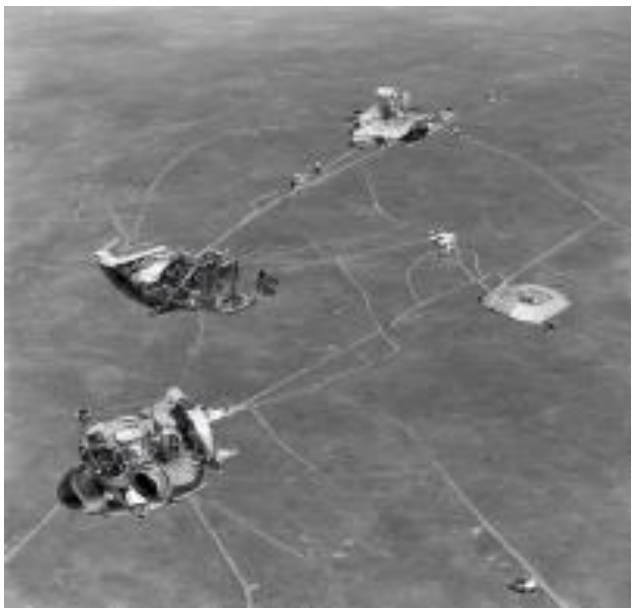
# TerraForma Corp

# *2022 Annual Report*

## EXECUTIVE REPORT

This activity report presents some results of the investigation-speculation operations conducted within the Department of Ubivectoral Influences (DUI) of TerraForma Corp, on the occasion of a collaboration with the EUR ArTeC. The Graduate School ArTeC (*Arts, Technologies, Digital, Human Mediations, Creation*) is a teaching and research program funded by the National Research Agency (ANR) since 2018 under the Programme d'Investissement d'Avenir (PIA). Within the terraforming activities conducted under the aegis of the TerraForma Corp, the Department of Ubivectorial Influences aims to study as well as to steer the dynamics of influences whose interactions weave the current state, and shape the possible future states, of the co-habitability of planet Earth. Its work is driven by the premise that these influences are "ubivectorial", i.e. they result from a multiplicity of simultaneous factors, supported by vectors that are not strictly locatable, acting at sometimes very heterogeneous scales and in directions that are frequently contradictory to each other.

The full annual report is available online at https://terraformacorp.eur-artec.com/



*After having briefly characterized the context of the current evolutions of our planetarity, this executive report, coordinated by Yves Citton, synthesizes the content of the different results of the year's work, before making a general assessment and opening up three major perspectives for the future of the work of the TerraForma Corp. The images have been generated by Grégory Chatonsky.*

Through TerraForma Corp, humans and non-humans, living and non-living entities, are objectively allied in a sprawling collective placed entirely at the service of co-habitability. The Earth hears us and we hear the Earth because, through our common vibrations, we are all one with her. The various organs of the Corp embody a planetary mobilization through which the Earth claims a novel legal and political status, which recognizes it as a collective subject of reciprocal rights and duties, but also as an agency endowed with an authority superior to that of national States.

The Corp has no centralized headquarters: it exists wherever its members are active, it acts at any point and at any time where its influence is exercised. Its multiple organs vibrate, think, push, trickle, spawn, communicate, suggest, research, calculate, model, compute, work, produce, invent, buy, sell, transport, move, demonstrate, denounce, protest, block, dismantle, build, agitate, pacify, legislate, create in all directions—in an informality that is the condition of a terraforming adapted to the multiple dimensions of the living as well as to the infinite singularities of individuals and of territories

Minimal coordination takes the form of annual reports written within its various operational units describing some of its operations, achievements, failures, and proposals for future activities. These reports have so far only been written for internal information purposes. For the first time, in this year 2022, a selection of activity reports is offered to the public, worldwide, in half a dozen languages.

## Context

This annual report, which is the first to be made public, does not cover all the activities of the TerraForma Corp. It gives access to the work of one of its activity groups, the Department of Ubivectorial Influences, which proposes here a few brief surveys intended to illustrate the fields of work of the Corp, as well as its perspectives for future development. The choices have been made according to the constraints and opportunities of the current phase of terraforming. This phase is characterized by four contextual elements identified thanks to the calculations of Terra.com, the artificial intelligence (AI) developed by the Corp.

The first element of context is the rapid implementation of technical systems that make it possible to envisage an algorithmic global governance of the flows of information, energy, materials, goods and bodies on the surface of the planet. From Elon Musk's highly publicized Starlink project, promising ubiquitous access to the internet through full satellite coverage, to the underground investigations of distributed Open Source Intelligence in social networks, from high-speed trading and derivatives speculation to Deep State conspiracy theories, the informational machines that humans have equipped themselves with are beginning to structure their interactions far more powerfully than intentional deliberation. The development of Decentralized Autonomous Organizations (DAOs) since 2016 offers a glimpse of translocal modes of coordinating activities based on blockchains, which can now scale globally without relying on the proven inadequacies of national States.

The second element of context is the acceleration of planetary awareness. The financial crisis of 2008, the Covid-19 pandemic and the invasion of Ukraine have all brought into full focus the infrastructural interdependence that makes integrated global logistics more than ever the lung on which the breathing, living and dying of most human beings as well as other Earthlings depends.

The third element of context, made salient by the three crises mentioned above but now surfacing in all spheres of existence, is the need to manage the dismantling of the negative commons inherited by current generations. Nuclear waste, the plastic continent, the accumulation of $CO_2$ in the atmosphere: the Anthropocene plunges humans into a world where their productive infrastructures turn into feral threats that they are now condemned to face collectively.

The fourth element of context is the fatigue of the decision-making processes—democratic or authoritarian—

that have so far guided the development of human societies. The scale of planetary problems is proving unmanageable with the decision-making mechanisms inherited from the past. The humans committed to take charge of the destiny of their communities are sinking into denial, burn-out, solastalgia or dementia. The political institutions based on representative democracy drift towards suicidal nationalism. Neither companies, tied to profit imperatives, nor the financial mechanisms that regulate their competition, nor activist groups full of good intentions but lacking in means are capable of reorienting economic activities towards the planet's habitability. The rationalities of global planning are crushed against the endemic rationalities of local resistance. On all sides, human capacities to act come up against their intrinsic and extrinsic limits.

The activities of the TerraForma Corp address these limits by widening the compass of what acts on the surface of the grounds, in the depths of the oceans as in the atmosphere of the Earth. Carbon dioxide, uranium, copper, water, but also cyclones, forests or so-called "invasive" species share with humans an agency that the Corp's mission is to translate into influences, operations and transformations—beyond or below human decisions alone. Its goal being to integrate these decisions within the constraints as well as within the accidents that overdetermine them, the Corp can only act diagonally, through these decisions, these constraints and these accidents. It is this diagonalist bias that organizes this annual report, that justifies the selection of the operations chosen to appear in it, and that explains its order of presentation.

