

FIRST COMPONENTS TO SUPPORT, TO MAKE DURABLE AND TO CONTROL CREATIVE INPUTS THROUGH MATERIALS AND PROCESSES

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ABSTRACT

Creativity in design allows ideas renewal and thus takes part in the dynamism and the longevity of a company. However, the creative individual draws his inspiration in various sources which in our case are technical materials and processes.

Our study is an applied research focused on creativity through materials and technical processes. It takes place in a specific context, a French traditional creative family company in the luxury world called Hermès. Here, materials and know-how are important and designers with different professional profiles mix with. Probably because of their initial training, their approaches and needs towards materials and processes can be different from a designer to another.

Materials could be an inspiration source for designers. Because materials concur to give a personality to product, many designers have recourse to material collections which they are private or public, physical or virtual, academic or commercial. The aim of this article is to show what could be the contribution of a material and process space to support and make durable creativity in a creative and multi-field firm.

Keywords: creativity, creation vs conception, materials and processes, material collection

1 INTRODUCTION

1.1 Context of the research

Our research takes place in a French traditional creative family company in the luxury world: Hermès, famous for its “carré” (square silk scarf) and its Kelly and Birkin bags (hand made leather bags). The firm, who has just celebrated its 170, was founded by Thierry Hermès. In 1837, he established his own manufacture of saddles and harnesses in Grands Boulevards district in Paris. At the time of the horse-drawn carriage disappearance for the engine car, Hermès knew to innovate by transferring its know-how from saddler to other products, in particular bags and luggage. All along its history, the family Hermès Company was managed by generations of businessmen who had the characteristic of adopting a different attitude compared with their time. Today, the point “cousu sellier” (saddler seam) became a characteristic of this great luxury “Maison”. Today, Hermès has grown up and it creates and manufactures a large range of products classified by “Trades”: Hand bags and luggages, Horsemanship, Silk and fabrics, Perfumes, Woman ready-to-wear, Men ready to wear, Accessories, Art de vivre et Art de la Table, Jewellery, Watches, Interior and Design.

“Time does not respect what was made without him”

(Yvon Men according to Ernest David)

A business, a company, a society, a firm or here a “Maison”, the name of a working structure isn’t insignificant. “Maison” both refers to historical family values representative of the luxury world regarding creation. More over, it’s differing from usual industry where it exists a “quality, cost and delay” triangle [1]. In Hermès, quality is a value, cost consequence of excellence and time is relative.

1.2 Aim of the research

There are many definitions of luxury today. It can be art or something rare [2]. It can be a special moment like a sunset in the desert [3]. In our study case, luxury is taking time to make something well [4]. In spite of the actual world economic crisis, luxury is one of the sectors who resist the more. In France, luxury sector represents an important part of French culture and of the economic activity.

According to the 2007 Colbert Committee report [5], French luxury represents a third of the market of the world luxury. But, in addition to the difficulties caused by the world-wide crisis, luxury had to fight against its own plagues: the copy and the counterfeit. That's why, it is necessary to innovate and be creative in this sector to support the economy on which it depends. For these reasons, it might be interesting to consider this economic case in design research.

To resist to the copy and to the counterfeit, the luxury have to innovate, that is to say to produce new ideas and be creative. Materials and processes are sources of inspiration for creators and designers [6], [7], [8], in particular in Hermès where materials and knowledge made have specific roles in its identity and in the emergence of new projects. Indeed, Hermes based most of its brand image on the expert testimony and the quality of its materials (in particular leather and silk) and its craft industry (saddler, serigraphy...). The brand image is important for a company because it is a guarantee for the consumer. Thus, we insist on the idea of controlling creativity to guarantee coherence of future products to make them durable. For us, a durable product is a product that goes through fashions to begin an brand identity product. Lubart stresses the importance of coherence of creative productions when it mentions that "a creative production cannot be simply a new answer. It must be also adapted, i.e. that it must satisfy various constraints related to the situations in which is the people."

