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A PRODUCT DESIGN METHOD PROPOSAL FOR BABIES´ PLAY AND LEARNING

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1. Introduction

"The design of toys and other objects and environments for playful use requires knowledge and skills that are not all taught in general design education." [Gielen 2010]. This is the case of the Product Design Engineering department (PDE) in Universidad EAFIT, Colombia, which at the moment does not have a course oriented to design for children´s play and learning. In this manner, the method described in this paper is a result of a bachelor graduation project within the mentioned faculty. The project was structured under the development of a certain design task, with the aim of generate and systematically record such a method. Besides the product design method proposal, the project had as a result a product concept which aims to validate in a certain extent, the usefulness and effectiveness of the method.

The design task in which the project was supported arose from the experience of Alejandra María Velásquez Posada, teacher of the PDE. She identified the lack of didactic toys to be used within baby swimming from her own experience with her kids and from her perspective as an Industrial Designer.

In this manner, according to the preliminary research phase, the design statement was defined as "*the development of a playful system to support baby swimming and to assist the process of strengthening parent´s (companions) and babies' emotional link with babies from 6 to 24 months old".*

As it is shown in the figure 1, the fuzzy front end (FFE) is the determinant stage of "chaos" within the product design process, in which the structure of the design situation is just getting started. Its difficulty lies largely on the achievement of a solid understanding about the user. The difficulty of the rest of the process lies on the designer's ability to translate what was found into a user centered designed product. Empathic Design (understood as user centered design approach that focuses on user´s feelings towards products) can be considered as a convenient approach to design for babies, by relying on mothers and primary caretakers and observation of babies' behavior. In this way, relevant sources and authors from Empathic Design were consulted such Leonard, D. & Rayport, J.F., and Suri, J.F., Battarbee, K.,& Koskinen, [1997], among others. It is important to mention that there is not such a method specifically oriented to design for babies´ play and learning found within the mentioned research, but there are different methods and tools oriented to user-centered-design liable to be assembled in order to formulate such a method, for instance, *Contextual research*, *ethnography* among others user centered design processes.

Contextmapping within participatory design can be considered as an adequate method for the FFE, due its guidance achieving user's insights. Though Contextmapping does not bring representative results of a target group, it can be thought as a useful research-inspirational tool regarding those design projects that aim to hold their main market research on other executed studies which bring out representative results. Considering the complexity of a user research where babies and their main caretakers are issued, and since the execution of a detailed market research is not the goal or focus of a

certain design project, Contextmapping can fit ideally by guiding on reaching and understanding a limited amount of user's latent and tacit needs to be later translated in suitable baby products.

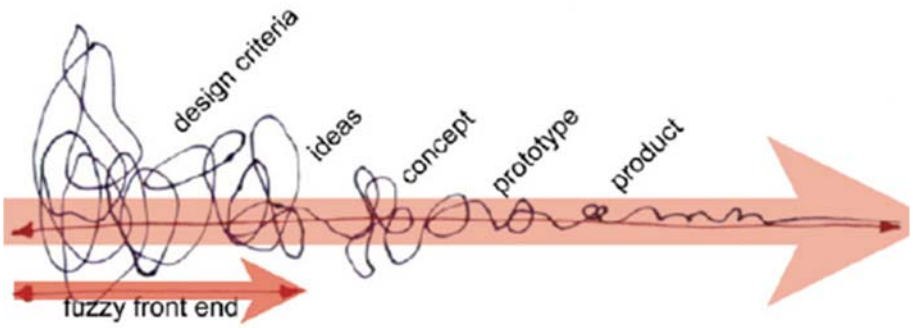

Figure 1. The basic design process and the fuzzy front end. Based on Kim and Wilemon [2002]

The method presented in this paper proposes the usage of Contextmapping as a primary user research tool. Besides, it carefully guides the translation of the information obtained, in a user centered product that aims to satisfy their needs regarding both function and aesthetics. In this manner, the procedure executed to obtain the subject-matter method will be explained; besides, as a results section, it aims to (1) explain and describe step by step the method proposal achieved (subject-matter method), (2) show its application and demonstrate in some extent its usefulness and effectiveness by developing the mentioned design task . Finally, the paper aims to discuss and conclude about the findings of the mentioned project.

