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2010

'In time of plenty and in time of want'.
On the attachment between designers and their objects of design

Abstract. The paper discusses the way designers relate to their object of design, and how objects of design unfold in practice. By drawing on science and organizational studies, and with a particular reference to a psychoanalytical debate on the notion of desire, I discuss a detailed case study in Jewellery design and I argue for an ambivalence of attachment between designers and their object of design. Through the analysis, I individualize two basic drivers (lack and plenty) that help to expose to analysis the different ways designers attach to their objects of design as well as how objects of design unfold practices.

Introduction

The following paper elaborates on the notion of attachment between designer and their object of design and the way objects of design unfold up to a final product. The aim is to discuss the contribution of some notions from organizational and science study that draw on psychoanalysis for the theorization of attachment between expert practitioners and their object of activity in organization. I start by discussing Knorr-cetina's notion of object of knowledge (Knorr-Cetina, 1997, 1999, 2001) and her definition of post-social relations, and I will underline how these concepts draw on Lacan's theory of desire as a lack driven force. I show that theories of attachment that build on the notion of lack provide interesting insights on the way attachment between designers and their object of design unfolds. However, I also show that those the notion of lack – in its translation into the design domain - provides explanations that are only partial and, more dangerously, that risk falling into forms of structural determinism and reductionism. In order to overcome this limit, I take advantage of a controversy in the psychoanalytical discussion of the notion of desire, and I discuss another take on the notion of desire where it is problematized differently. It is in fact by translating Deleuze and Guattari's bitter critique of Lacan's theory into the sociology of attachment that I will elaborate another look at the relation between designers and their objects of design that has nothing to do with lacks. This different form of attachment has rather to do with plenty and possibilities, and it provides a possible solution to the reductionist pitfall of the translation of a Lacanian framework into the study of design.

Through the illustration of a detailed case study on Jewellery design, I argue for an integration of the two different notions of desire that fit well with some recent contributions to the sociology of attachment, especially with the work of Gomard and Hennion (1998) and Hennion (2001, 2007). In particular I will show how Hennion central notion *co-formation* (2007) asks exactly for two different notions of desire aimed to explain and describe the formation and unfolding of attachment between the designer and the object of design. A closing metaphor that summarizes my argument and where the Deleuzian notion and the Lacanian one are translated into design and integrate one

another is then offered at the end.

1. Post-social relations as a form of lack-driven attachment in science

In this part I will introduce some recent theorizations of the attachment between the practitioner and his/her object of activity. In particular I will focus on the work of the Austrian sociologist Knorr-Cetina. In studying the way scientists fabricate their scientific results, the Knorr-Cetina (1997, 1999, 2001) developed a theory of post-social relations in order to describe the relationship between scientists and their object of enquiry - which she defined as *objects of knowledge* - in the everyday day work of scientific laboratories. According to her, objects of knowledge are characteristically open, question-generation and complex:

> *They are processes and projections rather than definitive things. Observation and enquiry reveal them by increasing rather than reducing their complexity. Objects of knowledge seem to have the capacity of unfolding indefinitely and in this they lie at the opposite end from the tools and the commercial goods which are ready-to-be-used or traded. These tools and goods have the character of closed boxes. Objects of knowledge are always in the process of being materially defined, they continually acquire new properties and change the ones they have […] interest turns elsewhere, in a meandering movement describable as a trail or chain of searches, led on by lack of object.*

An object of knowledge is dispersed, and signifying (meaning generative). Knorr-Cetina stresses its non-identity with itself, which features practices of unfolding, and naming (2001: 184). In this sense, she offers an ontology of the object of knowledge based on an open-ended *becoming* rather a fixed *being*. According to her view this *becoming* is due to the fact that the object of knowledge embodies a structure of *wanting* which traditionally characterizes the individual as in Freud. Sociability and the attachment to an object of activity are then understood as *lack-driven* (*…led on by lack of object*):

> *Sociability here consists in the phenomenon that the object takes over the subject's wants as a structure of wanting, the subject becomes defined by the object. (ibid.)*

This structure of lacks and wants - which intuitively belongs to humans - is here used to describe the fabrication of the object of knowledge as a progressive accumulation of single fulfillments of visible lacks (which become manifest as the fabrication of new scientific knowledge progressively unfolds).

> *To relate this now to knowledge objects, the point I want to stress is that the representations experts come up with in their search processes are not only partial and inadequate, they also tend to specify what is still missing in the picture…if the argument about the expanding role of knowledge and expertise in contemporary society is right, objects understood as continually unfolding structures which combine presence and absence will have to be added to the sociological vocabulary.*

The object of knowledge's unfolding nature is described as a process driven by lacks and wants. These are intrinsic and incorporated into the object to be discovered which progressively discloses new demands to scientists who passively attend to objective lacks' presence and absence. In describing an instance of this post-social relation, Knorr-Cetina *(1997, pp.17-19)* provides the example of McClintock's libidinal and inspirational solidarity with her object of knowledge:

> *I found that the more I worked with them the bigger they [the chromosomes] got, and when I was really working with them I was not outside, I was down there. I was part of the system. I was right down there with them, and everything got big. I even was able to see the internal part of the chromosomes – actually everything was there. It surprised me because I actually felt as if I was right down there and these were my friends [...] As you look at these things they become part of you. And you forget yourself. The main thing about it is to forget yourself.*

In this particular form of attachment, that I will call *lack-driven* from now on, the subject forget him/herself as his/her abnegation toward the object of knowledge is almost

absolute[1].

2. Lack and attachments

In a small note in one of the central work about object of knowledge, Knorr-Cetina (2001:188) affirms that she draws on Baas' understanding of the Lacan's notion of thing, his theory of desire and of the process of individualization (that is the specific *becoming* Lacan focused on).

In her conceptualization of objectualization and post-social relation, Knorr-Cetina seems to basically appropriate the theory of individualization as described in Lacan and to turn it inside out in order to talk about objects of knowledge: these (and not individual's as in Lacan) become structures of lacks and wants and thus drive the process of discovery and fabrication of scientific results. Object of knowledge's lacks emerge during the process of scientific enquiry and act as pointers to which scientists attend to. In this way, the scientist depends on objects' progressive disclosure of lacks as if the object itself would 'want' scientists to act in a specific way. In his argument about the pragmatics of passions, Ladri (2007) discussed the attachment of mathematicians to mathematical objects by drawing on the same argument:

> *Incompleteness renews attachment to the object of knowing, only temporarily gaining stability. Here, temporary closure implies the confrontation among and within epistemic communities, where the cognitive, together with emotions and aesthetics, plays a major role [...]*
>
> *Far from being complete, mathematical objects present an incompleteness of being which is the focus of attachment for the community of knowing.*

[1] Knorr-Cetina sticks with same arguments even when - more recently - analyzes the financial market as an object of attachment that occurs – according to her – within: *an environment of reiterated lacks* (2000, p. 141).

In this way, also mathematicians are rendered as subjugated to the unpredictable and intrinsic unfolding of mathematical objects that will progressively and indefinitely disclose their supposedly objective[2] lacks. It is important to note that Ladri's work aims to underline how desire emerges as a collective attachment of an epistemic community to its object of knowledge and not so much as an isolated individual disposition of a subject to an object. However, his mathematicians are not different from the image that Knorr-Cetina offered: even when they seem active, they are described as acting with an eye (both eyes!) to mathematical object's lacks whose very nature is usually – and unfortunately – taken for granted (e.g. irrefutably objective) and poorly addressed in the analysis (as if it is of not interest for the sociological enquiry).