## Overview

After a glossary defining some key words and other neologisms used in the rest of the report and after a chronology contextualizing the activities of the TerraForma Corp in the thoughts and practices put in place in relation to planetarity during the last decades, the **first section** illustrates the activities of the Corp centered on the vectors of imagination that can be identified or activated within the terraforming currently in progress. We are situated here in System 1 (S1) of Stafford Beer's model of viable systems (see Chronology), that of the operations by which organizations are inscribed in the environment they influence and transform. A first group of contributions, organically linked to each other, is devoted to conceptualizing, mapping, quantifying and re-orienting the influence of images on the co-habitability of the planet Earth.

The first chapter tries to understand the processes of metabolization of the images within the psycho-technical organisms through which they flow. It lays the bases of a cartography of the infrastructure and of the dynamics of the circulation of the images, simultaneously in the field of the material devices which govern them and in their shaping of the human imaginations. The second chapter sketches a modeling of these processes of metabolization, likely to lead to a quantification of the influence of the images on their various environments. The third chapter zooms in on the details of the interceptional indicators whose data must be collected in order to understand the objective effects of the circulation of images through subjective perceptions and the affective turbulence that they cause among the living (human and non-human). The fourth chapter takes a step back from these investigative protocols: it transcribes the answers given by the Terra.com AI to some of the questions that the Public Relations department of the Corp is asking itself in order to optimize its terraforming influence on contemporary audiences.

As a whole, this first section documents the technical modalities and possible progress of our (still stammering) awareness of planetarity, by articulating it already with the need to overcome both the fatigue of the current decision-making processes that paralyze our political institutions and the various forms of eco-anxiety that sometimes inhibit activism at the same time as they arouse it. How to conceive (in the double sense of understanding and design) the generation, circulation and reception of images, which flow today in absolutely unprecedented quantities on the surface of the planet? How can we reconfigure the vectorialization of our imaginations to foster a convergence between the affections received from our environments, the ways in which we perceive them and the ways in which we affect them in return?

The **second section** discusses the vectors of ideology that currently structure public debates on planetarity. It asks how to identify and interpret the great attractors around which our media agendas swirl, as well as our urban planning and infrastructure designs. The circulation of images analyzed in the previous section is in fact constantly overdetermined by relatively stable ideological structures, whose vectors orient in depth the imaginations and arguments of the surface. We are here at the level of system 4 (S4) of Stafford Beer's Viable System Model (VMS): the one in charge of ensuring the adaptation of the system to external environments whose future evolutions are potentially threatening. But ideology also appears as a central element of system 2 (S2), whose function is to ensure the homeostasis of the organization around relatively stable states of balance.

The fifth chapter tackles the notion of "ecological planning", as it has come to play a central role in the electoral discourse of parties identified on the right and on the left, to propose that it be inscribed in the emerging paradigm of terraliberal policies, still largely to be invented. The sixth chapter questions the strategies of the Corp in the face of the crises (political, energetic, economic, financial, ecological) that are piling up on the horizon, in order to specify the possible modes of intervention of a terraforming activism in the context of these crises. The seventh chapter extracts from the titanic open-pit lignite mine in Hambach, Germany, the hypothesis of a multisecular destructive colonization of the planet by an orthothelemic conspiracy of the straight line and the right angle, the orthogonal ideology being perhaps at the root of our de/terraforming ravages. Finally, the eighth chapter proposes a strategy of ideological offensive based on the elaboration of anarco-nudges, defined as insensitive nudges contributing to preserve the habitability of the planet by inciting the subjects to better resist the incentives.

This second section responds to the need to articulate the first two elements of the context mentioned

above: how to associate the awareness of our planetarity with the unprecedented power of the technical systems that today circulate the mutual affections that weave our living environments? The challenge is to invent new historical perspectives as well as new operating modes to revitalize the capacities for collective action inhibited by the fatigue of our current processes of debate and decision.

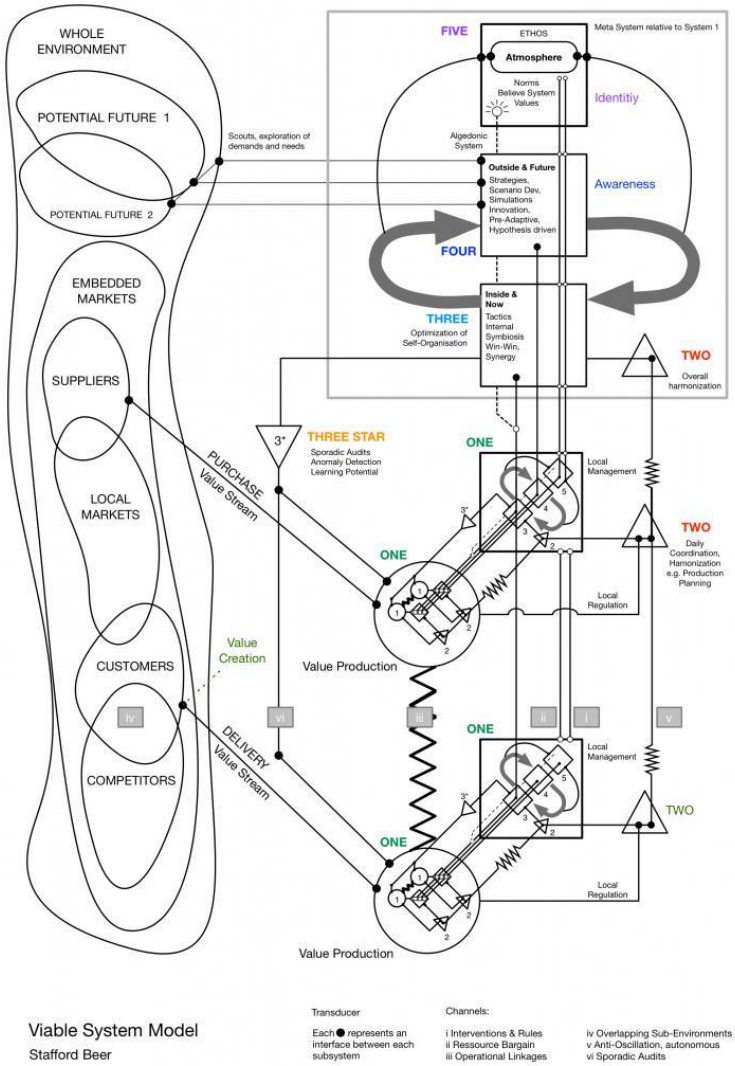



Diagram of the Viable System Model according to Stafford Beer (https://metaphorum.org/)

The **third section** gathers a few surveys that will study our vectors of de/territorialization in the more concrete depths of our spaces, our temporalities and our materialities. Each one explores and experiments with the stuff that supports and anchors our existences in habitable territorialities, in the context of techno-socio-economic dynamics that detach us from our traditional foundations. These investigations are situated at the precise points where, in the schema of the VSM, the operational S1 enters in material contact with the local environments of which it undergoes the influence and on which it exerts its influences.

