

BASIC DESIGN: A CREATIVE TOOL FOR PERSONALIZING CERAMIC PRODUCTS

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ABSTRACT

This study aims to demonstrate the close link which still exists between the basic premises of design and innovation today. In this specific case, in the ceramic industrial sector, we will concentrate on ceramic tiles or ceramic elements used in Architecture.

Unlike the twentieth-century consumer, the new users of the twenty-first century require suggestions and stimuli to enhance their personality and nowadays the house is, above all, a prolongation of that personality: a place where individuals can express themselves. And design has a key role to play in achieving this.

Basic Design is a propaedeutic, preliminary or preparatory educational resource, the aim of which is to provide the basic knowledge required for formal creation and manipulation: the elemental principles or basics of Design, and processes for generating and repeating basic forms, as well as the structures they give rise to, their growth and possible variations, and so on. Basic Design is a source of innovation that enables us to understand form and invent original and unique solutions. Form, colour, texture, etc. are attributes that the user will be able to choose and manipulate in order to define a product.

Personalization or customization gives added value to a product and is currently highly esteemed by the user who acquires new products. Personalization or customization means difference. This is why product personalization can be an effective way of reaching market segments dissatisfied with traditional products and a means for promoting new services.

In a period of crisis in the building industry, product personalization permits tailor-made production, thereby avoiding the undesirable accumulation of stock on the part of the manufacturer and stimulating the market so that recovery can occur.

This development of tailor-made products is possible as a result of the standardization and automation of manufacturing processes and the use of new technologies. Currently Information and Communication Technologies enable many companies to adapt their range of products to the needs and tastes of the consumer, which gives them an edge over their competitors.

This presentation proposes **Basic Design as a creative tool for product personalization**, for our purposes floor and wall tiles, through **a software application proposal** in which both the client and the company can participate actively and benefit from its use. A software application is involved that allows the user to choose a series of characteristics for the end product, thereby intervening in its creation.

It is a proposal for an intuitive and effective software application which corroborates the central hypothesis that the use of a unique and appropriate visual language –**Basic Design- is a constant source of creativity and innovation for industrial ceramic design and offers companies in the Sector the opportunity to continue to innovate by providing a new service to the user: product personalization.**

1. INTRODUCTION

The exclusive design, personalization or customization of products ensures the added value demanded by the user. From this, we can deduce that nowadays differentiation is, more than ever, the surest way of reaching the consumer.

Design has a key role to play in this. The contribution of ideas on design to the creation of innovative solutions is based on an understanding of the known and latent needs of the user. Design is a creative process, the aim of which is to solve problems and limitations in an original way, for example by defining new concepts. As such, it is a factor that generates differentiating attributes and these are values which are held in esteem by consumers.

The idea behind this project is to provide users with a tool which will enable them to satisfy their different needs by configuring or creating tailor-made products using a basic language and an accessible medium: The use and application of **BASIC DESIGN as a creative tool for the personalization of ceramic products**. The new technologies will enable us to achieve the objectives set out in this presentation, which is why we propose the development of a software tool that is simple and accessible for the user and not too costly for the company.

The project has been developed in three parts. The first part, dedicated to the language of Basic Design, analyses and establishes the principal elements of the application, which facilitate interaction with the user during the creation of a product. The second part, dedicated to the software tool, proposes the interface or visual and functional aspect of the software application, which will provide the user with intuitive guidelines for the creation and/or personalization of a product. And the third part, devoted to the validation of the proposal, examines the user and his or her interaction with the proposed tool and validates the results which are obtained. This process will clarify the basic aspects of the proposal and enable us to conclude the project, leaving us the task of measuring our success by our results.

2. BASIC DESIGN

Today “instead of forms, the designer selects languages” and “a designer’s creativity does not lie in the originality of form, but in getting the language right”, (Chaves^[1]). And what is Basic Design, if not a language?

We could say that the predominant task of modern design theory has been to reveal the syntax of the language of vision. The most obvious objective of Basic Design has been to provide a language from which creative ability can be developed, but within the framework of a rational methodology.