The argument that I want to make here is that to take the notion of lack as central in the understanding of attachment of practitioners and their object of activity, and in its unfolding might risk to fall into a form of structural reductionism and determinism especially when we move from object of knowledge to object of design. The danger is that the relationship between subjects and their objects of activity is systematically reduced to explanations that only see objects of activity taking over their subjects[3]. My claim is that the notion of lack (and the related idea of lack-driven object's becoming and attachment) in its translation from psychoanalisys to the domain of science and technology provides only a partial explanation of the way objects *become* and attach to their subjects. In particular, I claim that a lack-driven explanation seems particularly successful when the relationship between objects and subjects is framed within highly ordered and scientific settings but shows severe limits otherwise (e.g. in many moments of a design process).

In order to discuss this central aspect, I introduce a case study concerned with the

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[2] Ladri adds that: *studying the situated character of making mathematics does not affect the belief in the objectivity of mathematical knowledge, and it does not necessarily lead to radically post-modern positions in respect to knowledge [...] On the contrary, it can open additional 'glances' on scientific practices.*

[3] The lack driven framework has been recently employed in a wide variety of organizational domains such as the construction of an individual or organizational identity (Driver, 2009a, 2009b), the fabrication of a scientific objects (Knorr-Cetina, 1997, 2001) of financial market results (Knorr-Cetina and Bruegger, 2000), of mathematical objects (Ladri, 2008), of a new piece of architecture (Ewenstein and Whyte, 2009).

design and production of a new silver piece of jewelry. In particular, the idea is to split the following case study in two little chapters: the production of the new piece of jewelry, and the early conceptualization and design that precede its fabrication. The first chapter (namely the model making and industrial production of a silver ring) is used in order provide an illustration of a lack driven becoming of an object of design and the kind of attachment with designers that is produced. This first narrative will give me the chance to provide an illustration of a lack-driven attachment but also to point to the need to elaborate an alternative notion to those that draw on the Lacanian desire. The second chapter of the case study instead focuses on those early stages of conceptualization and design of the silver ring and shows how a lack-driven explanation of the way designers attach to their objects of design and how this relation unfold proof to be inadequate.

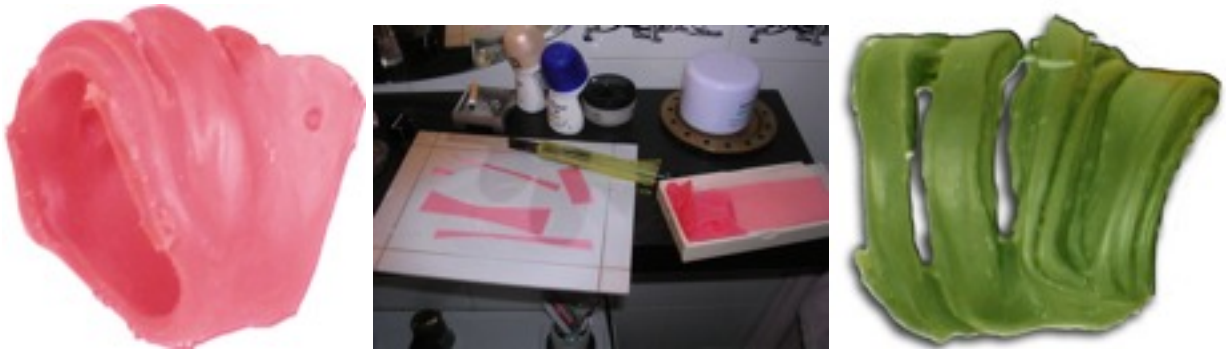
3. Chapter one: The birth of a new jewelry silver collection

The example that I want to provide here refers to the domain of Jewelery design and, in particular, it deals with the fabrication of a new silver ring. The case study is based on extensive ethnographical observations during which I have tried to map the trajectory from the first instantiation of an idea about a new silver jeweler collection to its final realization ready to be sold in the market. As I have mentioned, the idea here is to focus on the production part as an illustration of lack-driven unfolding and the form of lack-driven attachment that it produces.

In order to create a new prototype for a new silver ring, Simonetta[4] (S) uses pink and green waxes. These are as soft as the waxes used for candles. The process starts with a sheet of soft wax (pink or light green), which is cut into irregular strips and then warmed with a hair dryer. Simonetta takes a strip of softened wax and moulds it around a metal bar or her finger using her fingertips and a few small tools. She folds and crimps the soft wax around the bar and touches up little pieces with a small stick. She takes no

[4] Simonetta (a fictious name) was one of the jewellery designers I have extensively shadowed.

more than one hour to create a couple of pink and green wax-prototypes with unique wax drops and irregularities (see Picture 1).



Picture 1 - Two soft wax prototypes and raw wax

The prototypes are then wrapped with thin paper, placed in a small plastic bag and enclosed in a very small cardboard box before to be sent to a laboratory for Galvanic electro-formation. Galvanic processes are chemical treatments whereby silver – chemically dissolved in a watery solution in form of ions – flows through an electric current and get deposited on the surface of an electro-conductive object in the form of a silver layer (basically silver-plating a given object[5]).

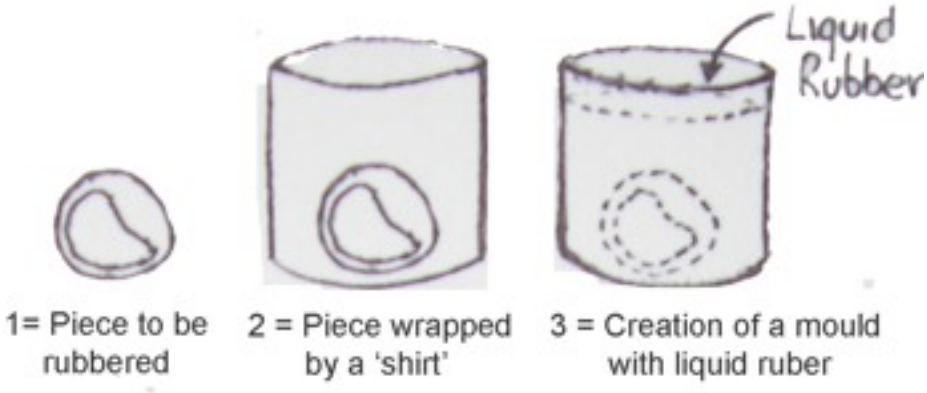
Antonio is the expert model maker who deals with the Galvanic electro-formation process. After having unpacked the soft wax models sent by Simonetta few days ago, he starts to create what is called a rubber. Rubbers are gummy hollow containers that provide a negative mould for objects to be replicated before their electro-formation. But before to do this, Antonio has need to check something. It turns out that silver ions

[5] The galvanic process is performed in galvanic baths that are containers for the solution where pieces are immersed orderly mounted on removable chassis. The galvanic bath's solution consists of water, polishing solution and potassium cyanide. Dissolved in each litre of solution are 32/35 grams of silver (7kg per 200 litres in each bath) in the form of silver salts that are basically molecules. The process consists in positively charging a metal basket containing pure silver grain (which is called the anode) and in negatively charging a chassis to which the items to be sliver-plated are attached (and become the attracting cathode) and which is entirely immersed in the solution. Each item (immersed wax rings in our case) attracts silver ions, which deposit on its surfaces, while at the other pole new pure silver grains slowly dissolve, thereby maintaining the presence of silver ions in the solution constant. Part of the process is invisible and Antonio has to deal with it. Electro-forming final models in the chassis take between 24 and 36 hours.

dissolved in the galvanic bath cannot reach those areas of an object's surface which are too tightly close to each other (e.g. apertures, tiny holes or small details). Since silver ions are attracted by the surface they are less likely to deposit where this surface is too difficult to reach. Simonetta's wax rings seem to show several small details and small apertures that Antonio describes as such:

> *[...] see these models, I can electro-form them like this if I want but...look, do you see these small apertures and details? The ions do not deposit in there, they cannot reach that part because they will be attracted before. In electro-formation these are called 'critical angles' and if you do not deal with them you will have a bad silver deposit and the final piece will crack...therefore I have to correct them now.*

Antonio is therefore asked to put some extra plasticine in what he calls 'critical angles'. After having carefully put some plasticine with a small metal stick, the original wax rings can be now *rubbered* in order to create what is called a *master copy*. Antonio takes the original prototype and fixes it on a circle base (1 in Picture 2) using glue. He then prepares what he calls a jacket for the prototype. This is a cut piece of plastic tubing (as used by plumbers) that acts as container's walls (2 in Picture 2). Together with the circular base to which the piece is fixed, this short tube enwraps the model, which now looks as if it is contained in a jar or a glass. After doing this, and paying attention to how well (1) and (2) fit together with no flaws, Antonio begins to pour cold liquid rubber into this 'container' until he has completely filled it. His idea is to obtain a rubber mould, as in the illustration.