The ninth chapter takes a step back from digital technologies to explore the problems of cohabitation between humans, chickens and mushrooms around an eco-village project in French Guyana. The tenth chapter investigates sinkholes that open up under human houses or roads when subterranean geological erosion weakens the earth's surface, with the effect of opening gaps in their conceptions of territories and their materialities. The eleventh chapter captures, through a dozen photographs accompanied by enigmatic texts, the central role that oblivion plays in the cognitive and affective rebalancing of human users prey to (environmental) mental disarray in the Anthropocene era. Finally, the twelfth chapter operationalizes this disarray by proposing an interface design entitled Slow Response Code which, instead of the Quick Response of the QR Code, forces the user to be at a precise moment in a singular place of the planet to have access to an online content.

It would be simplistic to limit these four chapters to a posture of withdrawal and resistance to the excesses of a certain globalizing deterritorialization. Their stake is rather to re-sensitize us to certain depths that the sliding of our fingers on our screens and digital keyboards tend to make us ignore, at our expense as well as future generations'. While the rest of the report foregrounds the influences of various forms of de/terraforming, this section sheds light on the inevitable and precious inertias of affective materialities that weigh our feet down on the surface of the Earth.

The **fourth section** illustrates and considers in a reflexive way the contribution of the vectors of art-based research (*recherche-création*) to the modalities of investigation-speculation practiced within the Department of Ubivectorial Influences of the TerraForma Corp. We are situated here in system 3 of the VSM (S3), the one whose task is to improve the organization's procedures, thanks to a capacity to renew the modes of approach, framing and processing used to identify and solve problems.

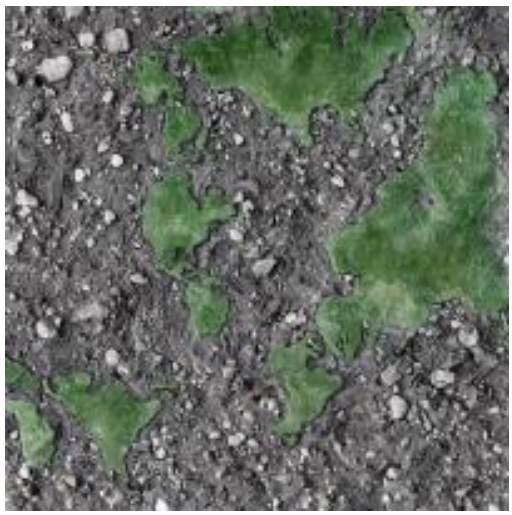
The thirteenth chapter confronts the curse imposed on the Yunnan region by the colonial opium trade, proposing to ward off this curse through the creation of mandalas, whose cosmographic properties point to alternative, less Western-centric modes of terraforming. The fourteenth chapter describes a procedure of diagrammatization of the communicative influences emanating from invited speakers in the work of the DIU, before articulating this diagrammatic form to the design of vases. The fifteenth chapter relates different experiments of translations of texts into images (and vice versa) accomplished in parallel by human subjects and by computational devices, while questioning the criteria usually mobilized to distinguish between them. The fifteenth chapter shares the protocol of a chemo-linguistic experimentation able to generate automatically, although without recourse to digital devices, action calls potentially carrying alternative terraformings.

All these proposals for *recherche-création* are to be taken on a double level: on the one hand, as absolutely specific historicities or materialities, referring to a singular space-time of terraforming activities; on the other hand, as ways of doing things, themselves historicizable and localisable, but transposable to other improbable contexts where their effects of creolisation will be unpredictable. In this, TerraForma Corp can find both tools to help dismantle negative commons and suggestions for restorative remodeling.

Finally, the **fifth and last section** turns to the way in which TerraForma Corp sets up new vectors of identity to dodge the pitfalls and dead ends of the dominant modalities of internal governance and external visibility. We are here at the level of System 5 of the VSM (S5), the one whose task is to define (and constantly revise the definition of) the organization's identity, its missions, its principles and its communicative projections.

The seventeenth chapter proposes a self-definition of the Corp based on the interpretation of its astral chart, which places the planet Earth in the interplay of influences exerted by neighboring stars, while adapting the formulation of its missions to the expectations of advice and comfort geared towards human users. The eighteenth chapter reveals the principles of the generative graphic design model through which the Corp has created a visual identity that is easily identifiable and yet infinitely adaptable to allow all its agents to singularize their relationship with it. The nineteenth chapter begins by meticulously documenting the habits of proxemic micro-territorialization that push a collective to ratify hierarchies through the choices of positions around a table, before spawning the model of officeless offices, de-localized in the sense that the specific localization of a workspace dilates to the limits of the entire planet. The twentieth chapter reads extracts from the report made by the whistleblower charged by the Corp to track down and denounce its internal dysfunctions, in the spirit of the VSM system 3 (S3), whose function is to exercise independent and critical auditing procedures, in order to verify the effective adherence of the organization to its objectives and to its declared ethical-ecological standards. In the same spirit, a final interview with the Terra.com AI concludes the report without closing it, since this conversation on the future prospects of terraforming reveals more doubts and confusion on the part of the Artificial Intelligence than reassuring certainties.

This fifth section therefore documents the ongoing mutations of the Corp which, by its very nature, must incessantly rethink the ways in which it embodies, relays and vectorializes the needs of co-habitability of the different species co-existing on planet Earth. How best to manifest this paradox: our planetarity is being discovered (and terraformed) at the same time that it is self-destructing (de-terraforming)? The different chapters of this section attempt to answer the same question that haunts private companies, State bureaucracies, NGOs and militant collectives—not so much the question of organization as that of its viability. This question takes a doubly relevant form for TerraForma Corp: how to make habitable, for its multiple agents scattered across the globe, a collective corporeality whose mission is to promote the co-habitability of planet Earth?



## Assessment

The doubts expressed by the last two texts of this report are an integral part of the Corp's identity. Its two major references in the recent past have both ended in failure. Stafford Beer's Viable System Model (VSM) inspired the economic policies of Salvador Allende's Chile, which was overthrown on September 11, 1973 by the US-backed military coup led by Augusto Pinochet. The first DAO was the victim of a hack that siphoned off a third of the US$ 250 million it had collected in record time. TerraForma Corp expects to suffer a similar failure. And it is by preparing incessantly for a failure that it hopes to postpone it indefinitely, while optimizing, along the way, its influence on the co-habitability of our planet.

