

# The CAL: cognitive, apperceptive and representative aspects of fashion design – Side note to neuroaesthetic theory

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**Abstract.** This article deals with the creative and cognitive process of the creative work from the aspect of fashion design. It is examined through the Cognitive-Apperceptive-Limn process (**The CAL**), analysing the stages of design work referring to prominent literature, and discussing exciting theories, such the FLOW and the AHA effects are, and the neuro aesthetic theory. Setting them into a new context, the article offers a fresh approach of a designer, rather than a scientific statement based on pragmatic findings. Since theories on artistic performance and creativity can never be enough ‘empirical’, and the process can be never understood enough well...

## 1. Introduction

Creativity and fantasy are unique human activities, based upon subjective ideals. They rise few questions: *How the cognitive process is determined by visual aspects? What is the physiological pathway that ensures the connection between the vision and the hand drove drawing tool? What is that appears in on the paper, as a manifestation of the pure idea? Yet, whose competence is to identify, what from is the effect, flowing as an invisible substance between the artwork and the host made up?* A few years ago I tried to discuss such dilemmas, with few of my psychologist friends. For example: How the inspiration is transmitted into artwork? I got from them puzzled answers as first aid, such as: *"In most cases, artists are not interrogated on the nation of their ideas."* [1]

Psychological research claims designers are hypersensitive, impulsive, socially aloof, introverted, and nonconforming person. [2] This kind of ‘deviancy’ is characteristic for every artist or designer. If so, then food for thought is, *if maintaining the productivity of the designer by squeezing him/her within the theoretical process of creative product development is not an absurd requirement applied in order to set control on the artistic genius?*

In this paper research objectives of the cognitive-creative and the mental-manual procedure will be examined according to the process of Cognition-Apperception and Limn (limn = draw, design, paint, sketch, used instead of these words): The CAL.

## 2. Art and the brain

Art is a subjective field of human activities that reflects one’s experience, knowledge, preference, and emotions. Balthasar Gracian (1601-1658), Spanish-born Jesuit priest says: *"Art is the completion of nature, as it were a second Creator..."* Art, as an interpretation of the existence, means all the artistic activities resulting material or spiritual product. However, *whose competence is to identify, what from is the effect made up, flowing as invisible substance between the artwork and the host?* [1]



### 2.1. The process of creative cognition

The adult human brain weighs on average 1, 2 (♀) - 1, 4 (♂) kg, and can be held in the palm of the hand. It “*can contemplate the vastness of interstellar space, the meaning of itself, (and) it asks questions about the meaning of its own existence, and about the nature of God.*” (Ramachandran, 2010) It is made up of neurons: there are approximately 100 billion of them. Since each makes about 1000 to 10 000 contacts with the others, the total number of permutations and combinations of the brain activity exceeds the number of elementary particles in the Universe.

Fantasy and imagination are half-subconscious, uncontrollable activities of the brain, manifested in intensive and fully ‘private’ communication of the frontal and back part. A kind of daydreaming: the “errors” of perception (inability to focus), cognition (a mixture of taught) and apperception result in diverse ideas, upon which the new products, or the artworks are born. (Figure 1.)