2. Method

It is important to state the difference between two methods regarding in this paper. The first one is the subject-matter method, it means, the actual product design method proposal for babies 'play and learning; and the second one, is the procedure (method) executed in order to achieve the subject-matter method.

The steps followed in order to build up the subject-matter method are described next. (1) Referencing a general design method according the subject-matter design task; as the procedure shown in Figure 1, there are several design methods at hand already tested and verified. Therefore, taking a suitable one as a reference can guide the development of a new desired framework. The basic design process on figure 1 was selected as reference in this case, and the following 6 main stages were conceived as the general steps: (a) research, (b) analysis – design criteria-, (c) ideation – ideas- , (d) conceptualization- concept- , (e) detailing, and (f) validation- prototype, product. (2) Creating the criteria for the selection of tools, techniques and methods to be included in the new method; designers have at hand a great number of existing tools to be applied in the different stages of the design process. For instance, interviews, surveys, observation among others are tools/techniques generally used in the FFE. In this manner, it is important to select the ones that fit together in a consistent framework. Thus, criteria to make such a selection are needed. The criteria created to select the tools, techniques and methods for the subject-matter method, consisted in two main aspects: (a) their coherence and effectiveness in terms of its particular objective within the reference design process; and (b) its fit within user centered design methods, explained as their significant support to achieve a solid understanding of users experiences and needs and its translation into relevant user centered (baby) products. (3) Assembly of the different tools; the reference method is re-written in terms of the just selected tools, techniques and methods, in order to obtain the new intended method. (4) Application and testing of the just assembled method; the method is applied in a design task, in order to evaluate its usefulness and effectiveness. (5) Evaluation of the achieved results regarding each step of the method; from feedback obtained in the previous stage, modifications of the new intended method in terms of the order of execution, quality of information achieved, structure, time employed among other relevant aspects are done in this stage.

3. Results

As it was mentioned before, the results section is divided in 2 parts: (1) the description of the product design method proposal for babies' play and learning, and (2) the description of the application of the mentioned method in the mentioned design task.

3.1 Description of the product design method proposal for babies play and learning

"In teaching and coaching the design projects…it was noticed that theoretic knowledge about child development, child psychology, child ergonomics, behavior sciences and play research, combined with the general design skills students have at hand, could successfully be applied in a design project on the topic of toys." [Gielen 2010] Accordingly with figure 2, the proposed method consists in 6 main stages. Its wealth lies mainly in the combination of (1) a user research method which would drive to a clear understanding of the user, (2) a helpful set of analysis tools which assist examination and capturing the information found, (3) an idea generation set of techniques in order to diverge into different possible solutions through a simple creativity principle, (4) a conceptualization set of tools which support the convergence of all influence sectors into an appropriate product language, (5) a set of tools to refine the final concept proposal (6) and validate. Thereby, each phase will be explained, and the main results of the posed design task will be showed.