One of the stakes of our research is to satisfy creator's needs with varied profiles. Indeed, bibliography in industrial engineering focus on creativity is directed towards one profile: the industrial designer qualify by its training in industrial design. By experimentation, we noted that the initial training of a creator like its professional field influences its approach on material and its needs towards materials and for the technical processes.

So, the aim of our research is to support and to make durable creation trough materials and technical processes/now-how in a context where various types of designers mix with.

Except the context, the originality of this research lies in the fact of addressing itself to multi-field designers in a context where materials and technical processes are important.

Creativity is a recurrent topic in engineering design because its utility within the companies is largely shown [9], [10]. In the first part of this article, we will detail which are creativity bases and how it intervenes in design.

Materials in product design are a substance; they are in direct interaction with users. We will see in the second part of the article which is their statute in design sciences and how they can cause inspiration for designers and creators. Then we will evoke the case of materials library like means of satisfying the inspiration with designers and creators by materials.

In the third and last part of our article, we will detail our first experimentation that we carried out in the shape of a questionnaire-interview.

2 CREATIVITY IN CONCEPTION

2.1 General information about creativity

Creativity is a cognitive phenomenon and consequently is complex and difficult to clarify because it implies many inter individual factors. Aristote have relative creativity by suggesting that source of inspiration came by sequence from mental associations but in Ancient Greece it was consider as the result of divine demonstrations. Today, creativity is a ground of research for many sciences and domains as psychology, social psychology, cognitive sciences, artificial intelligence, philosophy, history, economy, management, strategy and of course sciences of design.

It exists many definitions of creativity. In 2005, Lubart proposed a consensus between several researchers: "Creativity is the capacity to carry out a production which is at the same time new and adapted to the context in which it expresses

It exists two different approaches to explain the creative process [11]:

- The first one is the psychoanalytic approach which affirms that the reflection contents would be taken again by the subconscious escaping censure thus from the conscious one.
- The second one, called cognitive, also affirms that reflection contents would be taken again by the subconscious and that this one would obey to an association law.

Traditionally described, the creative process includes 5 non-linear phases [11]:

The first one is a **preparation and immersion** phase (conscious or not) in problems.

The second phase is one **incubation period** where ideas matured.

The third phase is the moment where **the idea emerges**, where ideas are put in order.

The fourth phase is that of the **evaluation** of the idea.

Finally the last phase, often long, is devoted to the development of ideas.

More the share of researchers in creativity psychology agree to say that creativity of a production implies a judgment. Thus, to be creative, a production must be validated by pars resulting from the same field. Validation is a big step of the creative process.

The data processing appears important in the creative process. That suggests being inclined with certain operating processes like:

- to identify and define a problem,
- to make an encoding, a comparison or a selective combination of information,
- to have a divergent thought,
- to evaluate the ideas,
- to be flexible [12]

A lot of these operating processes is allotted to the analogy of ideas between them. This analogy process was regularly practice in engineering design.

2.2 Creativity in engineering design

For a few years, the topic of creativity in design has been more and more scour. Research indeed showed the importance of the creative person place in a company in the improvement of innovation. For companies, innovate is remaining competitive, affirming themselves on market and being durable. Thus, to help and to improve creativity in design makes possible the optimization of design process.

The design process of a product includes several phases active of the concept until the product end-of-life. Each one of these phases requires its own methods and tools.

The creative process describes by Cross in 2000 and quoted by Mougenot in 2008 is synthesised in 4 phases: exploration, generation, evaluation and communication. Cognitive activity of the designers is important during the phase of exploration.

Our research is upstream design process, in a phase called “exploratory”, of the handing-over of the brief design to the creators until the idea formulation. During this phase the designer collects data which will be then processed and then exploited [13]. The cognitive activity of the designers is very important during this phase [10].

Designers need inspiration sources to satisfy their requirements in informations. These various inspiration sources will be then treated by a mechanism of analogies that is a practice very current to designers [10]. The resolution of problems by analogy in creativity implies the synthesis of two distant elements [14]. The concept of distance in the sources of inspiration would make it possible the designer to carry out one plus a large number of analogies [10]. Therefore, more the source of inspiration is far away from the field of the designer, more it should produce analogies and thus of ideas.

