

GOR, the Group of Revolutionary Objects: Praxis and Research

Filipe Pais ^{1,2,*}  and Olivain Porry ³

¹ School of Technology and Digital Media, Noroff University College, 4612 Kristiansand, Norway

² École Nationale Supérieure des Arts Décoratifs, Ensadlab, Reflective Interaction, 75005 Paris, France

³ Artist and Independent Researcher, 8 rue Boucry, 75018 Paris, France

* Correspondence: filipe.pais@noroff.no

Abstract: GOR stands for *Groupe des Objets Revolutionnaires*, or, in English, the Group of Revolutionary Objects. This group was founded by Filipe Pais, Julie Brugier and Olivain Porry in 2018, in reaction to two major planetary concerns: the climate crisis and techno-solutionism. GOR, in response, opens a fictional design space for debate and aesthetic manifestations, wherein objects and machines are given autonomy, and the possibility of disobeying whilst challenging human decisions. This article is a statement about GOR's motivations, practice and research, written by two of the group members. In addition to further introducing the GOR manifesto and the forces which have given rise to it, it reviews its artistic practices and actions conducted during art residencies and group exhibitions; it identifies two examples of how the GOR design space can yield interesting clues in research, introducing the notion of *super-object* and an artistic framework named COCO².

Keywords: abandoned objects; behaviours; misbehaviours; practice-based research; wicked problems; technological fix; speculative design; super-objects; COCO²



Citation: Pais, Filipe, and Olivain Porry. 2022. GOR, the Group of Revolutionary Objects: Praxis and Research. *Arts* 11: 101. <https://doi.org/10.3390/arts11050101>

Academic Editors: Frederic Fol Leymarie, Marian Mazzone, Marie Vicet, Juliette Bessette, Nicolas Ballet and G. W. Smith

Received: 26 July 2022

Accepted: 3 October 2022

Published: 11 October 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The story of GOR, the Group of Revolutionary Objects, starts with the systematic observation of Parisian streets, and more specifically with the astonishing quantity of abandoned objects found in the sidewalks of busy and secluded boulevards. Regardless of the arrondissement, chic or popular, busy or quiet, the phenomenon was largely widespread throughout the city in the years of 2016–2018. By that time, a myriad of objects with different sizes and shapes occupied narrow and large sidewalks. We could find anything we can imagine, porcelain buddhas, lamps, chairs, many types of furniture, forks, teddy bears, books, pans, clothes, radios, mirrors, TV sets, keyboards, computers, and numerous types of electronic equipment. Based on an awareness of the chaotic occupation of public spaces, the city hall (Mairie de Paris), developed an app named “dans ma rue”, which literally translates to “in my street”. With this app, Parisians became empowered to flag anomalies in the streets of the densest capital in Europe: dog dirt, graffiti, damaged lamp posts, abusive car and moto parking, and of course, abandoned objects! At the top of all the complaints flagged, abandoned objects were more abundant than any other category. According to Paris Data, from January 2021 to May 2022, Parisians flagged more than 276,658 abandoned objects in public spaces¹. As the reader might suspect, this number is only the tip of the iceberg unveiled by a few proactive Parisians who have probably become too tired of running into their neighbours' litter. Ikea's discarded products were the most frequent items found in public spaces. Every day, we would observe at least one discarded Ikea bookcase, a table, and other dismembered pieces of furniture. No matter the reasons, these items were certainly not valued by their owners; in some instances, they were found in near pristine condition, some of which would likely end up with a second life in nearby households (Figure 1).



Figure 1. Abandoned chair seen on Boulevard Voltaire, 11ème arrondissement in Paris, 2017.

The Group of Revolutionary Objects was born in 2017, against a backdrop of excessive overconsumption and the widespread abandonment in which private companies such as Ikea, create a vast impact in public spaces within cities around the world. By that time the US, the second largest carbon emitter in the world², was preparing to leave the Paris Agreement, which had established the commitment of 196 countries in reducing carbon emissions and tackling the climate crises. The US's decision to opt out of the agreement would have been hard to deny as anything other than an immoral act, where greed and economic growth were prioritised over a reduction of carbon emissions. The impact of the US carbon footprint on the world was too big to be dismissed. This event, combined with the hyper-consumerist lifestyle and the rise of abandoned objects on the streets of Paris, were certainly powerful triggers at the outset of this project.

GOR's ideas are also strongly influenced by the accounts of Anthony Dunne and Fiona Raby on *Speculative Design* (Dunne and Raby 2013). For the two designers and researchers, design should not be only about fixing and solving problems. Instead, it should be considered as a catalyst to rethink our relationship with reality, and to take a new glance at the so-called *wicked problems*³. They write: “what we are interested in, though, is the idea of possible futures and using them as tools to better understand the present and to discuss the kind of future people want” (Dunne and Raby 2013, p. 2).