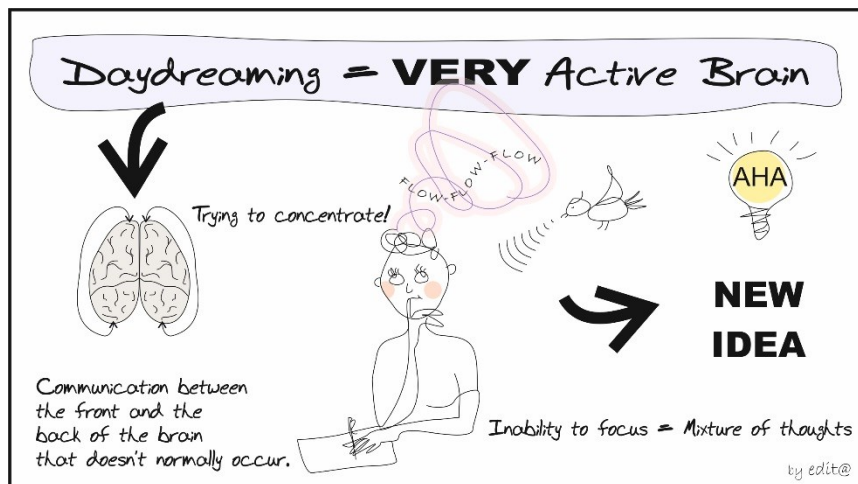


Figure 1: The process of creative cognition

Where does creativity come from? Where does it happen in the brain? Some of the concepts argue that evolution of the human culture and sociality, and increased development of hierarchical social grouping, effected changes in neural regions and their pathways. [3] Specific areas of the brain responsible for the apperceptive, creative and cognitive functions has been identified.

About 70% of our knowledge is visually driven. The largest system in the brain is the visual system (eye, optic nerve, visual cortex and LGN with 6 areas within the thalamus). Differences in the size of parts of the brain and the pathways will determine how the brain will respond to any visual information.

Research conceptualize cognitive functions as hierarchically ordered. At the top of the hierarchy are the cerebral cortex (top of the lobe), and the prefrontal cortex (frontal lobes), responsible for perception of the coloured objects, decision making, and memory, and here are located nuclei of “mirror neurons”. In particular, the orbitofrontal cortex (located approximately behind the eyebrows) which is involved in the cognitive processing of decision-making. [4] The hypothalamus is responsible, by the others, for the memory. In the handling of the emotions, the left and right amygdalae play an important role assisting in the processing of memories, decision-making, and emotional reactions. The left takes part in the brain's reward system (positive emotions, joy, euphoria, and pleasure), in operative cognition, associative learning, and short-term memory. The right is associated with negative emotions, and declarative (long-term) memory. The improved skills are considered to be part of this. (Figure 2) The spread of new ideologies, such as fashion, is based on this processes. (Figure 3.)

### 2.2. The perceptual process: The top-down vs. bottom-up processing approach

Perception depends on the perceiver's expectations and previous knowledge as well as the information available in the stimulus. There are two theories on this: by the **theory of top-down processing** (Richard Gregory, 1970) perception is a “best guess” (such hypothesis) which is based on *prior knowledge*.

Incorrect inferences may be created leading to several ‘errors’ of perception. For the visually sensitive brain ‘errors of the perception and cognition’ are the source of inspiration. In design theory, the top-down approach is called *stepwise design*. The essence of the method is the breaking down to sub-systems and reducing to base elements (*decomposition*, imaginative process). The **bottom-up processing approach** claims that information enters the eyes in one direction (sensory input, or the "bottom"), and is then turned into an image by the brain. "*What you see is what you get.*" (E.J Gibson) From the aspect of the design theory, it is an information-centred process, maintained by the incoming data which are processed, and further analysed by the cognition: the smaller elements are linked together, built in a large system (*composition*, cognitive process.) In fashion design both processing are present.