The concept of creativity evaluation is very important but complex because of subjective character. Criteria to evaluate creativity can be numerous. One of them is recurrent: novelty. Feasibility and adequacy with specifications seem to be criteria relevant when it is about design of product [10], [13]. However it is certain that the environment of our research can impact on creativity evaluation criteria. We will be able to have to establish our own criteria of evaluation for our research.

3 STATUS OF MATERIALS AND PROCESSES IN CONCEPTION

3.1 Materials and processes in engineering design

Materials and processes are increasingly numerous and more and more complexes so that it almost becomes necessary to be an expert to handle them and to adapt them [15].

Materials (and associate processes) are playing an important role in a product as fulfilling technical and esthetical functions, corresponding to a cost, creating product identity and corresponding to environmental constraints [8]. It is also for designers an important source of inspiration [7], [8], [15] and communication [16] especially on non-technical effects and to illustrate processes.

Ashby observed that in engineering design, materials and processes were often chosen in the late stage of the conception process because of cost, delay and usability constraints. Facility solution is often selected in spite of research and innovation. But we can observe that in certain cases, a material can be used as an excuse to create product. For example, it is the famous case of Corian®, a mark of material developed at the point by DuPont in 1967. The strategy carried out by DuPont Company to market his material was to call upon industrial designers and architects to make them work starting from Corian®, thus making it known on the public stage. The goal of this practice was to market a new material.

3.2 Materials and processes as a source of inspiration

Materials and know-how could alone define the luxury. Indeed, for an object, it embodies the search of excellence.

As we previously said, materials and technical processes could be a starting point to create new products. Thus, materials and processes could be a source of inspiration. In our research environment, many examples show us that productions were inspired from materials and now-how.

Example 1:

Emile Hermès is sent on mission in America during the Second World War to control leathers intended for the French cavalry. At the time of his mission, he discovered a country developing a mass industry, where transport developments promote the luggage industry. He will return from this country filled with enthusiasm with a still unknown zipper system in Europe. Emile Hermès will apply this new mechanism to come from the United States to bags and to luggage and also to sport clothing.



Figure 1: Emile Hermès returns from the First World War with a zip in his luggage. It will be the first to introduce it in Europe and to transfer this technology to luggage and fashion.

Example 2:

In the Seventies to the eighties, carbon fibre starts to be employed in aeronautics and in automobile sports. Its solidity and its lightness make it an ideal material. Lightness is one of the Hermès values. Indeed, the history of the mark built around travel melts of these qualities of the essential attributes for Hermès products. Carbon fibre was thus employed at Hermès to create the “Espace” briefcase in 1982. This one combines a technological matter with technique of assembly of wooden trunks: “with brought back corners”. This briefcase was far from being a success because of its final weight but it became a symbol of the Hermès audacity.

Example 3:

More recently, the French designer François Azembourg created a new material for Hermès. It is about an assembly of a foam plate between two leather sheets assembled by a topstitching. This assembly was called “Cuir-mousse” (leather-foam) and it is used for created in 2004 a light briefcase: Herlight.



Figure 2: Herlight briefcase, create in 2004 and marketed in 2006.

A part of the Hermès history was constructing around materials (leather and silk in particular) and know-how of saddler leather dealer. So it represents an important part of the firm identity. As Philippe Dumas [17] (Hermès family member) says “The real concern of the originality lay in the permanent and ingenious search of the means of working such or such know matter in order to draw some from the unknown results”. Contrary to Ashby’s assertion, in Hermès, material and process status was reversed. Some materials and knowledge made were often the initial point of the creation of an object, the beginning of a collection like we have resume in the next diagram.

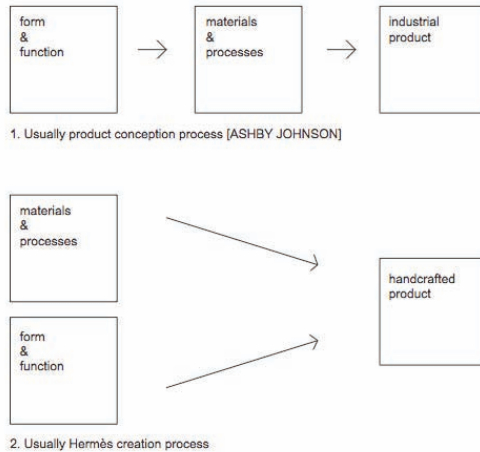


Figure 3: Status of materials and processes in conception and in Hermès.

