

Desirable futures

Material instinct



"We are entering the era of waste as a generator of spending" ⁽¹⁾
- Christine Frederick, 1929

The Industrial Revolution fostered a major transformation in humanity's relationship with material production and consumption. Industrial production allowed us to produce more efficiently and in larger quantities: the promise of passing from subsistence to abundance thus emerged. This linear system was made possible by the division of labor into specific tasks, which Adam Smith studied in a pin-making factory⁽²⁾. Various forms of industrial organization that subsequently developed, with Taylorism in the lead, were based on the sequenced view of a production line; resources are transformed through a set of operations divided and optimized to result in a product. These products, once they have been consumed, become waste, and so, we must then buy new products.

This linear system is only viable through mass consumption: to expand production, a sufficient number of consumers is needed. This is what Henry Ford understood when he made it possible for each of his workers, with their salary, to afford the fruit of his labor: a Ford Model T. The 20th century's economy took shape based on a dual fantasy: the vision of abundant nature as a source of free, inexhaustible resources that industry could draw from to produce a maximum number of products, and consumption as both an act of enjoyment and to satiate a need.

Christine Frederick, one of the pioneers of design according to Alexandra Midal⁽³⁾, is known for her treatise on home economics⁽⁴⁾. In it, she applies the principles of Taylorism to the organization of household chores, calling for the implementation of "factories" in the home.

1. Christine FREDERICK, *Selling Mrs Consumer*, New York, The business Bourse, 1929, P.79

2. Adam Smith, *Treatise on nature and the causes of the wealth of nations*, 1776, Édition Folio Essais, 1976, p. 38-39.

3. Alexandra MIDAL, *Design : Introduction to the history of a discipline*, Paris, Pocket, P29, 2009

4. *The new housekeeping, efficiency studies in house management*, Doubleday, New York, 1913