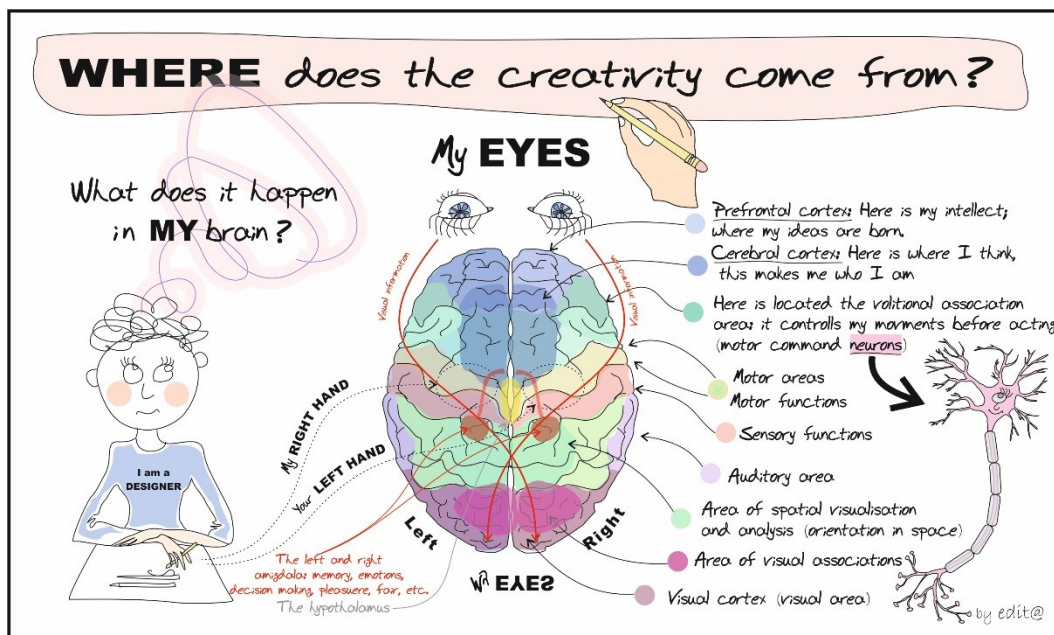


Figure 2: Functions of the brain which play role in creativity

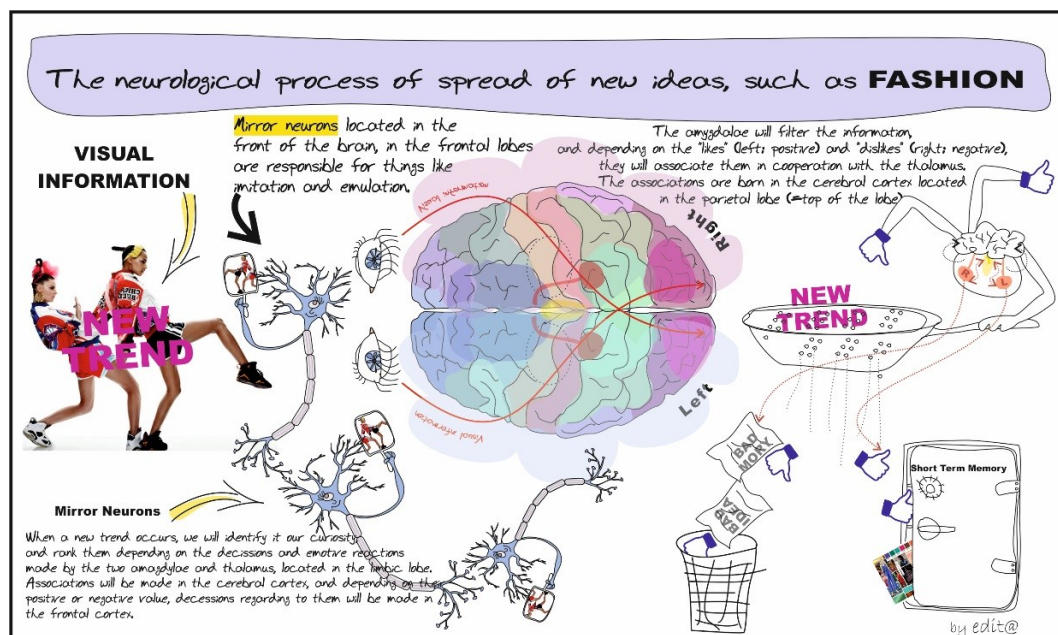


Figure 3: The spread of new ideas



### 3. The 3 types of fashion drawing for 4 steps of the product development in fashion industry

Based on the general methodology, the process product development in fashion is considered in 4 steps:

1. **Market research and idea generation**, a Cognitive phase, with the dominance of the bottom-up approach.