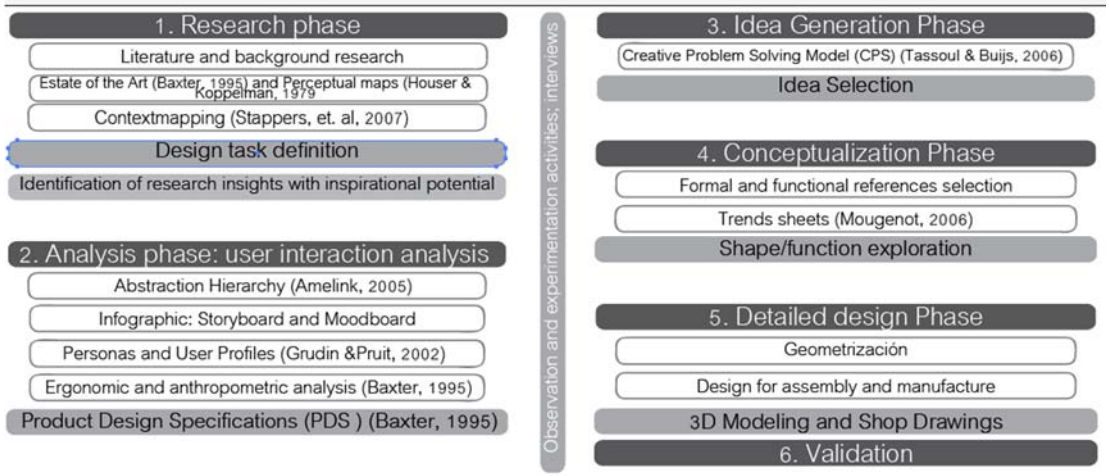

Figure 2. Diagram of the proposed method

3.1.1 Research phase

The research phase aims to obtain a solid understanding of the subject, in order to determine its precise statement. Furthermore, it intends to identify the different aspects influencing the project thematic in order to use them as analysis material and inspirational resources in the next phases.

3.1.1.1 Literature and background research

The literature research helps identifying the relevant and key aspects of the topic and raising relevant discussions; besides, it guides the recognition of relevant contributions in order to guide the design task statement.

3.1.1.2 State of the art [Baxter 1995] and Perceptual Maps [Houser and Koppelman 1979]

The State of the Art is a tool which helps analyzing those existent products which solve in some way the same needs, or which represent somehow a competitor or substitute of what is intended to design. On the other hand, Perceptual Maps complement precisely the State of the Art by refining the analysis, locating the identified products in maps according to relevant dimensions, related with: (1) functionality, (2) aesthetics and (3) user interaction. In this way, it is possible to obtain the relative positions of present and potential products with respect to those dimensions.

3.1.1.3 Contextmapping [Stappers et al. 2007]

"*Contextmapping is a procedure for conducting contextual research with real users, where tacit knowledge is gained about the context of use of products…*" [Stappers et al. 2007]. This procedure was

selected because of the possibility to generate empathy with users, and in this way approach in a closer mode their emotions. On the other hand, the project treats special users: babies. They are considered special users because of the particular way researchers need to approach them, since their communication is mostly different from spoken language. In this way, conducting Contextmapping with them and their caretakers, and complementing it with experimentation and observation activities was considered the most convenient way to obtain progressively tacit and latent knowledge. The procedure consists in six main phases: preparation, sensitizing, generative session, analysis, communication and next phases. A generative session is understood as a session where generative techniques such as collaging, mindmaps, maps among others exercises are applied together in order to understand the different experience domains of people: what do they say, do, and think.
After gathering which was considered the most important information of the design task, the next step is to filter and examine it through the analysis phase.

3.1.2 Analysis phase: user interaction

This phase aims to interpret and establish patterns to create a complete vision of the design task, which permit the elaboration of a product design specification list (PDS). In this manner, all the content gathered on the research phase is analyzed and registered with 5 more tools:

3.1.2.1 Abstraction hierarchy, AH [Amelink 2005]

"As part of the Design process, the AH is a tool that is used to help determine the information content of the interface…" [Amelink 2005]. This tool aims to help designers comprehending the different intentions of the subjects of an action. The meanings of their actions (intentions) are identified according to their deepness, from those superficial intentions or which could be observed at glance, to those which need to be interpreted from the subject´s point of view to be really comprehended. This tool is applied starting from the observation of the activity in question and the results of the generative session if that is the case, and the follow up of the different meaning levels: physical configuration, physical function, generalized function, abstract function and functional purpose.
After having a clear definition of user´s intentions and emotions, it is important to translate the obtained results in such a way that that is both clear and succinct.

3.1.2.2 Infographic

Infographics are graphic compositions which *"... may help the designer to convey design information in a way that tends to match the designer´s preferences, providing both overview and details, visual and written information in one design artifact"* [van der Lugt 2005].

3.1.2.3 User profiles and personas [Grudin and Pruit 2002]

"A Persona is a representative for a specific user group. It gives a detailed description of the behavior, goals, skills, attitudes, and context of a fictional person. It is a substitute of a large list of facts and figures. Furthermore, combines both quantitative and qualitative data." "*A User Profile is a representation of user data from qualitative research. Raw material is filtered, but not manipulated…"* [Grudin and Pruit 2002]. The combination of both techniques could facilitate capturing valuable user information from different parties, both real characters and facts and figures, and in some way ensures not dismissing important details that one of the techniques would not include. The procedure to apply these techniques consists on the briefing, during contextmapping research and observation activities if that is the case, the analysis and categorization of information and finally the layout.

