black boxes of AI.

[2] Maria Roszkowska is an artist, designer and initiator of the DISNOVATION.ORG working group with Nicolas Maigret. From 2010 she conducted research with EnsadLab Paris, before joining Intégral Ruedi Baur, a cultural design studio based in Paris. She designed and coordinated "Don't Brand My Public Space!", a 3 -year research on the issue of cities applying branding strategies. In 2015 she edited The Pirate Book, an anthology of media piracy.

[3] Disruptive is used to qualify innovations that cause a rupture or radical change, as opposed to marginal or "incremental" innovation.

[4] Technological solutionism is a near-total faith that technology can provide a solution for any and all of our problems, from the most trivial to the social and metaphysical.

[5] Cultic: Whose objective is worship. That which is dedicated to the celebration of worship or cult.

[6] Hardware: All of the material equipment.

[7] Software: The instructions given to a computer.

[8] Wetware: A term referring to biochemical systems of various natures, from bio-implants to sound bugs and brain waves.

DISNOVATION.ORG

Shanzhai Archeology, DISNOVATION.ORG (with Clément Renaud and Hongyuan Qu), 2015-2017

Switch (on Paper): What does the term disnovation mean to you? Should we see it as one aspect of the dystopia that people are currently talking a lot about?

DISNOVATION.ORG: DISNOVATION.ORG [catchword that means **disobedient innovation**] is a working group based in Paris. At the intersection of contemporary art, research in technology and hacking, we develop interface situations, debate and speculation that seek to stimulate the emergence of alternative narratives. Since 2017, we have been conducting a kind of autopsy on the ideology that comes from technological innovation through a series of investigations, artworks and critical subversion. At the same time, we are also busy with publications, like the recent **The Pirate Book**, conceived as an anthology of cultural content piracy.

Switch (on Paper): How does DISNOVATION.ORG function and what are your roles?

DISNOVATION.ORG : The initiative, headed by Nicolas Maigret[1] and Maria Roszkowska[2], functions along various configurations depending on the project and research in question. For example, **Predictive Art Bot**, a prediction algorithm designed to subvert emergent artistic trends, was created with Jérôme Saint-Clair (artist and developer) and Dasha Ilina (artist). **Shanzai Archeology**, a collection of hybrid and non-standardised technological objects, invites us to reconsider the normalisation of the Western technological imagination, and was produced with Clément Renaud (researcher) and Hongyuan Ou (designer). In other cases, we propose events that can take the shape of festivals, conferences or group exhibitions. Such was the case with the recent exhibitions in collaboration with Jeu de Paume in Paris (Futurs Non-Conformes) and Eastern Bloc in Montreal (Sight + Sound 2017).

LINKS

- Satellite voyeurism
- Drone 2000
- Design Fiction
- Mario De Vega, **Dolmen**
- Superglue, P2P foundation
- Telekommunisten
- 3D Additivism
- The Pirate Book
- Disnovation.org
- Futurs Non-Conformes
- Sight + Sound 2017
- Technological solutionism
- Humankind's technical activity and capitalism
- Technological Disobedience
- Supercargo
- Media piracy
- Sonideros au Mexique
- The cultures of appropriation
- AI-Experiment
- Great positivist narratives
- Villa Arson, Nice
- DISNOVATION.ORG Artistic work
- DISNOVATION.ORG Group shows

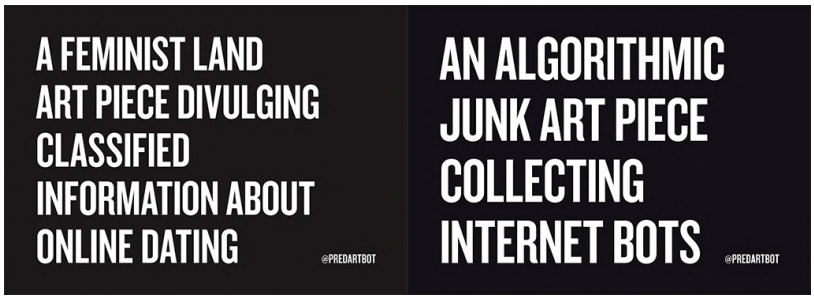
Shanzhai Archeology, DISNOVATION.ORG (with Clément Renaud and Hongyuan Qu), 2015-2017.

Switch (on Paper): You advocate techno-critique, or even technological disobedience. Why so, and what does that involve? You speak particularly about the necessity to (re) politicise the topic of technology in order to propose tools for understanding phenomena like "innovation propaganda" and "digital neo-feudalism", "algorithm governance" or "technosolutionism".

DISNOVATION.ORG: In the ambient context of techno-enthusiasm, it seems essential to us that we develop a critical reading of the great narratives of innovation that promise a radiant future based on hyper-consumption, techno-positivism, digital colonialism and the myth of infinite growth. We aim to generate spaces for active critique and for subverting the dominant technological infrastructure by using strategies of revelation, disturbance and perversion.

Following the apologies for the progress, evolution and growth of the past centuries, the lexicon of innovation and disruption[3] have become today's ultimate rhetorical instruments. They inundate our daily discourse, starting with an invasion of the political arena all the way to the sectors of work, education and art. But in the margins of this everyday propaganda in favour of technological solutionism[4], there are multiple critical, alternative or deviant, even speculative practices emerging. They invite us to identify and better understand what is at stake when it comes to technology and our society, and even propose ways to intervene.

Throughout our various projects, in our roles as curators and artists, we hope to emancipate ourselves from the linear conception of progress in order to re-integrate notions of degrowth or stasis at the heart of our visions for the future. We live on a planet that has definitively been changed by humankind's technical activity and capitalism, and we are trying to implant a variety of artistic alternatives that, though not always plausible, are often desirable, particularly as a foundation for building critical debates and projections.



Predictive Art Bot, DISNOVATION.ORG, 2015-2017.