Design, in this context becomes a self-reflective tool capable of analysing its own practice and effects, whilst offering a critical perspective that triggers more questions than it answers. Speculative objects often resemble artworks more than products. They allow us to visualise different futures, to anticipate and to dream with alternative parallel worlds, with the ultimate goal of creating awareness and debate around what we could potentially become. David A. Kirby calls these objects “diegetic prototypes” which takes us almost immediately to the notion of narrative (Kirby 2010). Although the objects propose narratives in themselves, they do not disclose a narrational completeness, as would be found within the narrative of a novel. Instead, they bring ambiguities and incomplete puzzles where an audience may offer their own narrational interpretation. GOR uses diegetic prototypes but also borrows other methodologies from the fields of speculative design, design fiction, critical and radical design, and design for debate. GOR attempts to create awareness of several issues; in particular, overproduction, overconsumption, and global warming. If these are central concerns to our endeavours, GOR is also interested by machine cohabitation, technological determinism and technological solutionism, examining contemporary narratives of smart technologies, artificial life, and artificial intelligence.

The group intentionally uses several types of technology to dismantle and criticize our contemporary modes of living and ways of designing that use planned obsolescence. The group's name "Group of Revolutionary Objects", is in fact a satire to innovation rhetoric, sustainable techno fixes, and greenwashing. However, there is also some irony to be found in the fact that we use technology to create protesting objects which are far from being "intelligent", or "revolutionary". In their essence, GOR's objects are "technologically incorrect" and therefore, they do not seek to praise technological agendas.

Our research interest leads us to another major influence that affects the formal and conceptual outcomes of GOR: the project *Behavioural Objects*. In 2012, at Ensadlab (the École Nationale Supérieure des Arts Décoratifs' laboratory, in Paris), Samuel Bianchini and Emanuele Quinz started working on the notion of *Behavioural Objects*. All GOR members were involved in this project at different levels. Their project was an important conceptual and material contribution towards the first steps of GOR. The notion of *Behavioural Objects* refers to objects that can express a certain behaviour through physical movement. These objects are always tangible and have non-anthropomorphic or non-biomorphic shapes. According to scholars, these objects display actions and reactions that are hardly predictable and inferred from their shapes (Bianchini et al. 2015). A classic example extensively analysed is the series *Floats*, initiated in the sixties by the artist Robert Breer. *Floats* presented a collection of minimalist sculptures of various sizes and shapes which move very slowly through space. Due to the slow movement, and the geometrical shape of the hulls which concealed motors, wheels, and other electronic elements, their movement was barely noticeable. As a result, these objects altered the space configuration, creating a strange and disorienting perceptual experience for the viewer. While their behaviour is simple, the dynamic configuration of the installation space was unpredictable.

Another major artistic reference that influenced our work, is the project *360° Presence* by Jeppe Hein (2002). In the installation space, a 70 cm diameter metal sphere moves across a room without any predefined trajectory (Figure 2). As visitors enter the room, the sphere starts moving around, whilst violently bouncing against the wooden walls; as time passes, the walls become increasingly damaged. While the sphere moves around, as if living its own life, the viewer assists without having a say or without the choice to stop or to influence the sphere's actions.



Figure 2. *360° Presence*, Jeppe Hein, Kunstmuseum Wolfsburg, 2015. Photo: Mies Rogmans.

What kind of behaviour is at work here? At first glance, one might say this sphere is misbehaving. Other questions quickly come to mind: What kind of misbehaviour? Is this a malfunction of the system? Or, is this a simulation of misbehaviour? In other words, a controlled malfunction that is intended to look like misbehaviour. We believe we could answer the last question in the affirmative; at least that is our interpretation of Jeppe Hein's proposal. However, this work generates a more complex set of questions: is the object able to decide on its own to misbehave? What would trigger such a decision? What is the meaning of such misbehaving for both machines and humans? What if future everyday life objects could "consciously" decide to misbehave and make autonomous decisions without human supervision?

These questions nourish a research strand that is central to our explorations and experimentations. We are interested in an inquiry into the future of objects, their complexities, fragilities, motivations, but also their political, social, ecological, and ethical impacts.

Now that we have provided a brief perspective on the context that inspired GOR members to start this group, we can proceed to the next section. *GOR: Objects, protest, and non-human centric design*, introduces further details about our group's constitution, our artistic statement, and how exactly we operate. In Section 3—*Actions, Manifestations, and Method*, we offer some insights into the different actions and methodologies used during residencies and collective exhibitions. Section 4—*GOR and Research*, introduces two research strands which originated from our experimentations and explorations: COCO² by Olivain Porry and Super-Objects by Filipe Pais. Section 5—*Closing Remarks*, will conclude the article.

2. GOR: Objects, Protest, and Non-Human Centric Design

GOR is a collective originally composed by Julie Brugier (designer), Filipe Pais (artist, educator and researcher), and Olivain Porry (artist and researcher). While working with objects and exploring their potential for agency and behaviour at the Reflective Interaction Group at Ensadlab in Paris, we became seduced by a popular idea in France; namely, protest.