3.1.2.4 Ergonomic and anthropometric analysis

This study intends to identify those permissible and desirable movements, positions, interactions, grips etc. in order to create dimensional references. In this way, the designer should select the criteria to choose the positions, grips, movements etc to analyze, elaborate the respective diagrams and search the dimensions involved.
Now that the information has been analyzed, it is possible to state the specifications of the product.

3.1.2.5 Product design specifications (PDS) [Baxter 1995]

A Product Design Specification list conveys all the information obtained in the design process, in technical design specifications.

3.1.3 Idea generation phase

This phase aims to generate as much ideas as possible within the project´s domain. Elaborated ideas are not expected yet, but a considerable amount of ideas which can guide the designer into a creative and original path. Because of the ease of the exercise it is recommended to brainstorm by associations with pictures. In this way, having a picture, for instance of a battery, it is possible to generate associations such as energy, durability, activity, among others. It is also recommended to have a set of a variety of pictures carefully selected to generate associations, in terms of their capability to stimulate associations by relating what is seen in the picture with the core design task. Furthermore this exercise follows the Creative Problem Solving model [Tassoul and Buijs 2005], which is a model based on divergence and convergence activity and three main stages which fit in the proposed procedure: problem statement, idea generation and concept development.
After generate a considerable amount of ideas and select them, the next step is to organize them and shape them in such a way that is possible to recognize the design direction both aesthetically and in terms of functionality.

3.1.4 Conceptualization phase

This phase aims to define an abstract perspective to precise a concrete direction for the aesthetic and functional design. That abstract perspective should be certainly linked to the interaction definition: user-product-context. In this way, the conceptualization phase aims to synthesize the research findings and translate them into resources of inspiration. Then, those resources united in a careful and coherent way shape a concept, which satisfies the mentioned interaction.

3.1.4.1 Resources of inspiration selection

The resources of inspiration are those concrete aspects which the designer considers contribute to shape the concept, and finally the concluding design.

3.1.4.2 Formal and functional references selection

A formal reference, which could be anything: an animal, and object etc. aims to inspire and guide the product language in terms of contributing to the conveying of emotions and values selected for the product. In this way, the final product ideally would look and work in a way which is inspired and not literally taken from the mentioned reference. It is very important to select those references which fit within the research results.

3.1.4.3 Trend boards [Mougenot 2006]

A trends board is a graphic composition that represents the formal-aesthetic elements that address a desired experience of a product. It is an inspirational element [Maya 2011]. Finally, the concept and interaction could be abstracted from the trend board and the influence sectors captured.

3.1.4.4 Formal exploration

Here, the aim is to sketch, draw and/or scheme the formal and functional references in paper, in order to find new shapes and geometries which communicate the defined concept. At the end of this exercise it is possible to obtain a close approach of the final product language and operation.

3.1.5 Detailed design phase

This phase aims to conclude the procedure by elaborating a concrete product proposal, utilizing CAD technology, sketching, prototyping or whatever the requirements specify the final result should be.

3.1.5.1 Geometrization

This procedure aims to adjust geometrically the generated shapes during the shape exploration, in such a way that a harmonious aesthetic structure is achieved. Furthermore, it intends to refine the geometries found to achieve evocation of the defined concept.

3.1.6 Validation phase

This stage aims to confirm by examination that the specified requirements are fulfilled by the concept. For this stage, the PDS serves as a check list to evaluate the achieved concept.

3.2 Results of the application of the product design method proposal

This section will show the results of the mentioned design process, in a sequence of studies according to the proposed method.

3.2.1 Results of the research phase

3.2.1.1 Results of the literature and background research studies

"Baby swimming" is defined as the core of the thematic content of the design task. Thereby, some key aspects were identified as influencers of its background: (1) Baby swimming definition [Ahrendt 2002]. (2) Baby swimming basic sequence. (3) Baby swimming and the concept of "play*": "It identifies three major concepts that greatly influence toy (play) quality: Aimlessness, Empathy and Play Value"* [Gielen 2010]. (4) Global infant´s development and the benefits of baby swimming: cognitive and intellectual, emotional, physic and playing preferences evolution (based on [Berk 2006], [Shaffer and Kipp 2002], [Sharman et. al 1995], [Bee and Boyd 2004]).