2. **Screening** can be considered as Cognitive phase, with a bottom-up approach.

3. **Concept development** is a Cognitive-Apperceptive part of the process, in which the top-down vs. bottom-up processing are as well present. Designing of the product range is a stage of realisation of the 'immaterial': a stage of crafting and creation which can be hardly finished by computer (thus, designer faces the challenges in representing of the ideas) is over more a "manual" phase of the work, when the Limn and the top-down approach are dominant.

4. **Product development and commercialization** are Cognitive, bottom-up approached. (Figure 3)

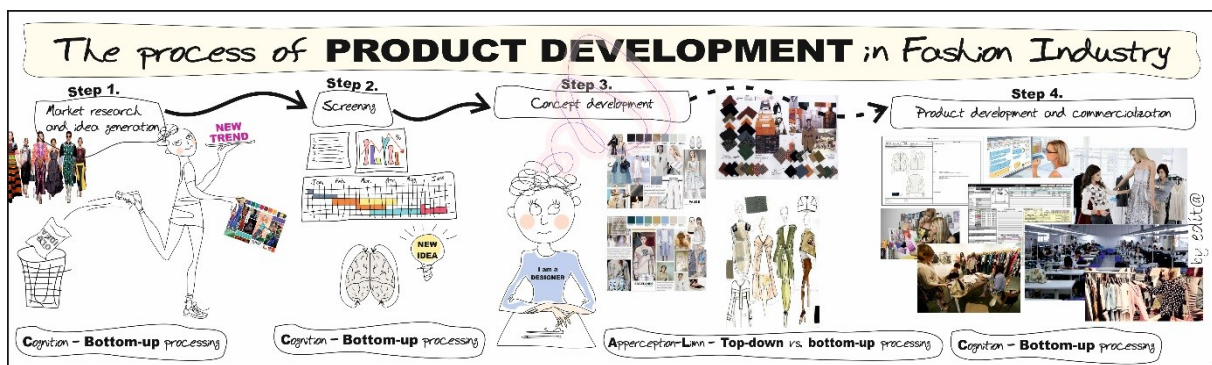


Figure 4: The 4 steps of the creative product development in fashion industry

#### 3.1. Types of fashion drawing applied in the process of product development

Generally speaking, there are three types of fashion drawings, which can be considered as phases of the progress of the idea. (Figure 4)

Phase 1: **Thumbnail sketch** is a quick, freehand sketch that tracks the evolution of the first idea, usually found in the context of many others. Can be made by different tools (marker, pen, aquarelle, pencil, etc.). It can be hardly made by CAD.