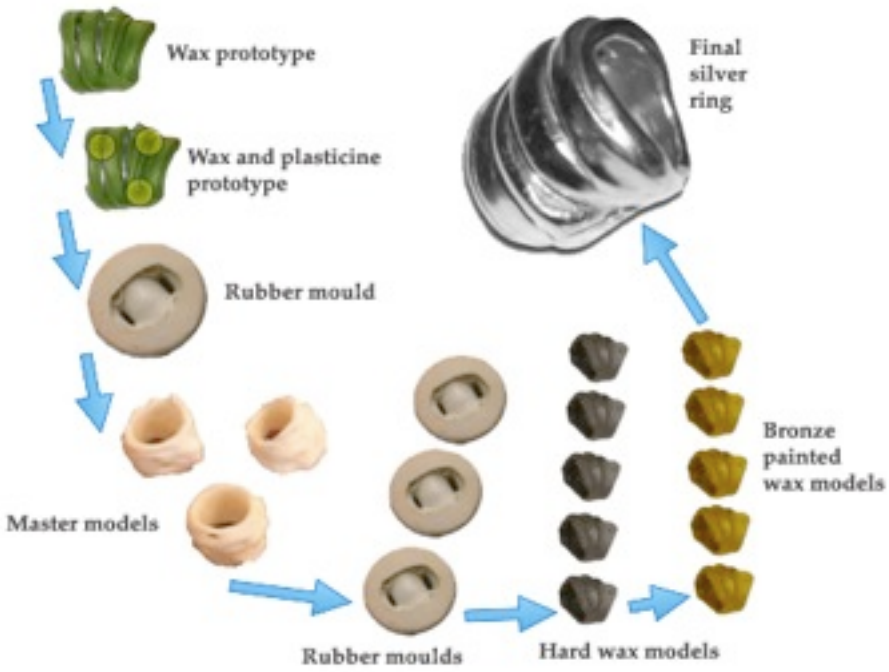
Picture 2 - Representation of the prototype and the use of a jacket for the liquid rubber

The original ring designed by Simonetta is now inside a solid rubber mould waiting to be disclosed. Once solidified, the rubber looks like a white cylinder that, we know, contains the original prototype. Antonio now slices open it with a sharp cutter and removes the wax item. This first passage only serves to obtain a temporary rubber mould, which now perfectly replicates the shape of the original 'corrected' wax prototypes. The original wax model (now that Antonio has a rubber mould of it) is no longer useful and can be put aside. The point now is to create a new and much stable master model from the mould just obtained. The mould is now put back into its original jacket and cold liquid resin is poured into the hollow shaped space left by the soft wax model thus originating a resin copy. Like rubber, resin takes almost an hour to solidify and to dry. Then the model (now in resin) is removed from the rubber mould, cleaned, and smoothed with tiny drills. The artificial resin version is considered the starting-point for creation of definitive silver pieces. Original wax is moldable and suits well Simonetta's prototyping process, but it is difficult to modify because it melts easily and is too soft to touch up with drills. Artificial resin has instead the properties of being much more workable, less fragile and more likely to suit the various tools (like tiny drills) Antonio has to use in his lab. Now that a master model is ready, the point is to make as many replicas of it and to electro-form them to have final silver rings.

Electro-formation processes are usually employed with models made of low-flux alloy because they are electro conductible but still not difficult to melt (electro-conductibility and low melting point are characteristics required by the process). This means that, traditionally, resin models would need to be converted into low-flux alloy copies. Instead, Antonio is proud to show me that he is able to electro-form not only low flux alloy models but also any other object even if it is not electro-conductible in nature. Instead of creating alloy based copies from the master copy as Simonetta requested (thirty in the case I have witnessed), Antonio use hard wax to create thirty master's replicas[6]. Then

[6] This black wax is very different from the sort that Simonetta uses to model prototypes: while light green and pink waxes are soft, have low-temperature melting points, weigh less and have low granularity, the dark waxes in A's workshop (black, grey and dark blue) are harder (they feel like plastic to the touch), have higher-temperature melting points, weigh more and have higher granularity.

he paints them with a special bronze-based paint that renders the entire surface electro-conductible. In this way, he is able to retain the original shape (also corrected of its critical angles) and to provide it with the physical and chemical properties that the electro-formation process requires. Silver ions will now deposit all over the sprayed surface and - thanks to the bronze pigments in the paint and the removal of critical angles - rings will be homogeneously plated. These final bronze-sprayed master models in hard wax are ready to be mounted on special chassis to be immersed in the galvanic baths and be electro-formed. Space prevents me to describe in detail the many tricks and craftiness that Antonio uses to deal with these shapes and different material[7]. The process in fact advance for many more passages because as the hard wax rings become plated with silver, they have to be emptied by warming the whole product up to let the internal hard wax leak out from a purposefully made hole that, then, has to be sealed through soldering. The silver ring is then polished, brushed, washed and so on. I stop here, as I believe this part of the process is rich enough to support my argument.



Picture 3 - Recapitulation of described passages

[7] For a detailed analysis of how A manage to deal and interact with the invisible forces in play in the Galvanic baths see Storni (2007). For an organizational analysis of this very same case see Storni (2009).

3.1 Interlude

In the case I have just presented, a lack-driven explanation seems to be adequately describing the way the object of design and its attachment with subjects unfold and, maybe, it is also fairly adequate to look at the very nature of scientific objects and their becoming within well-structured scientific laboratory practices (as in Knorr-Cetina or Ladri). From the very first instantiation of the soft wax prototype, the object of design (a *silver-ring-to-be*, that is indeed a *becoming* and not a *being*) enters a process of fabrication where it progressively discloses lacks as follow. As soon as the soft wax model enters the modeling laboratory, it lacks smoothness because thigh angles would compromise a proper electro-formation. Corrected prototypes are then too soft, and lack the capability to retain the original shape. They have to be converted into artificial resin, and then multiplied, and then bronze-sprayed and so on. As the object of design unfolds in the process, new lacks emerge, and designers (e.g. Antonio) do not have much choice but attend to what the object of design *wants them to do*. Not differently from the way Knorr-Cetina describe her scientists (indeed by using the metaphor of fabrication) or Ladri describes his mathematicians, subjects *forget themselves* in the very act of extinguishing 'objective' object of design's lacks.

