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VISUAL COMMUNICATION BETWEEN CULTURAL MEANING AND FUNCTIONAL EFFECTIVENESS. A CASE STUDY IN UPCYCLING DESIGN

Abstract: *This paper explains the contemporary Design dynamics and shows how specific design processes influence and modify user behaviour and production narrative in the material culture of a transforming society. The research shows the methods used in applying the design process to create an innovative low cost upcycled multifunctional and transformative backpack/bag in the specific context of nomad working. The purpose was not to create a fashion accessory, but to design a new outer case for laptops and various objects. The case study demonstrates the importance of the collaboration between designers, engineers, technicians and entrepreneurs, namely Bisector Studio as a design team and Upside Down as the producer from Iasi in order to achieve functional innovation and relevant visual communication.*

Key words: *industrial design, visual communication, upcycling design, modularity, material culture, critical design, design thinking.*

1. INTRODUCTION

In contemporary design practice and research, visual communication refers not only to the bidimensional representation of a product, such as icons/pictograms or stylistic lines that follow up trends in terms of aesthetic considerations, but mainly to the whole product narrative as an open result of a complex design thinking process. Moreover, current techno-cultural climate implies that the role of the design process is, more than ever, focused on analyzing relations, behavioral codes or mentalities and, by those means, improving society on various levels rather than increasing the turnover of a company. Design has become an essential instrument of social and cultural transformation in the context of which the main concerns about the quality of connections between individuals and society, are to analyze, understand and reshape the way of how we conceptualize civilization. Contemporary design studies deepen its own cultural meaning and functional capabilities to alter or improve ideologies and behavior, to problematize and investigate identity challenges experienced by individuals, establishing by this means a more responsive and aware way of thinking or acting. Concerning this tendency, Adrian Forty wrote, "Far from being a neutral, inoffensive artistic activity, design, by its very nature has much more enduring effects than the ephemeral products of the media because it can cast ideas about who we are and how we should behave into permanent and tangible forms."[1]. For a better understanding, cultural meaning implies that design culture improves the connections between various social and economic contexts and individuals or public, considering that the object becomes, more or less, a facilitator of interactions between users and multiple meanings that they correlate to products. "Furthermore, it is not just a matter of individuals pondering what objects might mean, but individuals reading objects in relation to other individuals within complex intergroup networks patterned by social status and role, and space-time contexts."[2]. In the same way, functional efficiency refers not only to what the product is intended to solve but also, more than ever, to both quality and quantity of interactions which define the nowadays user experience corelated to a wider dynamic economical system redefining the material culture, in a general sense.

2. CASE STUDY

2.1 Theoretical research stage

Even if a common consequence of post-war capitalist systems, mass production or, better said, overproduction, has inevitable triggered unprecedented spread of theoretical and practical design critical trends that question or investigate the long-term effects of this context on future development of society, by overcoming the modernist industrial ideal to solve the perfect fusion between function and form. The famous bauhausian quote "form follows function", stated by Louis Sullivan in 1896, is ironically replaced by Henri Petroski with a more antinomic expression namely "form follows failure" in consensus with David Pye who also considered beyond any doubt that the failing to solve unilaterally the concept of functionality in design is caused by the constant compromise between different stages of process, production itself being, in fact, an endless improvisation in search for ideal solutions.[3]

Along with the so-called Digital Revolution, this critical point of view becomes even more challenging regarding contemporary design's postindustrial condition to influence and shape the multitude of today social relational contexts especially if we consider the shift from economical, technological and social interest in mass production industry offering various adaptive solutions strategies or experiences. For example, some post-war design movements, such as the German group Kunstflug from the 80's, propose to switch from hardware to software, from material to immaterial, from object to subject, to what Hardy Fischer's called "the design without object", overpassing the mass production narrative in order to gain specific capabilities, attitudes or behaviors to answer and solve responsibly global concerning issues such as pollution or poverty, naming just a few of them. The last decades of design concept evolution consist in, first of all, the critical transition

from an idealistic industrial aesthetic to an ideology with strong psychological, sociological or behavioral characteristics centered on a more contextualized analysis by discovering new suitable solutions regarding the subject of design process or user experience. Questioning the relation between general interests of industry and business environment in mass production and the revised role of design as one of the most significant players in reshaping society toward its deepest needs, Anthony Dunne and Fiona Raby, due to their studio-platform activity, aim to use the design process as both cultural and social tool through cross-disciplinary debates between theorists, researchers, practitioners, industry and public. [4]