Hermès would like to innovate and to renew its glance on materials and know-how in a view to support and to make durable its creation.

We previously affirmed that it would be necessary to our research to take part in the communication of technical information of materials and processes. Since the sample seems to be media, we will be able to support the training in science of materials by example, therefore by material sample.

By requesting knowledge in material science of creators, we hope to make easy the appropriation of new materials and processes.

3.3 What is a material collection?

To collect information about new materials, the designer could consult Internet, suppliers, go on professional trade show, read specialized book or consult material collections (cf. experimentation part 4.3). A material collection built data bases and sample collections in order to offer an access (physical or virtual) to information to designers, artists and sometimes manufacturers. Created in the Eighties, material collections strongly developed during 20 last years. However, we can note certain breathlessness of these places after strong passion. Indeed, even if the concept is very tempting, certain disadvantages can discourage from the designers to consult them.

We are interesting in material collection because it could be a physical place, close to existing Hermès tools (cf. experimentation part 4.2).

Thanks' to literature review [18], [19], [20] a previous training period of several months at Innovathèque and our study on six material collections (Material Connexion, Innovathèque, Materio, Material Collection of Paris Val-de-Seine Architecture School, Materioteca), we have found common and uncommon characteristics.

Material collections aims can be different from a material collection to another. Most have the objective to provide an access to information on new materials-processes with the aim of selling subscriptions. Others, also commercial, wish to draw the attention to materials and processes in the objective to market them. Finally, school material collections are intended to enrich knowledge by their students. It also exist personal material collections to creators, made up of material samples and various elements accumulated during their exercise. We will approach this particular case in the fourth part of this article.

For most of material collections, information sources are the same: suppliers, exhibitions, trade shows, web, contacts, magazines... So, many samples were common on every material collections. Differences could be found on specialized material collections like Materioteca (on plastics), Innovathèque (on woods).

In many cases, it is possible to reach physical samples. Those are arranged in boxes, drawers or racks and its talks with the environmental constraints (light, heat, moisture, handling, dust...).

We have notice that most of samples are not implemented and often presented in a rough way. So, this kind of presentation distorts to some extent reality since it does not represent the characteristics in real situation.

Moreover, because of storage problem, samples are often in small size. That does not make it possible to designers to realize of certain perceptive effects.

Most of material collections were constructing in the roughly same way. All of them are inspired of "cluster analysis" [21]. This principle returns has to classify materials according to their family and their nature. An original way of classification was observed at the Material Collection of Paris Val-de-Seine Architecture School where materials and processes were classified (physically and virtually) according to their function (floor covering, coating of wall, ceilings).

During my trainee in industrial design, I have observed that it could be difficult to find solutions to work on a material though this last one were known. My diploma project was consisted to lead an exploratory research on neoprene in a view to create a product coming from previous experimentations. I have noted that collecting information to form, to stick, to cut and to print it. Several months were needed to appropriate myself the material and processes associates. In spite of my training course carried out in parallel of this project, I did not succeed in obtaining information in a simple way on the "workability"¹ of this material.

As Manzini said in "The material of invention: Materials and design", materials and processes are so technical that designers couldn't access to the information. Therefore, less disposer of an expert in materials science, reading of material can become impossible.

Because certain kind of sample could be out-of-novelty (other materials are more powerful replaced them or they are not marketed any more), information is not exploitable any more. This phenomenon disturbs research and becomes even frustrating in certain cases. Thus, the literature review calls into question the reliability of material collections databases.

Even if efforts were made, there still remain gaps concerning perceptive information on presented materials and processes.