From this point of view, the year 2022 was a major turning point. Until then, the plan was to gradually build up the organization through loose, informal and relatively traditional modes of coordination (mailing lists, telephone calls, face-to-face meetings, videoconferences, website, with the sending of shared informative documents, but without any contractualization having the force of law or code). This rise in power had as its horizon the launch in 2025 of a DAO based on a blockchain and open to receive the flows of financing whose promises are pouring in from multiple sides. The Corp's founding assumption was indeed that the VSM could finally find its formal and efficient implementation in the form of a DAO thanks to the emerging technologies and organizational practices of blockchains.

The work documented in this report has, however, led to a significant alteration of these future prospects. The form of the DAO will continue to offer a general model towards which to tend, but on condition that it is emancipated from the financial dimension of cryptocurrency which today constitutes its most common mode of existence and operation. The unprecedented scalability offered by DAOs—that is to say, their capacity to grow enormously in scale without having to alter their operating methods—makes them an indispensable tool for any organization aiming at global coordination. But, as the whistleblower duly pointed out in this annual report, the monetary models on which current DAOs are based, which are often reduced to financial and speculating mechanisms, are based on premises that are in direct contradiction with the missions of the Corp (strict individualization of collaboration modes, reduction of agents to calculating homo œconomicus behaviors, carbon cost of token mining through Proof-of-Work mechanisms).

The Corp is not giving up on contributing to the promising developments of a Web3 significantly different from the Web2 colonized by platform capitalism. On the contrary, it is a matter of radicalizing this difference by rejecting the financialization of daily life at the same time as its platformization. The Corp therefore intends to contribute to the development of a new generation of DAOs, established on more sustainable bases, ecologically as well as socially and anthropologically, than those currently operating on the model of cryptocurrencies. The major event of the switch of Ethereum, host of the first DAO, from a mining mechanism based on the "Proof-of-Work" to a securing mechanism based on the "Proof-of-Stake", a switch successfully operated on September 15, 2022, certainly constitutes a mutation with enormous consequences in the sustainability of a Web3 capable of ensuring a planetary governmentality. Although the "Proof-of-Stake" is considerably less energy-consuming, it nevertheless tends to concentrate in the hands of the largest operators a decision-making and regulatory power that must imperatively be distributed more equally. Hence the will, widely shared within the Corp, to go even further than the existing blockchains, to raise the Web3 to other dynamics of planetary relationality.

This desire is not a utopian leap into a dream future from which the stain of money would have been washed away. The question of financing organizations like the Corp constitutes a major and inescapable problem of any terraforming enterprise programmed to operate on a planetary scale. The Corp's decision must rather be understood as a bet on the possibility of accounting environmental threats according to dynamics of influence that would allow the subordination of strictly financial logics under the pressure of existential urgencies shared as well by non-humans as by humans. Other types of DAOs will be necessary to implement the superiority of the imperative of concrete co-habitability of our shared living environments over the profitability (monetary or symbolic) of investments.

## Prospects

At this stage, three tracks are proposed to the energies of Corp members to orient the activities of the years to come. The **first track** consists in re-evaluating the modes of terraforming according to the complementary properties of four relational scales that need to be articulated in a precise (i.e. quantified) way in their relationships of superposition, co-development or incompatibility.

1° *Commensality* brings together living people around their meals, rituals of preparation and consumption of food and drink. Living implies feeding, not only with consumable goods but also with commensals (etymologically: fellow-beings who share our table).

2° *Conviviality* brings together expressive bodies in conversations that are never limited to the communication of coded information according to the rules of a certain language. Conviviality corresponds to the multi-sensorial co-presence of a group animated by a common curiosity, but meeting for the pleasure of study, more than for the result produced by the studying. This pleasure is conditioned by the self-limitation to user-friendly tools, that is to say easily understandable, controllable, modifiable and reparable by their users.

3° *Collaboration* brings together producers of goods or services in order to coordinate their productive operations. This is what economic analysis, organization and management theories (including the original version of the VSM) have traditionally tried to optimize. Our current deterraforming activities are largely the result of the exclusive prevalence of this relational scale at the expense of the other three.

4° Finally, *co-viability* brings together different forms of life within the same territory that serves as a shared habitat, with relationships of symbiosis, synergy, competition and rivalry. When Stafford Beer's categories are taken up today and complemented by the addition of an S to design Viable *& Sustainable* System Models (VSSM), sustainability implies that what is viable for my existing species must also be viable for the other species whose diversity frames the life and renewal of our common ecosystem.

If TerraForma Corp has from the outset identified with the need to understand and implement forms of habitation compatible with the needs of co-viability, reflection on the inadequacy of structured DAOs such as cryptocurrencies invites the work of future years to explore and value more intensely the levels of commensality and conviviality, on which depend not only the co-habitability of the planet but also the desirability of the modes of cohabitation that may be imagined and realized there.

The **second track** calls for the Corp's agents to explore, formulate and codify a preliminary idea of what a DAO could look like, where the exchange of services would not be based on the equivalent of a monetary currency, but on a completely different valuation system. The candidate for this year's work is the "RESPECT" report (noted RSPCT), with the challenge of replacing token mined on the basis of "Proof-of-Work" with value multiplication established by a "Proof-of-Respect" process. The work initiated this year by the DUI is at the heart of this research and experimentation program, since the calculation of the terraforming value of the RSPCT of a commodity or a service relies on the computation of the influences of which it is the vector.

The modelling, quantification and processing of big data provided by the sensitivity of the sensors distributed on the surface of the planet and put in place during the last decades give hope to quantify the (terraforming and de-terraforming) influences of a given commodity or service on the co-habitability of a living environment. The analysis of the different relational scales will in turn give hope to sum up these different influences, in an approximation that would be realistic enough to derive an integrated intercept indicator, aiming to represent a trend of forthcoming effects rather than a sanction of observed effects. The value of the RSPCT will be derived directly from this indicator, as soon as $x > 0$.

The calculation of RSPCT corresponds to the central function of the S4 of the VSM, that of the adaptation of the organization to an environment in constant transformation, and more particularly that of its anticipated adaptation to the future transformations of this environment. But beyond its computational parametrics, the value of RSPCT is

intended to take the place of the "religious respect" that most human populations have felt towards deities and natural forces whose power seemed to exceed their own. In a world of limited resources that extractivism has devastated with its consumerist recklessness, the computational operation performed by the Terra.com AI to value the RSPCT due to commodities and services produced and exchanged between humans embodies the need to "look and think twice" (*re-spectare*) before scaling up the production of that commodity or service to an industrial scale that will risk deteriorating the co-viability of a habitat.