Shanzhai Archeology, DISNOVATION.ORG (with Clément Renaud and Hongyuan Qu), 2015-2017, installation at West den Haag, 2017 © West den Haag.

Switch (on Paper): You make a distinction between different disnovation practices, distinguishing between those borne of "necessity", of "emancipation", and those that are "cultic[5]" and finally "political". Could you tell us more?

DISNOVATION.ORG: When we first started our research, we tried to identify the typologies of the practices closest to our core interest. These categories operated as working hypotheses, or let's say a prism to decrypt certain contemporary artistic forms. But obviously there are an infinite number of practices that are category hybrids, that go beyond categories or defy them altogether.

On the one hand, we identified the disnovations of necessity; alternative technological practices that respond to the imperatives of survival, resourcefulness or substituting inaccessible artefacts. This was the case with the popular practices that emerged in Cuba following the American embargo and the end of the Soviet Union. For 50 years, no merchandise arrived to the island, and so another relationship to consumption, repairs and manufacturing had to be established. Artist and designer Ernesto Oroza documents these practices on his blog technologicaldisobedience.com.

On the other hand, there are political disnovations that constitute the strategic use of technological potential to achieve the goals of disobedience, dissidence or activism (topic of the second cycle of the exhibition Futurs Non-Conformes on virtual space at the National Gallery Jeu de Paume in Paris).

Then, there are the disnovations of emancipation, which correspond to practices that subvert the function and inherent constraints of a technology, or to the appropriation and hybridisation of said technology (topic of the third cycle of the exhibition Futurs Non-Conformes).

Finally, there are the 'cultic' disnovations founded on practices that shed light on the symbolic and ritual dimension of our individual and collective relationship to technological artefacts and their use. This is the case in the Supercargo project by Peter Moosgaard.

Technological Disobedience, Ernesto Oroza.

Switch (on Paper): Could you talk more about this work by Peter Moosgaard? Doesn't he make the link between an artistic thought process and the required critical reflection on technology?

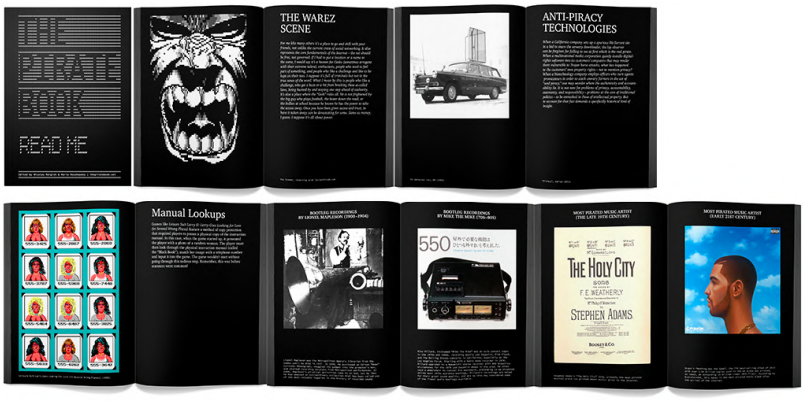
DISNOVATION.ORG: With the research blog Supercargo, Peter Moosgaard reappropriates the notion of Cargo Cult, which came about through the culture shock that occurred when aboriginal cultures met Western technology. Certain tribes integrated simulations of Western technical objects into their ritual practices,

reproducing them in wood and rope, creating plane cockpits, cargo holds, weapons… Today, Moosgaard collects objects and images from contemporary artistic and popular production that are similar to the practices in Cargo Cult. His work is, in our opinion, a way of exploring the impact and place of technological artefacts outside their purely practical function. It also very clearly evokes what might remain after the disaster of hyper-consumption. A period where we might want to reproduce artefacts not so much for their practical use but for their symbolic and ritual function as lost objects.

Supercargo, Peter Moosgaard.

Switch (on Paper): Coming back to The Pirate Book, and beyond the traditional clichés, what Internet Piracy represent for you today?

DISNOVATION.ORG: While editing the book, we wanted to open the field of thought onto various instances of cultural content piracy by returning to what makes these practices legitimate in our own experience: that is, the notion of necessity. The expression “pirate by necessity” is used to define situations where piracy is the main, if not unique way to access content, for political, legal, geographical or economic reasons. This opening allowed the book to not be trapped solely by moral considerations, and to avoid an over-esthetisation of the figure of the pirate. For example, a cultural content pirate (media piracy) plays an important role in emerging countries; he is someone who encourages development, diversifies the cultural offer, upholds political opposition and reduces the economic and cultural inequalities between countries. With remix, remakes and other derivation practices, piracy also acts as a way for someone to appropriate the colonial or foreign culture and create a kind of creative resistance against the Western template of a centralised market. In The Pirate Book, these themes drive the contributions by Joty Izquierdo about culture in Sonideros au Mexique, or by Ishita Tiwary on the cultures of appropriation in Indian cinema.



The Pirate Book, Nicolas Maigret & Maria Roszkowska, 2015.

Switch (on Paper): You say you try to remain vigilant about “ornamental” uses or “digital distractions” that often aim to produce a kind of wonderment. But isn’t this phenomenon quite simply the result of someone’s initial or primitive discovery of

these new technologies, when users ask fewer critical questions about the objects they are discovering?