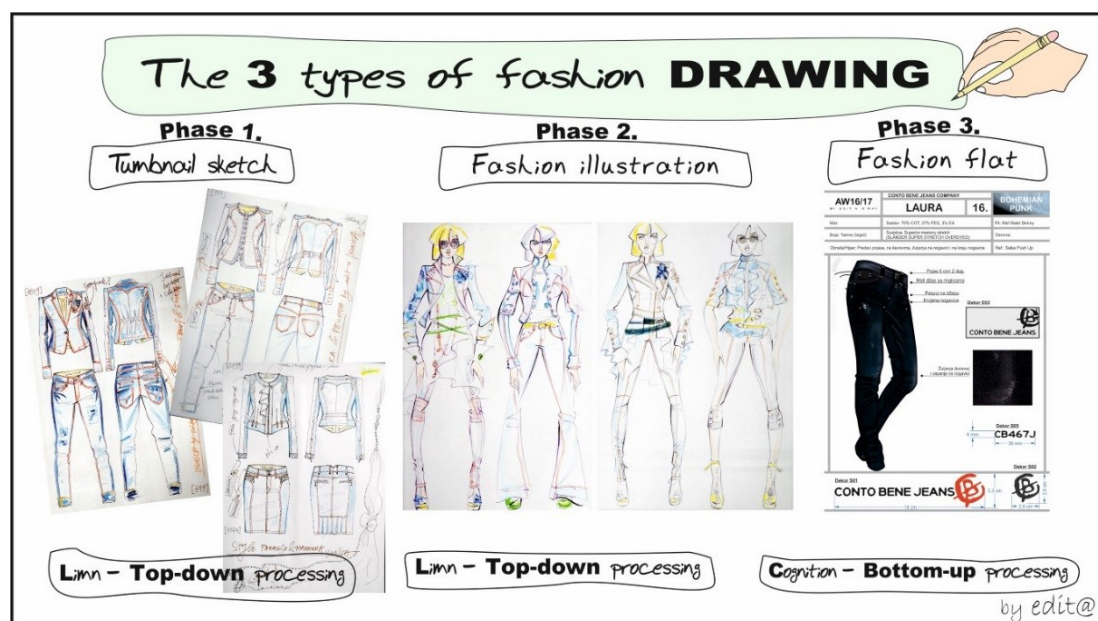


Figure 5: The 3 types of fashion drawing

Phase 2: **Fashion illustration (artwork)** is a detailed drawing of the garment on a figure, usually made in full colour, used to communicate a design idea. Can be made both by hand or CAD.

Phase 3: **Fashion flats (technical drawings)** are the illustration of the garment without figure, and are used generally in garment spec sheets, or submitted to my manufacturer in order to prepare the sample prototypes. Can be made by hand or with CAD too.

#### 4. The CAL: Side notes to neuro aesthetic theory from the aspect of the creative process

Maria Silvia Venturini Fendi said: *The designer feels visionary while designing.* While ranking an artwork, artistic performance or concept, the Critics will consider them if were writing some compound formula! At the end of the complex train of thought, the result is usually replaced by the 'expression'. *What is desiring to communicate, exploiting artists as such mediums? Whose competence is to identify, what from is the effect made up, that's flowing as invisible substance between the artwork and the host?*

##### 4.1. The FLOW effect

An artist must be completely *in-tune* with the artwork in order to enrich its creation. [5] As the artwork progresses, so does the artist. This mental state is called FLOW (Csíkszentmihályi, 2015), in which "a person performing an activity is fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of the activity. In essence, flow is characterized by complete absorption in what one does." [6] FLOW can be considered as the main mover engine of the artistic (designer) activities: this mood is flowing through the pathways of the brain managing the different regions during the CAL process. It is a top-down process, when prior knowledge, suddenly indicates, incorrect inferences ('errors' of perception), and the decrease of the attention result in unexpected associations. In the manual drawing, mistakes are also the source of fresh ideas. FLOW can hardly be accompanied with digital tools because their managing (drawing of different objects, handling their preferences, shaping, colouring, and applying different patterns on them, making a combination of objects to get the entire silhouette, etc.) is over more Cognitive in nature. The manual work conveys the free stream of the ideas. (Figure 1.)