In this circumstance, more concerning topics begin to question the use of design only as a tool for increasing the turnover of a company and focus more on the ethical component of the field by attempting to find solutions to issues such as water purification, overexploitation of natural resources, improving the quality of life, sustaining circular economy or local producers and by implementing ecological ideologies in today material culture and design processes. Given this wide context, the eco trends fast spreading during the last twenty years in contemporary Romanian design tendencies led to the development of more responsible approaches, such as upcycle/recycle design. [5]. The nowadays Romanian Design's effort to adapt and synchronize with global material culture also need to be considered a significant turning point in order to properly address to the most relevant concerns regarding the prominent role of Design to influence a transformative both local and global society. Despite its industrial anachronism caused by the communist hasty and unrealistic economic growth plan, Romanian Design and other creative industries have rapidly managed in adjusting and improving its capabilities to identify and solve the multiple challenges of our times. That's why, after the 90's, some well-known trends in western design, besides the hi-tech mainstream, such as those that refer to revitalization and reinterpretation of the traditions and craft or others, more responsible from an ecological perspective, such as the upcycle / recycle culture, have evolved in Romania during the last twenty years, arousing the interest of the younger generation of designers. In this regard, it is worth mentioning Upside Down a local producer from Iasi, Romania, with whom Bisector Design Studio collaborates to improve some specific upcycle/recycle design process characteristics. Upside Down is an innovative manufacturer from Iasi that upcycles by transforming old objects into new useful products. Upside Down creates, designs and manufactures useful products as bags, wallets, covers from old truck polyplan and street banners, materials that are recovered and brought back to life, but in another form.[6] Bisector is a design studio from Iasi Romania founded by product designer and assistant professor Alexandra Ghioc (who finished her bachelor, masters and PhD at "George Enescu" National University of Arts) and visual artist and professor Radu Carnariu (who also finished his bachelor, masters and PhD in fine arts at "George Enescu" National University of Arts). The aim of the studio is to create a new cultural behavior and to alter the perception between art, design and the industry in order to create innovation. Together we conceived a more appealing product design strategy regarding a variety of new innovative objects made of old polyplan and banners. One of the most provocative projects was the Robinson Bag, a multifunctional backpack for laptops.

2.2 Practical research stage

The analysis of the competitive market implied a detailed study of the most relevant similar international projects regarding the structure, function and aesthetics of both interior and exterior of this category of products in order to properly identify possible innovative solutions. Therefore, the analysis of the exterior involved various problematics to be taken into account such as ergonomics (handling, adjustability, volume and weight), accessibility, impermeability (suitable materials) and outer shape aesthetics or chromatic schemes (visual and tactile communication-patterns, graphic lines, textures, finishes). Likewise, the analysis of the interior implied the identification of the most innovative functional characteristics focused on maximizing the storage capacity and finding alternate multifunctional solutions.
Considering that the "nomad working" in nowadays society has become a common lucrative behaviour, another important step in this analysis was to find those international manufacturers that transformed the backpack into a portable working station such as Redmaloo laptop sleeve, Blackflymobile 2 Workstation for 13-17'' Laptops or La-function.

Another relevant point in our research was aimed to identify multifunctional transformative solutions that allow the user to convert the bag into a backpack and vice versa following a large amount of examples such as Hardgraft (2unfold), Ringopie (Tote/messenger bag/shoulder bag/school bag/laptop bag/handmade bag/sling bag/ purse/For Her/For Him), The Unit Portables Bag or The Camper Satchel - Tan etc.

Just as importantly, in order to determine what the outer dimensions of the new product will be, various measurements were required especially on the most used laptops and notebooks starting from 13 inch to 17 inch and on auxiliary equipment (chargers, cables, USB flash drives and others).

Last but not least, our study targeted to list and measure not only the objects that are usually stored inside the backpack, but also the objects that "gravitate" around this product considering various daily needs of the common user like wet umbrellas, water bottles or coffee cups.