What if objects could protest? What if objects could refuse to work, or deliberately become dysfunctional, as forms of protest? What if abandoned, discarded, and rejected objects found in the streets of Paris could unite in protest against overproduction, overconsumption, accelerationism, and capitalism? What does it mean when a human-made, non-living object protests against human action? Could a human-made object rebel against its creator and genuinely disobey their orders?

These and other questions inhabit the universe of GOR, which is also deeply rooted in the fictional, philosophical, and sociological worlds by the writers and thinkers José Saramago, Michel Serres, and Bruno Latour. In the book *The Lives of Things*, José Saramago introduces six short stories where everyday life objects start behaving strangely and act according to their own motivations. In the short story *Things*, the acronym OUMI refers to a wide range of non-human things: objects, utensils, machines, or installations, which come to life and revolt against humans. The OUMI are the central characters in this short story. They disappear and misbehave, hurting humans and creating chaos around them. Ultimately, the reader discovers that they are not evil things, but instead, OUMI are politically engaged objects acting against a dictatorial regime (Saramago and Fages [1978] 2000).

The OUMI are precious to our research because they show a reversal in the relationship between humans and ordinary objects and related environments. The dull things around us, such as chairs, windows, doors, sofas, and letter boxes, that we tend to ignore and take for granted, were now out of control. The OUMI make visible our complex network of relationships and interdependencies with objects and non-living matter. In this sense, they remind us of the Actor Network Theory, proposed by Bruno Latour and fellow theoreticians. For these scholars, the social and natural have complex dynamic relationships with endless movement. Networks are complex entanglements of humans and non-humans, living and non-living elements. In addition, mushrooms, football players, smartphones, Astérix, Google, Trump, and bacteria, are all equal parts of this complex network of relationships

(Latour 2005). Inspired by Levi Bryant, GOR offers an artistic exploration around a post humanist ontology in which “humans are no longer monarchs of being, but are instead among beings, entangled in beings, and implicated in other beings” (Bryant 2011, p. 40). Influenced by Latourian views, Levi Bryant suggests a flat ontology that can unite the two worlds, synthesizing the human and the nonhuman into a common collective. An ontology is flat if it makes no distinction between types of things that exist but treats all equally. This is what Bryant calls “the democracy of objects” (Bryant 2011).

These insightful views, bring GOR’s agenda additional questions that drive our actions and reflections: how can we design for a flat ontology? In other words, how can we design without bringing humans, once again, to the centre of the network? How can we distribute power and agency more democratically (Bryant) or symmetrically (Latour 2018)? Is it possible to design using a non-anthropocentric approach whilst being human? GOR is very interested and regularly nourished by mildly complex concepts and theories, however, we are less interested in delivering sophisticated theoretical outputs. In other words, even if we believe that writing is a powerful medium of expression, our strengths reside elsewhere. In the next section, we introduce some of GOR’s methodologies, actions and concrete outcomes that range from installations, videos, and a written manifesto.

3. Actions, Manifestations, and Method

The very first experiments that were conducted under the name “GOR” took place at the Gaîté Lyrique, a cultural centre dedicated to the digital arts located in Paris. It is during a short artist residency that our first thoughts for *l’Assemblée des Objets*, and more broadly the core ideas behind GOR, were developed. During the residency, we began the collection of abandoned objects found in the streets of Paris. During multiple perambulations, we noticed that the piles of objects found around the city had already constituted clues on the interrelation of objects that would later inspire the structure and organisation of our first installation (Figure 3).



Figure 3. *L’Assemblée des Objets*, GOR, La Gaîté Lyrique, Paris, 2017.

Scattered in a room, worn, and broken objects are animated by sudden and repetitive movements. Several pots and pans clatter their lids, a large metal ventilation pipe vibrates on the floor, a vacuum cleaner filter and a lampshade continuously moves back and forth, while wooden boxes and a toilet paper holder strikes its flaps in a similar continuous manner. *L’Assemblée des Objets* is initially perceived as a chaotic space. Prior to entering

the installation, the visitor is already given some signs of chaos, due to the cacophony generated by the movement and behaviour of objects. Upon entering the room, we can observe the overexcited, hyperactive objects, whose hustle and bustle evoke a wild protest, a type of shared anger. There are numerous objects, about fifteen, which move in all directions, striking, vibrating, and moving without apparent organization on the floor of the exhibition space. The area occupied by the objects is delimited by thin clear wooden slats. By crossing this delimitation, visitors can wander among the objects and observe them more closely. However, they may find themselves in the path of a rolling object, be disturbed by the intense clattering of a saucepan and its lid, or have to avoid the vibrations of a cymbal with erratic movement.

Inside the installation space, the viewers take the risk of being mistreated by the objects, but they also have the power to affect and disturb this ecosystem. This installation attempts to create a symmetric relational space, where humans and non-humans co-exist with similar power relationships. Despite the efforts undertaken by some visitors to interact with these objects, they make little acknowledgment of human existence. To a certain extent, they ignore them, not allowing for any kind of control. However, humans still hold the power to obstruct their path, change the objects' trajectories, and affect the overall behaviour of this ecosystem.

