

Solve et Coagula

2013

0.1 Preface

During the past years of my education I have been mainly busy experimenting with techniques, tools and systems. I do not really distinguish these sorts of things: for me a technique and a tool are both systems of actions, relations and materials. There is a difference that I sometimes recognise and sometimes ignore: a technique is the *action of actions* upon materials, in order to produce a material outcome, while a tool is the *action of materials* upon actions in order to perform a certain action. It might sound confusing but we can see the difference considering for instance a scanner device and the technique of scanning. The scanner is a tool for scanning (perform an action). Scanning is the process of converting an analog visual entity into a digital one (achieve outcome). The scanner acts on our actions : inspection, pressing buttons, opening, aligning. The scanning takes for granted the tool and focuses on its outcome. Another example might be cooking and a recipe. Cooking is an action whose outcome is food while a recipe is a tool that if used in a certain way makes us perform the action of cooking, whose outcome is food.

My "practice" has been focusing on the re-elaboration of these concepts: on one side I would attempt to develop techniques that are not focused on the outcome but on the system of the technique itself, and on the other side I would aim at creating tools whose use is not defined; tools whose design would not influence much the sort of actions that would be carried with them. Going back to the kitchen example, I would try to create new ways of cooking, without giving importance to what is actually being cooked, or I would develop recipes that can be used in different ways and for different purposes.

As a design student, I often found myself being requested or invited to find "the most suitable form" for my systems, as much as "the most suitable way of re/presenting them". "In order to communicate that your project is about cooking, you should cook us something!" "In order to show the potential of your recipes, you should show us some ways of using them". But how can you possibly productify¹ or represent a

¹Productification: even though this term is not officially English, it is sometimes adopted to refer to a process of transforming something into a product. I could not find any appropriate word that could replace this broken-English term. Words usually adopted in this context are *commodification* and *commercialisation*, but the very notion of *production* is fundamental to my research and these terms fail to focus on the process by which something that before was not a product, ends up becoming one.

system without defining it, without closing up the potential of it?

Every time I tried to do that, people ended up relating to the product rather than to the system behind it. Even worse, my attempts at spreading certain ideas, techniques or tools among schoolmates have often been annihilated by people's relation to authorship and other art academy's doxa. Rather than looking at the medium, people would look at a person's creation and it would not matter anymore how useful or interesting something could be, as it would endanger their originality.

The ghost of 'form' has been haunting me for years, asking me to find the right body for my undefined projects and asking me to create the right context in which to place them. But how could I keep up with my intentions by following this advice? How can a system's potential be preserved intact, when finalising an object? How can the flow of possibilities be transmitted to people, once a technique is exemplified?

Are objects responsible for the way we relate to them? Or is our culture responsible for the way things are? Can we unlearn the way we approach reality? In which way could we learn to unlearn? Can we design things that will change the way we relate to the knowledge of things?

These problems and the frustration that comes with them, together with my attraction to systems, have been fuelling my research.

0.2 Structure

In the first chapter I introduce the attractors of this research: objects and system. These are not in reality two different kinds of things, but rather the result of different kinds of approaches. I try to individualize the sort of processes and tendencies at the base of what I perceive to be a strong cultural orientation toward objectification. In the first part of the second chapter I introduce some actual practices that follow the pro-

Commodification in fact refers to the transformation of something into commodity or "the assignment of a market value" to goods, services and ideas. It's a construct from Latin *commoditas* "convenience, advantage" and *-ficatio* [from *facere* "to make, do"] it denotes a relation to the market and is a term intimately connected to marxist politics. Commercialisation instead refers to the process of introducing new products to the market rather than the making of them. Therefore in the text I will often use the term productification (product + fication); product deriving from Latin *producere* "lead or bring forth, draw out, conduct" [formed by *pro-* "forward, forth, toward the front" and *ducere* "to lead"] and -fication deriving from *facere* as earlier explained.

cesses I mention in the first chapter. These are practices that radicalise the duality of approaches by considering things as systems in a production environment and by delivering the results of such a production-packaged knowledge- to the target of their activities: consumers. As a consequence of this division of roles, power structures are installed in the social body. This leads to the second part of the second chapter where I attempt to understand the mechanisms by which the roles of producer and consumer have changed, but without actually affecting the power structures at the base of the system. If in the first part of the chapter processes of embedding, closing and packaging are described, in this second part I instead focus on the processes of opening and participating and on how a shift in processes of production affects the configuration of the social and of the individual. The object-system division is shown to be at work here as well. The picture presented is not very encouraging and the third and last chapter tries to envision possible ways to exit this scenario, acknowledging nevertheless that there is not (and there cannot be) a rational solution nor an actual way out and that each of us should instead attempt solving these problems for themselves. Rather than solutions or programs of action I therefore scatter observations, suggestions and undeveloped ideas.

Chapter 1

Approaches

Daily life puts us in contact with all kind of things: tools, machines, offices, software, institutions, organizations, traffic and so on. Most often we seem to simply slide next to each other, like when we stop by an ATM to withdraw some cash and we don't actually bother thinking what's behind it, both metaphorically and literally. In the same way we shortly interact with the appendix of bureaucracy and services when putting a letter in a postbox or disposing our garbage in appropriate bins. And till things keep on flowing in the way they are meant to, the surface of individuals deals with the surface of things. But when the cleaners go on strike, and the street becomes a heap of garbage, we get in contact with much deeper layers of the garbage disposal system and of the social apparatus. So while the service stops being a faceless entity, garbage bags start breaking up to reveal all the fermenting outputs of consumerism.

From these sorts of observations two different approaches to things emerge; one is focused on what things are and what they do, and another is focused on how they work and how they are made. The whole realm of matter and culture could be analyzed through these approaches but in this research I will focus on artifacts in general and technological systems more specifically¹. This choice is motivated by the idea that society and technology are profoundly entangled and by the idea that

¹Artifact: "anything made by human art," from Latin *arte* + *factum*. *Arte* being the ablative of *ars*: "science, technical knowledge, craft and art" and *factum*: "thing made" from *facere* "to make, do".

the attempt at understanding technical systems brings along an understanding of the social ones.

In this way the study of a tiny watch² can quickly bring us to mechanisms of privatization of knowledge, and the attempt to repair it can immediately uncover the politics involved in such a gesture.

1.1 Objects and systems

Things can be approached in two ways : as objects or as systems. The first approach is the one that people adopt most of the time: considering things as functional utensils with certain meanings and values, such as preciousness, affective attachment or symbolic value. This approach plumbs us in the world of objects, goods, products of all kinds - tables, lighters, phones, cars, clocks, jewellery, books etc. Objects that are useful or entertaining, others less useful but that we care for, others that make up our identity, others again that we just like to look at.

The second approach is the one that science deals with all the time, but that scientists themselves, in their daily life, like most other people do, adopt generally just out of normality. When things break, when we have to improvise with what we have or when we are put in front of something totally unknown. These are situations that uncover the systems that things are made up of, their mechanisms, their troubles, their relations and their potential. The characteristic of systems is in fact that they are free from the "objectness" of products -there is not a right way they should be used, they don't have an identity nor a specific application.

Similar systems can be found in different objects, and even the most robust system will necessarily evolve into something else. Irrelevantly from the effort that is put into enclosing systems into "boxes", they will always escape. Applications are actualization of the potential of a system into one or another form. The sum of particular uses will never

Technology: "discourse or treatise on an art or the arts" from Greek *tekhnologia*: "systematic treatment of an art, craft, or technique". Formed by *tekhno-* [from *tekhne*: "art, skill, craft, method, system"] and *-logia* "a speaking, discourse, study, treatise, doctrine, theory, science" [from root of *legein* "to speak"].

²For a good example of such a study read *This is rocket science! Modernity, Capitalism and Liberalism in Hacker Culture* by Dunaicsik Péter maxigas. The text presents an anthropology of hacker culture through the study of a tiny technological artifact.

be equal to the potential of a system.