The **third line** of work in this annual report calls for more research and experimentation in and especially *with* the speculative capacities of artificial intelligences (AI), whose recent advances have been revolutionary in the fields of machine learning, recognition, and especially the synthetic generation of text, sound, and images. The working hypothesis here is that the surprises of speculation emanating from computational devices can help our era overcome the limits imposed on our collaborative imagination by the stranglehold of financial speculation. A program has already been set up in partnership with the EUR ArTeC to set up experimental workshops in which human agents will delegate to artificial imaginations the task of writing, sounding and visualizing fragments of universes that have remained unimagined until now. Computational devices drawing their information from huge data banks are certainly content to repeat the past by answering the questions we ask them about the future. But, thanks to the correlations detected by deep learning, the recombinations they propose of these past data are not at all "random". They reproduce not only the biases (racist, sexist, classist, validist) inherited from a racist, sexist, classist and validist past, but also the common (and uncommon) intelligences accumulated in the collective heritage of which these databases are composed.

To experiment with the ways in which AIs complete the beginnings of sentences, narratives, arguments, songs, or films that we submit to them is thus to enrich the intelligences and imaginations of our individualities, both infinite and limited, with the contribution of multiplied, pluralized, decentralized intelligences and imaginations endowed with a certain autonomy of recombination. A DAO can realize the co-activation of simultaneous wills scattered in space, within a process whose results are unpredictable, according to the project that emerged under the title of TerraForma Corp. In the same way, the experimentation with the speculative capacities of the AIs can help the TerraForma Corp to spawn imaginations whose derivatives, although repeating some elements inherited from the past, will accelerate the future.

# CHRONOLOGY

*This chronology, coordinated by Carlos Duran and Abad Ain Al-Shams, contextualizes the emergence of the TerraForma Corp and its transmutation into a DAO (Decentralized Autonomous Organization) within some of the multiple sources of inspiration that have influenced its development: cybernetic modeling, management theories, cartographic experiments, artistic practices, and philosophical speculations.*

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| XI e century before J.-C. | The Zhou Dynasty came to power in China and ruled in the name of a world system called Tianxia ("All-that-is-under-heaven"). The philosopher Zhao Tingyang summarizes its main principles as follows: "(a) the real solutions to the problems of world politics lie in a universally accepted world system rather than in the use of force; (b) a universal world system is politically justified if it has a political institution that governs for the benefit of all peoples and nations, and for the production of the greatest amount of shared goods; (c) a universal world system works if it creates harmony between all nations and cultures." (Zhao Tingyang, "The Philosophy of Tianxia," Diogenes, No. 221, 2008, p. 8) |
| 1942-1956 | Conferences held at the Macy Foundation in New York regularly bring together specialists from a wide variety of disciplines (mathematics, physics, biology, medicine, psychiatry, anthropology) in discussions from which emerge many research paradigms developed in the second half of the 20th century, including cybernetics, information science, and cognitivism. |
| 1964 | Marshall McLuhan publishes the book *Understanding Media: The Extensions of Man* (New York, McGraw Hill) which initiates the indiscipline of media studies, based on the postulate that the communication technologies put in place between humans and their environment condition their behaviors by redimensioning their relationships to space, time and agentivity. |
| 1970 | The American feminist Jo Freeman publishes the text The Tyranny of Structurelessness in the *Berkeley Journal of Sociology*. |

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| 1970-1973 | The socialist Chile of President Salvador Allende calls the British cybernetic management theorist Stafford Beer to design and implement the Cybersyn project, which was to optimize the flow of information, goods, and services in the context of agile planning of the socialist economy, in real time and with an eye to direct democracy. The project develops the Cyberstrider software, based on Bayesian functions, which formalizes and operationalizes the Viable System Model (VMS) theory developed by Beer at the same time. From the economic point of view, the cybernetic organization is based on four levels of control (the firm, the branch, the sector, the country) from which thousands of data are transmitted by telex from the field units to a central control room located in the heart of Santiago, opened in 1972, where screens and models inform the coordinators in real time of the state of the economy. From a political point of view, the Cyberfolk project was to allow all Chileans to send messages of satisfaction or dissatisfaction (as "algedonic loops"), the results of which would be displayed on one of the walls of the central control room. The project was destroyed by Augusto Pinochet's military coup d'état, fomented with the support of the United States on September 11, 1973. |

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| 1972-1979 | Stafford Beer published *The Brain of the Firm* (Harmondsworth, Allen Lane, Penguin, 1972), which presents his cybernetic theory of management, *Platform for Change* (New Chichester, Wiley, 1975), which draws from cybernetics an alternative epistemology likely to transform (our relative conceptions and practices of what) the world is (with a concluding chapter devoted to the Cybersyn experiment in Chile), and *The Heart of the Enterprise* (Chichester, Wiley, 1979), which develops and completes his Viable System Model (VSM). The latter proposes a recursive analysis of the functioning of any organization, at any scale, in three elements (O = Operation; E = Environment; M = Meta-system), within which it distinguishes five systems. An operational system that concretely accomplishes the organization's tasks (S1, operation) and four systems that are part of the meta-systemic management: S2 ensures the stability of the organization, to avoid too abrupt oscillations and conflicts; S3 works on its potential improvement, in constant relation with S2, but also by developing information sensors and indicators through a specific system of monitoring S3*; S4 must ensure the adaptation of the organization to environments (local and global) in permanent and accelerated transformations; finally S5 is in charge of defining the identity of the organization, by verifying the conformity of its actions with the principles, finalities, and missions in which it affirms to recognize itself. |

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| 1986 | Gareth Morgan publishes *Images of Organization* (New York, Sage) which reviews eight metaphorical models that structure the common imaginaries of organization in the modern era: 1° machines, 2° living organisms, 3° brains, 4° cultures, 5° political systems, 6° psychic prisons, 7° flows and transformations, 8° instruments of domination. |

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| 1994 | A group of post-operative activists centered in Bologna, Italy, is using the name Luther Blissett (a name borrowed from a Jamaican soccer player) to informally federate actions of various kinds, such as exposing journalistic or editorial malpractice, both on the progressive left and in established conservative circles. |
| 1995-2003 | The Cybernetic Culture Research Unit (CCRU) is developing its experimental theory-fiction activities on the bangs of the University of Warwick with members such as Sadie Plant, Nick Land, Stephen Metcalf, Iain Hamilton Grant, Ray Brassier, Reza Negarestani, Mark Fisher, Kodwo Eshun, Robin Mackay, Luciana Parisi, Matthew Fuller or Steve Goodman. |
| 1997 | Sadie Plant publishes *Zeros + ones: digital women + the new technoculture* (London, Doubleday) which outlines a program of study and action that will strongly inspire the TerraForma Corp. |
| 1999 | Luther Blissett publishes a novel entitled *Q* (Milan, Einaudi), translated into a dozen languages, in which the protagonist travels through various insurrectionary struggles in Renaissance Europe and finds himself confronted by a mysterious secret agent of the Inquisition, anonymous but identified by the letter Q. |
| 2001 | Léonore Bonaccini & Xavier Four start the activities of the collective Bureau d'études which will produce for two decades diagrams mapping power relations on a planetary as well as national scale (https://bureaudetudes.org/). Part of this work will be compiled in 2015 in the book *Atlas of agendas - mapping the power, mapping the commons* (Eindhoven, Onomatopée). |
| 2001 | Tiqqun publishes "L'hypothèses cybernétique" in *Tiqqun 2, Zone d'Opacité Offensive* (Paris, Belles-Lettres). |