¹ term invented by Jean-François Bassereau, researcher at RCP Design, 2007

The Innovation Department of Hermès, where we make our research, subscribed on three material collections (Material Connexion, Matéριο, Innovathèque). Because of the physical accessibility, the information accessibility due to the “unexpertness” of Hermès creators, the nature of samples, the price and the incoherence with Hermès values, **traditional material collection are not adapted to Hermès creators.**

4 STUDY OF THE PUBLIC CONCERNED IN THE FORM OF QUESTIONNAIRE: REPORTS AND DEDUCTIONS

In order to know the needs and the profile of the public concerned with our research, we carried out a series of semi-directing talks on the basis of questionnaire defined as a preliminary.

Our research on creativity concerns a creator population with varied profiles. Indeed, the product diversity and the brand history imply that our research is addressed to several creator profiles. So, we will have to take into account every individual without exception.

In Hermès, we listed 33 people concerned by our research. On these 33 people, we could interview 11 of them. Because of time and availability of creators, it was difficult for us to question all the creators in time that it was assigned to us. We aim to question every creator as soon as possible. However, we tried to question subjects in different fields, different categories of age, different sex and different years of experience in the company.

We based ourselves on a qualitative questionnaire. This choice was justified by the will to take into account each individual as well as possible and the share of its answer subjectivity. We wanted precision and to take into account each individual. Our study concerns a restricted public. A quantitative questionnaire would have made us to take the risk not to take into account certain needs. Being integrated into the company for our research, we are strongly implied in the study context. However, we are aware that an observation where we take part implies an analysis effort and to catch distance.

4.1 An heterogeneous public of creators

The aim of the first part of our talks was to know general points about creator profiles: sex, age, training, the years in Hermes, position and the estimated percentage of the time intended for creation in the company. We questioned 12 people of a going age 24 years to more than 80 years. Among the 12 asking person, we have interview 5 female and 7 male. We have note that “old” creators (60 to 82 years) devoted more time to creation.

NAME	SEX	AGE	FIELD	JOB	TIME IN HERMES	% devoted to creation in H.
Marine B.	Female	25	hand-bags and luggage	Studio assistant	2 years	45%
Joséphine C.	Female	24	"art de vivre"	Junior assistant	2 years	40%
Philippe D.	Male	45	watches	Artistic manager	less than 1 year	65%
Jean-Claude E.	Male	61	perfumes	Perfumer	4 years	70%
Anne L.	Female	44	accessoires	Artistic manager	10 years	50%
Leïla M.	Female	82	show window decoration	Artistic manager	13 years	100%
Ramesh N.	Male	41	woman ready to wear	Fashion designer	7 years	25%
Henry O.	Male	72	silks, "art de la table", watches	Draughtsman	50 years	100%
Sébastien R.	Male	31	hand-bags and luggage	Modeler	3 years	20%
Aurélien S.	Male	42	Interior and design	Artistic manager	11 years	20%
Yves T.	Male	60	« Art de la table »	Artistic manager	12 years	100%

Couli	Female	50	horse-riding and hand-bags and luggage	Artistic manager	7 years	40%
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Table 1: General points of 12 asking creators in Hermès

4.2 Existing inspiration tools

The second part of our interview relates to internal and external inspiration sources in Hermes.

Since 1986, some tools are proposed to the Hermès creators. There are the **Emile Hermès museum** (collection of old objects in connexion with the trip and the equestrian universe), the **“Conservatoire”** (store place regrouping the Hermès productions and prototypes, very first saddles to last bags) and the **archives** (database made up of photographs and written documents).

We noted that creators recently entered in the “Maison” (less than two years) request much more these intern tools. The need to know and to immerse them in the Hermes universe could explain this tendency. Moreover, it permits to make easy analogies in coherence with the brand. In the other cases, the consulting of the museum, the “Conservatoire” or the archives is to check details about objects (snaps, locks, patterns, buckles, mechanisms...). Until, one more experienced creator (7 years in Hermès), which goes there very regularly, more experimented creators have implicit inspiration sources. We have noted “meeting in Hermès”, “spirit of Hermès”, “my life”, “my cavalymen experience”, “Hermès values” and “experience of a moment in Hermès”.

Tools created by the company are a good starting point to learn about brand values. The disadvantages quoted by creators who call little upon these 3 structures are the backward-looking and redundant side of these sources of in-house inspiration.