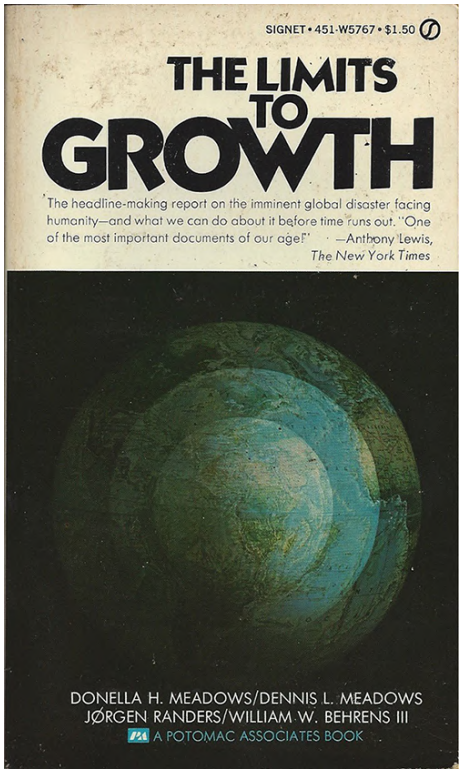
DISNOVATION.ORG: There are indeed different moments when it comes to discovering and accessing technological changes. But the positive a priori regarding these changes is quite simply the product of an ideology and the propaganda of such an ideology, at a particular moment in the history of our society. The techno-capitalist system in which we participate as citizens needs this ideology to continue so that we may ride the wave of continuous growth, hyper-consumption and built-in obsolescence.

This is why we find it necessary to bring make artists aware of the role they play in the process of symbolic propagation and the validation of technological artefacts that they use. Besides, these very artists are often exploited by laboratories, companies and public powers that depend on their ability to disseminate, validate, popularize and even innovate for little pay, using different products or subjects. In the immense list of everyday examples, note the way in which Google exploits artists through the Cultural Institute, but also with its project AI-Experiment. We were particularly interested in artistic practices that are clearly aware of their potential to modify the dominant narrative, rather than simply being their mediators. That is the stance we took for the exhibition Non-Compliant Futures in Montreal.

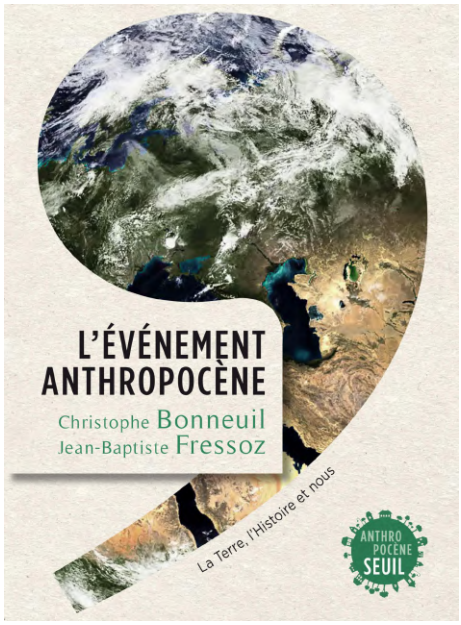
Non-Compliant Futures, exhibition for the festival Sight+Sound 2017, Montréal
curatoriat : DISNOVATION.ORG.

Switch (on Paper): You base yourselves on a singular ambivalence, which is that of "distinguishing between the idea of progress as improvement and of Progress as an ideology". What are the historical and philosophical foundations for this (apparent) paradox and what does it consist of, exactly?

DISNOVATION.ORG: Whether we're talking about progress, innovation, disruption, evolution, solutionism… the situation remains the same. Today these terms are generally perceived as positive, and it is exactly this positivist a priori that creates a cognitive mess when these terms are used for the ideology of power, be it political, economic or industrial. How could we possibly be critical of values as natural or positive as those of progress and innovation? And yet, the two world wars, the atomic bomb, genocides, the persistence of poverty, pollution… are fodder for a real critique of progress and mankind's domination over nature. From the second half of the 20th century onward, the rather ambiguous notion of innovation began to win the favour of the great positivist narratives. There is abundant critical literature and a long history behind this thesis, with works by Günther Anders or Jacques Ellul to Evgeny Morozov, not to mention **The Limits To Growth** (Club of Rome – 1970) or **Progress Trap** by Ronald Wright (2004) in **A Short History of Progress**. **L'Èvènement Anthropoccne** by Jean-Baptiste Fressoz and Christophe Bonneuil is also a remarkable book that makes a connection between these subjects and environmental issues.



The Limits to Growth, Donella H. Meadows, Dennis L. Meadows, Jørgen Randers & William W. Behrens III, 1972.



L'Èvènement Anthropoccne, Jean-Baptiste Fressoz, Christophe Bonneuil, 2013

Switch (on Paper): You are artists and exhibition curators (like for the recent exhibition at Jeu de Paume in Paris and at Villa Arson in Nice). How do you manage to find your place in the art world seen that your work is not necessarily exhibited in the conventional context of the White cube?

DISNOVATION.ORG: The artistic work that we develop, and the work by artists we've invited to show in group shows, is not entirely dependent on the gallery circuit, and often these artists take their distance by choice, as we do. The reasons may vary, from a political coherence to not participate in the networks of speculation, or the voluntarily ill-adapted nature of certain practices, to the forms that live on other levels than what might be considered an aesthetic experience like the media circuits (networks, journals, web, TV…), public space, hardware[6], software[7], wetware[8]… The projects in Futurs Non-Conformes are rather typical of the kinds of productions that exist for the most part outside of the **White cube**.