However, it is important to precise that what we witness in our laboratories concerns expert and well-established prototyping and fabrication practices. Not differently from the laboratory described by Knorr-Cetina, practices are based on the accumulation of expertise, the efficient alignment of space, material and machines and the reproduction of a specific dominant order. Everything is well organized and what deviates from a standard (such as for instance tight angles) is easily put back in track. In this sort of highly ordered context, objects of design lack within a certain set of prefigured possibilities that are basically inscribed in the stable arrangement of things. In the case I presents, object of design's lacks always point to something that already exists (as a standard size or a machine to be used), that cannot be modified (as a law regarding a

certain procedure or the irreversibility of a transformative action), essentially, that is necessary (as a compulsory treatment of the physical characteristic of a specific raw material). In such order, the object of design *becomes-through-lacking* and so Antonio's attachment to it does.

The problem here is that a framework that uncritically draws on the Lacanian notion of lack might easily insinuate a form of discrimination between what looks stable, necessary, objective, ordered, pre-figured, exploitable, and what is not stable yet, not necessary, not objective, not entirely pre-figured or pre-figurable, un-explored, and so on. This discrimination bias can have consequences on the way we theorize attachment between designers and objects of design because it might reinforce the idea that subjects become attached to their objects only as a result of their giving up to objective lacks. I believe that this emphasis on an inescapable abnegation toward what becomes objectively, visibly and progressively empty can easily afford reductionistic and deterministic accounts. Individual or collective, the object of activity is constantly defined as *needy,* and subjects are seen like trapped between it and the ordered structure that makes it lacks. Note that I am not saying that Lacan was a reductionist. His concerns were very different from the ones in this work. What I am saying is that an application of the notion of lack in the explanation of how objects of design unfold and attach to designers risk to afford structural determinism.

I argue that the notion of lack become relevant in the understanding of the formation of attachment and in the unfolding of the object of design only when a specific order is so strongly established that clearly prevails over what might resists or challenge it (another order where for instance our ring is produce through, say, investment casting and not electro-formation). A further investigation of how our object of design has come into being shows many earlier passages that are of a rather different nature than those in Picture 3. During these early stages, the unfolding attachment with our ring-to-be has pretty often nothing to do with object of design's lacks. Rather it has to do with multiple possibilities in a dis-ordered setting where entities are not in full control and relations are not pre-figured. Investigating the formation of the very order that has produced our lacking ring opens up to a different conceptualization of attachment and the way object

of design can unfold and relate to the designer. Rather than be exiled to the realm of incompleteness, the next part of the story shows that a non-lacanian way of thinking the evolving relationship between designers and their objects of design is also needed.

4. Chapter two. The birth of 'Malfatti'

Carlo is from a small town in Tuscany while Simonetta comes from Molise, where they now live together. Simonetta studied architecture in Florence where she met Carlo. Simonetta graduated in 1998, and after a master program in jewellery design in Florence, she found a job as a jewellery designer with a very popular Tuscan gold company. She also had her own portfolio of drawings to show to companies at annual gold and silver fairs. Carlo began to be interested in the same activity and he started to collect working experiences in the field (even though he is not trained in design, he became a skilled user of computer design programs for 3D modeling and drawing).

One day they stumbled across an exhibition of 'Machines for Manufacturing Work and Computers' at Fortezza D'Abbasso in Florence. The exhibition was free and they decided to go. They refer to this event as a major turning point in their professional lives: *it was like being in the right place at the right time*, said Simonetta. Thereafter, their work slowly changed into what it is today. When they entered the exhibition, Carlo had already acquired experience in computer modeling, and what they found was a wide range of machines and computer devices (from very expensive to cheap) with which to prototype wax, artificial resin or bronze models starting from a digital model. They were amazed by those machines and were impressed by the endless opportunities offered. According to Simonetta, that was the beginning of their prototyping business. Some of the machines were affordable, even if not fully versatile, and they decided to buy two of them: a 3D scanner (that creates digital model of real objects) and a 3D plotter (that instead creates real objects from 3D models).

Picture 4 - 3D scanner and plotter and related computer application for 3D modeling

As said, Simonetta has a background in jewellery design and experience gained from previous work with big companies in Tuscany. According to her account, this experience provided entry into the *classical* world of designing gold and silver jewels, like bracelets, rings, ear-rings, pendants and so on. All these objects derive from a highly standardized procedure to make a new item. The process begins with sketches, which are then converted into detailed digital and technical drawings (from different perspectives and in color); these digital technical drawings are then used as input to the rapid prototyping machine. The prototype then undergoes micro-fusion. Both Simonetta and Carlo believe that this procedure determines the appearance of the outcome, as shown by this extract.

> *…we belong to the classical school where 90% of the outcomes look the same... for years. Starting with a drawing and proceeding according to classical methods (like those of the Arezzo school) induces you to produce always the same classical jewels for classical jewelry showcases…it is very hard to find an alternative… [Simonetta]*

As said, the prototypes used for micro-fusion are produced from digital technical drawings (which are Cartesian and regular). According to the informants' accounts, this is *how 90% of Italian gold and silver jewels are designed and produced.* As a

consequence, 90% of products on the market are described as similar[8]. The informants said that drawing and prototyping machines, and the use made of them by most of the actors in the jewellery market, are only able to generate static and rigid shapes: that is, objects whose appearance is '*always the same, seen again and again in jewellery*' (S). Moreover, since Carlo and Simonetta are minor players in the market, they must offer something very unusual, as Simonetta pointed out:

> *The only thing is to be different and try to distinguish yourself from the classical designers in the market. Ninety percent of people will continue to buy Morellato, but there will be 10% who may start saying they are bored with it and are ready for something new. [Simonetta]*

Their intention is to switch to a non-classical design of silver jewellery and to develop their own style by questioning the design methods that they have been taught. This has induced them to consider alternative materials, techniques and procedures in a search which has lasted for years.

As said, Simonetta and Carlo started working with real prototypes when they bought a 3D plotter and a 3D scanner in Florence. The use of these machines made them lose interest in hand-made drawings and focus instead on computer modeling. Initially, computer drawings had the advantage that they could be easily translated into 3D wax models by the new 3D plotter. Moreover, the new 3D scanner could be used to scan any sort of small object and convert it into a digital model for redesign.

These machines were very important at the beginning, and Carlo started to have control of them by learning and finally mastering dedicated computer applications for 3D modeling and prototyping. From being *drawing producers*, Simonetta and Carlo became

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[8] The classical jewellery school is based on microfusion (micro-melting) which, technically speaking, dates back its modern form to Benvenuto Cellini's (1500-1571) techniques for creating gold statues and objects in Medicean Florence (and also to the techniques used by the Greeks for bronze statues and idols). According to this procedure, a model made of wax (or *bassalega*, a metal alloy which melts at low temperatures) is constructed on the basis of a technical drawing or a standard shape. A mould is then cast around the model using chalk or clay. This negative mould is then filled with molten metal (gold or whatever) which melts the model inside and occupies its space. When sufficient time has passed, the mould is ready to be broken in order to obtain its now solidified content. This is an old and useful procedure with which to convert what has been initially modeled with *bassalega* or wax into a gold or silver item. The technique is basically the same in contemporary (though classical) jewellery design, where the use of low temperature alloys seems the most used.

wax and resin prototype makers, and this induced them to grow interested not only in selling ideas but also in finding ways to produce their own concepts by themselves. Silver is cheaper, and hence easy to start with. This was their first real attempt to create their own models. Unfortunately, the static nature of three-dimensional outcomes (now interpreted as a reminiscence of the classic jewellery school) had not yet been solved: Carlo and Simonetta were enriched by the opportunity scanning almost everything but – as they said about classical procedures – digital drawings were too static, and so were their final models to be micro-fused. Abandoning drawings and bringing a classical process 'home' through 3D machines was not of help achieving alternative shapes for a new collection.