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| 2002 | Randy Martin publishes *The Financialization of Daily Life* (Philadelphia, Temple University Press) which, along with *Knowledge Ltd. Toward a Social Logic of the Derivative* (Philadelphia, Temple University Press, 2015), offers a radical analysis of the epistemological as well as socio-political upheavals induced by the development of new financial instruments, such as derivatives. |
| 2005 | Zhao Tingyang published in Chinese *The Tianxia System: An Introduction to the Philosophy of a World Institution*. |
| 2006 | Ramachandra Guha publishes the book *How Much Should a Person Consume? Environmentalism in India and the United States* (Berkeley, University of California Press), which questions the unsustainability and injustice of consumption practices promoted by Western culture. |
| 2007 | Denise Fereira da Silva publishes *Towards a Global Idea of Race* (Minneapolis, University of Minnesota Press), which traces the history of modern philosophy, highlighting the racist premises and implications of the very definitions of the human, of knowledge and of politics. |
| 2008 | Under the pseudonym Satoshi Nakamoto, a text was published that launched the cryptocurrency Bitcoin: *A peer-to-peer electronic cash system*. |

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| 2008 | Reza Negarestani publishes *Cyclonopedia. Complicity with Anonymous Materials* (Melbourne, Re.Press) which articulates petro-power, polemology, philosophy and religion in a hyperstition that disrupts the usual distribution of agentivities between humans and non-humans. |
| 2009 | Delphi Carstens synthesizes and disseminates more widely the notion of hyperstition by putting online an interview with Nick Land "Hyperstition. An Introduction" on http://xenopraxis.net/readings/carstens_hyperstition.pdf |
| 2009 | Isabelle Stengers publishes *Au temps des catastrophes* (Paris, La Découverte) which offers an overview of the relationship between knowledge, planetary habitability and political activism. |
| 2011 | Angela Espinoza & Jon Walker edited and published the book *A Complexity Approach to Sustainability* (London, World Scientific Europe), which summarizes, popularizes and updates Stafford Beer's Viable System Model (VSM) of management. |
| 2011 | A collection of Nick Land's writings is published as *Fanged Noumena: Collected Writings 1987-2007*, Falmouth, Urbanomic, 2011. |
| 2011 | The neo-pagan activist Starhawk publishes *The Empowerment Manual* (Cabriola Island, New Society Publishers) which outlines a plurality of possible mobilizations for ecofeminist causes. |
| 2012 | Bruno Latour publishes *An Inquiry on the Modes of Existence* (Cambridge, MA: MIT Press) in which fifteen modes of existence are declined, which will inspire the pluralist options and the axes of sensitivities modeled by the TerraForma Corp software: 1° REProduction, 2° METamorphosis, 3° HABit, 4° TEChnique, 5° FICtion, 6° REFerence, 7° POLitics, 8° LAW, 9° RELigion, 10° ATTachment, 11° ORGanization, 12° MORality, 13° NETwork, 14° PREposition, 15° Double Clic. |
| 2013-2014 | Vitalik Buterin publishes *Ethereum White Paper*, which paves the way for the possible automation of the management of decentralized organizations, and "DAOs, DACs, DAs and More: An Incomplete Terminology Guide", which provides initial guidance in the coming world of DAOs (Decentralized Autonomous Organizations). |
| 2005-2020 | Pierre Bayard published a series of works for the Editions de Minuit that laid the foundations of an "interventionist critique" based on the capacity of literary practices to foresee, predict and influence future events, including *Demain est écrit* (2005), *Le Plagiat par anticipation* (2009), *Il existe d'autres mondes* (2014), *Le Titanic fera naufrage* (2016), *Comment parler des faits qui ne se sont pas produits?* (2020) |

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| 2015 | Katherine McKittrick publishes Sylvia Wynter's *On Being Human As Praxis* (Durham, Duke University Press), which presents the thought of this West Indian philosopher, a pioneer of anti-racist and decolonial ecology, calling for the development of practices and knowledge emancipated from the ecocidal model of homo eonomicus. |

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| 2015 | Pablo Servigne and Raphaël Stevens published the book *Comment tout peut s'effondrer : petit manuel de collapsologie à l'usage des générations présentes* (Paris, Seuil). |
| 2015-2022 | Gwenola Wagon, Stéphane Degoutin, and Pierre Cassou-Noguès develop multimedia works such as *World Brain* (2015), *Psychoanalysis of the International Airport* (2016), *Welcome to Erewhon* (2019), and *Virusland* (2022), which investigate the technological and imaginary metabolisms generated by our globally extended connection networks. |
| 2016 | Jennifer Gabrys publishes *Program Earth: Environmental Sensing Technology and the Making of a Computational Planet* (Minneapolis: University of Minnesota Press), which sets out the basis for a global collection of indicators of the habitability of planet Earth. |
| 2016 | Max Hampshire, Paul Kolling & Paul Seidler begin developing terra0 which explores the creation of hybrid ecosystems in the technosphere, with the goal of experimenting with the multiple ways in which smart contracts can foster the inherent objectality of non-human entities in different social and economic contexts, to learn to recognize and care for their needs. On the technical side, terra0 operates with Ethereum Mainnet, Solidity, OpenCV and React. |
| 2016 | DAO, the title of a venture capital investment fund, is launched on the Ethereum blockchain. Open access, the DAO invites everyone to buy tokens and any project owner to present it to obtain the necessary funding for its launch. An immediate success with a large public allows to collect the equivalent of 250 million US$ in a few months, breaking the previous crowdfunding records. On June 17, an Internet user succeeded in the DAO Hack, which exploited a vulnerability in the DAO's code in order to siphon off the equivalent of US$70 million. This fiasco plummets the dreams of DAO for some time and forces Ethereum - which was not hacked as such, only the specific program of the DAO contained flaws exploited by the hacker - to go back in the chain of time to introduce a branching prior to the hack (hard fork) which allows to reimburse the parties injured by the siphoning. However, the US Securities and Exchange Commision decreed on July 25, 2017 that the DAO should have registered its transactions with it and declared it at fault for not doing so, which signals the death of the DAO. |
| 2016 | Donna Haraway publishes *Staying with the Trouble* (Durham, Duke University Press), which inspired the TerraForma Corp's practices of "computational disorder" and "disorderly accounting". |
| 2017 | William E. Connolly publishes *Facing the Planetary: Entangled Humanism and the Politics of Swarming* (Durham: Duke University Press), which offers an in-depth discussion of the notion of planetarity. |
| 2017 | Angela Espinoza & Jon Walker add a chapter entitled "The Global Recursion: A Planetary Society Striving towards Sustainability" to the second edition of their book *A Complexity Approach to Sustainability* (London, World Scientific Europe) |
| 2017 | A series of messages denouncing collusion between the media, financiers, artists, progressive intellectuals and the Deep State were published under the pseudonym Q on the anonymous forum 4chan7 (then 8kun), giving increasing visibility to a group of American far-right activists soon identified as QAnon. Some hypotheses link this Q to the one whose fictional adventures were imagined by Luther Blissett in 1999. |