The split identity of things, oscillating between *being as system* and *being as object* is not only resulting from an unconscious division that we carry on over what surrounds us, but is something that we as well actively perform when producing knowledge. In fact at the moment we are ourselves creating something, we tend to enclose it into products, shells, templates.

1.2 Simplification

"A television is a single and coherent object with relatively few apparent parts. On the other hand when it breaks down, for that same user – and still more for the repair person – it rapidly turns into a network of electronic components and human interventions." (Law, 1992)

The world of systems is way more complex than the one of objects, that is the reason why most of the time we relate to things as single units rather than as an assembly of parts, materials, rules, particles etc. The simplification or - in actor-network-theory's terms- the "punctualisation" of systems into objects, is as common as it is precarious. The object is more than simply the sum of its parts, it's an entanglement of meanings and connotations, it's a material-semiotic network³, and when the system breaks -even if just due to the failure of a single part- the punctualisation breaks as well: we stop dealing with the object and we start dealing with a more or less obscure system.

At first sight the system is an assembly of parts, but the attempt at tracing how these parts are made and how they relate to each other brings us quickly deep into the complexity of systems: each part is itself a system comprising elements and relations among elements and the more we zoom-in the more we lose the overview of what we are trying to understand. In fact the process of understanding systems doesn't consist of the linearity of a matryoshkesque zooming-in but resembles instead a continuous zooming-in and out, an unfolding of an increasingly more complex network, where parallel forks of subsystems are explored and their relation is never out of sight.

³Actor Network Theory and Material Semiotics, John Law 2009

1.3 Blackboxing

Simplification is the way we learn to deal with our daily immersion into a multitude of increasingly more complex products, but it is not a peculiarity of consumers only. The simplification process is a practical way to deal with knowledge in general: if we would have to research into the syntax, morphology and etymology of everything we want to write, we would probably end up writing very little. For efficiency reasons the complexity of a system is neutralized by relating to the system as a compact object whose mechanism is less relevant than its function.

In science and engineering these sort of devices that can be considered only in terms of their inputs and outputs (therefore ignoring their internal structure) are called black-boxes⁴. A black-box device is an efficient and reliable unit that can be taken for granted as a building block for more complex systems. Almost anything might be referred to as a black box: an electronic component⁵, a computer program or the human brain. The activity of black-boxing, while fostering innovation, makes at the same time the obtaining of information harder, through a "successive accumulation of layers, each of which makes the preceding ones more obscure"⁶.

⁴Black-box is a term generally used to refer to flight-data-recorders, electronic devices sealed into robust containers on airplanes. They record the activity and performance of a plane so that in case of accident these data can be accessed for investigation. The notion of black-box as expressed in the text is adopted by various disciplines and theories such as electronics, computing, psychology, cybernetics and ANT.

⁵And then we have transistors, resistors and connections and we pack them into one module called microchip. From now on we deal with the microchip and its output pins and we can forget which components are inside and how they are organized.

⁶Latour here refers to "the way scientific and technical work is made invisible by its own success. When a machine runs efficiently, when a matter of fact is settled, one need focus only on its inputs and outputs and not on its internal complexity. Thus, paradoxically, the more science and technology succeed, the more opaque and obscure they become." (Bruno Latour, 1999)

1.4 Program / Anti-program

As tools and techniques become more and more fit-to-purpose they become at the same time increasingly less accessible. The black-boxing process takes place at every layer of a system, from transistors to integrated circuits, power assembly, external packaging, patenting, terms and condition of agreement, instructions, seals, warranty and consumer services.

All of these expedients represent ways in which the *program* of a device is carried on. Every part of an artifact is the result of a conflict: all things that might go wrong -the *anti-program* - are worked against by this set of interventions⁷.

To avoid a button staying pushed-down, a spring is integrated; to avoid the use of "wrong" power adapters, differently shaped power plugs and sockets are introduced; to avoid the counterfeiting of money, holograms and patterns are included.

"The program of action is in practice the answer to an anti-program against which the mechanism braces itself."

Technology and society work together to the straightening of programs, creating things that will be used how they are meant to be used and that will work as we want them to work. Possible undesired actions and degenerations are therefore hypothesized and more or less visibly prevented. But however efficient, regulated by norms, tightly package with proprietary screws or without screws at all, any device carries "only a portion of a program of action and of the fight necessary to win against many anti-programs."

After all, anything can be used for something it was not meant for, anything can be broken apart, reverse engineered etc.

The study of the history of technology shows us how generally newly introduced systems are more vulnerable to hacking and errors. The emerging of unexpected anti-programs that could not be conceived in a first moment is what makes a technology become increasingly more reliable.

The struggle to overcome anti-programs is sometimes pushed to the limits of what can be considered functional: by creating black-boxes that can't be repaired or that have to rely on actions external to the materiality of the system itself- such as legislations, law-enforcement,

⁷The terms program and anti-program have been introduced by Bruno Latour and all the quotes in this paragraph are from him.

surveillance, dedicated services or external hardware.

It's easy to see how the idea of efficiency at play, is one that envisions the relation between systems and individuals as the relation between consumers and products where the interaction is a predetermined regulated experience.

The freedom for individuals to explore, understand and modify systems is increasingly worked against, and this stripping of tools and techniques create power structures in the social body. The action, or interaction, of people has always to be pre-determined, so even the freedom to act has to be enclosed into defined limits.

The potential of becoming something unexpected, something that is not-yet there, is crystallized into the possibility of becoming something possible, something that has been thought of and allowed already.

Chapter 2

*"The time has come," the Walrus said,
"To talk of many things:
Of shoes—and ships—and sealing-wax—
Of cabbages—and kings—
And why the sea is boiling hot—
And whether pigs have wings."
(Lewis Carroll, Through the looking-glass)*

2.1 Packaging, embedding, hiding (and technical numbness)

The inaccessibility of certain products is not always given by so-conscious choices or strategies, as I first mentioned when treating programs and anti-programs. The fact that some objects are hard to open, and as a consequence to understand their internal structure, is sometimes given by other factors such as miniaturization and economy of production, therefore by technology and market dynamics rather than strategies.

If technology gets smaller and smaller it doesn't follow that the object they get applied to has to diminish in size as well. There is a threshold point where the miniaturization of technologies doesn't evolve parallel to a miniaturization of devices anymore, because of functional constraints¹.

¹David H. Levy, Portable product miniaturisation and the ergonomic threshold, 1997

A phone will not get smaller than a palm of a hand as its use would simply become unpractical. So even if its internal system reaches the size of a fingernail, it will still be packaged into something people can hold and keep in their pockets without losing it. In the past century watches have been decreasing in size and increasing in complexity but the invention of super efficient atomic and quantum clocks didn't result into atomic sized watches - yet - but rather the opposite.

Similarly to ergonomic constraints, industrial standards pose limitations to technological progress: for example the new generation of solid disks needs old hard-disk sized adapters in order to fit into desktop cases.

At the time of the industrial revolution, machines didn't have any skin, they were bare skeletons of function, exceeding humans in power and in size; innovation has long since abandoned the human scale and it is normal therefore that nowadays electronics and computers are embedded inside of bigger objects rather than being one whole with them².

But if this could sound like a reasonable enough excuse for the difficulty in accessing systems knowledge, anyone that has ever attempted to open a household device can testify that there is more at stake.³ Layers and layers of plastic and stupidly positioned screws, puzzling clickable parts, proprietary plugs and software are all ways in which we get told that we should not even attempt to engage with them. That machines are designed to be assembled by other machines and never be disassembled by humans, that they are supposed to be repaired by specialists and not by the average person, that is cheaper to replace than to fix, that specifications and protocols belong to producers and not to consumers.