Except these three places, internal inspiration sources in Hermès quoted by whole of creators are appreciably the same ones: equestrian universe, collections of other Hermès “Trades” and meetings in Hermès.

External inspiration sources in Hermès vary little according to each creator. We noted the street, shops, trade shows, suppliers, museums and exhibitions, books and reviews. One creator affirms that all these sources of inspiration are related to the equestrian universe, therefore intern at Hermès.

All of them keep their ideas in a personal notebook thanks to sketches, notes, photos, and pictures.

4.3 Various profiles in creativity

Close to ethnomethodology observation way, we have observed differences between creation and engineering conception [22], [23]. These differences appear in particular in groupware [24], [25] when « designers » have to communicate.

In term of languages: In France there is many words to qualify people that make creation-conception activities whereas in English these activities were merged into one word: designer.

Materials-processes approach could be different to a creator, to a product designer, to an industrial designer, to an engineering designer.

We could see that there are differences between designers, especially concerning the material and process approach. At Hermes, creation rests primarily on creators so we must address ourselves to this public.

Being given that the creators less better seems to perceive the technical attributes of a material or a process, we will have to make the effort make available this information for the example. To train new collaborators of various leathers, Hermès employed sample charts. These last are used to code information and thus help with the memorizing and knowledge of Hermes materials.

Moreover, by diversifying creator knowledge in materials and processes, we could hope to support diversity and innovation in materials and processes at Hermès.

During these last years, I’ve observed that materials and processes were differently grasped according to the initial training of “designers”. Thus, the generic term “designer” employed in English and divided in other words seems to reveal a real difference.

We noted that creators have a less technical approach than other designers but this lake was making up for a more intuitive sensitive approach that they explain with difficulty. There is a part of implicit.

Product designers and industrial designers have a technical approach, may be more specialized in a domain (plastics, textiles...). Their sensitive approach is more explicit than creators because of the technical approach. If designers express their ideas in a such way that engineer-designers couldn't understand them [7], it probably signify that their approaches are different.

The third part of our questionnaire aimed at knowing the connexion between Hermès creators with materials and technical processes. As we previousl said, to collect information about new materials, creators consult Internet, suppliers, go on professional trade show, read specialized book or, in some cases, consult material collections.

6 creators knew material collections. Except one (draughtsman), all of them find materials and processes important. But we could observe that for some creators, materials and processes seems to be more important. One of them said us that her training increases her on materials. Conversely, two self-educated creators said us that they were not very inspired with materials and processes. So, **we suppose that according to the initial training, sensibility toward materials and processes could be different. Comprehension about technology could impact on material and process inspiration.**

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Moreover, by diversifying creator knowledge in materials and processes, we could hope to support diversity and innovation in materials and processes at Hermès.

4.4 Remarks

At the end of interview, we questioned the creator about his feeling, her remarks about the purpose of the interview.

5 creators wish to have the opportunity to communicate with other creator about materials. Indeed, we noted that creators were individuals. Creators develop expertness in their own field that could be interesting to exploit.

In some department, it exists micro-material collections. Those are made up of samples of previous research, tests and prototypes, supplier's samples, regularly used materials, and other collecting samples. Two creators affirm that our "material collection" is more a storage place than an inspiration source.

5 CONCLUSION

Material collection is one of material information tool proposed to designers and creators. In our study case, this system is close to existing physical tools. Thanks to our experiment we can state assumptions. **We supposed that physical material samples and samples that illustrate technical process and now-how could inspire creators.** So, it could be necessary to collect samples in a same place reachable by creators. Moreover, creating a physical space could allow us to make connexions with existing inspiration places (museum, "Conservatoire" and archives) in order to maybe give coherence to analogy.

We also suppose that giving information about sample enable to make more analogy and produce more ideas.

Choose of samples is important. **We suppose that more samples will moved away from the brand universe, more analogies will be made.**

The need is felt to create a common space adapted to all of Hermès creators in order to exchange and communicate on new materials and processes to offer inspiration source on materials and technical processes, to support new material and new process developments and to control coherence in intern developments.

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