According to Marcolli^[2], “the important thing is to recognize the basic elements of form, in other words its primary building blocks. The morphological and semantic elements, fixed and variable parts of language which give a specific and functional value to the essential, basic form and which, organized collectively in a particular way, by means of formal procedures of composition, modulation, selection and modification of their interrelationships, constitute a language, a lexicon, and, in other words, the communication of the contents of discourse”.

Dondis^[3] considers that “language is simply a communicational resource (...) which has evolved (...) to the point of alphabetization (...)”, a term he uses because there is no Spanish word to translate the term literacy= the ability to read and write, and that we can expect the same evolutionary process in the case of visual language. If, linguistically, syntax means the arrangement of words in an orderly and appropriate fashion, in the context of visual literacy, syntax can only mean the orderly arrangement of parts, although there are many possibilities of compositional variation, which will affect the final result and its meaning differently. So there are no absolute rules. Instead, meaning will vary, depending on the arrangement of the parts and the perceptual process.

Gestalt psychologists have done some interesting work in this field, developing the Gestalt principles of perceptual organization. And, in fact, Gestalt means form understood as configuration, as a whole consisting of interacting parts that can be separated and observed completely independently, and then put together to form a whole entity again; but the sum of the parts is not the same as the whole and not a single unit of the system can be changed without modifying the whole.

According to Munari^[4], “understanding visual communication is like learning a language, a language consisting solely of images”. Visual language has the same meaning for everyone; it is more limited than spoken language but more direct. It aims to provide

exact, clear, simple and objective information. ...“designers, given that they have to use all kinds of materials and techniques without artistic prejudices, have to have a method that will enable them to complete their project with the appropriate material and the precise techniques and form which [best] correspond to the function –including the psychological function”.

In addition, in a modest attempt to present a visual grammatical system that can work in practice, Wong^[5] discusses the principles of design in order to establish his particular vision of visual grammar. Undoubtedly, the success of his work is due to the simplicity with which he explains and discusses the basic elements of design and how they are related to one another. As we have already said, these basic elements configure a valid working method. His method is applicable to two-dimensional and three-dimensional forms, and facilitates the creative process and its application to the different branches of design. It is based on the principle of the Repetition of forms, which should be envisaged with respect to each of the visual elements and how they are related, so that their manipulation will produce variations in their repetition, thereby producing a wide range of possibilities in the creative process. This method is also extremely useful for creating modular products, given that it meticulously analyses the possibilities for repetition/variation of a module, following an organizational pattern or structure in both two-dimensional and three-dimensional space.

According to Wong’s theory, the principles that underlie the creation of form and its subsequent manipulation are based on the elements of design, which he divides into four groups as shown below:

The conceptual elements –point, line, plane and volume- are not visible.

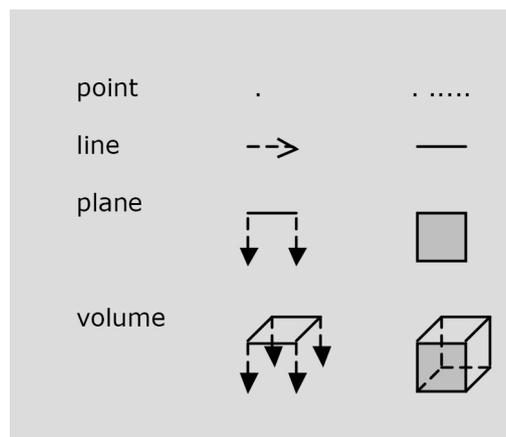


Fig. 1.a. The conceptual elements according to W. Wong.

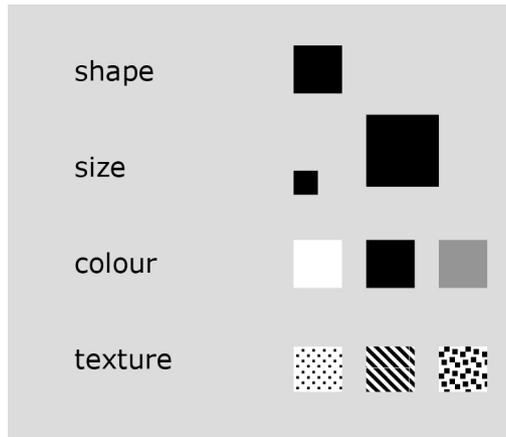


Fig. 1.b. The visual elements according to W. Wong.