2.1.1 Packaging

Many more or less functional products present in our daily life, are conceived in two phases and from two different minds. Made very rough and simple: The engineer plans the internal mechanics of the system, and the designer designs for it a suitable skin or package and a way the

²"Form follows function - that has been misunderstood. Form and function should be one, joined in a spiritual union." Frank Lloyd Wright

³One might justify the uneasiness of accessing and repairing electronics as a safety measure. But if according to manufacturers the safest way to deal with problems is not to deal with them at all, I think is better to be free to risk electrocution. As we learnt how to replace fuses, what stop us to learn how to replace modern circuitry?

user is supposed to interact with it, literally or symbolically.

"One of my first jobs after leaving school was to design a table radio [...] This was shroud design: the design of external covering of the mechanical and electrical guts. It was my first, and I hope my last, encounter with appearance design, styling, or design cosmetics."

(Papanek, Design for the Real World)

What a humiliating role, for this supposedly creative person, the designer, to be put in front of an already designed object - the system - and being asked to cover it up nicely. Because black-boxing is a cultural tendency, a contemporary designer is not guilty of his package oriented practice, he is guilty instead of not reflecting upon it.

With the miniaturisation of technologies the package-designer job becomes more and more important. Less and less restrictions are given by the system itself, but are mainly given by the user interaction. Through aesthetics and experience.

The increase in heterogeneity of packaging is directly proportional to the increase of homogeneity of systems.

2.1.2 Embedded systems

Opening up a wireless router might reveal the same board that we can find opening an alarm clock, a phone or a microwave.

These hidden boards are pre-programmed IT devices, generally called embedded systems. A computer or a microcontroller that is programmed to perform only one set function is an embedded system. Its role and position in the overall device are predefined and confined even though its power and capabilities go beyond that specific application. They are present in phones, cars, music players, traffic lights, satellites and new applications are constantly being developed.

The fact that different manufactures can personalise in different ways the same system makes this technology appealing to an increasing number of market sectors.

Embedded systems are a good example of how systems' potential is exploited by producers and the enclosing of this potential is a mass phenomenon. What is delivered to users and clients is in fact a very specific

non-interfaceable device.

Discovering that embedded devices make up 98% of all computers in the world might trigger our attention toward this usually hidden packaged potential.

Example: Imagine buying a computer whose use as been pre-set to allow you only to check your email and your social networking accounts: the long evolution in computing toward a general-purpose-computer seems suddenly to stop and start instead going backward. Sadly enough this path has been embarked already. Chrome OS is an operating system (perhaps imperating system) developed by google, and shipped in ad-hoc hardware. Most of the computing happens on google servers rather than locally. It's conceived for the "average user" : someone that uses computers only for internet activities, such as email, social networking etc. The computer becomes a terminal to the "cloud", so its computing power can be low. People's computer time and activity is inseparable from google. Chrome OS is a very explicit example, but the tendency toward developing specific-purpose-computers is much broader. Computers that will prevent users from knowing which programs are running or that will allow only specific programs to run, devices that can be remotely accessed by the producer in order to terminate unwanted programs or to delete illegal files (e.g Amazon Kindle).

Counter-example: a project that says a lot about the potential of embedded systems: Internet Census 2012 , Port scanning /0 using insecure embedded devices.

2.1.3 Smart Materials

Embedded systems will get smaller and smaller, making up the very particles of the materials that make up objects. At that very moment we might stop considering them embedded.

When the outside becomes the inside and the inside becomes the outside, the moment in which the system disappears from our sight to become the whole of the object, that is the only moment in which form and function merge. Materially, not conceptually.

The fluid objects we can imagine emerging from this freedom from constraints will be the new design. Design that doesn't have to reflect upon relating form and function. But can this free shaping of form without constraints still be called design? The transformation of systems into form is the revenge of aesthetics over functionality.

For decades we hear about materials getting smarter, technologies becoming flexible and devices reaching the nano scale, but so far, we

have seen little applications of such a potential. The practicality of these technologies is still unpackaged -the attraction to smart materials needs still to find an economical justification before entering our lives. But instead of enjoying this moment of research and play with raw systems and materials "without a why", people seem to sit back and wait for the moment in which they will need their applications. Waiting for the production line and the vitrines, while skeptically or enthusiastically reading the latest news from the labs.

2.1.4 Interaction design

A chip is embedded into a computer and a computer into a control unit, the control unit is embedded into plastic, wood, textile, tables, walls.

The interaction designer that hides the system of interaction in order to make the user experience more magical is moved by the same dynamics of the advertiser of goods. A selling of a surface, an experience predetermined by the designer. Giving the opportunity and the power to the user to take part in his own consumption process. Embedding or "enhancing" objects and spaces with technology in order to enchant the user, while silently commanding how to move, what to touch.

While "designing experiences" is not a bad thing in itself, nor it is to hide an arduino⁴ under a table, what is being contested instead is the effort to keep the systems secret, so that the trick can be pulled out again and again.

Interaction design based merely on input-output installations will inevitably perform a power-game where the entertainment of "interactivity" is the product sold to a participating public kept ignorant. Why use computing and technology to trick people? Perhaps it is because interaction designers -so used to being tricked themselves by the daily spectacle⁵ - can't think about any other way to relate to technology from one side and to other people from the other. It is hard to know to which degree this illusionist-kind-of-approach is a conscious one, but hopefully the spreading of know-how and the growing trend for transparency will contribute to the unmasking of the tricks.

⁴An arduino is a microcontroller on which the open-source platform Arduino is based on. It is designed to make electronics and physical computing more accessible to non-experts such as artists and designers. (<http://www.arduino.cc/>)

⁵Guy Debord, *The Society of the Spectacle*, 1967

Interaction design spreads the thought and practice of engaging the public in an active participation, perhaps it even vitally relies on the user involvement to exist (as without its user there is nothing to be experienced, like a painting that would go blank when nobody is observing it). But it didn't revolutionise the relation between authors and public, it simply brought in what was happening already outside of the art and design bubble. And it brought in these dynamics without interfering with their meaning, without even de-contextualising them, it only brought them in, by capillarity.

2.2 Opening, customizing, participating (and political numbness)

"The process of the capitalisation of knowledge, e.g. science, is based on the production of procedural information as a commodity. Commodification, in science, finance, and bureaucracy is the process which strips out subjects, context, agency (and therefore actor-networks) to yield information which can be exchanged, shared, traded, and, potentially, used by any actor/network, anywhere." (Roy Williams, 2007)

The process by which knowledge has been increasingly capitalized, by the obscuring procedures of embedding, hiding and closing, has been contrasted by an opposite action that aimed at a free flow of information and means of production. Using the tools of transparency, openness and sharing, social and political struggles such as the free software and the free culture movements have been fighting for the liberation of knowledge and the defense of the commons⁶.

Through the successful implementation of different methods of production, distribution and legislation, these movements demonstrated the power of their tools both through a reconfiguration of socio-economical

⁶Making a very long story short: The free culture movement (late 1990's) was born out of the necessity of broadening the ideas promoted by the free software movement (1980's) to other creative spheres. Creative Commons (CC) is the license promoted by the free culture organization. Even though the two movements share a focus on freedom of knowledge, there are many ethical issues that create disagreement and collisions between the two (one of the reasons being that, differently from the free software licensing concept of copyleft (GNU GPL), in the CC license "some rights are reserved"). Read statements from the main advocates of the two movements, Richard Stallman and Lawrence Lessig, for a better understanding of this topic.

relations and by the adoption of markets of this new pool of exploitable potential.