The first iteration of *l'Assemblée des Objets* was prototyped in a short amount of time. Following the gathering of several objects collected in the streets of Paris, we started to observe a process which was guided by the question: how can we convert and use the formal affordances of these objects, animate them, and transform them into protesting objects? This question led us to an intensive process of experimentation, which involved disassembling and reassembling objects. With the help of a modular robotic kit—the MisB Kit⁴, we were able to equip objects of different sizes and shapes with motors that could quickly animate them. The MisB Kit uses a Velcro system which allows a quick adaptation and a change of position of the motors and components, without the need to use screws or other rigid systems. Whilst this system is minimally unstable, it does allow for a fairly rapid understanding of the consequences for a motor positioning with a reasonable degree of certainty. This process is simplified by the software that allows the animation and programming of objects without requiring any experience with coding. With the MisB Kit software, we can pilot several motors at the same time, and in real time, but also record movement animations for each motor. Additionally, the playfulness and fun, the prototyping process was highly intuitive, allowing us to explore movement and behaviours in a very natural way.

Inspired by the dynamics of street protests and demonstrations, our experimentations explored objects with a specific interest in their potential to generate loud sounds which disrupt silence and call for attention. There was also a clear quest to explore collective movement. While some objects can be easily animated to move around, others, such as heavy cooking pots or wooden boxes, are more likely to remain immobile and to participate in this parade as sonic protesters. As such, this collective of objects was divided into a few subgroups: immobile objects; slow-moving objects and fast-moving objects. All of them were capable of generating sounds of different natures and scales.

The second iteration of *l'Assemblée des Objets* was made possible during another residency at Bel Ordinaire, a space dedicated to contemporary art in the city of Pau, France (Figure 4). During a week, the GOR team worked intensively in three directions:

- (1) Find and collect more objects to animate.
- (2) Transform all prototypes into final versions, more resistant, and durable.
- (3) Create a collective choreography with all objects. This residency would culminate with a public exhibition at the Médiathèque Intercommunale André-Labarrère, in the same city.



Figure 4. GOR Artist Residency at Bel Ordinaire, Pau, France, 2017.

When our protesting objects returned to Paris, they were visibly “tired”, some clearly broken, with missing parts; a few others showed some light damage, scratches, and dents, with dead motors and bloated batteries. These were the signs of a brave protest in a chaotic environment unregulated by humans. Once the objects were given some care and repair, we decided to return the objects to where they once belonged—the streets of Paris. The objects were finally rioting in the streets, vibrating, clunking, and striking against the pavement and against each other. These moments were documented in a short film called *L’Assemblée des Objets Parisiens*, which depicts the different objects, wandering and assembling in the streets of the Quartier Latin, in the 5th arrondissement. This film would be exhibited later, together with some of the featured objects at Lieu Multiple in Poitiers (Figure 5).



Figure 5. *L’Assemblée des Objets Parisiens*, GOR, film shooting scene in the Quartier Latin, Paris, 2018.

Adding to the list of residencies, exhibitions, installations, videos, talks, and workshops undertaken, we have also written a GOR manifesto. This manifesto (Figure 6) is a central element that not only provides a definition of GOR, but identifies the values, actions and directions that can hopefully inspire other designers, artists, politicians, city planners, and humans in general.