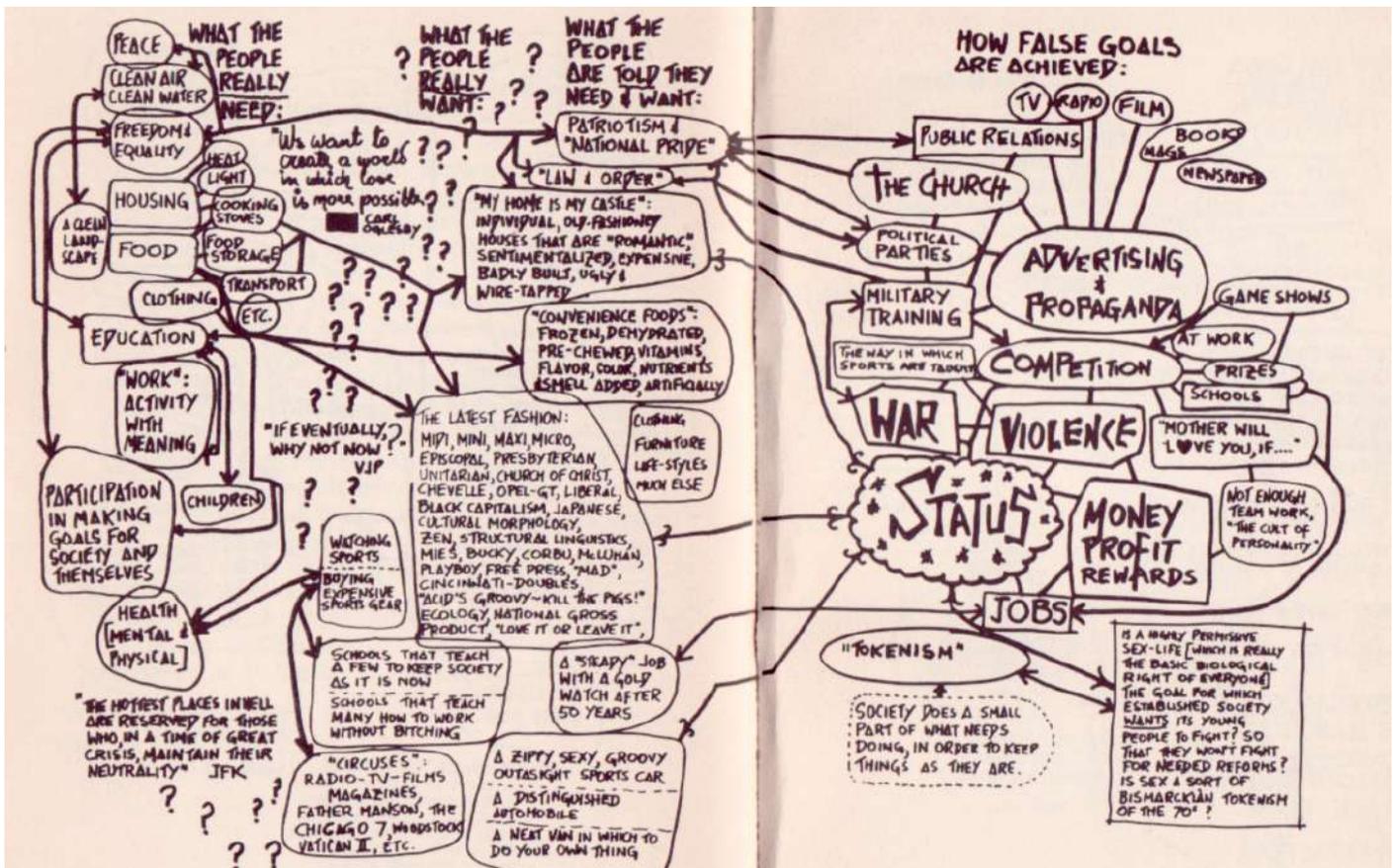


Taylorism in a Ford factory in Michigan, 1913.

Here, she invented before-and-after diagrams to prove the efficiency of her recommendations, forging a path toward the techno-scientific rationalization of the household, as well as household consumerism. In fact, she refers to the ethos of disposability, and speaks of creative waste as moral justification for housewives' constant and increased repurchasing of products. She ties this form of efficiency to linear consumption: "creative loss" elevates waste to something positive, a source of enjoyment and social value.

Throughout the 20th century, this relationship with consumption is at the very heart of design thinking and practices. It was Streamline that posited the very first precepts of the relationship between design and consumption. "*Ugliness doesn't sell!*" This well-worn adage from Raymond Loewy says it all: the economic question, that of appearance and desire, is, from their point of view, at the core of design. The primary contact of the designer is the user, and, therefore, in terms of consumer goods, the consumer. The "Moderns" accused these designers of a "cover-up", placing a cover or skin over the object's function, dolling it up to draw in the consumer. For them, mass production arose from an almost transcendental common interest that allows everyone access to progress. This debate continued throughout the 20th century: design that gives the decision-making power to the user, and thus must enchant them, versus design that denounces consumption in favor of a greater good.

In many ways, and notably in the postwar period and during the following booming decades, Streamline's intuition was reinforced, and the consumption instinct grew stronger, as a "natural" outcome of mass production: "*I spend, therefore I am*". The appearance of marketing fostered new needs, and Maslow's pyramid helped position a product in a progressive manner, depending on a household's socioeconomic level or a specific consumer segment. Design would become a major ally of this consumerist orientation: whether they created products or services, the designer often took on the role of translating technological evolutions into marketable uses.



Mapping from *Design for the real world*, Victor Papanek, 1971.

Non sono cattivo - I'm not a bad guy

This phrase was spoken by Ettore Sottsass. Along with other so-called radical designers, notably in Italy and the United Kingdom in the 1960s and '70s, he called for "a reconsideration of the role of design in the nightmare it helped create". This involved two strategies: first, providing new, reflexive artifacts that help us question our relationship to the world and to consumption, in other words, critical design, and second, providing more virtuous behavioral patterns. A rift in the design world reopened, and some designers immediately began positioning themselves in a critical fashion, in opposition to mass consumption. It was certainly Victor Papanek who most clearly opened up this secondary pathway to transformation through design: "Design, if it wants to fulfill its ecological and social responsibilities, must be revolutionary and radical. It should claim for itself the principal of minimal usage of nature, that is to say, do the utmost using less." In his manifesto *Design for the real world*, published in 1971, he suggests that the designer's primary point of contact should be the end user, the individual and not the consumer, corporate sponsor, or company. He was also among the first to introduce environmental impact as part of his design approach, encouraging the consideration of object life cycles and their recycling. Thus began, in the 1970s, a two-fold awakening. The distinction between end user and consumer implies some reflection on usage according to social necessity, which doesn't necessarily form part of a sales strategy; post-modernity also influenced designers, who contributed to an overall rethinking of productive systems, beyond technological shifts, to meet emerging environmental challenges.