"Companies are increasingly likely to free reveal in order to increase incentives to innovate, giving away ownership rights in order to obtain other benefits. Though the example often given is open source programming, the democratizing of innovation goes far beyond this particular practice (Von Hippel 2005), by recognizing the enthusiasms and pleasures of consumers involvements with numerous commodities and entering into a relation with those involvements, thus producing experience innovation (Prahalad and Ramaswamy 2004) through shifting the boundary between private and collective."
(Nigel Thrift, 2006)

It's hard to see whether it was the wide spreading of "free and open knowledge movements" that attracted the interest of markets, or if their success has been caused by the markets interest itself. Nevertheless something seems to be common to both hypotheses: the "transparency" of the tools has been consolidated at the cost of an ambiguity of ends. In fact, in the same way as technology obscures itself by its own success, the political struggle for freedom had to undergo "optimization" before reaching social importance. Optimization took place on one side through the focus upon the most efficient and economically profitable models (stripped of unproductive ethical concerns) and on the other side through the systematic categorization and marginalization of politically concerned groups.

Thereby the word "freedom" got smoothened into "open". The blur of political stands made in fact the open and transparent toolkits suitable for anyone: for small and big businesses, designers, artists, students, amateurs, hackers et cetera. Some would join for the "free beer", some for the "free speech" and some others for the free work⁷.

"Almost without notice, what was once a threatening movement of radicals, hackers and pirates became now the do-

⁷To distinguish free from gratis, the free software movement adopted the famous sentence from Richard Stallman: *you should think of free as in free speech, not as in free beer.*

main of reformists, revisionists, and apologists for capitalism.” (Dmytri Kleiner, 2010)

The *freedom-as-aim* through the *freedom-as-mean* of early struggles has been therefore supplanted by the efficiency of *open-as-mean* of the later tendency, where the aim can be instead contrasting with the concept of freedom itself.

Openness and user-empowerment nowadays serve in fact the purpose of growth and innovation rather than a modification of the social status-quo.

It’s reasonable to doubt whether this trend hosts in itself the possibility of a real transformation rather than a simple reconfiguration of the same old system. But if there is a possibility as such, I believe it does not (and it cannot) lay in the evolution of current socio-economical dynamics. It lays in the possibility that the individuals making up the total of exploited enthusiastic producer-consumer groups will purge themselves of the economic dynamics they blindly seem to reproduce.

”The reader will notice the difficulty that I have with keeping production and consumption separate: producers try to put themselves in the place of consumers, consumers contribute their intellectual labour and all kinds of work to production in the cause of making better goods, in a kind of generalized outsourcing, migrations regularly occur between production and consumption, and vice versa. Innovation can turn up anywhere and is no longer necessarily restricted to particular niches in the division of labour. ” (Nigel Thrift, 2006)

2.2.1 From the medium to the process of creation of the medium

”We shape our tools and thereafter our tools shape us”.

I always liked this sentence from Marshall McLuhan, but for the first time, after years of quoting him, my focus shifted from what he meant to who he meant. He seems to speak in the name of mankind, an all-inclusive ”we”. I think it is important to intervene on the we whenever one is to refer to such a sentence as the social and technical contexts continually change.

To make sense in the framework of this text⁸, rather than representing the supposed unity of a social body, this word comes to include the "us" and the "they". Including them at the same time, because the division of roles is nevertheless still at the base of the ruling system: it's the schizophrenic "we" of prosumers⁹. And as both producers and consumers participate in the shaping of tools, there is not anymore such a temporal division as expressed by McLuhan's "and thereafter".

The idea that tools get produced in a first instance and in a later moment have an impact on society is here replaced by a "shaping" process that happens much more simultaneously. To understand this contemporaneity we can just look at the way the internet and society influenced and changed each others in the past years. The more users got involved in the shaping of tools (media or goods) the more simultaneous the process became. And the more people contribute with advice, creativity and skills, the more they reinforce the system they perhaps try to change.

"Google value lies in the vast content created by users on the internet. Without it, Google would be nothing substantial, just another firm selling search engines to corporations. And

⁸At electric speeds the consumer becomes producer as the public becomes participant role player. Marshall McLuhan and Barrington Nevitt suggested in 1972 in their book *Take Today*. When I attempt to actualise McLuhan to this framework I don't mean he is outdated; he was well ahead of his times and predicted much of what is now taking place. Nevertheless I think he left important conflicts aside, and optimistically observed rather than lived the social changes that were taking place. *"Personally, I have a great faith in the resiliency and adaptability of man, and I tend to look to our tomorrows with a surge of excitement and hope. I feel that were standing on the threshold of a liberating and exhilarating world in which the human tribe can become truly one family and mans consciousness can be freed from the shackles of mechanical culture and enabled to roam the cosmos."* So, when I intervene on his "we", it is to take distance from an idea of mankind, humanity or a global village and to connect it to an idea of conflict among all of us and among our(many)selves.

⁹In 1980 the futurist Alvin Toffler coined the term prosumer in his book *The Third Wave*, in order to address a figure that is both producer and consumer. He saw in the raise of DIY culture, self-service etc. a "progressive blurring of the line that separates producer from consumer". He claimed as well that the industrial revolution created a separation among these roles, and that before that time, prosumerism was a more common phenomenon (e.g. farming).

The schizophrenic aspect I recognise in prosumers is given by the fact that the autonomy of a self-sustaining occupation such as farming, is replaced nowadays by a interdependency to the system. The prosumer doesn't produce what he consumes and doesn't consume what he produces. One is at times the demanding consumer, at times the ambitious producer. And one consumes what is delivered, and produces what he/she can profit from.

the ranking algorithm is crucially dependent on the links towards document, i.e. the collective wisdom of internet users”
(Michel Bauwens, 2005)

Therefore while society creates the internet, the internet creates the social; it is not only the effect of tools to have an impact on us, it is as well the process of creating these tools that is changing society. Shaping the way we shape tools shapes us, and the exploitation of these processes is what is now taking place under the appearance of democratization and user-empowerment.

If McLuhan shifted the focus from content to medium, I think that what now should be done is to shift the focus from the medium to the process of creation of the medium.

2.2.2 Dilution

With the shift from products to processes of production (through transparency, openness, participation) the present socio-economical tendency pushes to liquefy the producer-consumer dichotomy, but even though made more fluid, it still relies on this very structure. The process of dilution of roles happens through different degrees of involvement of consumers: if the possibility of participating in the production process is first granted from top down, it slowly transforms into a mutual exchange, a symbiosis in which producers and consumers feed constantly each other.

What is less visible though, is that to produce this blur it is not the crumbling of power structures, but its internalization.

”Historical conflict no longer opposes two massive molar heaps, two classes-the exploited and the exploiters, the dominant and dominated, managers and workers-among which, in each individual case, one could differentiate. The front line no longer cuts through the middle of society; it now runs through the middle of each of us” (Tiqqun, 2011)

2.2.3 Open-close

Faced with the reality of control and surveillance systems many people answer ”they have nothing to hide”. This means accepting an invasive

system into our daily life on one side, and on the other a self identification with the role of a citizen -more specifically, a good one. Being monitored in every movement and decision is nothing in exchange for the security provided by a system of prevention and detection of troubles, a system of order.

A system that is ignored most of the time, as it is so well embedded in the urban structure.

The model of transparency adopted by people as citizens is accompanied by mechanisms of self-disclosure and self-promotion as individuals, as we can observe on virtual platforms. Not only does the citizen-consumer-individual make his/her own control easier by embracing openness and publicity, she/he does in effect challenge others to do the same: for instance through active citizenship and civil networks (i.e. *burgernet*¹⁰) or simply by pushing friends into social networks. He/she demands as well less secrets and obscurity from companies, states and institutions. In response, these systems comply willingly to the new dogma of transparency by creating more and more open structures. Open societies, open democracy, open archives, open markets, open logs, open polices, open education, opensource, open design etc.