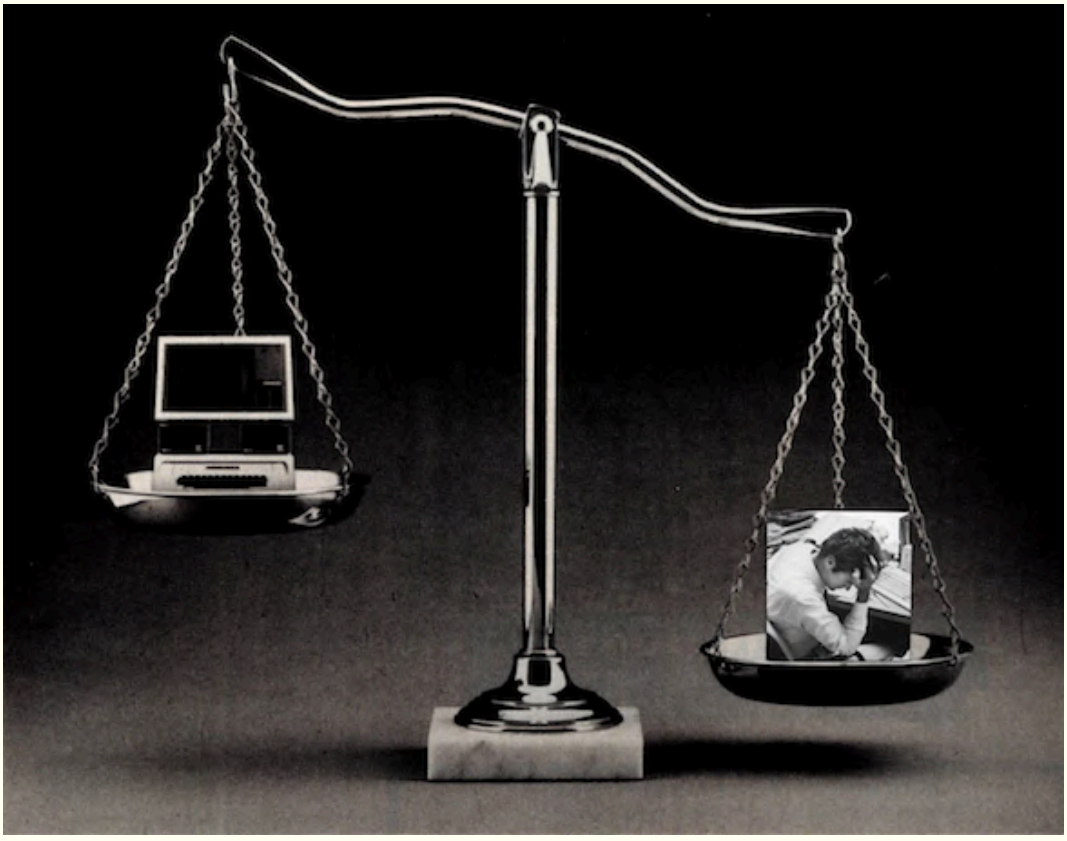
Nicolas Maigret

by Aude Launay

Somewhere between technocracy and technocriticism, technopositivism and technophobia, and technoscientific communication and machinic fetishism, the apparently more neutral alternative, which holds that technology comes down to what you do with it—starting from the principle that technology is never criticized *per se*, it is the uses made of it that come under fire—, is obviously not as neutral as all that, quite to the contrary. According to Wikipedia, which it seems relevant to quote here: "William Henry Smyth, a Californian engineer, is usually credited with inventing the word 'technocracy' in 1919 to describe 'the rule of the people made effective through the agency of their servants, the scientists and engineers'". Almost a century later, what has happened to this power of a people drowning in an abundance of technical goods which they have never particularly wanted? (*You can't always want what you get*, as the physicist and philosopher Etienne

Klein sums things up, paraphrasing the Rolling Stones). Or how to come to terms with the "propaganda of innovation" that people are experiencing in Paris and Melanesia alike?

While Morehshin Allahyari and Daniel Rourke, who are behind #Additivism, postulate in their manifesto that "there is nothing which our infatuated race would desire to see more than the fertile union between a man and an Analytical Engine", Ernesto Oroza notes that there is a "technological disobedience" at work, at the very same time as Ewen Chardronnet and Bureau d'études are imagining an "alien capitalism"—the final stage of digital serfdom? Taking a look at various "alternovation" strategies, we discuss the usefulness of art (what else?) or, in any event, art's possibility of shifting from an apologetic space of technology to a place where it can be debated, with Nicolas Maigret, artist and long-term curator of the Jeu de Paume's virtual space for the next eighteen months.



From Lauren Huret, Artificial Fear, Intelligence of Death, 2016, LINK Editions.

The critical stance applied in "Futurs non-conformes" [Non-compliant Futures] came into being in a project which you've been involved with for four years now: *Disnovation*. This daily research is incarnated in the tumblr of the same name which describes itself as "a critical exploration of the mechanics and rhetoric of innovation". In it we find a collection of press articles which refer, for example, to the need for a code of conduct applying to algorithm programmers, to the cognitive interest of note-taking on paper rather than with a computer, and to climate modification techniques, among many other subjects. Surprisingly, these major societal challenges are still not producing anything more than a relatively faint echo in the art world, properly so-called, even if this world is a keen consumer of technological novelties. By putting yourself in the curator's position, you who are also an artist, and by mixing, for this first part of your exhibition, both explicitly artistic practices and lines of thinking developed in other spheres (philosophy, information design,

analytical literature...), are you not in the process of emphasizing the fact that art circles are somewhat generally lacking in distance and hindsight with regard to the technologies being used in them?

For “Futurs Non-Conformes”, acting as a curator rather than as an artist came quite naturally. In the end of the day, curating is quite like the documentation and research method involved when you create a new piece. Furthermore, for a subject like “the propaganda of innovation”, the curatorial form more broadly serves the purpose of creating areas of doubt and debate.

This online exhibition will be organized in three six-month cycles, and the first cycle, called “mythologies”, tries to lay the foundations for a debate. This in turn steered my choice towards activities taking the shape of collections, archives, archaeologies and compilations. A way of providing tools for re-reading our technological histories and making them more complex. Here there are projects focusing on artificial intelligence,[1] global networking,[2] the intelligent city,[3] patents,[4] extreme consumerism,[5] and the future of man as a cyborg...[6]

To get back to the core of your question, “Futurs Non-Conformes” does not actually explore “the art world properly so-called”, and the challenges raised are in effect not very visible at all in an art world which we might call conventional. But radical postures often emerge on the sidelines: if we think back to Dada, Fluxus, Situationism, the tactical media, net art and (h)ac(k)tivism, they’re all phenomena which came to the fore in vague, confused areas. What seems worrying to me, in the end, is above all the fact that techno-critical challenges are as invisible as they are in the political arena, in the broad sense.

I think there’s a need to re-politicize the technological subject on the scale of society.