Re-use and recycling

Thirty years later, the awakening has become real, but changes are still at an embryonic stage. In three decades, neither design, nor industry, nor even technological innovations have managed to turn the tide. A green, and sometimes social, transition has really just begun, and has been slow to catch on everywhere. Still, all initiatives are useful and necessary to help shift mentalities, inform the greater public, and give it a taste or desire to choose alternative options that are available, when they're more equitable and virtuous than others.

New materials, re-use, recycling, and anti-waste are more familiar terms than in the past, but they have yet to acquire the prestige and power of the imaginary visions that continue to perpetuate the consumerist ideal of the 20th century, bereft of the environmental commitments needed for a real transformation of our extractivist and uncaring relationship with natural resources. It is therefore urgent to represent these virtuous notions within desirable future universes.

The circular economy

As with the providential advent of all things disposable, or the fascination for the first robotic assembly lines that allowed for ever more efficient manufacturing, could new productive practices, which are more virtuous and humane, enthrall us to the same extent? Wouldn't the circular economy, specifically, the keystone of an alternative way to treat raw materials, production costs, and, of course, consumers, benefit from being represented in stories that allow the widest possible audience to fall in love with this system? We naturally think so, and for more than one reason: the circular economy espouses all the challenges we face in terms of resources, their use, and re-use. Beyond product re-use and recycling, it's about imagining a productive system in a circular manner, right from the start, erasing any distinctions between waste and resource⁽⁵⁾.

Makers and hackers, heroes of the apocalypse(s)

Future visions have extensively explored the idea of a circular economy made necessary by an apocalypse. In fact, many science fiction scenarios highlight total breakdowns in society, where survivors have no choice but to rely on their cleverness and resourcefulness to survive. Many futuristic and dystopian scenarios bring to the fore this vision of a maker, where tinkering and secondhand are the principal means of subsistence, with *Mad Max* being a clear example of this vision that has also been reflected in many other works. The maker often transforms into a resistance fighter against the established order, notably in dystopias that predict an unequal world (*Seven sisters*, *Elysium*, *Série 3%*, etc.). Steampunk, incidentally, gives these settings and characters a cleaner and more poetic spin; they become everyday heroes. In the cyberpunk movement, the wastefulness of ultra-commercial capitalist societies is reflected in the abundance of waste and pollution in crowded megacities. Alongside the maker, who survives through recycling, we find a new figure, that of the hacker, who consequently integrates all things digital into his/her mode of resistance, in the face not of an established human order, but that of a machine, where the productive system has taken over from humans. How can we fail to think of *The Matrix*?

And finally, it may be in the adaptation by Sony for Amazon Prime of the novel *Autofac* by Philip K. Dick that we find that most sarcastic demonstration of the absurdity of our affluent consumerism. After a massive, apocalyptic war, groups of humans survive, along with a fully automated company, *Autofac*, which produces and delivers all kinds of imaginable artifacts, well beyond what the survivors need. The groups of humans are confined to quarters within zones limited by the company's delivery lanes. They try to resist, using their limited means, the pollution caused by the delivery of these useless objects that pile up in parking lots. They end up calling upon customer service, in the form of an android-style robot reminiscent of the chatbots we're increasingly faced with each day. At the end of this short film, we discover that the humans are, in fact, machines created by *Autofac* to justify its own existence.

5. This movement gradually gained ground, starting with a small number of researchers and professors, and the concept has slowly, but surely found real applications within a few pioneering companies. The circular economy is at the crossroads of several fundamental trends. The Ellen MacArthur Foundation is now one of its main proponents.



Excerpt from the comic *VilleVermine : L'homme aux babioles (VilleVermine : the knick-knack man)*, Julien Lambert, 2018

Rethinking the object system: emancipated goods

This alternative presented by visions of the future thus happens through a new relationship to objects, where we enter their inner workings and see what's under the hood, so to speak, to understand how they work, repair them, or even make them work better. Freeing ourselves from linear systems of production and mass consumption calls for an ontological transformation through a review of our system of objects, their intrinsic characteristics, and our relationship with them, whatever their mode of production. Razmig Keucheyan, in a new essay⁽⁶⁾, earnestly calls for emancipated products, which he defines as being liberated from the rationale of rapid consumer rotation. He outlines 4 essential characteristics of these emancipated goods:

- **Robustness:** Robustness consists of adapting materials for usage. The longer the duration of usage, the most robust the product should be, and, conversely, the shorter the duration of usage, the more frugal the materials should be in terms of their footprint. Most of the time, durability is the best strategy. And for this, Keucheyan tells us, nothing could be better than extending the warranty period.