The increase in openness and transparency of the public and the private spheres generates more trust and belief, and the concepts themselves come to signify something unarguably "good". But an increase in transparency doesn't necessarily bring an increase in analysis - " by virtue of becoming more open - i.e. more accessible for public scrutiny- it is assumed that organizations, governments, and corporations will become more accountable, more moral, less corrupt, and more efficient".(Carl Marklund, 2012)

The assumption that something open and transparent is necessarily good and honest, risks to make the observation of the object less attentive.

Surveillance systems -whether real or fake- reduce the need for an active observation from a vigilant. On the opposite side, a thief acts through transparency rather than through invisibility, through acting normal and becoming one with the flow of unbothered shoppers, in order to hide his action. The power of an illusionist's trick relies on the ability to hide her/his secret through the transparency of his/her system; in the same way the new form of power of society seems to have become

¹⁰Burgernet is a dutch civil network based on the sharing of information between citizens and the police.

its willingness to be looked through.

Companies, designers and organizations are deliberately releasing their source codes, plans, methods of production, costs and resources. This trend provides a new way of adding value- the "good" transparency- to the final product. Meanwhile, by concentrating (or perhaps distracting) attention on the methods and concepts of production- the ethical and political stand is lost. The process through which openness and transparency have become majoritarian tools (of marketing, administration, socialization, etc), coincides in fact with the story of the neutralization of political intentions at their base, as mentioned earlier on in this chapter.

In the shadow of this enthusiasm for transparency, governments and corporations are actually enforcing normative, tactics and cultural legislation against the freedom of individuals. Invasion of privacy, manipulation, spinning of information, digital rights management and anti-counterfeiting regulations are just some of the measures deployed. Nevertheless, because they are obfuscated by the climate of "openness optimism", they get opposed by increasingly fewer dissenting groups. Openly embracing transparency is simply making us¹¹ blind, and naked. While we proceed in our fight against secrecy and obscurity- without ever really analyzing what is it that is made accessible and by getting disoriented by the information overload- we make ourselves, and the ones around us, vulnerable to structures that instead are really benefiting from social transparency.

"If openness truly is something that we all agree upon, it must be a rather vacuous political ideal. Indeed, it might be best to think about it as an empty signifier, one whose very function and appeal rests precisely on its ultimate vacuity."
(Nathaniel Tkacz, 2013)

¹¹decoding "us": If I don't say 'we' , but I say for instance "people" ,"society","everyone" then I dissociate from the social body, but I am very much part of it. Everyone is in the same mud. This is the "we" of my multiple social parentheses, and of yours as well. I am trying to talk for all individuals falling into one or multiple social categories. People that are at times engaged, at times passive, people that are fluid and people that feel to be solid. I do understand the ambiguity of an inclusive "we" (that is also what I contest in McLuhan's sentence), but it's in fact very hard to replace . In Italian and French, the problem is sometimes resolved by using the indefinite pronouns "si" or "on", that can at times mean "we", "you", "they", "one", "man".

2.2.4 Intention

"Those who would question the extent of the spectacle's reach into the thoughts and souls of humanity have doubtlessly failed to look for it in themselves."
(Len Bracken, 2000)

The very tools that have the potential of involving people in a more active relation with the techno-social body have been shown unsuccessful or disinterested in actually changing the system structures. It seems to me that the de-politicisation of open systems- what has been earlier on called neutralisation- corresponds to a conflict between *means* and *ends*. In fact, the freedom-as-aim of politicised approaches to technology doesn't put ends and means on two different levels: the struggle for freedom is enacted with free systems. In the capitalist approach to open systems instead, the means are utilitarian to other ends such as power or profit. And as a consequence of the penetration and absorption of capitalism in every space and non-space, everyone seems to follow this latter approach.

"So long as we represent technology as an instrument, we remain transfixed in the will to master it." (Heiddeger, 1977)

By considering technological systems as mere input-output utensils, we are destined to a repetition of the same, a homogeneous heterogeneity. Tools that take inputs from the same pool where they expel outputs. On the contrary, liberating systems from the narrow input-output notion, from the utilitarianism, is an action itself dense of intention.¹² The intrinsic ethics and politics of the gesture, don't need an external justification, or end. A politics oriented to freedom is lived, not constructed; the ends are in the means themselves, in daily practices and approaches to people, systems and knowledge.

I could even argue that there is no end at all, but just intention, as the struggle at stake is not one that aims at a particular end, but it is a struggle for a freedom of becoming, for the potential of the not-yet.

¹²intension: from Old French entencion "stretching, intensity, will, thought", from Latin intentionem (nominative intentio) "a stretching out, straining, exertion, effort, attention".

Chapter 3

Solve et

Would you tell me, please, which way I ought to go from here?"

"That depends a good deal on where you want to get to."

"I don't much care where "

"Then it doesn't matter which way you go."

(Lewis Carroll, Alice in Wonderland)

The step from passive consumerism to active consumerism brings with it some qualities such as skills, self-confidence, better tools, community forming, better infrastructures etc. But at the same time it blurs the repressive system into the people's system. With the blurring of the line between individuals that pursue a subversion or a modification of the system and those who aim to rise in its hierarchy, it is getting harder and harder to find affinity of aims.

"Power cannot be understood as having a center anymore; it is a mere accumulation of mechanisms into which subjects, or in Foucault's words processes of subjectivation, are entangled." (Agamben on Tiqqun on Foucault)

Everything is becoming muddy, quick-sand that puts makers, small-entrepreneurs, corporations, environmental activists, green capitalists and anarchists side by side.

Those that want to overthrow the system sink because they didn't make

an effort to understand how that system changed and those that want to make it better, by offering themselves, sink because they never understood it.

So how do we get out of here?

Quick-sand

Ideally people should stop moving, in order to gain a bit of time. As the quicker you move, the quicker you sink, they should slow down the pace to their own basic rhythm.

After having tasted a bit more mud, some will start again screaming and agitating, others will begin to appreciate the taste of mud after all. So while the ones screaming and agitating are sinking lower and lower, more and more people who pity them decide to put their taste aside, and start calmly eating this muddy soup. After some time spent looking at each other and screaming to those on top that it is better at the bottom, new allies start falling on their heads.

Old computers, phones, televisions, radios, hand-tools.

All these things, too old, too broken, too unsafe, too unreliable or too unfashionable, form an army of possibilities. Someone fixes the radio, while someone builds a lathe out of an old drill. A group of people discuss the ways to power these tools.

While they discuss, a kid dismantles the drill assembly and clumsily connects some of its parts to a bike and starts cycling. The rotation makes a lot of movement in the mud and quite some people start having brilliant ideas. But at the moment in which the possibility of getting out of the mud seems to have appeared, instead of joining their efforts and improving the tool, people engage in an endless discussion: 'why are we trying to get out of here, using all of our energy to get up there just to sink back, when we can stay here, unbothered?'. Others answer 'why would we stay here in this muddy and dark place, when there is light and warmth out there?'

And in this fashion they go on discussing.

Sometimes someone manages to depart on improvised vehicles or ladders, then sinks back; sometimes little groups join forces and go floating just a bit higher, among the mud-eaters. Up there they try to explain to people the reason why they ended up in the mud and that it is not a good thing to eat it; and some suggest to go up and others suggest to go down.

Sometimes the adventurer themselves decides to stay there, and joins the mud banquet.

Sometimes mud-eaters agitate until they sink lower, sometimes they go down only to use the tools to get higher. But most of them have their own techniques to float to the top. They simply hold on some other people and make their way to the surface where they can lay on their backs and float undisturbed.

Down, in the lower mud the discussion goes on. 'What is the best way to get out of the mud all together?'. While some argue that some people in fact deserve to stay in the mud and that they should leave on their own, others go on creating a better life in the deep mud.

A small group is sick of all the discussion and thinks that these people busy with making things, seem to not grasp the gravity of the situation. They therefore decide to move further, even deeper. While they agitate lower and lower they finally touch the ground. It is cold and hard, not comfortable at all, nevertheless they cannot go further nor can they go back. Only when a bunch of bolts and nuts and other objects fall at their side and touch the ground with a metallic sound they realize: it is not the ground their feet are standing on, it is a growing bunch of garbage.