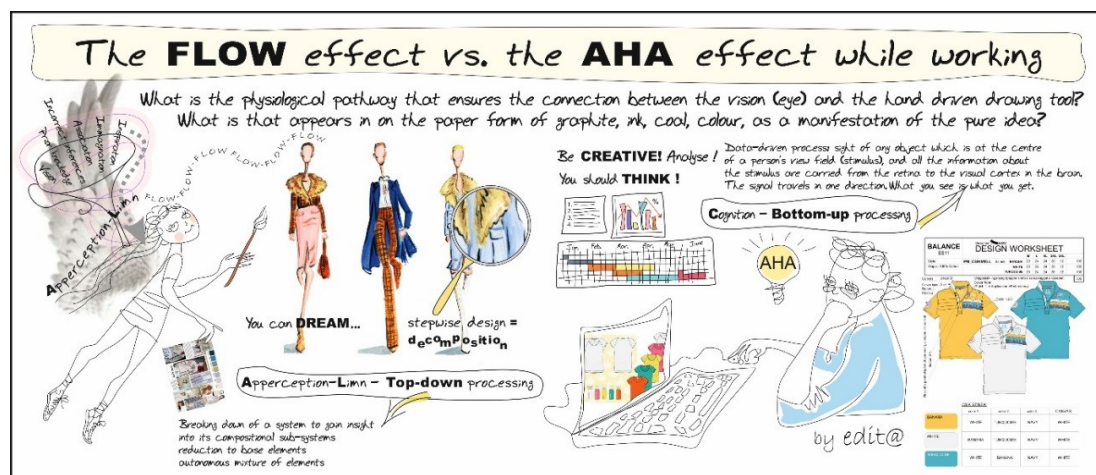


Figure 6: The FLOW effect vs. the AHA effect while working

##### 4.2. The AHA effect

The effect known as the sudden appearance of solving a problem is called AHA effect. This occurs in 4 of insights: 1. Suddenness: the experience is surprising and immediate; 2. Ease: matched to the difficulties experienced before, the solution proceeds smoothly and easily; 3. Positive affect: insights produce confident experience; 4. The feeling of being right: to judge the solution as being true and have confidence in this judgment. The AHA effect can be associated with the *bottom-up processing approach*, a data-driven process of problem-solving. It is motivated by a positive experience of a problem solved.

#### 4.3. The neuroesthetic theory

Neuroesthetics (Zeki, 1998 and Ramachandran-Hirstein, 1998) associates the (neuro-)psychological research with aesthetics by examining issues as “*response (of the brain) to art, as well as interactions with objects and scenes that evoke an intense feeling, often of pleasure.*” It combines the theoretical with the scientific approach, striving to explain art as a logical, and evolutionary rational phenomenon, striving to combine principles from perceptual psychology, evolutionary biology, neurological deficits, and functional brain anatomy in order to explain the evolutionary sense of beauty as the essence of art. (Zeki, 1998). [7] The theory of V.S. Ramachandran and William Hirstein summarize the process in “Eight laws of artistic experience”. (1. Peak shift principle, 2. Perceptual grouping and binding, 3. Orderliness, 4. Symmetry, 5. Contrast extraction, 6. Isolation of a single module, 7. Perceptual problem solving and 8. Abhorrence of coincidences. [7]) The great interest on this theory involved the rapid evolution of parallel concepts on the matter of visual perception. However, principles similar to these eight are already in use, and are known as “*Elements and principles of art*”.

#### 5. Evaluation of manual drawing vs. CAD regarding the neuro aesthetic theory

The latest ‘pull that lever’-type, idea-generation-designer is believing that designers can easily arrange product ranges and that the collection can be created faster than ever by using of the CAD, and the on-line mood board-assisting tools. Instead of in-depth study work, immediate sharing of the primary ideas – such concept-germs – by the popular tools, and collaborative work through web-based brainstorming and mind mapping applications, became over more popular. In most of the job advertisements, the preferable future employee needs to have colour and fabrics trend researching knowledge, understanding of the fit and the construction, and to be proficient in using of CAD programs such as Adobe Photoshop and Adobe Illustrator, seldom Corel Draw. Almost never is asked whether he/she can manually draw. And this is a mistake!