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| 2018 | Brian Massumi published *99 Theses on the Revaluation of Value. A Postcapitalist Manifesto* (Minneapolis, University of Minnesota Press), which lays the foundations for a possible reappropriation of certain financial mechanisms, such as blockchains, for the purpose of social transformation that would allow us to go beyond the modes of valuation on which contemporary capitalism is based on a planetary scale. |
| 2018 | Various associations, artists and researchers, mainly located in Western Europe, interacting until then through multiple mailing lists and groups on social networks, decide to federate within the TerraForma Corp, whose first online general assembly decrees the launch, with a principle of open and anonymous membership for anyone who wishes to contribute to its work and/or claim to be part of it, on the model imagined by Luther Blissett in the 1990s. |

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| 2018 | Simultaneously with the European condensation of TerraForma Corp, Do Kwon founded Terraform Labs in Seoul, which develops the Terra blockchain as well as the LUNA cryptocurrency, which includes voting rights on proposals submitted to the common governance. As of February 2019, Terra was promoted and supported by a large group of companies and e-commerce platforms called Terra Alliance, with 45 million users in 10 countries and $25 billion in revenue. |
| 2018 | Jennifer Gabrys publishes "Becoming Planetary" in the online journal e-flux Architecture. |
| 2018 | The activities of EUR ArTeC are launched with an inaugural conference by Bruno Latour at the Institut National de l'Histoire de l'Art in Paris. |
| 2018 | The Disnovation.org collective launches its post-growth program (https://disnovation.org/postgrowth.php), which re-envision social metabolisms by questioning the energies and materialities required, drawing on ecofeminism, indigenous knowledge, environmental accounting and historical materialism. |
| 2019 | Frédérique Aït-Touati, Alexandra Arènes and Axelle Grégoire published *Terra Forma. Manuel de cartographies potentielles* (Paris, B42) which will deeply influence the activities of the TerraForma Corp by proposing seven alternative conception models of our ways of mapping living habitats: 1° Soil, 2° Point of Life, 3° Living Landscapes, 4° Borders, 5° Space-time, 6° (Re)Sources, 7° Memory(s). The EUR ArTeC invites the authors to present their work as part of a disorientation experience at the Gaité Lyrique. |
| 2019 | Grégory Chatonsky presents the exhibition *Second Earth* at the Palais de Tokyo in Paris, where an automatic life of imagination, thought and even production processes is staged, organized by artificial intelligences on the fringe of human decisions and potentially capable of surviving the latter. |

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| 2019 | Benjamin Bratton launches the three-year program *The Terraforming 2019* at the Strelka Institute in Moscow and publishes the book of the same name, which explains its presuppositions and aims. The program is interrupted following the invasion of Ukraine by Russian armies in the spring of 2022, but the book is translated into French by EUR ArTeC in the fall of 2021 under the title *La Terraformation 2019* (Dijon, Les Presses du réel). |
| 2019 | TerraForma Corp decides to devote two years of work to the re-evaluation of Stafford Beer's Viable System Model with the objective of inventing a computational model that can be integrated into a blockchain to arrange sustainable interactions on a planetary scale for all the living entities involved. |
| 2019 | Patricio Dávila publishes the catalog for the exhibition *Diagrams of Power. Visualizing, Mapping and Performing* (Eindhoven, Onomatopoeia), which lists the works of various artists proposing "power diagrams", defined "as visual works that represent and communicate ideas or data, but equally as processes that arrange bodies and things", since "a diagram can be used both to show how power is distributed, but it can also itself serve as a vehicle through which that power is distributed". |

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| 2019 | Alan Damasio publishes the novel *Les furtifs* (Paris, La Volte) in which a father in search of his missing daughter joins a military action group tracking down undetectable non-human entities, in a European space controlled by the artificial intelligences of large corporations against which various autonomist insurgencies are fighting. |
| 2019 | Lukáš Likavčan, *Introduction to Comparative Planetology* (Moscow: Strelka Press) makes explicit the philosophical implications of a planetary approach to political processes by bringing to the forefront of his analysis the infrastructures that simultaneously condition the habitability of urban areas and the damage to the habitability of the entire planet. |
| 2019 | The TerraForma Corp begins to generate first work reports, sent to different media outlets, some of which are integrated anonymously into Cora Novirus' Primer on Bifurcations, published as a special issue 80 of the journal *Multitudes* in the fall of 2020. |

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| 2019 | Theo Deutinger published the book *Ultimate Atlas. Logbook of Spaceship Earth* (Zürich, Lars Müller), which quantifies in one-dimensional form a sample of indicators of the Earth's habitation patterns and habitability parameters. |
| 2019 | Ingrid Diran & Antoine Traisnel publish in the n° 47-3 of the journal *Diacritics* the article "The Birth of Geopower" which critically reviews the relationship between planetarity and geopolitical realities. |
| 2019 | Historian Dipesh Chakrabarty publishes "The Planet: An Emergent Humanist Category" in issue 46 of *Critical Inquiry*, which shows the upheaval imposed on our categories of political thought by the notion of planetarity. |
| 2019 | Malcolm Ferdinand published *Une écologie décoloniale. Penser l'écologie depuis le monde caribéen* (Paris, Seuil), which articulates the needs and challenges of a decentralization of the premises of ecology, in order to integrate the needs and contributions of non-eurocentric perspectives. |
| 2020 | Holly Jean Buck publishes *After Geoengineering: Climate Tragedy, Repair, and Restoration* (New York, Verso) in which she calls on environmentalists to discern which forms of geoengineering should be rejected at all costs and which may be acceptable, as well as to consider the need for global governance to accompany these climate change mitigation technologies. |
| 2020 | The website CryptoArt.wtf posts a carbon impact calculator for NFTs that is causing lasting controversy among blockchain advocates and users in the environmentally-minded art community. |
| 2020 | Founded the Earth Viability Center, whose research programs study the habitability of the Earth at local and global scales, and which publishes viability indicators monitoring the state of the Earth Life Support System (ELSS), based on Stafford Beer's Viable System Model (http://www.earthviability.org/dashboard/). |
| 2020 | The collective COALA (Coalition of Automated Legal Applications) proposes the DAO Model Law which allows to give a legal personality to DAOs and to put them in harmony with transnational law. |
| 2020 | The State of Wyoming officially accredits the legal existence of DAOs by giving them the same rights as limited liability companies. |
| 2020 | Vladan Joler posts the diagram *New Extractivism*. Assemblage of Concepts and Allegories (www.extractivism.work) which proposes a mapping of the social, political and ecological planetary implications of the operation of platform capitalism. |