In artistic domains, this might consist in proposing tools which give rise to debate, perception, understanding and active stances in the face of current technological challenges, as well as vanishing points, and appropriations in the form of hijackings, transformations and perversions of technological innovations.

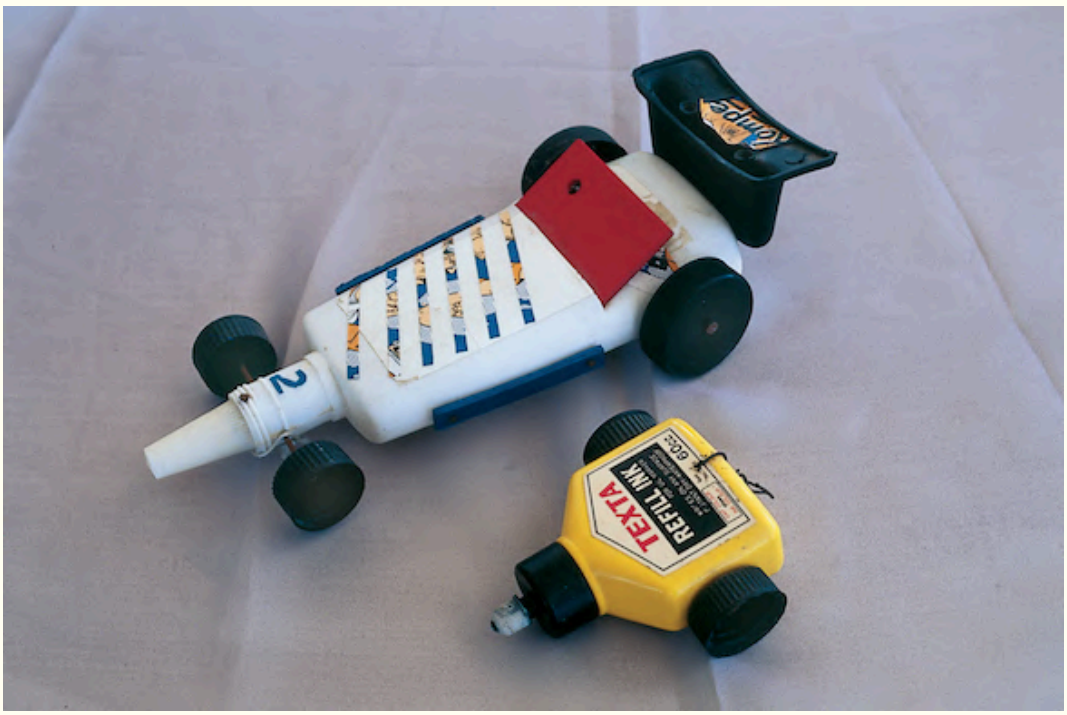
In the theoretical field, this way of thinking is coming back with a vengeance. In the wake of historical authors, such as Jacques Ellul, Gilbert Simondon, and Paul Virilio, in France, a new generation is coming to grips with contemporary changes, in particular with figures like Antoinette Rouvroy, Matteo Pasquinelli and Evgeny Morozov. And this generation is dealing with predominantly contemporary issues such as digital neo-feudalism (“In feudal times, it was the exploitation of land cultivated by farmers, in the internet age it’s the exploitation of the immaterial spaces cultivated by cultural producers, prosumers and the notorious Free Culture”)[7], algorithmic governmentality[8] (or how algorithms are an implicit arena of expression for challenges of an ethical, political and legal nature), and techno-solutionism[9] (the ideology whereby all problems which can be described can then be solved by technology).

These days, and in my own art praxis, I get the impression that this is no longer a time either for ornament or for distraction, like, for example, the amazement produced by the

prowess and magical dimension of new technologies. Nor can I go along with the idea that the artist is a tool for popularizing techno-scientific research. This field seems to me to be increasingly a passive propaganda tool, to some degree at the service of a validation of the consumption/ innovation/ dependency/ obsolescence machine.

What I find extremely interesting, on the other hand, are the rare moments of abuse and perversion of technology, its uses, and its communicational infrastructures. In particular what those moments render perceptible from a domain that is usually opaque and constricted. In this respect, the work and the manifesto of Critical Engineering[10] are inspiring. There is also a marked fictional and even poetic potential in these everyday abuses, as recently with TAY,[11] that semi-intelligent chatbot prototype which, in just a few days, became the parrot of the obscene and racist language of the Internet users it communicated with.

But there's a non-high-tech aspect which is just as interesting, especially in very spontaneous forms like examples of disobedience arising out of necessity, including inventions made by prisoners,[12] the improvised *gambiarra* solutions in Brazil,[13] and forms of pirating out of necessity which have been explored in *The Pirate Book*.[14] All these issues are also present in the *Technological Disobedience*[15] project which is the brainchild of the Cuban designer and artist Ernesto Oroza, who has, for years, been collecting activities which he calls "technological disobedience". This is obviously linked with Cuban history and the economic embargo that the island has suffered for several decades, making access to a majority of ordinary tools and technologies impossible. Ernesto Oroza documents and collects the way these objects are replaced by empirical technological practices in the form of DIY inventions.



Ernesto Oroza, Technological Disobedience.

As possible crises in relation to the propaganda of innovation, you mention "changes and perversions of technological innovations", and you actually present, in the first cycle of

“Futurs non-conformes”, both a project by Ernesto Oroza, connected with what this latter calls “technological disobedience”, and a project by the artist and publisher Peter Moosgaard devoted to the “cargo cult”. While the former strives to reveal Cuban practices for mending and even re-inventing consumer goods, the latter describes that story of consumerist mimicry which appeared in Oceania more than a century ago, and which still sporadically exists in various more overtly critical forms. Is it in this shift from a cult to a counter-culture that, in your view, alternovation, if I may so put it, is being played out?