Nevertheless, the machines (fundamental in their feeling autonomous designers) brought new raw materials to Simonetta and Carlo's attention: hard wax and resins in the form of bars for the 3D plotter. The shift from drawings to 3D models was also a shift from paper and its properties to wax and resin and their properties. Unfortunately, they soon realized that being able to produce real prototypes was of no particular help in creating a recognizable style, as this quotation shows:

> *The machines were really efficient and it did not take long to learn how to use them. The fact was that we were basically producing prototypes based on the same drawings and the same style and we were still using micro-fusion. We soon realized than machines could only create regular, static shapes, and in this sense they did not help us find our style. [Carlo]*

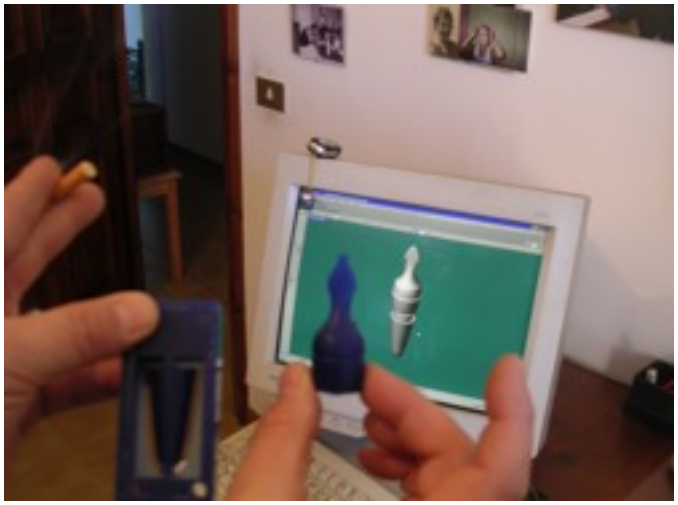

Fig. 5 - Carlo showing a designed model and its wax version

After few months of focusing on their own business, Carlo and Simonetta came to know several new aspects of the jewellery manufacturing industry. They were expert designers but not really conversant with production and fabrication processes. According to their past experience, micro-fusion was the way to convert prototypes into silver items. This procedure first required the preparation of a double-walled mould in clay (of the required shape) that will contain a cast of molten silver. This mould was made on the basis of prepared base-alloy simple models (basso-fondente which is a low-flux alloy). Moulds should be simple because the base alloy pieces had to be industrially produced in large amounts by numerically controlled milling machines on the basis of digital technical drawings. This are usually used for semi-finished articles in simple standard shapes (i.e. spheres, stick, chains etc...) to be assembled later on.

During one of his several trips to investigate possible workshops for the production of their collection, Carlo came across a new technique called electro-formation, which seemed revolutionary to them. This technique was used by Antonio, an expert model maker based in Tuscany. When this technique is employed, silver is not melted and put into a mould based on an earlier alloy model. Instead it is deposited all over a given object's surface by electric current through a specific chemical process. Carlo immediately recognized the advantage of creating hollow shapes. The weight of a model was a major concern with micro-fusion, owing to restrictions on the range of design possibilities (e.g. the bigger the item, the heavier it becomes and the less comfortable and affordable to costumers). To have hollow items as final results would have removed constraints about size and weight. Moreover, the galvanic treatment was not based on base alloy models and their moulds, but on any sort of tangible model, which did not necessarily have to be metallic. Carlo soon realized that, with electro-formation, the wax models created with their 3D plotter would be just ready for plating without the prior creation of a base alloy model and its moulds. Consequently, a standard procedure requiring too simple and static shapes could be avoided.

The connection with Antonio had to be tested, and Carlo asked him to produce a few trial pieces. This first production was still based on hard wax models designed and then

modeled with the 3D plotter, and the final items perfectly resembled their original models. Treatment was rapid and the required economic transaction affordable, also because the amount of silver used drastically diminished. Carlo and Simonetta got acquainted to electro-formation, which proved to be more versatile than they had thought. This was also thanks to Antonio, who was highly inquisitive, willing to experiment, and clever enough to overcome minor problems. He in fact explained to Carlo that he had also found a way to electro-form models made of soft wax (different from that used by Carlo and Simonetta with their machines, and easier to mould), and that he was able to create hollow items of any shape, even irregular or complicated:

> *You give me an object and I will give you back a hollow silver replica of it…you won't see any difference. [Antonio]*

In Carlo's account:

> *We decided to try with soft wax because we were curious about A's suggestions. With hollow items we could try out big shapes, even bulky and irregular ones. It turned out to be funny and interesting. Soft wax was really mouldable and easy to deal with. It provided us with a full range of new possibilities. We first tried with bracelets: big irregular bracelets (they would have cost a fortune if made with micro fusion)…we liked them, they were somehow ugly but beautiful… [Carlo and Simonetta]*

> *That was the birth of Malfatti, we cannot tell you how this name came up but the word stresses this point of being artificially made (like hand made) and ugly in the sense of irregular, tribal-like, ancient, almost human with flaws…well, definitely different from the static jewellery of classical school… [Simonetta]*

Antonio became a friend, and Carlo took up his suggestion of using soft wax instead of hard ones. Soft wax is moldable by hand, and it makes it possible to create items without machines or without the initial effort spent on digital drawings. Carlo and Simonetta's problem was that of the static nature of their outcome's shape, realization that static models or semi-finished components were no longer needed was a sort of new beginning. Electro-formation suggests abandoning concerns about weight and size, and the 'mysterious' procedure that Antonio claimed to have mastered started to show that even the static nature of pre-designed shapes was no longer a problematic requirement. That was the first moment when they clearly saw that they had to renew the entire design process and its logic in order to obtain their own personal,

recognizable and non-classical style. Simonetta's words help to picture this moment.

> *We did not really produce anything new during the first year, year and a half. We were a bit stressed and worried that things would not work out. Micro-fusion on the one hand and technical drawing on the other really pushed us to produce all the same. And of course there were costs to meet, and with these silver items we did not make enough profit to keep going. We had no margins for experimentation. Then Carlo met Antonio, and this for us was a major turning-point. [Simonetta]*

It is quite evident that he was right. Looking at the prototypes produced by Simonetta in our first part of this story, it become quite clear how it is not possible to obtain that sort of shape by means of a technical drawing and a numerically controlled miller machine or a 3D plotter. But now, new shapes are possible and affordable. After seven years, thanks to the discovery of electro-formation, with no initial drawings, and new raw materials such as soft wax, Simonetta and Carlo have created and now run their own collection that they call Malfatti ('roughly made'). The point of this collection is that the initial step is the direct creation of a hand-made prototype using workable soft waxes and clay. Since these prototypes maintain the uniqueness of the human touch, there is no point in starting with a drawing, except for a rough sketch made only in order to convey a general idea. This uniqueness marked the break with the classical school and classical shapes: after years of research Carlo and Simonetta now produce their collection as seen in the first chapter.

5. Desire in design: sociological meiosis of a concept

In the first chapter, I intended to offer an illustration of how the idea of lack-driven attachment reasonably explains the formation of attachment and the unfolding of the object of design. Through numerous passages, the object progressively discloses lacks that subjects have to constantly extinguish. I showed how this model is based on the Lacanian conceptualization of desire and the notion of lack, and I argued that the generated framework is appropriate only when dealing with highly ordered settings where objects of design really lack.

However, I also suggested that the notion of attachment and the way in which objects of design unfold do not have to be reduced to the Lacanian concept of lack and that another conceptualization is also needed. In order to show the limit of the way the Lacanian model is translated into the conceptualization of the relationship between expert practitioners and their object of activity, I have introduced a second chapter that focuses on early stages of our story. At that time, the apparent order of chapter one was not there yet, and the notion of lack do not support either the understanding of the formation of attachment between our designers and their object of design or the unfolding of the object itself.