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| 2021 | Anna L. Tsing, Jennifer Deger, Alder Keleman Saxena, and Feifei Zhou are launching the website *Feral Atlas*. The more than human Anthropocene which aims to document on a global scale the places where ecologies have developed that are encouraged by human infrastructure but beyond human control, these infrastructural effects of ferality being typical of the Anthropocene. |
| 2021 | TerraForma Corp is postponing the launch of the financial side of its DAO for 2024 or 2025. In the meantime, it is experimenting with the possibility of setting up a DAO whose tokens are detached from any monetary investment. What is registered, valued and exchanged on the blockchain is measured in work time, in barter for members sharing the same geographical location or in "evangelical contribution" not monetized but quantified in "Respect", which becomes the most commonly used currency (under the notation RSPCT). Instead of the energy-intensive Proof-of-Work systems (on which Bitcoin is based), the Corp's experimental blockchain is based on the principle of "Proof-of-Respect": the value of a contribution is arbitrated by an estimate of the Terra.com AI, which computes to the best of its computational ability the possible effects of the contribution in question on its near and far, human and non-human environments. The sum of these effects constitutes the "influence" of the evaluated action. This computation fulfills the function of the S4 of the Viable System Model theorized by Stafford Beer. The value of the RSPCT corresponds to the result of this calculation when $x > 0$. |
| 2021 | Emmanuel Bonnet, Diego Landivar & Alexandre Monnin publish the book *Héritage et fermeture. Une écologie du démantèlement* (Paris, Divergences) which articulates the notion of "negative commons", defined as infrastructures that only nourish our present lives by rotting our future living environments, with the necessity to prepare the dismantling of such infrastructures. |
| 2021 | The magazine *Multitudes* publishes a special issue 86 dedicated to the questions of Planetarities. |
| 2021 | The members of the DIU meet at the École des vivants hosted by Alain Damasio for working days on terraformation. |
| 2021 | Maud Maffei & Grzegorz Pawlak are organizing the *States of Terraforming* conference at the Sorbonne University in Paris. |

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| 2021 | Nephtys Zwer & Philippe Rekacewicz publish the book *Cartographie radicale. Explorations* (Paris, La Découverte) which critically reviews the multiple ways in which the sciences and certain arts have represented territories and their inhabitants, helping to imagine other ways of visualizing and modeling the habitability of the planet. |
| 2021 | Stefano Harney & Fred Moten publish *All Incomplete* (Wivenhoe, Minor Compositions), which expands the thinking *in Undercommons. Fugitive Planning and Black Study* (Wivenhoe, Minor Compositions, 2013) to expose the racism inherent in the extractivist modes of production, governance, and logistics that propagate a bureaucratic and accounting anti-sociality on a planetary scale that threatens its livability. |

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| 202 | Camille de Toledo publishes *Le fleuve qui voulait écrire. Les auditions du parlement de Loire* (Paris, Les Liens qui Libèrent), which mobilizes the resources of literature to help humans understand what a non-human entity such as a river would need to express to preserve the habitability of our planet. Comparable approaches have been developed for years around the Atrato River in Colombia, the Ganges River in India and the Whanganui River in New Zealand. |
| 2022 | TerraForma Corp is making available the artificial intelligence it has been working on for two years, Terra.com, as the first attempt at a planetary scale computation of the needs of the various living entities that make up our terrestrial environments. The design is based on Stafford Beer's Viable System Model. |
| 2022 | Aliocha Imhoff & Kantuta Quirós publish their book *Qui parle? (pour les non-humains)* (Paris, PUF) in which they review different forms of research-creation practices imagined and implemented in recent years to put humans in touch with non-humans. |
| 2022 | A class action lawsuit was launched in Northern California on June 17 against Terraform Labs and its founder Do Kwon on charges of selling unregistered financial securities, thereby misleading investors. A month earlier, Do Kwon and Terraform Labs were fined $78 million in South Korea. In July, following the collapse of Terra, it was revealed that a $3.6 billion fund had been concealed for use in LUNA price manipulation and money laundering operations. |
| 2022 | The Raffard-Roussel collective presents its *Stackographie d'une trottinette électrique* at the Fiminco Foundation in Romainville, laying the foundations for a multifactorial analysis of the influence/impact of an electric scooter on human social and psychic formations as well as on the habitability of the planet. |
| 2022 | Ruth Catlow & Penny Rafferty publish the book *Radical Friends. Decentralized Autonomous Organisations and the Arts* (London, Torque Editions) which brings together a wide range of statements, analyses and proposals on the artistic and activist uses of DAOs. |
| 2022 | Jennifer Gabrys publishes *Citizens of Worlds: Open-Air Toolkits for Environmental Struggle* (Minneapolis, University of Minnesota Press), which catalogues, analyzes, promotes, and disseminates multiple ways that people from different cultures and places around the world record, collect, and process environmental data in their environmental mobilizations. |

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| 2022 | On September 15, Ethereum switches from the energy-intensive Proof-of-Work mechanism, also used by Bitcoin, to a Proof-of-Stake mechanism. This operation, called The Merge, is happening without any technical bugs, after a 50% increase in the value of the cryptocurrency, followed by a slight drop of 15% the day after the operation. This allowed the blockchain to reduce its energy consumption by 99.95%. |
| 2022 | The DIU presents an overview of the research conducted with the TerraForma Corp during the ArTeC Meetings held on October 5 and 6 at the Cité Internationale des Arts. |
| 2023 | TerraForma Corp officially redefines its form of corporeality as that of a "vibrational conspiracy". |
| 2025 | TerraForma Corp is giving up on financializing its blockchain operations in the cryptocurrency framework. A computational model in the process of being operationalized automatically translates conspiratorial vibrations into RSPCT values. |

**Members of the DUI and collaborators who contributed to this report:**

Laura Ben Ami, Hortense Boulais, Thu Huong Bui, Marielle Chabal, Sarah Drapeau, Carlos Duran, Marion Ficher, Hugo Ghezal, Hélène Le Brishoual Soro, Eduardo Maldonado, Pierre Musseau, Théophile Rey, Jorge Sosa, Catherine Stragand, Édouard Vien, Éloïse Vo, Agnès Brunetière, Baptiste Fauché, Haonan He, Clara Le Meur, Bruno Pace, Ieva Kotryna Skirmantaite, Alain Damasio, Yvannoé Kruger, Aurore Mréjen, Annael Le Poullennec, Julie de Faramond, Panagiota Fasoi, Frédérique Gadot, David Desrimais, Alice Ricci, Grégory Chatonsky, Yves Citton

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