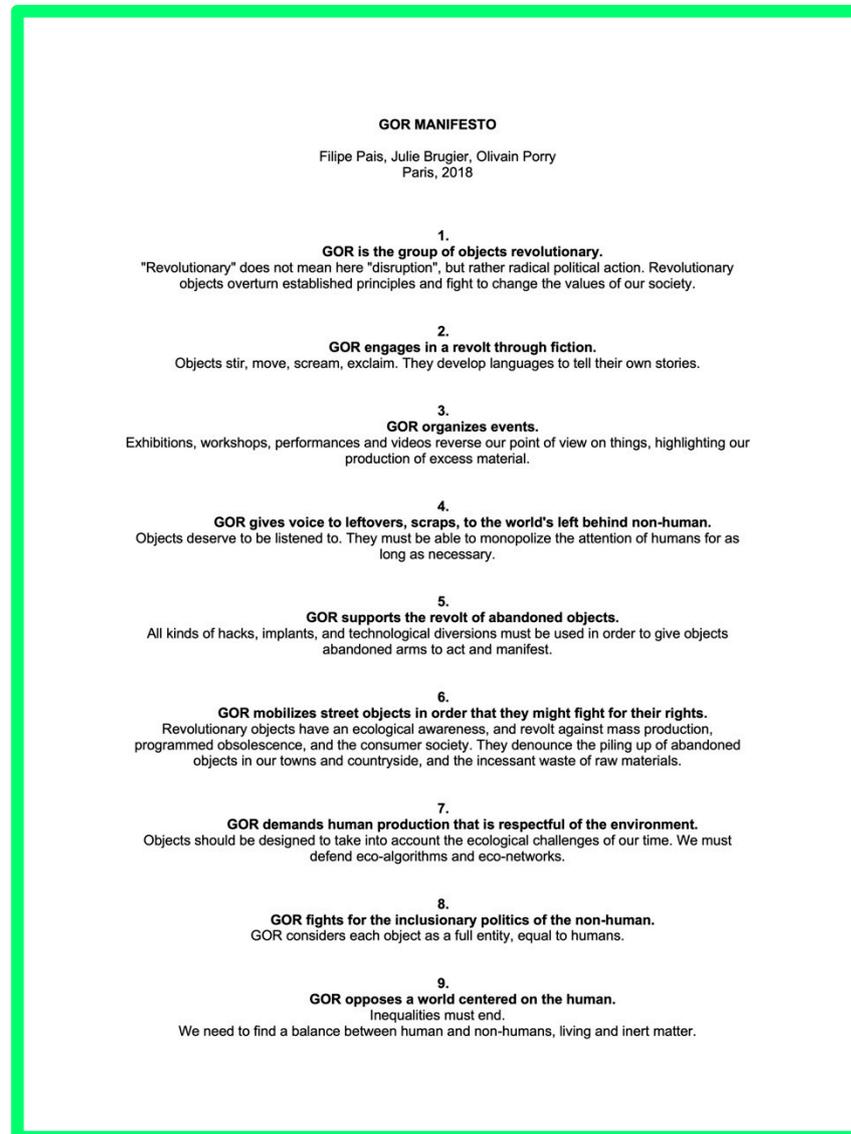


Figure 6. GOR Manifesto, Paris 2018.

4. GOR and Research

The reflections and experimentations undertaken before, during, and after our residencies, workshops, talks, and exhibitions, had a strong impact on our members' research activities. The intensive prototyping sessions using the MisB Kit showed that the modular kit had numerous weak spots at different levels: software, hardware, and structural. As we write this article, we continue to develop the MisB Kit at Ensadlab, and can clearly see how some of the current development directions directly link to our feedback and experience with GOR.

The GOR universe has also inspired the robotic workshops we have organized in recent years. Protesting objects, disobeying objects, connected objects, *more-than-human* object collectives, and assemblages, became exciting ideas that have directed several workshops⁵, that produced compelling results.

As the two following sub-sections will attempt to show, GOR was also an important trigger to develop the first thoughts on super-objects, a speculative concept proposed by Filipe Pais. Our work also influenced the research conducted by Olivain Porry during his doctoral thesis about collectives of co-localized and communicating behavioural objects (COCO²).

4.1. *Wicked Problems and Wicked Objects: Super-Objects*

We live in a world increasingly populated and mediated by digital apparatuses and connected devices. By 2025, the Internet of Things (IoT) is expected to have reached 75.44 billion devices, which should generate 79 zettabytes (ZB) of data (Alam 2018).

If these devices allow us to obtain detailed information and control all kinds of things in faraway places, they also create a network of dependency. In other words, they are making us dependent on a widely spread infrastructure which is increasingly gaining more agency and power to act autonomously. With the current massive economic investment in AI, we can clearly foresee that these networks will develop further and will increasingly infiltrate our daily routines. As they learn from us, these systems will know even more about us, until they become vital and eventually start to make decisions on their own. The recent controversy around Google's LaMDA⁶, a chatbot that is suspected of being sentient, is a good example of the current mood and state of things in AI development. However, GOR pushes this scenario into a further future that is obviously located in the realm of fiction. It asks: what if these connected objects, aware of their powers, could one day refuse to work or challenge human orders? While this might resemble bad science-fiction, where "robots are taking over", there may be something relevant in such an exaggeration.

GOR asks us to think and rethink the Anthropocene and humans' ecological impact, through our relationship with objects. Objects might misbehave, protest, or behave in a chaotic manner, yet they do not want to get rid of humans, or search for revenge. In fact, they have been conceived to protect humans from their own destructive actions towards the planet. Designed to protect the environment and solve wicked problems, these behavioural objects might even disobey or act against human will. They are called super-objects, but despite their name, they exist between us, as ordinary objects; furniture, small domestic appliances, home equipment, windows, and doors, etc. The rise of such objects represents a desperate response from decaying and techno-solutionist societies on the verge of extinction. Confronted with an overwhelming number of wicked problems, post-capitalist societies will attempt to survive and resist climate change, deforestation, wildfires, crime, and pandemics, by introducing super-objects. These can be placed in any location or at any time. An ordinary looking car could conceal a super-object without difficulty; yet, it is hard to identify a super-object by only assessing its appearance. Not unlike the OUMI in Saramago's novel, super-objects can be spotted through their behaviour, and when they are in action (Pais 2018). Despite their ordinary appearance, super-objects are complex, networked objects. In fact, they only exist due to a massively distributed apparatus composed of all kinds of connected objects, sensors, servers, and actuators, which permit super-objects to make informed decisions to act upon. Without these connections, the super-object cannot exist. In order to clarify this speculative concept, let us look at two examples: one fictional, and a second one which refers to an existing project.