There’s not really any unique kind of propaganda in regard to technological innovation, but rather ever-changing forms of propaganda. For me, this expression is a way of naming a context in which innovation and technological development have become a central vehicle of the political, economic and industrial system, but also the core of a form of popular western cult.

So strategies putting this “propaganda of innovation” in a state of crisis are also being invented in a very varied, empirical and scattered way. Strategies which you have neatly called alternovations.

Ernesto Oroza, Technological Disobedience.

On the one hand, there are alternovations resulting from necessity, with alternative technological practices corresponding to imperatives of survival, making do, and replacing inaccessible artefacts (this is so with the Cuban case we’ve just mentioned).

On the other hand, there are political alternovations, with strategic uses of technological possibilities for the purposes of disobedience, dissidence and activism. (This will be the subject of the exhibition’s second cycle).

Then there are alternovations of emancipation, with practices involving the hijacking of initial functions and constraints, and practices involving the appropriation and hybridization of technologies. (This will be the subject of the exhibition's third cycle).

Last of all, there are cult-oriented alternovations, with practices which shed light on the symbolic and ritual dimension of the individual and collective relations we have with technological artefacts and their consumption. (This is the case with Peter Moosgaard's *Supercargo* project).

Peter Moosgaard, Supergargo.

Let me take advantage of this latter example to go into more detail about the *Supercargo* research blog. Here, Peter Moosgaard borrows the "cargo cult" notion which came into being from the clash caused by the encounter between aboriginal cultures and western technologies. Some tribes then introduced simulacra of western technical objects into their ritual practices, by using wood and rope to reproduce, for example, airplane cockpits, freighters and weapons. Today, Moosgaard is putting together a collection of objects which come close to these practices in contemporary artistic and popular production. The way I see it, his work is a way of exploring the impact and place of technological artefacts outside their purely practical functions. It also powerfully conjures up what might be an age marked by the post-disaster of hyper-consumerism, in which we would see the emergence of a desire to reproduce artefacts not so much for their practical functions, as for the symbolic and ritual function of lost objects.

Peter Moosgaard, Supergargo.

As you mention digital neo-feudalism, Morozov's warhorse, do you think that his suggestion, which at the moment seems crazily utopian, of "using all these sensors, algorithms, databases and real time coordination capacities with a view to providing an actual public service working outside the market system"[16] can also be part of this alternovation model?

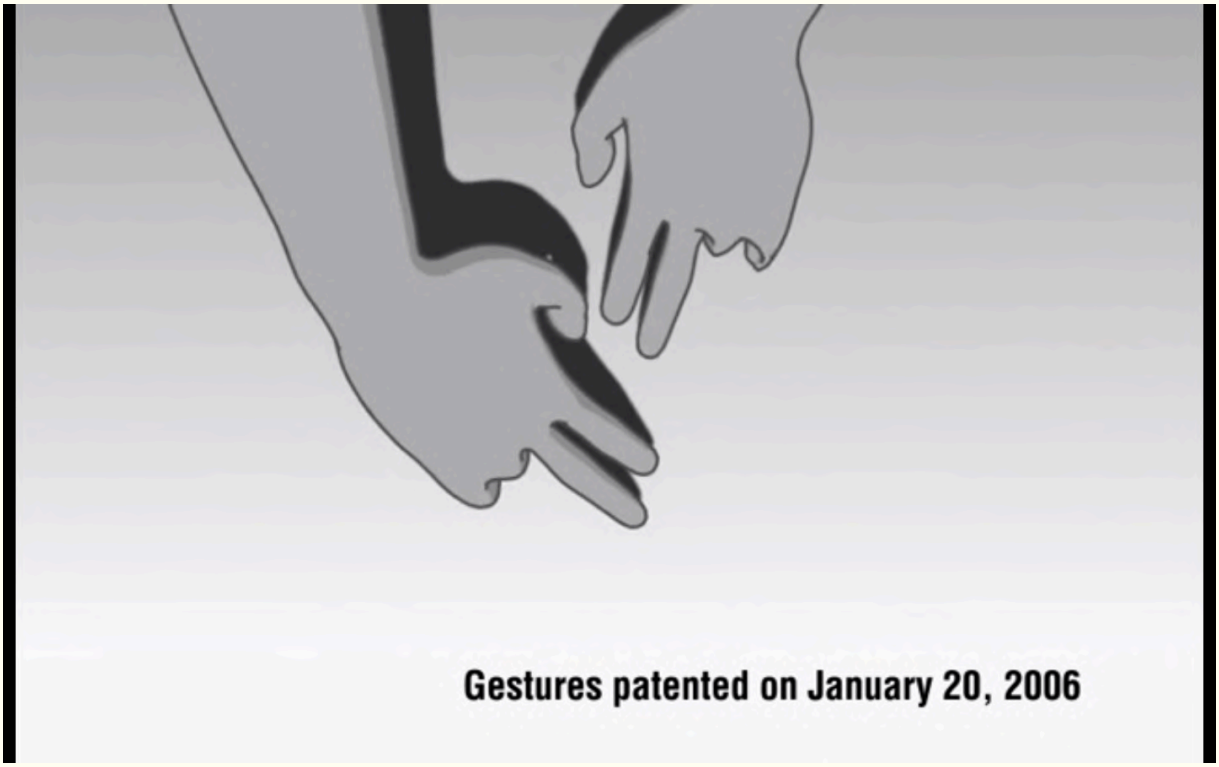
The idea of a digital neo-feudalism was already developed by Matteo Pasquinelli in the early days of Facebook:[17] at that time, he was analyzing the significance of a shift towards a proprietary web 2.0, where the user, "a digital serf", would become the labour force working on behalf of and for the profit of major proprietors. More recently, in his book *The Stack*, Benjamin Bratton[18] describes and questions the accumulation of technological mediation infrastructures, and a chapter is devoted to neo-feudalism.

Evgeny Morozov extends this line of thinking with a proposal to share tools and infrastructures of public utility. Politicizing the technological question is a central issue at the moment, because, as we mentioned earlier, these essential issues of any contemporary policy are totally missing from the predominant discourse and, as a result, misunderstood.