- **Ease of disassembly,** a requisite condition of maintainability. When one of its components is damaged, it can be easily replaced by its owner or by a repair shop. Particular attention should be paid to the method of assembly: screwing something in and/or interlocking is preferable to gluing and to one-piece structures.

- **Interoperability:** This means, as much for hard as for soft goods, allowing different components or software to operate amongst each other and be compatible between different brands. A "universal" charger, with the exception of the iPhone, was made compulsory for manufacturers in 2017, after a decade of debate in the European Parliament, brought to the fore by a coalition of consumer associations and Green and left-wing parliamentarians. This measure alone has saved 50,000 tons of electronic waste each year. It signals a return to a welcome standard!

- **Scalability:** This means that for each product, design provisions should theoretically include any future potential changes. True technological disruptions are quite rare, so objects should be able to foresee evolutions, if not in their nature, then at least in terms of adaptability to incremental innovations.

Razmig Keucheyan⁽⁷⁾ concludes : *"Robustness, ease of disassembly, interoperability, and scalability: these four characteristics of emancipated goods lean toward one same goal, that of objects appearing less inscrutable to us humans. Then, the power dynamic between the value of usage and the exchange value will have a chance to shift in favor of the former. Private property and the inequalities that accompany it will still not have been abolished, but we will have made a first step toward a post-capitalist world."*

6. Les besoins artificiels. Comment sortir du consumérisme, Zones, 2019, 202 p.

7. *Ibid*



The *Easybreath* snorkeling mask from Decathlon, equipped with a 3D-printed adapter, to make up for the lack of hospital equipment during the COVID-19 pandemic.

This rejection of disposal is at the very heart of the comic entitled *L'homme aux babioles* (*The knick-knack man*) of Ville Vermine, published by Sarbacane. Jacques Peuplier is a detective with magical powers to take on his mission: he can communicate with objects. Henceforth, it is not only functional and simply utilitarian relationships that are highlighted, but more empathetic ones, where the object is a vessel and a mediator of our way of living in the world. They tell Jacques how much they suffer when so many of them are cast aside. Here, it's about reconnecting with the dignity of the artisan, providing a real alternative to the considerable disposability of linear production systems. Where there is a specialized worker, as soon as they use their individuality and improvises, makes a mistake, the artisan, through their judgment and actions, provides a certain level of quality.

The third industrial Revolution : contextual resilience

The circular economy thus happens through a new relationship with objects, which become less intimidating and more accessible in their mechanics, and constitute an extension of human activity; it's also a productive system linked to its particular territory and context, because it allows for production to be truly flexible. If makers were particularly active and relevant during the coronavirus crisis, notably in terms of the flexibility of production tools in fablabs, it's due to their ability to rapidly adapt production to a specific context, with all the agility of production that adapts to needs, and not the other way around. The other good piece of news is that these technologies and practices are percolating throughout the predominant industrial system, and it's possible that certain industries may disseminate this resilience around them. Just observe what has been done in Grenoble: an ecosystem created by Schneider Electric, researchers from the CEA, makerspaces, and fablabs. They produced results immediately. The platform was organized for use on several projects, notably founded on a baseline observation: a shortage of masks. A three-fold system of recovery, distribution, then production, based on an original prototype, quickly came together. People who never talk to each other ended up working together: makers and industrial firms.



The *NU! Intelligent fridge*, at the heart of a sustainable ecosystem.

Local networks

The closed-circuit nature of production also invites a certain circularity in consumption: each individual becomes simultaneously a consumer and a producer. Technological evolution, what Jeremy Rifkin calls the Third Industrial Revolution⁽⁸⁾, is facilitating its adoption. Indeed, the agility of productive tools as seen in fablabs also corresponds to a certain circular form of design and an alternative view of consumption. Whereas in a linear system, zero marginal cost is found in the extra unit produced, which allows for a reduction in the unit cost through mass production, in a circular system, it's the emergence of free, open-design alternatives, available on social media and producible close to home, that allows for a reduced impact.