What a discovery! Years and years of things have accumulated down there. There is almost anything they might need. They decide to just wait and see what happens. Some secretly hope that the growing mountain will raise them to the top, while others hope instead that it will push itself and with it all the mud, higher and higher destroying everyone and everything. A group decides to pile up some garbage and go refer the discovery to the old friends.

This news generates a big fuzz in the mud society. From the bottom to the top people think problems, solutions and dissolutions. Many people agree that this is a serious problem while others think it's an opportunity, others again refuse to believe it or simply don't care.

For one reason or another, some people decide to urge to the surface and call for emergency.

Once they arrive to the top, they discover that nobody is left up there.

No solution

"To define is to kill. To suggest is to create." (Stéphane Mallarmé)

There is a mechanism smoothly installed in our brains by our cultural education that pushes us to follow conventions as if they were our own decisions. I mean for instance the way in which we define for ourselves the procedure through which we will write a text, even though we lie all the way through that we have a conclusion we are moving toward. In this way for every critique there is a proposal, for every statement there is an explanation and for every beginning there is an end. I did myself the favor of being sincere with myself and from the beginning of my writing I knew I did not have not a conclusion. Nevertheless, even after days spent reading and writing about it I have not defeated yet the packaging mechanism. And it tries to push me, whenever I'm not concentrated specifically on this, in directions I do not want to go. So if on one hand I feel I should propose different approaches in dealing with delivered artifacts and in creating new ones, on the other hand I think I simply shouldn't. So rather than wrapping a conclusion of the text I tried to dissolve possibilities in it.

Potential consequences

Mapping systems can help us overcome the impotence of product oriented knowledge and help us to give faces, rails, wiring, paper, roads, circuits, numbers, mortality, fragility, fatigue, boredom, inconsistency, unpredictability to the socio-technical body we live in. But from the observation of the ways in which every potentiality is inevitably destined to be contained, no free space of action seems to be left.

Whatever material or immaterial production, produces products. Potential constantly escapes from the constrains that get put to it, and commodification is the result of the run to close it in a box after the other. So if it's impossible to create a *zvehrf* - without transforming it into a defined object - perhaps we should focus on the space left to the potential of its consequences.

An idea written on paper is one crystallization of an undefinable evolution of thoughts, but its interpretation, rather than its reading, can open up more and diverse possibilities than the shapeless thought itself. So rather than struggling for breaking free from encloses, as there will always be newer ones, it is the active looking through the objectness of things that put into action the negation of stasis.

Putting in motion what seems to be settled: from the realization of the inconsistency of packaged potential doesn't therefore follow a para-

doxical practice of designing potential, but a process of undesigning actualization.

Exercising break-down

As we saw earlier on, breakdown represents the moment in which we become aware of the system behind surfaces and symbols. Looking through the objectness of products is the first step in taking action to modify the status of things. But if the technosocial system is made up of impenetrable obscure devices and technically numb people, how can this step take place? If the aim is triggering people's interaction with technology, and to develop awareness of the political implications of this action, perhaps our concept of efficacy should change. Should one design things that break then? Things that fall apart, misbehave? There is no need to create things deprived of function; the power of breakdown rather than being implemented in the designing process should be implemented in the undesigning, deprogramming and misusing of the delivered artifacts. Sabotage opens the eyes on the system in all its internal and external relations and misuse puts in action the freedom to transcend it.

The idea of sabotage might seem to contradict the purpose of shining light upon the potential of technologies, but it is contradicting only if one thinks that the Luddites were technophobic people attacking machines¹. Through misuse and breakdown we engage ourselves and other people, voluntarily or not, into a deeper understanding and revealing of systems. Disclosing as well what is hidden behind the transparency the world seems to have embraced. It's time to look at the finger, not at what the finger is pointing.

Using the system's system

"An apple cannot be shared, if I eat it you will not eat it. But in the digital age the status of goods has changed: immaterial goods are semiotic stuff that is not annihilated by use. When it comes to semiotic products private property

¹Rather than rebelling against machines, fearing they would "steal their work", the Luddites were in fact rebelling against the introduction of the capitalist system of factory production. They were fighting against The Machine, rather than against machines

becomes irrelevant, and in fact it is more and more difficult to enforce it." (Franco Bifo Berardi, 2009)

Patents language

The word patent paradoxically comes from "open"². A patent is in fact the detailed description of what is inside of a black box. The language in which inventions are described in these documents is stripped from connotations, metaphors and symbols. Patents are a description of systems so abstracted from their objectness that we might have difficulties in grasping their subject. The form used by patent is in fact a very suitable form to talk about systems. It doesn't suggest how to relate, why to desire, how it will look. It mechanically maps parts and connection among parts; it maps conflicts and dynamics. The neutrality of this language, while aiming at being all-inclusive and specific, creates openings as well: it lets us imagine and run after something that is never made explicit, it makes us envision applications and demands for connections. This closing-opening, generic-specific nature creates the ambiguity at the base of the power of patents. They close up knowledge but they need to be open in order to do so. They need to be inclusive and specific in order to be claimed, but they also need to be generic in order to be claimed even more. They need to be accessible by others, in order to verify if something invented or adopted has been patented already, but they need to be closed, so that only few can actually make use of them. And behind, or better around this language, is the realm of objects. Where things are names, shapes and identities. And in this world patents are themselves commodities. They are goods to be sold and bought, enforced and claimed. They productify knowledge, and privatize systems.

Legally bond to freedom

But how to create things that have in themselves a resistance to become products? If one wants to keep systems open in their possibilities, he/she actually has to restrict them in some of these possibilities. In order to keep them open they need to be made hard to be closed, therefore they

²Patent: "open letter or document from some authority" shortened form of Anglo-French *lettre patent*, literally "open letter", from Old French *patente*, from Latin *patentum* (nominative *patens*) "open, lying open".

need to be restricted from the possibility of becoming products. There has been a long discussion in the free and open source software movements, regarding the freedom to commercialize software. The prevalent thought though, is that to be really free, software has to be free to be used in any way, commercially included.

I came to disagree with this thought. It seems to me more rooted into competition than into ethics³. Copyleft itself -as it is in effect a copyright license- restricts the use to certain conditions: any use or misuse of copylefted material is allowed as long as the same license is adopted. This legal binding has been fundamental for the spreading of this culture. From this notion, I think that resistance to productification could be achieved via legal ways. Patents, with all their faults, can come handy to this purpose, as it is their ambiguity of closing and opening that is needed.

The digitalisation of materials

While software is regulated by licenses, hardware is regulated by patents. We cannot simply take a copyleft license and stick it to our artifacts. We can license the digital files, the blueprints, the pcb-design and the software but we can't license the invention and anyway once an object is physically compiled, the license doesn't have any power over the object. The schematics might be modified, changed and redistributed under the same license, while the piece of hardware or the invention can be commercialized or even patented by someone else. With hardware there is as well the problem of its materiality: while copying a digital file doesn't take any energy -making it possible for it to be made freely accessible- it's a much harder task to price a physical copy. Material costs and the time spent on it must be valued.

These are some of the problems that "free hardware" has to solve, and while there are already multiple foundations and projects providing open hardware licenses, none of them seem to treat hardware in a different way than software.