3.2.1.2 Results of the state of the art studies

The products found related with the usage within baby swimming lessons (trough internet research) were clustered in four main categories: (1) lifejackets, (2) inflatable products, (3) visual and auditory stimulators, (4) EVA foam accessories. In this way, three perceptual maps were done with the assistance of five baby swimming attendant parents, three women and 2 men from 30-40 years old, whiten a baby swimming club in Medellin, during November 2010-March 2011. The map´s axes were named according to their perception. Some examples of the perceptual maps are shown in the figure3. The first perceptual map focuses on functional attributes, and is determined by the axis "under -water movement stimulation vs. stimulation of under-water independence". The second and third focus on aesthetical attributes, and are determined by the axis "fun vs. safe", and "voluminous vs. geometrically complex" respectively. The main conclusion of this exercise founded in the arisen discussion, consists in the critical role played by floatability, in terms of the disadvantages it could generate around user interaction by providing permanent flotation and safety. Those disadvantages could be summarized as: false water perception, inhibition of reflexes´ action, possible emotions of frustration and blocking of emotional links development due to the movement inhibition. On the other hand, it was possible to recognize that those products which stimulate babies´ movements in water are those which do not provide permanent flotation and are visual or/and auditory stimulators. In addition, those which look safe are also categorized as movement blockers and consequently, boring. Furthermore, functional failures of the existing products were discovered such as water accumulation and material deterioration.

Figure 3. Perceptual map based on functional atributes. Perceptual map based on aesthetic atributes

The main result of the research phase is to define a clear design statement: *"the development of a playful system to support baby swimming and to assist the process of strengthening parent´s (companions) and babies' emotional link with babies from 6 to 24 months old"*.

3.2.1.3 Results of the contextmapping studies

The generative session was executed with the participation of two Colombian mothers attendants of baby swimming lessons and one baby swimming instructor, at Universidad EAFIT, on April 2011. One of the mothers is an international negotiator of 32 years old, the other one is a housewife of 33 years old and the baby swimming instructor is a 25 years old man, professional swimmer. The exercises carried out consisted mostly in the elaboration of simple parallels, maps and mock ups by images abstraction and association about the different emotions and experiences around baby swimming. The most important findings consist: (1) the music and baby sign language songs are determinant in baby swimming, because they help babies recognizing the different exercises and the movements required, they make them be prepared cognitively and physically, enjoy the sessions and reduce tantrums. Besides, (2) parents assist to baby swimming lessons, among other reasons, because they want to watch their babies achieving milestones which drive them to be independent in water. Strengthening the emotional link with their babies is a less important goal for them when assisting to baby swimming; in this manner, this is an issue the to –be-designed product should address in order to get parents interested in this emotional link strengthening, due to it is one of the main aims of baby swimming according to its definition. Furthermore (3) in order to strength the emotional link with their babies they prefer they home environment. However (4) parents experiment different emotions which mostly depend of their personal character and the babies´ behavior during the sessions. On the other hand (5) babies experiment different emotions during the different stages of the sessions, and emotions are different according to their age and family nurture.

3.2.2 Results of the analysis phase

3.2.2.1 Results of the abstraction hierarchy study

This exercise was executed from two different points of view: (1) from the companion adult´s perspective when his/her baby is younger than 20 months old, and from and from babies 'and companion adult´s perspective, when the baby is older than 20 months. This difference was established in this specific study because of the communication and motor milestones achieved by babies when they become around 20 months old. It means, when babies are older than 20 months old, are capable to communicate on spoken language in a fair way, so decisions and actions made during baby swimming are influenced by both participants (adult and baby). Above is not the case of younger babies, when actions and decisions during baby swimming are made mostly by adults. For the first AH case, the deeper level of meaning, was defined as the companion adult´s recognition of the accomplishment of one of the following functions by the baby: enjoyment, learning (in-water independence). For the second AH case, the deeper level of meaning was defined as the baby´s aim to demonstrate to him/herself and the adult his/her abilities in water (achieved by imitation-confirmation process) and feel capable enough to perform in water as adults do.