The subjects we started with in the second chapter were drawings' designers whose object of design was vaguely to "*find an alternative* or *something new for our style*". Along with some sketches in a drawing book, these projecting utterances were the solely and almost intangible series of earlier instantiations of their object of design (a new jewelery collection-to-be). Through the exploration of possibilities and the association with unforeseeable elements (such as the 3D machines, Antonio and his lab or new raw materials), they passed from those vague and undefined statements and sketches to more tangible instantiations (such as the first series of regular wax models) and then to more detailed definitions of what they wanted to create: "*we can try big shapes, even bulky and irregular ones*". Through the consolidation of a specific order around the design of a new collection, Carlo and Simonetta further specified their object of design as being "*artificially made, ugly, irregular, tribal-like, ancient, almost human with flaws*", and moved from static plotted models to hand-made soft-wax prototypes.

This is clearly a series of passages in the *becoming* of our object of design and a moving formation of its attachment with Carlo and Simonetta, but apparently the progression we witnessed is not driven by lacks, not by necessity, not one where subjects are taken over by unavoidable object of design's lacks. While it is clearly a lack that separates a resin model from the following hard wax copy (as in Picture 3), the same cannot be said between the former vague *being different* and the later more defined *being almost human, with flaws.* Between the earlier plotted models and the first series of soft wax prototypes things were alike. In our first chapter, each one of the

instantiations lacks the one that follows; as said, they are linked by a condition of necessity in a pre-figured order. Contrarily, those in the second chapter did not. Instead of piling lacks up to subjugated designers, they opened up to the many possibilities available to be explored by active subjects. When there were no clear answers to the question of *being different* and *creating something new* – there were no visible lacks to fill, but rather a multitude of not clearly defined possibilities to explore and to experiment with. And this is not because the lack was difficult to perceive, but because there were not lack at all: still the process unfolds, still our designers attach to their object of design in their creative and generative formation. Accordingly to the way the object of design unfolds, also the way it attaches to the designer is different. In our first story Antonio was attached to the object of activity through a relation of necessity: he has to add plasticine, he has to create a resin model which then needs to be bronze-sprayed. On the contrary, in our second chapter Carlo and Simonetta show a different kind of attachment to their unfolding object of activity: they do not have to move from paper drawing to making hard wax model through the machines, they simply have this opportunity to explore. At that time, that was not seen as a necessary step. Similarly, Carlo and Simonetta did not have to pass to hand-made prototypes; it is just something they have tried to do in their explorations.

A different framework is therefore needed in order to balance the Lacan-inspired approaches and give room to another theory of becoming where the notion of desire is not the perpetual will for what cannot be fulfilled. Psychoanalysis offers, in this sense, a great opportunity through a particular debate that has seen the Lacanian notion of desire at the center of a philosophical controversy animated by Deleuze and Guattari who bitterly and directly criticized Lacan's position in their *Anti-Oedipus* (1983). The aim is obviously not to enage directly with this controversy as that is not the aim of this work. The aim is rather to integrate the lack-driven approach as in Knorr-cetina and other, with another look that draws on those who have criticized Lacan. Deleuze and Guattari, in fact postulate that desire does not arise from lack as in the Freudian and Lacanian tradition, but rather is a productive force in itself. The two French thinkers operate a critique of Western capitalist society as well as traditional psychoanalysis that,

according to them, trains individuals to believe that desire equals lack and that to consume is the only way to fulfill it. However, as showed by Guattari (1995: 76),

> *Desire does not depend on lacks, i.e. is an outcome from a feeling of lack or absence; rather, desire 'produces'.*

The two authors set themselves against the Freudian death drive, and consequently present an opposed view of desire as production/consumption, deliberately de-emphasizing destruction and lacks and emphasizing creative production. They argued for "*an achieved state in which desire no longer lacks anything but fills itself and constructs its own field of immanence*" (Deleuze and Guattari, 1987: 156). Desire produces, and it produces the real (Deleuze and Guattari, 1983: 26). Also Brewis and Linstead (2000) emphasize the idea of desire as an act of creation, rather than an act to fulfill lacks. Commenting on Deleuze and Guattari, they observe:

> *Desire is here radically reworked, not as a drive that is directed at the fulfillment of a need, a drive that works towards extinguishing lack, but as one that seeks to proliferate, to reproduce, to improvise, to diversify, to create or to explore, to be curious, to play. (Brewis & Linstead, 2000: 23).*

Thus, desire can be understood as being immanent, endless, rhizomatic (Deleuze and Guattari, 1976, 1988). Deleuze and Guattari argue that modern capitalistic society does not produce unified subjects and individuals prior to desire. Desire is an underlying social force similar to that of the libido. But desire is – in Deleuze's account – not only a personal trait (like libido) but also an ontological and epistemological principle (Styhre, 2006). Desire couples continuous flows and partial objects that are by nature fragmentary and fragmented in a constant entrepreneurial motion. Desire unfold, desired objects or subjects becomes, but not through lacks. Desire here has nothing to do with lacks. It is a creative chain of elements that unfolds to produce and to create a specific reality (its own field of immanence). For Deleuze to desire is to construct chains of elements; it is to build assemblages. To desire, to be attached to a particular object of activity does not necessarily imply having to fulfill visible lacks, it rather has to do with constructing something, drawing heterogeneous things together in a ways that is creative and generative of a new reality (*its own field of immanence*).

The philosopher Castoriadis (1987) – who, contrary to Lacan, is considered a philosopher of plentitude and not emptiness – also objected to desire being defined by the lack of the desired object, when in fact the object must be present to the psyche as desirable, which means that the psyche has in fact already fashioned it (quoted in Brown, 2005). Desire is not, or not only, someone's desire, and when it looks so, it has already started to produce a field of immanence, not out of emptiness and lacks but out of a plentitude of possibilities that are produced and rhizomatically build *ensemblements* of subjects and objects. It is not a never-ending reservoir of lacks, but a creative opening toward a plentitude of possibilities, toward an open-ended and unfolding chain of associated elements. As stated by Deleuze and Guattari, the unconscious "*is not a theater, but a factory!*".

6. The design dispositive: where attachment and unfolding occurs

What becomes even more clear here as well as in our second chapter is also that attachment between individual or collective subjects and their objects of activity does not occur in a vacuum and that their becoming is always framed in a larger set of interrelated elements that cannot be ignored as they constitute the very set of conditions of attachment to occur. In their sociology of attachment Gomard and Hennion (1998) pay attention to this aspect by elaborating on the Foucault's notion of dispositifs where certain *passings* (Garfinkel's word to talk about the becoming of subjects) occurs. Passings, especially in relation with music amateur, wine tasters and drug users, constitute the series of transformations that generate attachment by transforming each of the involved constituents: passionate subjects on the one hand and their unfolding objects of activity on the another. The dispositifs within which these passings occur are defined as socio-technical arrangements constituted by "*the devices, settings and means that permit, in situated settings, to produce attachment*" (1998).

The concept of dispositif has a long tradition in French philosophy[9]. Even if not coined by Foucault, it is in his *Histoire de la sexualité* that the term dispositif appears for the first time before to become a central concept in his philosophy (Kessler, 2006). In an interview with the team editing the psychoanalytical journal *Ornicar* that took place in 1977, Foucault underlined a series of intent behind his use of the concept. First of all, he wanted to underlying the heterogeneity of dispositif constituents that are composed by: discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions – in short, the said as much as the unsaid. In this sense, the dispositif becomes the set of relations that connects such elements. But more importantly, Foucault wanted to point out the dominant strategic function of dispositif that structure both power and knowledge.