The digitalization of hardware (what makes possible the sharing and licensing of blueprints in a similar fashion as software) has been helped

³See Peer Production License (copyfarleft) by John Magyar, B.A., J.D. and Dmytri Kleiner for a more radical copyleft license. "Any use by a business that is privately owned and managed, and that seeks to generate profit from the labor of employees paid by salary or other wages, is not permitted under this license."

by the "digital fabrication revolution" (i.e. fablabs). But this sort of digitalization doesn't regard the hardware itself. It regards the way we communicate to machines to translate digital information into techniques that provide us with analog material outputs. Lego bricks are closer to digital hardware than digital prototyping is; lego pieces must be aligned to snap together, their ultimate positioning is accurate, they themselves define their spacing, allowing a structure to grow to any size and when a lego construction is no longer needed it can be disassembled and the parts reused.⁴

"The digitization of material is not a new idea. It is four billion years old, going back to the evolutionary age of the ribosome, the protein that makes proteins. Humans are full of molecular machinery. The ribosome builds all that machinery out of a microscopic version of lego pieces". (Neil Gershenfeld, 2012)

The moment in which material will become truly digital, and atoms will be treated as bits of code, then the sharing of hardware will detach itself from material, time and cost related problems. A free sharing of hardware whose materials can be mailed, and the code to assemble them can be e-mailed⁵. Hardware that can be truly built from scavenged materials and compiled with free code.

Recursive prior art

Is it possible to act on the patent system in a similar way to that of how copyleft did on copyright? Ways to patent something to prevent from being patented (which can otherwise happen if left on public domain) and then license the patent rights as GPL or non-commercial share-alike? It is possible (Patentleft, Open RTLinux), but this means

⁴Neil Gershenfeld, How to Make Almost Anything- The Digital Fabrication Revolution, 2012.

⁵Molecular assemblers are being researched at the Center for Bits and Atoms of MIT. Similar to the fictional Matter Compiler described by Neil Stephenson in the book The Diamond Age, these machines would be able to create objects by programming the assembly of molecules. In Stephenson's book, matter compilers are connected to the feed, a sort of public infrastructure similar to our electric network or sewers system. Molecules are fed through the feed from a centralised point called source. The post/e-mail possibility is just an example borrowed from Gershenfeld's paper, I'd like instead to start already thinking alternative ways of implementing such a technology through autonomous and decentralised networks.

to go through the horror of the bureaucracy of the patent office and to be willing to defend the patent rights in court, in case the invention gets used differently than what we aimed for. Patents are, as well, expensive to acquire and enforce. Another problem is that collaborative projects, both software and hardware, belong to a community or to the all community (commons), therefore the step to patenting means that someone would take authority in deciding what and how to patent.

There is another way, and this is an easy one, that allows us to avoid bureaucracy. It is as simple as making a detailed description in a public document (see internet) of what an "invention" looks like, and release it with whatever free license or any license at all. In this way, at the moment a third-party might actually patent the invention, you can invalidate it via prior art- proving that something existed before the date a patent was filed. The revelation of prior art has the power to invalidate a patent during the application process or after the patent has been issued. Of course this won't protect from big corporation interests, but it can be used regardless as a legal tool- if one is bothered to act through legal avenues.

The prior art mechanism can be used by anyone against any patent holder. It is not something meant only for developers, designers, inventor or whatever producers of knowledge, it is something that usually patent offices or lawyers have the task of investigating, but that anyone can use as an attack. Prior art only invalidates, it is not a tool to claim rights.

The prior art invalidation system teaches us three things: the first is that it is always a good idea to document and share our ideas; secondly it gives us a tool to fight the patent systems as non-producers; last, it questions originality. A deep prior art research will in fact uncover the evolution of systems and the collective dimension of creation, rather than finding an origin, an author.

Diagrams

The openly obscure and closely transparent written and visual language of patents is just one of the many languages of systems.

A system can be visually expressed as a diagram. Some people see diagrams as aids to systematization and as problem solvers while others see them as "proliferators of a process of unfolding" or maps of "movement".

The first is a means to the understanding while the second opens new possibilities.

”It is not a question of two fundamentally different types of diagram; rather this oscillating between systematizing and opening is inherent in the diagram [...] Correspondingly, diagrams would not only take care of ”order and stability” but would also mean ”destabilization and discovery””.

There is in fact ”no diagram which does not have among its points which connect it, relatively free or uncoupled points, points of creativity, of change, of resistance”⁶.

On specific and generic tools

”Those who believe that tools are simple utensils have never held a hammer in their hand, have never allowed themselves to recognize the flux of possibilities that they are suddenly able to envisage. ” (Latour, 2002)

If more generic technologies would be part of every toolbox, next to screwdrivers, tape, sandpaper and nails there would come a moment in which we can do almost everything ourselves, and the relation to products would be transformed.

With generic I mean an idea similar but opposed to the one of simplification: because even though the exploration of systems might first suggest a zoom in it is in effect the general view that gives knowledge of the system.

Specialization and Simplification are both ways to strip systems of their network, the first by excluding external relations the second by excluding internal ones. A generic design is a design that in its un-specificity invites us to dive deep in its mechanism and then to imagine possible ways to interact with it. They therefore challenge interplay rather than use.

The more efficient and specific a thing is, the more we tend to simplify it (see society, phone, highway) and relate to it in the seemingly unique way they suggest. On the other hand the more basic, generic, a thing is the more we in fact understand its complexity, problems and potential. In this sense, generic systems act like raw materials: a piece of stone, as much as a piece of textile, doesn’t demand to be used in a certain way.

⁶Drawing a Hypothesis, Gansterer, 2011

You might throw the stone, or you might sculpt it, you might warm it up or you might crumble it; and the more we elaborate on this piece of material, the more we in fact inscribe instructions in it.

Richard Sennett in his book *The Craftsman* differentiates the specific from the generic as fit-to-purpose and all-purpose tools:

"The tool that simply restores is likely to be put mentally in the toolbox of fit-for-purpose-only, whereas the all purpose tool allow us to explore deeper the act of making a repair. " "in its sheer variety this all-purpose tool admits all manner of unfathomed possibilities: it, too, can expand our skills if only our imagination rises to the occasion. Without hesitation, the flat-edged screwdriver can be described as sublime, the word sublime standing, as it does in philosophy and the arts, for the potentially strange. In craftwork, that sentiment focuses especially on objects very simple in form that seemingly can do anything." (Sennett, 2009)

The understanding of the potential of a system -rather than the understanding of a system- makes us inventive, makes us active, curious. So why would we ever want to disclose potential from systems? Why is our concept of efficiency related to specific functions if this makes the use of things passive and uncritical? What would happen if these specific tools would disappear?

"Getting better at using tools comes to us, in part, when the tools challenge us, and this challenge often occurs just because the tools are not fit-for-purpose. They may not be good enough or it's hard to figure out how to use them. The challenge becomes greater when we are obliged to use these tools to repair or undo mistakes. In both creation and repair, the challenge can be met by adapting the form of a tool, or improvising with it as it is, using it in ways it was not meant for. However we come to use it, the very incompleteness of the tool has taught us something (194)." (Sennett, Ibid.)

Generic, all-purpose-tools are collectively created and owned, they are the actors of individual and collective development (think of wheels, looms...). They surely get produced and sold, under different shapes,

tastes and sizes, but they are less likely to fall into the category of products as their system breaks out of any local specific form and application. Technological advance, perfecting tools to fit ever more special purposes, doesn't only make it harder for people to engage with them, it also makes the engagement a rarer event. Specialization in fact is not solely the way tools gets assigned specific identities, it is also what shapes social life: "to each his own". This means that improvisation and experimentation get bound to restricted fields, roles, practices. More categories get created, and each of these is interfaced through its "proper" inputs and outputs.

Lathe biosas (live hidden)

"The increase in heterogeneity of packaging is directly proportional to the increase of homogeneity of systems"

While the potential of systems has to deal with its actualization into products in order to take part in the social game, individuals have to deal with their actualization into social identities. There are boxes for everyone to fit in, even for those rejecting the system itself; participating in social life means in fact often approximating our identity to the box closer to us. Products and objects make easier the discourse about systems and their use and the same mechanism counts for people. If we accept to self-define ourselves, to actualize ourselves into one of the many social categories continuously produced, we are taking part in the negation of individuals' potential.