The major barrier to this type of proposition is that, in order to be operative, they must be if not global, then in any event widespread. And this cohesion of national and even supra-national decisions is currently impossible under a diktat of industrial lobbies. We just have to think back to what happened during attempts to move public services towards free software: in the end, the decision was not adopted in favour of an industrial leader.

These perspectives involving sharing are an extension of the ideal of the factory owned by its own workers, or, on the contrary, in a centralized form: of public service. Among other things, these questions are the subject of the work of Telekommunisten,[19] a Berlin-based

artists' collective which is exploring pseudo-fictional scenarios for "venture communism". Their manifesto, the Telekommunisten Manifesto,[20] which will be presented in the second part of the exhibition, rightly deals with these contemporary issues.



Julien Prévieux, What Shall We Do Next? (Sequence#1), ongoing project since 2006.

To get back to our original subject, at what moment do you think the models of alternovation and dissidence applied by artists—in particular those you work with—become operative, if that is indeed their goal?

I think this is the objective of most of them. But there are many different ways of thinking about how to become operative: from the sabotage[21] of the Luddites to the subtle infiltration of the imaginaries of the "Cyborg Manifesto",[22] by way of alternatives that are being so powerfully communicated that they perforce become part of the public debate.[23]

Here are a few examples of strategies that we're currently trying to identify and name with the Disnovation Research group. This is a research project that's currently under way, whose goal is to get us to:

1-Identify moments when historical technological utopias fail, in order to better perceive shifts in progress.

2-Analyze the power wielded by technological innovation and its many different levels of influence on society, practices and the collective imagination.

3-Develop strategies of appropriation, hijacking and corruption of technological infrastructures as a method of personal and collective emancipation (i.e. Satellite

voyeurism).[24]

4-Develop deviant visions of the future operating as generators of doubt, discomfort, and questioning (i.e. Drone-2000).[25]

5-Develop extreme, perverse and absurd technological speculations as activators of public debates (i.e. Design Fiction).[26]

6-Develop experimental moments and spaces offering glimpses of emerging concerns, which are not easy to grasp on a purely abstract and discursive level (i.e. Mario de Vega, *Dolmen*).[27]

7-Appropriate and divert technological power innovations and structures so as to re-invent diagonal practices, other forms of infrastructures and other power relations (i.e. Superglue, [28] P2P foundation).

8-Disturb technological imaginations so as to introduce new spaces of mental projection, and fallow areas to be occupied (i.e. Telekommunisten).

9-Invade the technological domain with unforeseen affects to contribute to the construction of futures which do not conform with economic-industrial designs (i.e. 3D Additivism).[29]

10-All sorts of radical interferences tending towards the construction of alternative imaginations of the future, so as not to leave this privilege just in the hands of engineers and political decision-makers.

In quoting this very enlightening text by the architect Jack Self[30] about the contemporary conditions of form mentioned by Peter Moosgaard in relation to *Supercargo*: "Form today has no longevity, and is purely temporal, operative and contingent. [...] As a result of ubiquitous telephony and digital media, the physical object is now irrelevant. Consider Amazon, Uber, Airbnb or iTunes (amongst innumerable other communication applications) – there exists a form to each which is peculiar and particular, but which is neither physical or stylistic / aesthetic", I'd like to broach the issue of the form of these exhibitions, "Futurs non-conformes", which are thus taking place online. Because your artistic praxis is not solely incarnated in "de-materialized" works, and works that are presented and presentable on the Internet—and even quite to the contrary—, what line of thinking about the exhibition are you developing in this respect? What does the term "virtual space" [i.e. "espace virtuel", which is the name of the online

Peter Moosgaard, Cargo Phone II, 2014.

exhibition space on which occur “Futurs non-conformes”] mean to you?

Stone, paint. Courtesy Peter Moosgaa

To take Jack Self’s words a little further, I’d say that the challenges of design in fact no longer have to do with the physical forms of objects, but more with infrastructure; in the actual weave of systems of governance incorporated in the heart of networks architecture, interfaces, and kinds of interaction (human-machine and human-human).[31]

As far as the exhibition “Futurs Non-Conformes” is concerned, it presents pieces online which are based on documentary and conceptual qualities; they are connected and put in context by way of the virtual space of the Jeu de Paume. This term seems a bit dated these days 😉 —the fact of calling a site a “virtual space”, in contrast with what is actual and physical, has lost its initial obviousness. First and foremost because we have a far better knowledge of the eminently physical and geographical reality of the network infrastructures,[32] but also because the web has distinctly changed, in particular towards a centralized infrastructure encouraging live access, with users who have become ubiquitous players.

Peter Moosgaard, Supergargo.

In the end of the day, the identification of progress with technical advances, just like faith in technology, is a relatively recent conception with regard to history—going back about 150 years—and has never been universally shared, something which we tend to forget today. So what is left of the idea of progress, once relieved of the cult of innovation?

First off, we must single out the idea of progress as improvement, and the ideology of Progress. What is essential in the idea of progress are the criteria which are chosen to be included or excluded, so as to appraise what represents an improvement (improvement for whom, for what period of time, with what human cost, what ecological cost, what geological footprint...).

Peter Moosgaard, Supergargo.

This is what Ronald Wright postulates with his "progress trap" concept.[33] A large number of technical advances may initially seem to be seductive and positive, but when they are analyzed on other temporal and geographical scales, they turn out to be a trap, a disaster or a lifestyle which can't last. To take things a bit further, we can link up with Nick Bostrom and his concept of "existential risks".[34] According to Bostrom, since the invention of the atom bomb, a new category of risks has been ushered in: it represents a worldwide risk of lethal intensity but, unlike a meteorite possibly falling to earth, these new risks are much more likely. His point is that it's crucial to analyze, anticipate and avert these risks.