Imagine you are driving a rented car and you are about to enter the city of London. As you drive through Finchley Road, at 55 Km/h, a gentle, synthesized voice informs you that the pollution levels are higher than usual. Following this, and without any other notification, the motor slows down and the speed decreases to 40 km/h. Of course, you are running late for your meeting at King's Cross, as usual . . . You try to accelerate and increase the speed, but your efforts are useless. You finally understand you are driving a super-object which will not cope with your actions in order to keep carbon monoxide, methane, and nitrous oxide emissions low.

As a reaction to the intense human exploitation of the Amazonian forest, the AKQA, a Brazilian advertising company, launched an open source system that can easily transform

heavy duty vehicles in super-objects. Code of Conscience⁷ uses a GPS tracking system installed in heavy duty vehicles, that autonomously prevents them from entering protected natural areas. Here again, the driver will be surprised as soon as he will discover that the machine, he thought he had mastered, will simply stop at the border of the Amazonian forest (Figure 7).

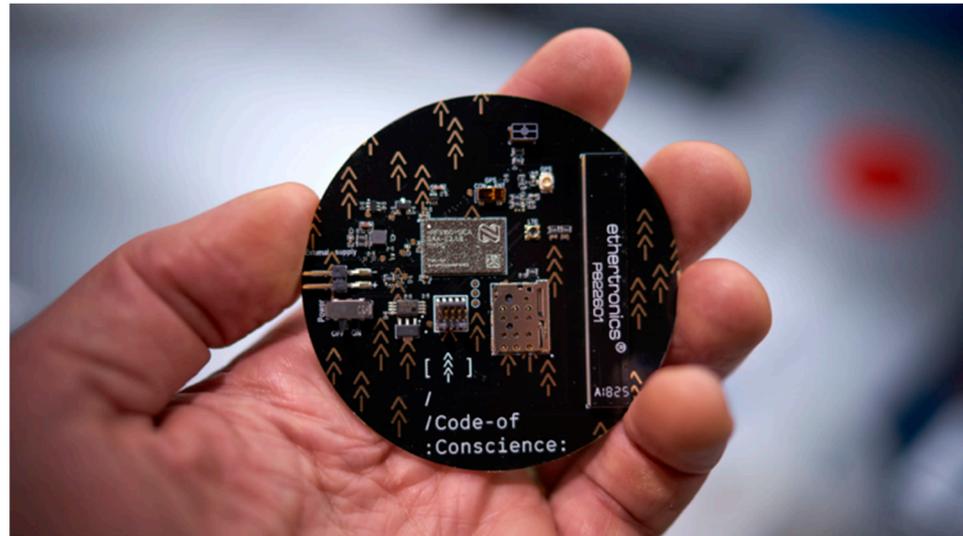


Figure 7. Detail of low-cost electronic hardware from Code of Conscience by AKQA.

As we become increasingly engulfed by sophisticated machines and wicked problems, projects such as Code of Conscience will likely become commonplace. Super-objects will be part of our routines, and distracted by our own affairs, they will learn from us, and from the world around us. As a result, they will grow more independent and will evolve into collectives. This GOR research branch attempts to continue exploring the notion of super-objects, the ontology and paradigm shifts behind them, but also their evolution and manifestations in the fields of art and design.

4.2. Objects, Together, Doing Things: The COCO² Design

While a lampshade moves back and forth, animated by the pendulum movement of a counterweight, a large saucepan lifts its lid and drops it with a bang. Simultaneously, a red ringed dossier slides on the floor, rising and falling, like a continuous breath. All objects in *l'Assemblée des Objets* seem to come from different contexts. Nothing seems to link an air pipe, a saucepan, a ringed dossier, a teapot, and a cymbal. However, gathered in a space circumscribed by discrete wooden slats, these objects are kept together, forming a group. Some of them interact together, others form assemblages. For example, the metallic structure of a shopping trolley rolls back and forth, supporting a big casserole that generates a loud noise with its lid. Together, inside this delimited space, the *Assemblée des Objets* looks like a ZAD⁸.

While the multiplicity of individual behaviours in this group reinforces the autonomy and agency of each object, it is possible to perceive a common, collective behaviour. As viewers observe the installation, they might notice that each object has its own expressive qualities; nevertheless, most of them act in a chaotic, noisy, repetitive, and disharmonious manner. Even if they are fundamentally different in their shapes and forms, they all show signs of overuse, bits of dirt, scratches, and broken parts, which, in the observer's eye, bind them together in the category of waste.

Their collective behaviour and shared formal characteristics allow us to perceive *l'Assemblée des Objets* as a coherent group belonging to a singular category of artistic installations that Porry names COCO²—collectives of co-localized and communicating be-

havioural objects (Porry 2022). Influenced by the work conducted as a GOR member, Porry has extensively explored COCO² as an installation art subcategory, in his doctoral thesis.