Pushing creativity, experimentation and critique toward productization through institutions, markets or subcultures means inevitably to take part into these active and passive packaging processes. Living hidden means to not define our space of action, to not pre-determine our social interactions and live as potential.

"There is in effect something that humans are and have to be, but this is not an essence nor properly a thing: It is the simple fact of one's own existence as possibility or potentiality" (Agamben, 1993)

In the same way as the potential of systems cannot be truly narrowed to one or more applications, people can't be applied to one or another

category. And the fluidity by which people step from one identity to another -without ever finding the one that embraces all of their evolving attributes- shows the inappropriateness of the process that attempts to enclose these parts.

"The best and most free playground, the one we want to play in, is necessarily outside of these categories. That's where creativity and experimentation can grow autonomously, like weeds into cement cracks." () ()

But even if just temporarily, to each person is given his own box, a reliable and controllable unit that can be used in the build up of the social system. And there is no use in trying to get out from these divisions, as we will soon be put into a newer one. So rather than trying and acting outside of divisions, the break-down of social systems takes place when acting as black boxes whose relation between inputs and outputs is unpredictable, by being the unreliable black boxes of society.

Undesigning

How to go beyond the utilitarian approach to technology and achieve the convergence of ends and means? How to create things that are not defined in their function but dense of intention?

To achieve the "unproductness" of objects, a focus to their being 'as systems' is necessary. To combine purpose with undefined function might seem paradoxical: but it is in this strange connection that the multiplicity of possibilities reveals itself.

This activity creates artifacts based on the usual antiprograms of technology. Its program of action involves the traditional anti-program of design while its anti-program is the tendency to productization. The present socio-economical aspect of technology is transformed therefore into a negative degeneration that is consciously worked against in order to pursuit freedom. This turning around of program and anti-programs causes an overturning of meanings and values.

Undesigning shifts from a *critical/deprogramming* approach [break-down, short circuiting, cracking] to a *propositive/reprogramming* one [creating, re-purposing, hacking]. So while commodification runs its race after potential, by capturing it in one form after the other, the undesigning

process walks that path backward. By liberating each actualization into undisclosed potential.

The accessibility of the potential offered by non-products, allows and demands the involvement of people at every step of the life of objects. From idea through incubation to creation, imitation, modification, extraction, use, misuse and so on, and again through the cyclical nature of this generative process. But this is not a production line, or a structured process, is a system that doesn't need and doesn't want an orchestrating point.

And regardless of how complex this might sound, these sort of things happen everyday.

They happen in the blur, among groups of friends, communities and on the internet, all the time.

Layer after layer

Simpler artifacts have more explicit potential, as we saw with raw materials, code and all-purpose tools but it is only our lack of sensibility and intention, or perhaps simply ignorance, that makes us less active in front of a really specific tool. Once the technosocial black box is open, after we start seeing and looking for the system rather than the object, an endless flow of possibilities is disclosed. It doesn't matter anymore if we live immersed in fit-to-purpose objects and subjects or if we try to surround ourselves only with open systems. At the moment in which we are not respectful anymore of the unwritten laws of social behavior, at the moment in which we feel free to unwrap, dismantle, dissect, extrapolate, implant, share and mutate to our will and curiosity then even the more obscure of the blackboxes has subversive potential. The moment in which there are no more terms and conditions of use, and the logics of our relation to technology are transformed into a fluid and playful interaction. That is the moment in which we stop believing in the world of objects and we start seeing and acting in the system in which we are entangled.

Contents

0.1	Preface	2
0.2	Structure	3
1	Approaches	5
1.1	Objects and systems	6
1.2	Simplification	7
1.3	Blackboxing	8
1.4	Program / Anti-program	9
2		11
2.1	Packaging, embedding, hiding (and technical numbness) .	11
2.1.1	Packaging	12
2.1.2	Embedded systems	13
2.1.3	Smart Materials	14
2.1.4	Interaction design	15
2.2	Opening, customizing, participating (and political numbness)	16
2.2.1	From the medium to the process of creation of the medium	18
2.2.2	Dilution	20
2.2.3	Open-close	20
2.2.4	Intention	23

Bibliography

- Agamben, Giorgio, *The Coming Community*, 1993.
- Agamben, Giorgio, *Art, Inactivity, Politics*, 2007
- Agamben, Giorgio, *Contesting Civil War*, 2010.
- Bauwens, Michel, *P2P and Human Evolution*, 2005.
- Berardi, Franco Bifo, *Communism is back but we should call it the therapy of singularisation*, 2009.
- Bracken, Len, *The Spectacle Of Secrecy*, 2000.
- Carroll, Lewis, *Alice's Adventures in Wonderland*, 1865.
- Carroll, Lewis, *Through the Looking-Glass, and What Alice Found There*, 1871.
- Doctorow, Cory, *The Coming War on General Computation The Copyright War was Just the Beginning*, 2011.
- Debord, Guy, *The Society of the Spectacle*, 1967.
- Dunajcsik, Pter maxigas, *This is rocket science! Modernity, Capitalism and Liberalism in Hacker Culture*, 2012.
- Eco, Umberto, *On the Impossibility of Drawing a Map of the Empire on a Scale of 1 to 1*, 1998.
- Flusser, Vilem, *About the word design*, 1993.
- Gansterer, Nikolaus, *Drawing a Hypothesis*, 2011.
- Gershenfeld, Neil, *How to Make Almost Anything: The Digital Fabrication Revolution*, 2012.
- Harman, Graham, *Prince of Networks: Bruno Latour and Metaphysics*, 2009.
- Heidegger, Martin, *The Question Concerning Technology*, 1977.
- Kleiner, Dmytri, *The Telekommunist Manifesto*, 2010.
- Latour, Bruno, *Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts*, 1992.
- Latour, Bruno, *On actor-network theory*, 1996.
- Latour, Bruno, *Pandora's hope: essays on the reality of science studies*, 1999.

Latour, Bruno, *Technology is Society made Durable*, 2000.

Latour, Bruno, *Morality and Technology: The End of the Means*, 2002.

Latour, Bruno, *Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern*, 2003

Law, John, *Notes on the Theory of the Actor Network: Ordering, Strategy and Heterogeneity*, 1992.

Law, John, *Actor Network Theory and Material Semiotics*, 2009.

Levy, David H., *Portable Product Miniaturization and the Ergonomic Threshold*, 1987.

Marklund, Carl, *Open society, its enemies and its enablers: Obscure transparency and paradoxical openness*, 2012.

McLuhan, Marshall, *Understanding Media: The Extensions of Man*, 1964.

McLuhan, Marshall and Nevitt, Barrington, *Take today: The executive as dropout*, 1972.

Nowotny, Stefan, *Publicity and Secrecy*, 2011.

Papanek, Victor, *Design for the Real World: Human Ecology and Social Change*, 1971.

Sennett, Richard, *The Craftsman*, 2009.

Stephenson, Neal, *The Diamond Age: Or, A Young Lady's Illustrated Primer*, 1995.

Thrift, Nigel, *Re-inventing invention: new tendencies in capitalist commodification*, 2006.

Tiqqun, *This is not a Program*, 2011.

Tkacz, Nathaniel, *Open sesame: Openness is the new magic word in politics but should governments really be run like Wikipedia?*, 2013.

Toffler, Alvin, *The Third Wave*, 1980.

Unknown, *Internet Census 2012, Port scanning /0 using insecure embedded devices*, 2013.

Williams, Roy, *Managing Complex Adaptive Networks*, *Proceedings of the 4th International Conference on Intellectual Capital*, 2007.

Williams, Roy, *Affordances and the new political ecology*, 2012.

Wright, Stephen, *Digging in the Epistemic Commons*, 2007
[internetz links here](#)