2.3 Further design process: brainstorming, sketching, technical drawings and CAD development, modelmaking and testing

This stage focused mainly on the concept of adjustability, modularity, multifunctionality, storing possibilities in order to find the most relevant solution to transform the backpack for laptops into a regular small bag. (fig.1) Various proposals were discussed with the manufacturer and were developed and tested taking into

account their technical capabilities and specific characteristics of the recycled material (polyplan). (fig.2)

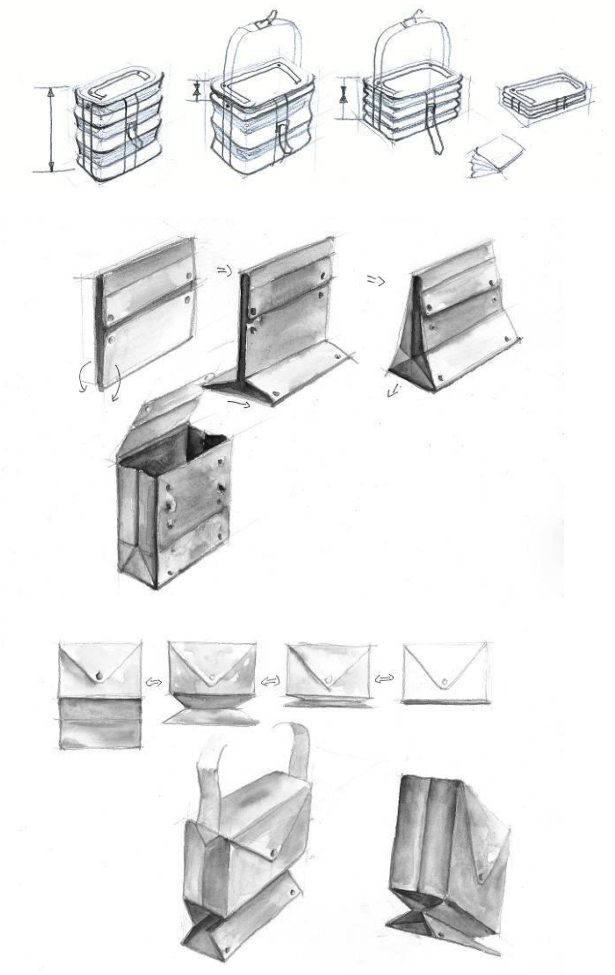

Fig. 1 Various concept proposals

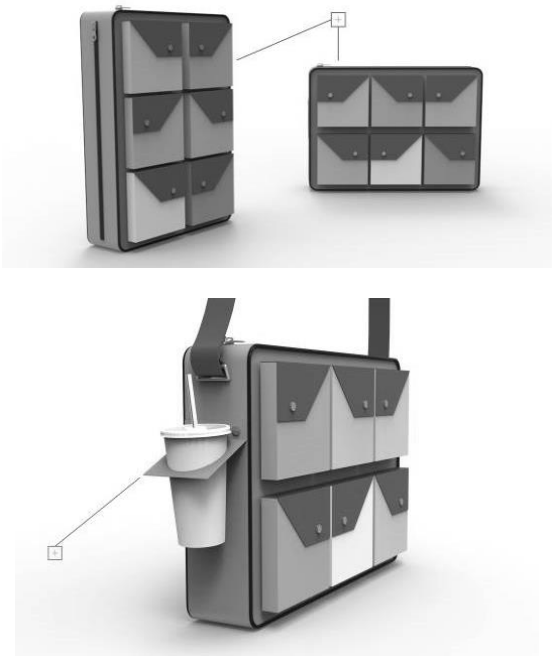

Fig. 2 Further 3D developments on an agreed concept

3. CASE STUDY – RESULTS

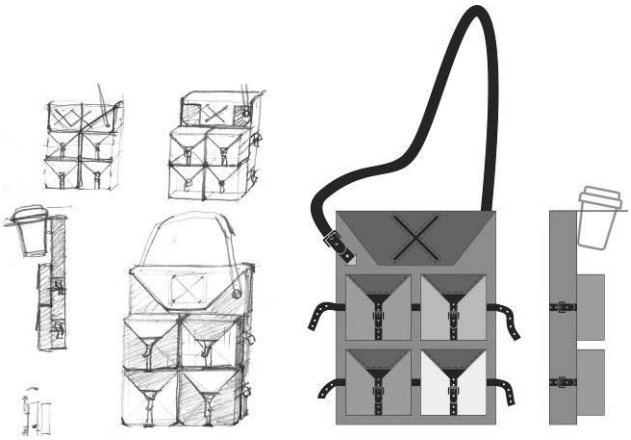

Fig. 3 Final solution before implementing and prototyping

After completing the previous concept stages our design process led to the final solutions regarding structural, functional and aesthetical characteristics of the product, naming included also. Named after Robinson Crusoe in order to highlight the "nomad" aspect of this backpack also taking into account the large possibilities of arrangement or interchanging the outer pockets, the final concept was ready for prototyping and further production. Robinson is an upcycled product manufactured from old outdoor banners and old truck polyplan, an original project shaped as a bag or backpack intended for transportation of a 13-inch laptop and accessories.