3.2.2.2 Results of the infographic study

As it is shown in the figure 4, the executed infographic was structured as a storyboard and moodboard. In this way, the basic sequence of baby swimming and the emotions experimented by babies were captured on each of the stages, according to their age, highlighting the reciprocal effect between parent´s and babies ´emotions. This means that babies´ mood affects directly parent´s mood and vice versa.

3.2.2.3 Results of the user profiles and personas studies

This combination of techniques presents real information of users obtained from the generative session, and assumed information obtained from the notes taken during observation and experimentation activities, as well as from interviews with different baby swimming instructors belonging to different baby clubs and gyms, on February-April 2011. Then the result consists in three parent's profiles, and four baby profiles. As is it shown in the figure 4, the information was diagramed in 4 main groups: a profile motto; the critical emotions experimented during baby swimming; information about age, lifestyle and name.

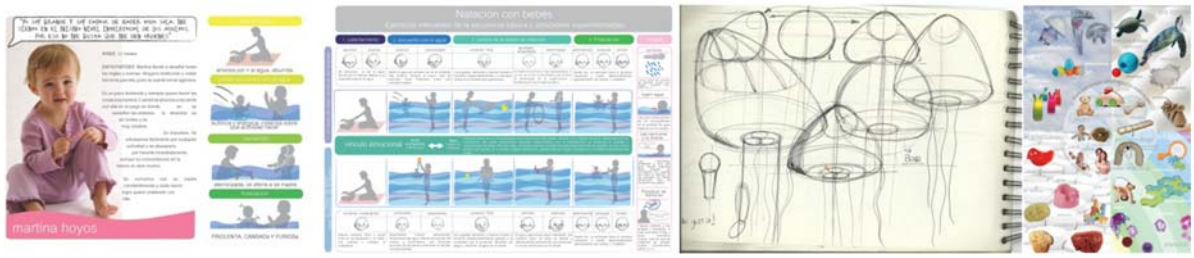

Figure 4. Left to right: Infographic . Examples of the combination of personas and user profiles. Shape exploration. Trend board

3.2.2.4 Results of the ergonomic and anthropometric analysis

The difficulty of this analysis lies in the fact that babies have can have 3D movement freedom during baby swimming. However, criteria was created in order to select those positions, movements and grips: (1) the ones that involve babies´ safety, (2) the ones that permit the task execution, and (3) the ones which involve babies' and parent´s comfort.

3.2.2.5 Results of the PDS study

A PDS was done, obtaining 31 design specifications clustered in 8 different categories, such as context, life cycle, maintenance, materials, user experience (ergonomics, playing basics and emotions) among others.

3.2.3 Results of the idea generation phase

An idea generation session was lead on May 2011, including a multidisciplinary team (3 product design engineering students (only one men), 2 teachers of the PDE, 1 mathematic engineer, all of them aged from 20 to 25 years old), and carrying out a sequence of exercises starting with the simple and general ones, to the more complex and specifically related with user´s insights. The result was an amount of 40 different ideas which were clustered and selected in 6 different categories such as acoustic playing, warm up phase, diving games among others.

3.2.4 Results of the conceptualization phase

The concept inspiration and foundation is based on all those PDS specifications, but also focuses on six fundamental aspects: (1) the ocean and its creatures, as the principal formal and functional reference; (2) the importance of baby sign language within baby swimming, and Tan Dun´s music as a fitting way to create music in water; this music was selected not only because Tan Dun is one of the most relevant compositors using organic instruments which work with water, but also because of the significance of water in his work, related with a life metaphor which provides an emotional touch that certainly fits the designer's intentions; (3) the baby swimming basic sequence; (4) playing as the main axis of baby swimming; (5) the emotions to be triggered in participants: happiness, anger, fear, pleasant surprise and attraction, the basic emotions [Erik and Friesen 1971] "*…because in everyday life, both the positive and the negative emotions are equally important and valuable"* [Weerdesteijn et al. 2010]; (6) the emotional link to be strengthen between participants.

3.2.4.1 Results of the formal and functional references selection

As the ocean creatures where previously selected as formal and functional references, animals with great acoustic potential (in terms of their aesthetics) where identified: jellyfish, turtle, plankton, and coral.