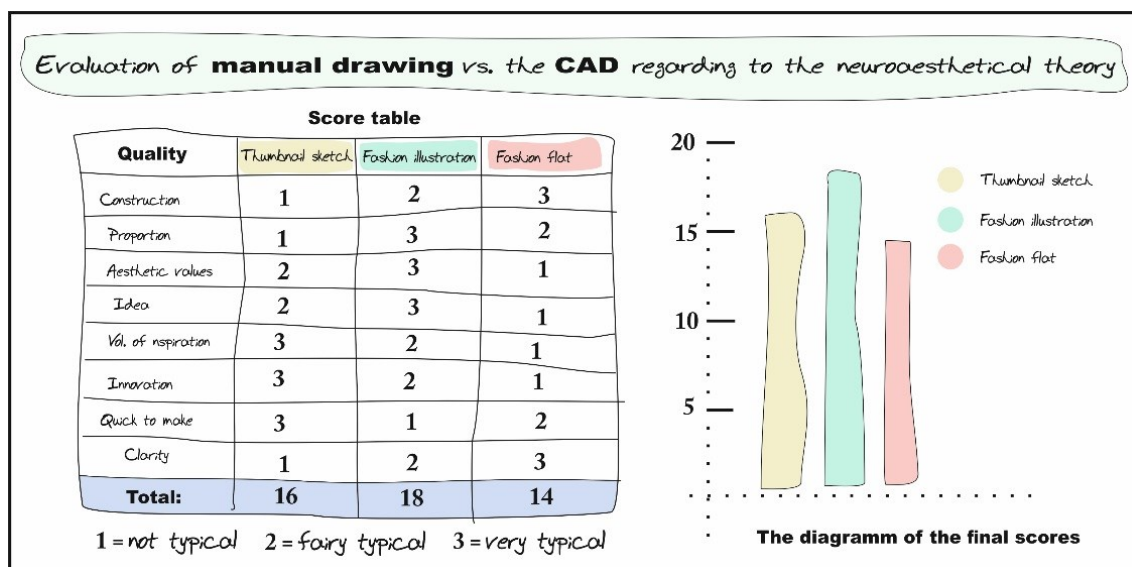


Figure 7: Analysis of the qualities of the sketch, fashion artwork, and technical drawing

A frequent reason why these are skipped is the manual ungainliness of the designer: drawing of artworks with a computer is a common choice of the starters lacking manual dexterities. (Figure 5)

‘Syndrome’ that goods offered on the fashion (mass) market became simple, and often very similar, became remarkable in the last 10-15 years. Articles started to report about unsellable, uncreative products with the identical preferences and tedious design, lacking artistic quality. Time for the development of the product range became reduced, contrary to the growth of the quantitative and qualitative market expectations (influence of Fast Fashion). Time for designing a collection,



maintaining the evolution of the creative idea, became limited: time for preparing hand-drawn fashion illustrations or artistic fashion flats, driven by the power of the very first idea, considered being unnecessary and sufficient products, useless crops of the selfish artistic fulfilment, seem to be gone. (An often argument for their needlessness, is they will never be used for any promotional proposal, and do not maintain the better quality of the product.) However, as we've seen, they're the embodiment of the creative idea and play important role in the design and product development process.

## 6. Conclusion

Running a fashion business in today's challenging and competitive climate is a lot harder and less glamorous than two decades ago and demand for talented designers is bigger than before. Since many young want to be a designer, numerous design schools offer a degree. Regarding the harsh market competition, most of the courses focus on the business and production side of the training, as opposed to the design/creative part. Time left for the development of the manual dexterities become shortened. Digital tools, which make the design process faster, more adaptive, and electronically communicable, became preferred. But, avoidance of the manual process cause 'gaps' within the creative process, resulting attributes different than processed manually, based on the previous, in-depth study work, when objects and their reality are analysed in detail, and afterward transmitted into their imaginative form...

Young professionals of the digital age, hardly understand the importance of manual dexterities and the significance of the study work. Avoidance of the traditional, hand-drawing techniques is in most cases explained by their comfort and fastness of the CAD ones, encouraged by the companies. However, it means a section within the design process is skipped, having a remarkable impact on the look of the final design, quality of the product, and context of the product range. (Figure 7) Not the usage of the CAD is offensive but its significant influence on the final design. (Figure 7)

Analysis of the cognitive process and qualities of the artwork certifies that different brain regions and pathways are responsible for the management of the manually driven tools in contrast to the computer aided ones. This can be also associated with the completely different experiences during the creative process, such as AHA and FLOW [6] experience are. Regarding these theories, this article pretended to analyse the cognitive creative process of the fashion design, its neurological and neuroesthetic background responsible for the method applied during the work, the type of fashion drawing created, and at the end: the final look and the quality of the garment.

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