At a first glimpse this very ordered dispositif can be assimilated to Knorr-Cetina's laboratories and scientific communities within which objects of knowledge – to the extent to which they are framed within a specific order (e.g. specific theories, laboratory equipment, well established procedures, and so on) – exert their structuring power over scientists through lacks. Not differently from Ladri's mathematicians, also Antonio is positioned within a dispositif made of tightly integrated rules, machines, routines, laws, institutions, discourses within which the silver-ring-to-be can disclose its lacks therefore determining Antonio's subjugated behavior.

Again, it is Deleuze and Guattari who discuss Foucault's concept of dispositif and extend its panopticonian interpretation (almost a lacanian castration) to a productive and creative desiring machine. By referring to the already mentioned metaphor of the rhizome (Deleuze/Guattari 1976, 18-19), the two French thinkers reaffirmed the heterogeneity and the interplay between elements already present in the Foucaultian notion but whereas the dispositif – in Foucault's writings – has a totalizing effect and is intimately linked to the production of power and knowledge, the rhizome, quite on the contrary, is related to a fluidity and openness escaping attempts of totalizing control

[9] A special number of *Hermès* is dedicated to the concept http://documents.irevues.inist.fr/handle/2042/14700, a neat review of the concept can be in Kessler (2006).

(Kessler, 2006). In his own take of Foucault's definition, Deleuze (1992) in fact shifts the focus from the idea that a dispositif establishes relations and connections between the heterogeneous elements that constitute it, to the disjoint and rather precarious character of such a formation:

> *But what is a dispositif? In the first instance it is a tangle, a multilinear ensemble. It is composed of lines, each having a different nature. And the lines in the apparatus do not outline or surround systems which are each homogeneous in their own right, object, subject, language, and so on, but follow directions, trace balances which are always off balance, now drawing together and then distancing themselves from one another. Each line is broken and subject to changes in direction, bifurcating and forked, and subject to drifting. Visible objects, affirmations which can be formulated, forces exercised and subjects in position are like vectors and tensors. Thus the three major aspects which Foucault successively distinguishes, Knowledge, Power and Subjectivity are by no means contours given once and for all, but series of variables which supplant one another. (Deleuze 1992: 159)*

Accordingly, it is important to note that although not mentioning Deleuze, Gomard and Hennion underlined that dispositifs – in their framework – *should not only be based on prohibition, reduction and regulation but also on production, revelation and multiplicity*. Apparently in line with what Deleuze describes as a *contours by no means given once for all*, it looks like that the two authors want to avoid reducing the notion of dispositif to a structuring entity where abnegation of subjects is already inscribed and only objects' lacks matter. Larger dispositifs do regulate and prohibit but also reveal, produce and multiply.

7. The attachment and the unfolding of objects in design: Ambivalence and co-formation

This series of arguments offers an alternative to those conceptualizations that draw on Lacan's notion of desire as a lack driven force to conceptualize the attachment between expert practitioners and their object of activity. It also provides with an interesting vocabulary that helps to address some of the passages that we have especially witnessed in our second chapter and for which a lack-driven explanation does not seem

to be adequate. By looking at Deleuze and Guattari, we can suggest that objects of design might have another way to unfold, to *become* and to attach to designers. Instead of lacks, objects of design might also display a plentitude of possibilities creatively producing and generating un-pre-figurable – but still immanent – realities.

In this way, the notion of attachment – at least in the design domain – is not longer reduced to the logic of a single driver framed in a disciplining dispositif but can gain here a sort of ambivalence, and can be seen as moving on a line where we have emptiness on one end - giving room to lack-driven attachment to objects that unfold though their progressively manifested incompleteness – and plentitude of possibilities on another end – giving room a different form of attachment to object of activity that unfold through the richness of multiple possibilities. In the first case, a strong order is already established and subjects serve objects' lacks. In the second case, multiple possible orders get instantiated, even temporarily and subjects are no longer subjected to the object's lacks: they rather explore, experiment, tinker, change and get changed.

Through the illustrative use of a case study and by briefly exploring the origins of the psychoanalytical debate on the notion of desire, I argue for an ambivalence of the notion of attachment as key to escape forms of determinism and reductionism hidden behind an uncritical application of the Lacanian ideas in the conceptualization of objects of activity. This intention to develop a more balanced understanding of the notion of attachment between object and subjects (without privileging one or another) is particularly evident in a recent work by Hennion (2001, 2007) where the author introduces the – rather symmetrical – concept of co-formation of object and subject in the study of amateurs. In discussing the activity of climbing a mountain he wrote (2007):

> *What climbing shows is not that the geological rock is a social construction, but that it is a reservoir of differences that can be brought into being. The climber makes the rock as the rock makes the climber. The differences are indeed in the rock, and not in the 'gaze' that is brought to it. But these are not brought to bear without the activity of the climb which makes them present. There is co-formation. Differences emerge, multiply and are projected. The 'object' is not an immobile mass against which our goals are thrown. It is in itself a deployment, a response, an infinite reservoir of differences that can be apprehended and brought into being. Stated otherwise, the more the object is social, the more it is natural – not the less.*

> *Pragmatism made us give up the dual world – things on one side autonomous but inert, things on the other side, pure social signs – so as to enter a world of mediations and effects, in which the body that tastes and the taste of the object, the group that loves it and the range of things they love, are produced together, one by the other.*

Here, Hennion neither mentions the subject's aim to climb the mountain nor he implies that the mountain determines a certain specific climbing path and not another. More that a set of lacks that progressively disclose, Hennion's mountain is instead defined a reservoir of differences that can be apprehended and brought into being by the activity of the climb. The objects and the subject co-form and unfolding is always a mutual process. Therefore, taking wine tasting as an example, the taste of wine is not a property of the wine in itself which unfold as the subject *forget* him/herself into his/her object of activity (*a la Lacan*) but something that emerges from the (produ)active encounter between objects and subjects. In our story Carlo and Simonetta eventually designed their Malfatti no more than the Malfatti designed Carlo and Simonetta as Malfatti-makers.

Objective lacks drive the progressive unfolding of the object and the attachment to its subjects only when the element of the dispositif are so well integrated and stabilized that the Foucaultian logic of prohibition, regulation and reduction prevails over the Deleuzian ones (based on revelations, disruptive productions, bifurcations and multiplications). But his last cannot be ignored to understand the nature of the attachment between designers and object of design and how these unfold.

In line with the notion of co-formation and according to the differences between the first and the second chapter of my case, I argue that if we witness only lack driven attachment and unfolding in our design field studies, then it means that we are late in the field and we have missed to witness what have made possible for lack to emerge, and how subjects and objects have been co-shaping one another before to get to the point where only objects appear to drive a process through their progressive lacks. Moreover, we risk understanding the past (when what today appear to be ordered was not) with the categories of the present (when instead the apparent order risks to be taken for granted). Now with Chromosome (as in Knorr-Cetina) and with Mathematics (as in Ladri) this bias could be accepted as it might be reasonably argued that

chromosomes as well as mathematical objects might be objective realities that are independent from the subjects who research them and that, sooner or later, will manifest in a specific way through the disclosure of unique and objective lacks. Objects of knowledge, scientific objects, mathematical objects (Knorr-Cetina, 2001; Ladri, 2008) but also – as we have said in our first chapter – design objects to be industrially fabricated (with an already prefigured fabrication process and outcome) suggest and reinforce a lack-driven explanation of attachment and of object of design's unfolding. They justify the emphasis on relationships of necessity over those of possibility, of singularity over multiplicity, of a disciplining dispositif over an open-ended rizhome and so on. The point is that at closer look (or as soon as we move into another domain of human activity) the uncritical and universal translation of the Lacanian framework into the domain of design might become unacceptable and verge to the absurdity to treat creative processes (e.g. inventions and innovations) as discoveries, to do not see the possibilities behind what now looks 'just' necessary.