3.2.4.2 Results of the trend board study

As were selected four formal references, the trend board, shown in figure 4, was diagramed starting from a circle divided in four. Then, in the center, images which communicate "babyness", "musical", and "aquatic" were located, as the focus and main language the product should accomplish. From that circle, four compositions are detached, each of them with the intention of communicate the character nature of each of the formal references.

In this way, the name of the board, or the concept selected was abstracted as: "Pure baby-ness: a melodic dip"; on the other hand, the interaction was abstracted as: "a charming hum"

3.2.4.3 Results of the formal exploration

The formal exploration was executed having the trend board as starting point, obtaining results such as the following shown in figure 4.

3.2.5 Results of the detailed design phase

The concept created consists in a family of products named **Doon lab**. The name was created since the system was inspired on Tan Dun**. Doon lab** is a water musical laboratory where babies and adults can experiment and play with water and the sounds that could be produced through its simple manipulation. It intends to stimulate babies´ movements in water due to the evocation of emotions by the visual and auditory encouragement its components probably bring out. Thanks to those babies´ movements in water it is possible to stimulate their development in different dimensions such as cognitive, physical and emotional. Doon lab´s main goal is to help strengthening the emotional and affective link between participants, through the execution of a simple activity, which keeps the principle and natural essence of the interaction between parents and babies (founded on imitation-confirmation principle), taking advantage of water benefits. As it is shown in figures 5, 6 and 7, Doon lab consists in a group of eleven abstract and acoustic creatures. Each of them has particular characteristics taken from the oceanic creatures which define their performance. Doon lab intends to make of the bath and the pool, an adequate space carefully acclimated for the generation of interesting stimuli that promote babies´ global development and in particular, his/her emotional and affective development.

3.2.5.1 Results of geometrization study

The achieved shapes for all the components of the system achieve aesthetically controlled proportions, in order to ensure good light reflection, and somehow its beauty arriving therefore to babies 'traction. In this way, the creatures will be explained briefly.

The representative "tun" issued by **the mysterious´** percussion it's a fine, distinguish and intriguing sound. In figure number 5 is captured their sequence of use which consists in immersing the campaigns of the three different creatures, reaching a different water content. Then it is possible to experience different percussive sounds according to the water level of each campaign, using their own tentacles or other creatures of the family.

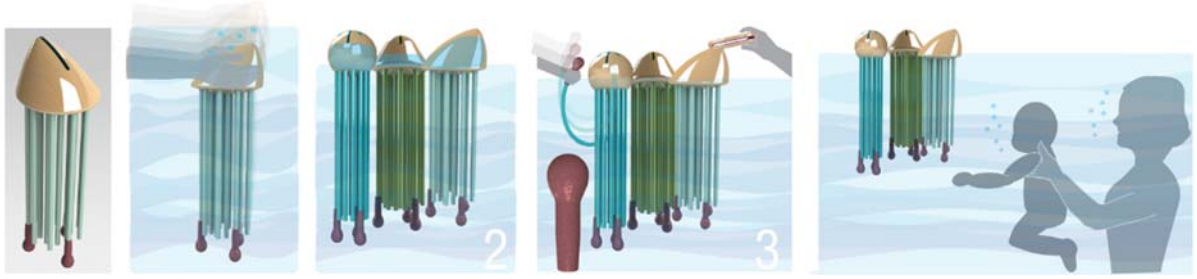

Figure 5. Sequence of use of the mysterious, three of the eleven creatures of the family

The clumsies issue a dazed, disheveled and humorous "pa, pa" sound. As it is shown in figure 6, the clumsies are griped by their lugs for splashing water. The silent, supports the baby and produces a desired imbalance that probably pushes the baby little by little to acquire water movement skills.

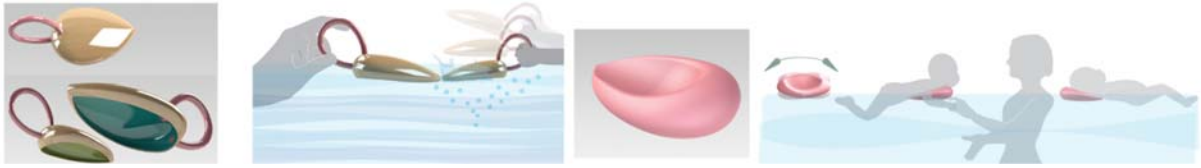

Figure 6. The clumsy and the silent. Three of the eleven creatures of the family

"The jesters" issue different sounds from their constant collisions between them produced by the water movement, and the percussion with other creatures of the product family.