Robinson is also an interactive product that contains detachable outer pockets which enable various chromatic options and structural combinations and brings in a "de-constructivist" solution which consists in moving the pockets from the interior to the exterior of the bag. Furthermore, it adds an innovative solution regarding a coffee cup holder which is located in the main flap of the bag / backpack in order to ease daily activities (which require both hands).

The original approach consists in placing the pockets that are usually positioned in the interior of the bag/backpack on the exterior of the product. Each pocket is designed as a module and can be removed, alternated or eliminated considering the daily needs of the user. With numerous possibilities of composing, the pockets are designed in two sizes as squares and rectangles and are used as "shortcuts storage spaces" for a better organizing and fast finding of the belongings. (fig.4,5,6)

One of the most interesting and innovative detail of this product is the "X" shaped coffee cup holder that is situated on the bag's main flap in order to solve the most common situations in which the user's actions require simultaneous movement of both hands (e.g. rush hours on public transportation).

Designed as an interpretation of the backpack's rubber ring for headphones, the coffee cup holder offers ease of storage without overturning. (fig.7)

Fig. 4 Robinson bag-final 3D concept

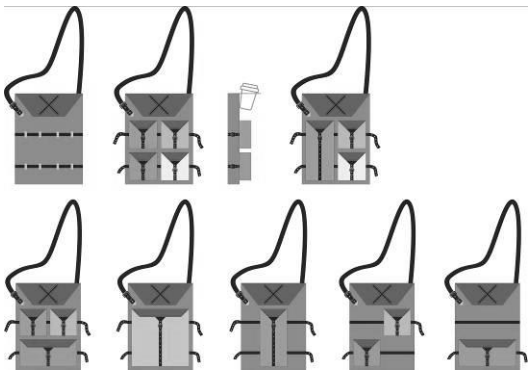

Fig. 5 Various arrangements of the outer pockets

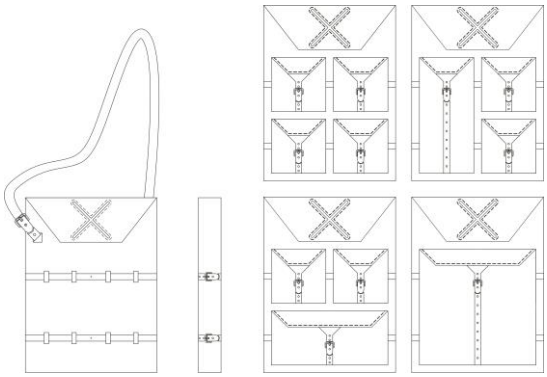

Fig. 6 Robinson bag-final 2D concept

Fig. 7 Detail view-coffee cup holder

4. CONCLUSIONS AND FURTHER RESEARCH

In conclusion, the project followed all the steps required in the international product design process regarding structural, functional and aesthetic aspects from researching the competitive market through concept sketches, 3D development, model making and testing to prototyping. The final product, which was exhibited at Romanian Design Week (Bucharest) and Zain (Cluj), consists in an innovative approach that implied not designing a fashion accessory but a modular multifunctional outer case for laptops and common goods. Furthermore, multiple objects are currently developed using this recycled material.

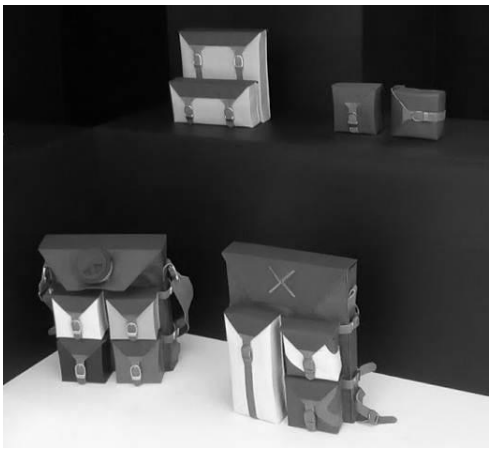

Fig. 8 Robinson Bag exhibited at Romanian Design Week

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