In these latter cases, the Lacanian argument is not only limited and partial – as it only pays attention to those moments that follow the establishment of a structuring dispositive; but also, and more importantly, it is castrating of the creative power of subjects – as they are depicted like subjugated to object's lack (even when they do not deal with objective realities independent from them as with scientists described in Knorr-Cetina). This is the core of the reductionist and deterministic pitfall. Let have a look for example to this extract where a lack driven framework is used to describe an architectural design process (Ewenstein and Whyte, 2009: *20*):

> *The conversation about car parking is fundamental to the design of the building, as the need for car parking space will determine the location of the building on the site. However, there are also internal factors that constrain the design of the building, and as the team tries to understand the key uncertainties the conversation flips from a discussion of the landscaping to a discussion of the interior.*

The design is here described as being constrained by internal and external factors. At such stage, design seems deductive and similar to a scientific process: it is just a matter to find the more convenient solution. Also the language reaffirms the lacanian perspective: the car park is *needed*, the space will *determine,* and so on. But as I said,

in this way we are late in the field, we do not even have the chance to ask ourselves why the building has to be build, why we need a car parking in the first place. There is not room at all for confusion, surprise, breakdown, change in perspectives and so on which, as we have seen (Ch. two) are indispensable to really understand the results of a design process and grasp – in its full complexity - the nature of attachment between the involved practitioners and their object of activity. The risk is instead to have accounts that only look at constrains and relations of necessity over subjugated subjects. The next series of extract from the same paper reaffirm this tendency:

> *The sketch as epistemic object actively draws attention to its own incompleteness and poses the question back to the practitioner for further development. Where, indeed, should that line be drawn? If a ready answer is not at hand, the designer responds by trying a number of lines and assessing their impact on the design once drawn. Design here takes the shape of exploration or inquiry.*
>
> *Thus the important role visual representations play as knowledge objects is not just on account of their capacity to embed or inscribe knowledge. Inscribing, embedding and containing is only part of the story; the other is lacking, wanting and unfolding in uncharted directions.*

This last extract resonates clearly with Knorr-Cetina argument about scientific representations that are supposed to refer to an independent reality. The authors seem they have not realized that when an object of design lacks is only because a direction has been already mostly charted, pre-figured and inscribe in the progressively fixed arrangement of things (a structuring dispositif). And so we are left with analysis that discriminate necessity over possibilities or, even worst that see necessity even where there is not such a thing. In this way, the pitfall of structural reductionism and determinism is reproduced because lacks are *always there* independently from subjects. These sort of accounts do not seem to make enough room for Hennion's co-formation and for the much needed ambivalence between lack (in dispositif) and plenties (in rizhomes) I have described. This is a problem that, in my opinion, affects a great part of studies (of organization, of processes, of design) with an often-limiting obsession with control and order. It looks like that many scholars are not aware of their discriminatory bias that always privilege organization over dis-organization, order over dis-order, lines over loops, singularity over multiplicity, necessity over possibility. In this

sense a privilege of a Foucaultian notion of dispositif over a Delezian rizhomatic reading of the same notion. Again, it should be clear that I am not saying that Foucault or Lacan sin of structural reductionism – this might be the task of philosophers or psychoanalysts. I rather say that the notion of lack or of panopticon when traslate into domains that are different from the one where they originated, risk to afford privileging structure (or objects) over agency and subjects.

In the work by Ewenstein and Whyte that I have just describe, the bias toward singularity and objectivity is almost overwhelming and design (indubitably a creative and multivoiced activity) is reduced to a form of discovery of a sort of solution that is already – and it has always been – there, with subjugated designer who have to find it. In design processes, and arguably in many other construction processes, often some definitions prove themselves to be inappropriate in the light of new emerging elements, apparently indifferent aspects turn to be crucial, allies and resources get lost while some unpredictable others suddenly show up, some structural elements changes, some other get complicated, some other get further obscure, the controller becomes the controlled, breakdown occurs, and so on. In a framework that put lack at the center there is not room for the object to surprise, to confuse, there is not enough room for designers to be proactive, to explore different equally rightful solutions, to take over their objects of design and push them into different un-charted directions, and not pre-determined ones. As we have seen with in the second chapter, early stages – when the whole dispositif forms – are fundamental to understand how and why we might ended up in a clearly lack-driven situation, and so to understand why a specific form of attachment between subjects and their objects of activity formed. To neglect this very important aspect in the analysis of attachment and the way objects of design unfold might push to draw unfair conclusions on both the nature of the objects and the agency of subjects.

8. Conclusion: marriage in design

In this work I have tried to argue for two distinct ways to look at, talk and understand the

attachment between designers and their objects of design and the way object of design unfolds. On one side, we have the translation of the Lacanian notion of lack within science studies that, as in the case of Knorr-Cetina's post-social relations, expose to analysis how expert practitioners are taken over by their object of knowledge's lacks. Through my analysis, I have argued that using this framework to talk about objects of design – how they unfold and how they attach to designers – might produce reductionist accounts.

On an opposite side, and taking advantage of a notion of design that refuses the centrality of the notion of lack, we have a different form of attachment that has plentitude at the center, and that follows a logic of possibility rather than of necessity. In the domain of psychoanalysis and psychology, the two discussed notions of desire are mutually exclusive. Lacan on the one hand and Deleuze and Guattari on the other put forward two distinct schools of though on desire that are might be fundamentally irreducible, and possibly conflicting, to one another. However, in their translation into different domains aimed to elaborate on the notion of attachment between expert practitioners and their object of activity, I argue that the two notions can be complementary, one addressing the limits of another. In this sense, this opposition between lack-driven and plenty-driven attachment and unfolding of the object can be seen as a contribution to the notion of co-formation recently put forward by Hennion (2007). Such opposition provides – at least in the domain of design – a way to understand the direction of the process of unfolding of this co-formation: lack-driven with the object takes over subjugated subjects in well-ordered dispositive, or plentitude-driven when the subject does not fulfill lacks but creates and produces unforeseen associations with other elements thus producing new possible realities, forming new dispositive, or changing the ones already exist.

Important to note before to conclude here is that even if it seems I am suggesting that we have plenty-driven becoming and attachment during the early stages of a design process and lack driven ones at later stages, I would like to argue for an ambivalence and an open-ended movement between these two poles. My point in fact is that to claim that each step toward a certain concrete direction (e.g. fulfilling a lack) also represents

the possibility for a new detour and deviation, a breakdown, a redefinition of the elements in the dispositif and their interdependencies.

Rather than being characteristically driven by lacks with emptiness at the center, attachment of designer to objects of design and the becoming of the object of design itself can be viewed as alternating between lacks and wants on one hand and plenties on another. Catholic English speakers may find this opposition familiar because this resonates with what the priest pronounces while celebrating a wedding ceremony: 'in time of plenty and in time of wants'. Taking advantage of this expression, I suggest seeing attachment between designers and their object of design as rather a marriage where the entities are fused together in time of plenty and in time of lacks, for the best of times and for the worst of times. A marriage changes both its parts with the aim to generate something new out of this alternation between times of plenty and times of wants. Knorr-Cetina lacanian model is accurate to talk about the unfolding of event in time of lacks. Deleuze and Guattari critiques of Freudian and Lacanian psychoanalysis suggest the possibility to extend the framework and talk of attachment and unfolding in time of plenty. Lot of research has to be done in understanding the very nature of dispositive in design, of the participating entities and their relations. The two drivers-based marriage-metaphor is intended to open that door.

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