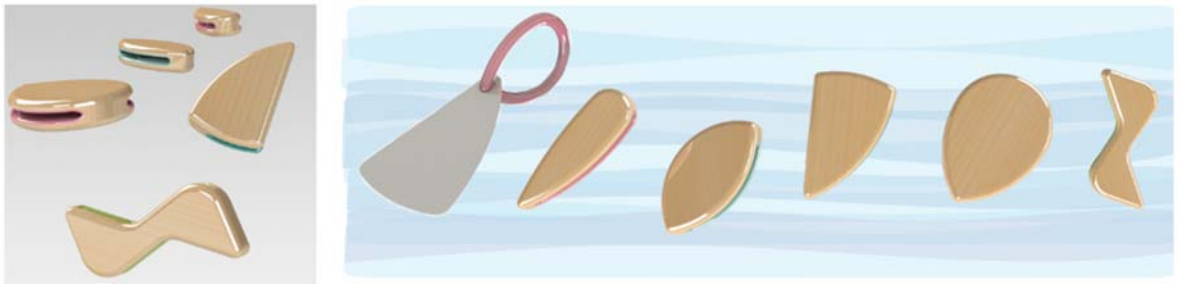

Figure 7. The jesters. Five of the eleven creatures of the family

3.2.6 Results of the validation phase

The concept was validated by people with different levels of expertise the baby swimming field: a 33 years old housewife baby swimming mother attendant, a baby swimming 25 year old instructor, with 2 years of experience in baby swimming, within a baby club on November 2011; and other experts related such as a Product Design Engineer and a Industrial Designer, within Universidad EAFIT. The validation consisted in the presentation of the playful system through high quality images and oral explanation of the design concept to each of the experts. The experts imagined the posed interaction and then, the follow up of the PDS was executed as a checklist. Some of the comments given during the validation consist in the questioning of the applied material, and the need of a prototype to fully test the concept. It is important to mention that this method ends in the validation phase, because it was the project´s scope. However a baby user test protocol probably would be such a wide topic of research to try in an individual investigation.

4. Conclusions

Within the educational structure of a Product Design Engineering faculty, the teaching of designing for children needs a special tutoring in order to give the students and designers in general the opportunity to obtain the skills they require, to work with such as special user as babies are. Based on the experience of this project, the paper described a method as a careful combination of different methods and techniques to help designers' (1) understanding the meaning of babies' actions and their real needs, (2) translate the information obtained into suitable baby products. Some of the advantages identified from the usage and implementation point of view of are mentioned below. The method guides students to discover babies´ special conditions in terms of widening the knowledge related with babies´ development, ergonomics and anthropometrics, and more importantly, to learn how to create empathy not only with babies but with their main caretakers; above because it will ensure into a certain extent the deep comprehension of babies in a global way, and therefore the achievement of a successful baby product. Furthermore, as other tools are proposed, the method aims to continue guiding designers to obtain a satisfactory product language which fits with the research made. Though this method was thought carefully for designing for babies, it does not mean that cannot be utilized for other kinds of users. In other words, it is a method which probably fits in other kind of user centered design tasks such as designing for elderly, designing for disabled people among others. Moreover, some of its disadvantages consist in the necessity and difficulty of involving primary caregivers, the length and number of steps involved and the need to have a solid understanding of the different development phases. On the other hand, the main disadvantage identified from the results point of view, consist in the need of a prototyping and user testing phase, in order to validate in a dependable way the achieved product concept and more importantly, its interaction. Moreover this method do not bring guarantee of its complete adequacy for designing for babies, as it has not been fully tested. However, further studies are intended to be carried out in order to evaluate the usefulness and effectiveness of Contextmapping in user research exercises within design projects related with babies, using other frameworks such as the ViP model (Hekkert, van Dijk, 2011); above, considering that contextmapping is based on a limited number of participants and hence its results are not representative of a target group.

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