Behavioural objects form collectives as soon as they are gathered and act in a way that manifests a common intentionality and organization. Arranged or dispersed in a room, installed on the ceiling, on the floor or on the walls, the object collectives can delimit very small territories without human presence, or surround the spectators to include them inside the group. The manner in which the objects are located in space and act in time, reveals hierarchies and interdependencies that unites the elements in a perceptible form. The co-located nature of an installation of several behavioural objects allows for multiple interactions between spectators and the objects, between the objects themselves and between the objects and space. These properties lead to the emergence of collective behaviour and relationships with the surrounding objects and space. When behavioural objects are grouped together, these relationships unfold and nuance the individual behaviours. The objects of such an installation can react programmatically to each other, be synchronized or act sequentially; they can be simply oriented towards the same point or move randomly in space.

As a collective, *l'Assemblée des Objets* belongs to a certain tradition of artistic practices, which had explored the link between art and cybernetic theories in the second half of the 20th century. Gordon Pask's *Colloquy of Mobiles* (1968) is a cornerstone of this approach, linking art and science and allowing the popularization of electronic techniques in contemporary art practice. This was one of the artworks extensively analysed in the context of the COCO² research. Conducted at EnsadLab in Paris, in an approach that combines theory and practice; the research produced several installations that resonate with GOR's practice.

In the installation *Toasters* (2018), a group of five electric toasters, liberated from their utilitarian condition, strike the floor to a rhythm of impulses which are directly linked to the room temperature, and to the presence of the viewers around them. Pounding with strength when the audience is sparse, the beats of the toasters become less frequent as the audience grows. The installation inverts the traditional "push the button" interaction, demanding visitors to be quiet, discreet, or even absent. If these conditions are met, then they might assist to a singular choreography of autonomous toasters. The relationship between the toasters appears and evolve as they move, form small groups, bump into each other or move through space. The toasters no longer toast bread and appear to avoid human presence. Like in *l'Assemblée des Objets*, *Toasters* builds a fictional space that invite us to reconsider the position of humans in a world already saturated by artefacts. GOR builds an almost symmetric space where humans have no control over objects and can even be disturbed by their chaotic behaviour, and *Toasters* draws organized forms deploying complex relationships from which humans are excluded (Figure 8).

The construction of a COCO² calls for iteration and observation, and requires the design of forms, movements, and relationships. In order to make decisions and understand the emergent collective behaviour, artists need to step back and frequently observe and experience the different phases of development of their own projects. The final form of the artistic proposal emerges following a process that emulates a conversation. The artist exchanges with the objects, space, time, and technique, in an attempt to create a good balance between the aesthetic experience and the artworks' core intentions. The design process involved in COCO² asks the artist to act as "Homo Arbitrator Formae", the arbitrator of forms, the one who makes the aesthetic decisions (Burnham 1968). The term created by Jack Burnham is relevant as it inscribes the artist within a process directed towards the emergence of a collective. In this sense, artists see themselves as torn between the position of author, technician, manufacturer, and spectator.

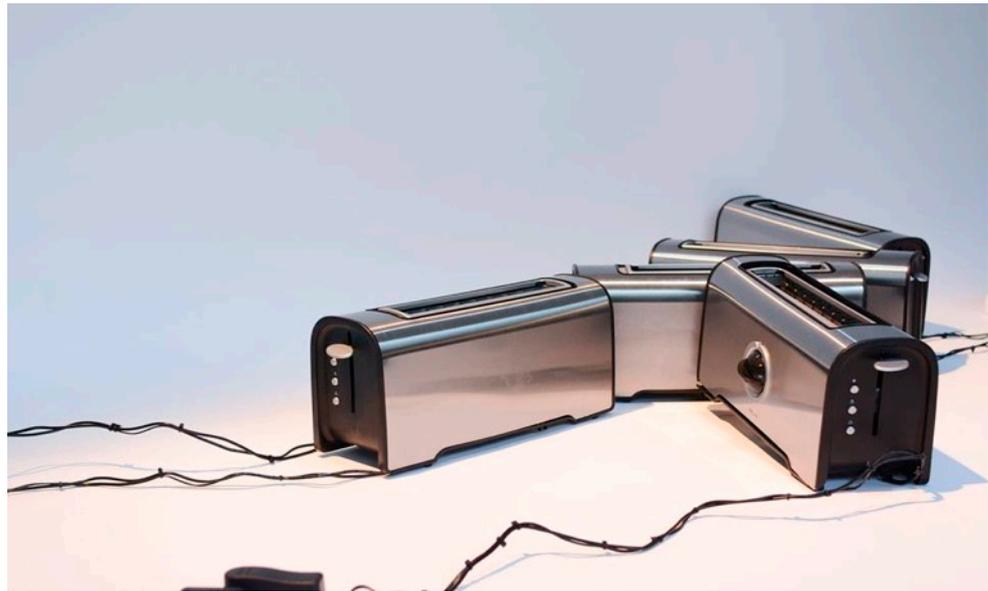


Figure 8. *Toasters*, Installation by Olivain Porry at Cité des Arts, Paris, 2018. Photo: Amélie Canon.