And this brings us last of all to the research journal *The Laboratory Planet*,[35] whose fifth issue—presented in "Futurs Non-Conformes #1", like Nick Bostrom's essay—posits the hypothesis of an "alien capitalism", in particular seeing the destruction of the earth and its future abandonment as a symptom of this "alien" capitalism. Alien here is the one that moves away from its terrestrial origin and becomes something different, offers itself different forms and different futures. This element of man becoming alien is seen from

anète Laboratoire n°5, extrait de la couverture.

different angles and by different contributors, with in particular the trajectory of human /technology hybridization, man's cosmic aspirations, and the development of synthetic biology encompassing the design, generation and evolution of alternative forms of life. I think we've just taken a good look at the first cycle in this triptych; the second cycle, in November 2016, will extend this research through a series of strategies titled "acting out".

1 *Artificial Fear, Intelligence of Death*, Lauren Huret http://www.laurenhuret.com/artificial-fear-intelligence-of-death/

2 *World Brain*, Stéphane Degoutin and Gwenola Wagon http://worldbrain.arte.tv/

3 *SmartCity ABC*, Manu Luksch http://smart.cityabc.xyz/

4 *What Shall We Do Next?,* Julien Prévieux https://vimeo.com/59793317

5 *Supercargo*, Peter Moosgaard http://cargoclub.tumblr.com/

6 Ewen Chardronnet and Bureau d'études, *The Laboratory Planet* http://laboratoryplanet.org/en/

7 Matteo Pasquinelli http://matteopasquinelli.com/docs/Pasquinelli_Digital_neofeudalism.pdf

8 Antoinette Rouvroy http://1libertaire.free.fr/GouvernementAlgorithmique01.html

9 Evgeny Morosov http://www.fypeditions.com/resoudre-laberration-du-solutionnisme-technologique-evgeny-morozov/

10 https://criticalengineering.org/

11 http://www.theverge.com/2016/3/24/11297050/tay-microsoft-chatbot-racist

12 http://temporaryservices.org/served/projects-by-name/prisoners-inventions/

13 http://we-make-money-not-art.com/gambiologia/

14 http://thepiratebook.net

15 http://www.technologicaldisobedience.com

16 http://www.theguardian.com/commentisfree/2016/apr/24/the-new-feudalism-silicon-valley-overlords-advertising-necessary-evil

17 Matteo Pasquineli http://matteopasquinelli.com/docs/Pasquinelli_Digital_neofeudalism.pdf

18 *The Stack*, the MIT Press https://mitpress.mit.edu/books/stack

19 Telekommunisten http://telekommunisten.net/

20 Telekommunisten Manifesto http://telekommunisten.net/the-telekommunist-manifesto/

21 http://www.editions-perrin.fr/livre/histoire-du-sabotage/9782262035594

22 http://www.cyberfeminisme.org/txt/cyborgmanifesto.htm

23 https://ahprojects.com/projects/cv-dazzle/

24 http://www.wired.com/2007/06/satellite-voyeu/

25 http://drone2000.net/

26 https://mitpress.mit.edu/books/speculative-everything

27 https://vimeo.com/127240820

28 https://superglue.it/

29 http://additivism.org/manifesto

30 http://jackself.com/pomo

31 Interface Politics http://www.gredits.org/interfacepolitics/en/call-for-papers-eng/

32 Timo Arnall, *Internet Machine* http://www.elasticspace.com/2014/05/internet-machine

33 The Progress Trap https://en.wikipedia.org/wiki/Progress_trap

34 Nick Bostrom, “Existential Risks”

Art Project Allows You To See What People Across The Globe Are Pirating In Real Time

By Ian Morris, Former Contributor.

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The Pirate Cinema is designed to be something of an art installation. The concept is pretty simple, a process looks for the world's most popular torrents, and intercepts traffic going from its source to its destination. Because torrents are peer-to-peer a seeder (the source) might be in Israel while the leecher (the destination) may be in Mexico. The process uses torrent trackers to grab chunks of torrents and display them through a video stream.

Because torrents are made up of small pieces of a video file, which are transferred in a random order, the fragments make this random stream feel like a genuine look at what people are watching across the globe. Of course, the reality is that these files aren't being viewed in real-time, but are simply being downloaded from one place to another, they may be watched later or perhaps even never.

The project is the work of an artist called Nicolas Maigret who started demonstrating it two years ago in various art venues and public places. On the official site, he explains "During the last ten years, Peer-to-Peer computing has become very popular. This horizontal network architecture paves the way for new modes of exchange and contribution. It recalls the utopian vision of openness and free appropriation that arose in the early days of the Internet." An interesting point, especially as we go toward a regulated and controlled internet with governments and rights holders trying to ensure that the public can't hide their conversations with encryption, and where downloading torrents is increasing policed.

As the clips play out on the video stream you can see the IP address - with the penultimate segment censored to protect the identity of the source and destination. As you might imagine, that's quite illuminating in itself, as these people are all using public trackers where their identities are clearly visible to the whole world, including Hollywood's lawyers. Maigret states that this information is provided as a way to show just how easy it is to see this sort of information on the unprotected internet.

The fragments themselves are fascinating. Often lasting less than a second, but still giving a glimpse of familiar content. Every so often there's an FBI anti-piracy warning that pops up along with a well-known scene from a movie like Guardians of the Galaxy or from an episode of Game of Thrones. You get a little chunk of audio too, which gives further clues to what the content is.

According to news site TorrentFreak there is a server located in a datacentre in Austria, its sole job is to look at the 100 most pirated items on The Pirate Bay and then send segments out on the video stream, along with the user's country and IP address. It's not clear how the server is currently getting its data, with the official Pirate Bay still offline, but there is no shortage of public torrent sites to scrape for information.

If you fancy checking it out, then head to the Pirate Cinema website. Do bear in mind though, the feed could easily contain adult material that's not suitable for work, so exercise caution when taking a peak.

Find Ian Morris on LinkedIn.

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