A consequence of the large-scale transformation of our productive systems is the development of local networks, within a resilient system driven by distributed technologies, where everyone participates according to their abilities and desires, in design, production, and consumption, an example that we've developed at the Studio. We are strong advocates of depositories and the re-use of sustainable packaging. Christine Frederick made them disappear from the home, so, using design and this vision of an everyday circular economy, we try to create the conditions for these usages to become contemporary comforts, notably using "phygital" tools. Depositories, as reusable containers, make long-distance transport impractical, and can only become organized and function based on local food production networks. A circular economy is often virtuous in many different ways, and combines zero waste with the local economy. It's with this in mind that, in start-up mode, along with a team of engineers, we've designed the Nu fridge: it combines a depository with a mobile phone, and local supply chains with the world of service-economy offices.

8. Each Industrial Revolution is, in his view, based on 3 factors: communications, logistics, and energy. Whereas the first one was based on the telegraph, the train, and steam power, the second was based on the telephone, the automobile, and fossil fuels. The Third Revolution, which we are currently experiencing, is based on the Internet of Things, 3D printing, and distributed renewable energy.



ESPACES DE CO-WORKING
BUREAUX



TRAITEURS



CONSIGNE



LOGISTIQUE



Diagram of the sustainable *NU!* ecosystem, providing healthy, zero-waste food.
Co-working spaces & Offices, depository, logistics, caterers.

The premise is based on an observation: usages are evolving, and contract catering offered in companies is less and less relevant to daily work schedules, which are extending the scope of possible meal breaks. The company cafeteria model is slowly but surely disappearing, replaced by a more flexible and alluring set of options. Yet, paradoxically, the more specially dedicated options and services are expanding in terms of merchandise, the more employees lack an alternative; the choice that breaks with the past and is taking over the industry serves take-out meals that produce an unbelievable quantity of daily waste and increase the economic precariousness of delivery staff. Deliveroo or Uber Eats are leading these types of options. The alternative on offer thus meets a real need, but it increases social insecurity, food waste, and trash. This is the paradox of our times, and we can see that technological innovations, even when they serve to disrupt an obsolete model, don't necessarily generate a clear improvement in the fields that are nevertheless the most concerning for everyone. This observation led us to envision a phygital ecosystem that would allow for a healthy meal on demand using a connected fridge, where you simply have to log in and serve yourself; it's all zero-waste, due to the concept of glass jars that the user places back in the fridge itself, to be washed and re-used. A network of caterers and restaurants in the neighborhood are mobilized, so they also can benefit from some extra income and another marketing channel; at the same time, they are assisted in making their eco-friendly transition, by providing their products in washable jars. It's just one example among many to prove that together, design and innovation can develop services and objects whose usage transforms the act of consumption, and allows for a set of stakeholders to move their economy forward, while being more respectful of the environment. Still, it's an example that demonstrates the limits of the robustness of a start-up blending technology, software, hardware, and ethical and environmental challenges. Faced with the juggernauts that digital marketplaces favoring profit over other values have become, it's hard for new firms defending values that are not always profitable in the short term to survive in the marketplace.

Ideas for testimonials

The fictional story can touch on a testimonial from an entrepreneur who launched a start-up in the years 2015-20 that placed technology at the service of zero-waste and anti-waste consumption. In the space of 30 years, their model became one of the most virtuous and iconic of its era. Their personal journey and entrepreneurial adventure faced a multitude of obstacles and dilemmas (political, economic, and technical), which they would have to overcome, making their success more than exemplary, an example for millions of young people looking for meaning. This journey, which can be inspired by certain real cases, such as that of the founders of NU!, tells the long, but quite certain, we hope, ideological and cultural shift that will, in two or three decades, transform how we produce, consume, sort, and recycle, and consider material savings and clean energy as key to the pleasure of living. This theme is essential on several levels: it leads us to question the notion of success and what is exemplary. Will the youth of generations to come embrace and, especially, identify with successful entrepreneurs who, unlike Jeff Bezos, Elon Musk, or Larry Page, don't aspire to conquer the universe or create hybrid humans, but instead are committed to improving life on Earth, notably for reasonable living environments, by fruitfully re-energizing the concepts of "terroir" (localism) and authenticity? This fictional vision can seek to foresee how a fledgling entrepreneurial movement from the 2000s, based on eco-sustainable values and a sharing economy, can break through and, after offering an alternative to existing options, become the new norm, with its advantages and, of course, disadvantages. Design's contribution to this fictional vision will be to offer systems for production, delivery, and consumption, services, options, and usages, which make this evolving shift in consumption credible and concrete, to the point of making it the norm.