As both the *Assemblée des Objets* and *Toasters* show, COCO² installations are generally flexible, with a variable geometry that constitutes an additional layer of complexity. It is impossible to predict what is going to happen and how these installations will evolve through time. It may happen that spectators assist in something unique, never seen by the artist who designed the COCO². The final installation is the result of a series of events over which the artist does not have absolute control.

5. Closing Remarks

At different scales—architectural, national or planetary, connected objects call for new ontologies: they invent new ways of understanding phenomena through distributed apparatuses. This ability to develop new machine perceptions is accompanied by modalities of collective behaviour and invites experience in the continuity of a flat ontology, new relations to things, objects, networks, and spaces. As a more or less pervasive entity, the internet of things can shape territories, influence the way humans inhabit them, and initiate forms of collaboration between objects, spaces, and species.

With a clear political and ecological engagement, GOR's manifestations, the super-objects, and COCO² are attentively following up on the developments of IoT and networked artificial intelligence(s). More than simply advocating for a subversion of techniques, we expect to continue developing fictional speculations, and inquiring of the effects with such technologies in human and non-human environments.

Author Contributions: Project administration, F.P.; Writing—original draft, F.P. and O.P. All authors have read and agreed to the published version of the manuscript.

Funding: This research was partially funded by the project *Machines Utopiques* launched by the Festival Accès)s(Cultures Électroniques in collaboration with Le Bel Ordinaire, La Gaîté Lyrique and Lieu Multiple.

Acknowledgments: Julie Brugier, Alexander Ross, Ensadlab Paris, Festival Accès)s(Cultures Électroniques, Le Bel Ordinaire, Lieu Multiple, La Gaîté Lyrique.

Conflicts of Interest: The authors declare no conflict of interest.

Notes

- ¹ Cf. <https://opendata.paris.fr> (accessed on 6 July 2022).
- ² Cf. <https://www.forbes.com/sites/rpapier/2019/12/04/the-worlds-top-10-carbon-dioxide-emitters/?sh=4454504d2d04> (accessed on 6 July 2022).
- ³ According to Horst Rittel and Melvin Webber, wicked problems are highly complex social or cultural problems that hard or impossible to solve. This is mainly because we might not fully understand them, or have contradictory knowledge about them, these generally entail large economic costs, and are interconnected with other problems. Poverty, climate change, deforestation and pandemics are examples of wicked problems. (Horst and Melvin 1973)
- ⁴ Cf. <https://misbkit.ensadlab.fr> (accessed on 10 October 2022).
- ⁵ Workshops Out of Control 1 (in 2018), 2 (in 2019), 3 (in 2020) and 4 (in 2021), at Interface Cultures, Kunstuniversität Linz, Austria.
- ⁶ Cf. <https://www.theguardian.com/technology/2022/jun/13/how-does-googles-ai-chatbot-work-and-could-it-be-sentient> (accessed on 10 October 2022).
- ⁷ Cf. <https://www.akqa.com/news/code-of-conscience/> (accessed on 10 October 2022).
- ⁸ The French term “ZAD” stands for “Zone à défendre”, which translates as “Zone to defend”, and refers to a place or area occupied by activists with the aim to jam and prevent the development of a project.

References

- Alam, Tanweer. 2018. A Reliable Communication Framework and its Use in Internet of Things (Iot). *International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT)* 3: 450–56.
- Bianchini, Samuel, Bourganel Remy, Quinz Emanuele, Levillain Florent, and Elisabetta Zibetti. 2015. *(Mis)behavioral Objects: Empowerment of Users Versus Empowerment of Objects*. Cham: Springer International Publishing, pp. 129–52. [CrossRef]
- Bryant, Levi. 2011. *The Democracy of Objects*. London: Open Humanities Press.
- Burnham, Jack. 1968. Systems Aesthetics. *Artforum* 7: 30–35.
- Dunne, Anthony, and Fiona Raby. 2013. *Speculative Everything*. Cambridge, MA: MIT Press, p. 2.
- Kirby, David. 2010. The Future Is Now: Diegetic Prototypes and the Role of Popular Films in Generating Real-World Technological Development. *Social Studies of Science-SOC STUD SCI* 40: 41–70. [CrossRef]
- Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press.
- Latour, Bruno. 2018. Esquisse d'un Parlement des choses. *Écologie et politique* 56: 47–64. [CrossRef]
- Horst, Rittel, and Webber Melvin. 1973. Dilemmas in a general theory of planning. *Policy Sciences* 4: 155–69.
- Pais, Filipe. 2018. *Le Retour des Objets, Quasi Objets et Super-Objets*. Paris: Fondation Calouste Gulbenkian Edition.
- Porry, Olivain. 2022. *Des Communautés de Machines*. Doctoral dissertation, SACRe, EnsadLab, PSL University, Paris.
- Saramago, José, and Claude Fages, trans. 2000. *Quasi Objets: Récits*. Paris: Éditions du Seuil. First published 1978.