The relational elements –position, direction, space and gravity- govern the location and interrelationship of forms.

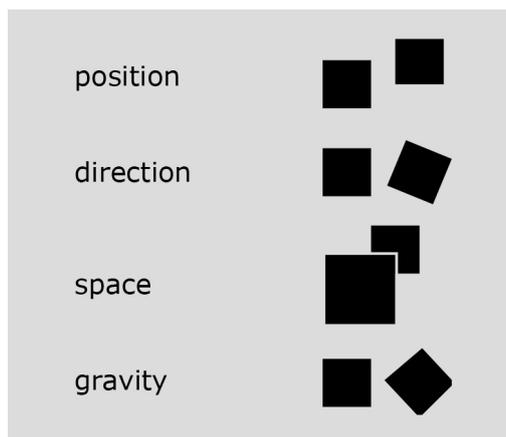


Fig. 1.c. The relational elements according to W. Wong.

The practical elements underpin the content and scope of a design. They are as follows:

- realistic or abstract representation
- meaning of the message conveyed
- function or purpose of the design

Forms may also interact with one another or with other forms; this may happen in order to achieve a new, more complex form or, as a result of multiple repetitions and in accordance with a specific structure, so a larger composition is obtained. The possible interrelationships that can occur between forms, according to Wong, are represented below.

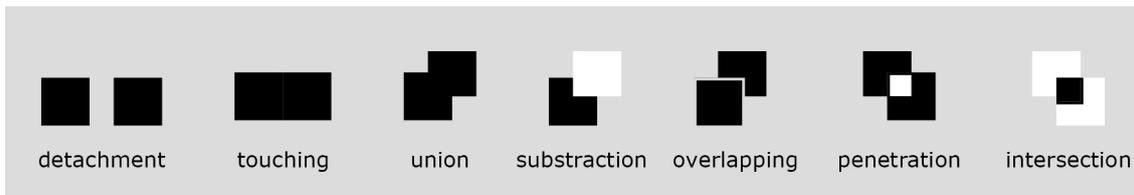


Fig. 1.d. Interaction of forms according to W. Wong.

In this way, all the instruments can participate in the design simultaneously and be manipulated, causing substantial variations in its form and structure.

For Wong^[6], “all the visual elements constitute what we generally refer to as “form”, which is the primary objective of research on visual language, (...) a shape with a specific size, colour and texture. And the way in which a form is created, constructed and organized jointly with other forms is often governed by a certain level of discipline, which we call “structure”.

Basic Design activates perceptual sensitivity and manual skill and these, in turn, promote creative expression and foster a higher level of innovation in problem-solving. This activity is supported by programs, methods, techniques and activities which enable the user to acquire specific knowledge, and an understanding of principles, strategies, habits, attitudes and values. The importance of Basic Design as a useful resource for application in creative processes and as a source of innovation goes without saying.

To summarize at this point, we can establish the principles, also known as the basic premises, which will control the creative process: Form, Structure, Texture, Colour and Material and which will serve as a basis for the development of the creative tool which we propose.

3. CREATIVE TOOL

One of the reasons for developing this project is the need to adapt products to different users. The personalization or customization of a product invests it with added value, which singles it out from other products. Therefore, the idea behind this project is based on the creation of tailor-made products using a system which is accessible to every user and not unduly costly for the manufacturer.

Product personalization systems include:

- Hydraulic Cutting

Hydraulic cutting is a process for cutting ceramic pieces which, unlike radial cutting techniques, enables us to cut curved shapes with the design features we desire, ranging from manual decoration to the most exact geometrical lines.

This process has made it easier to create functional pieces, such as signs for buildings, and has added innumerable decorative pieces to the options offered by floor and wall tiling, including friezes, rose windows or the odd detail on walls and floors.



Fig. 2. Collection designed by Alicer using hydraulic cutting.

- Laser Engraving

Laser engraving can be used on all ceramic surfaces. This technique provides the ceramic piece with functional and/or aesthetic value. The versatility and speed of the process ensure optimal results in architecture, interior design and urban features.



Fig. 3. Piezas cerámicas decoradas por grabado láser.

- Metallization in PVD Booths

Metallization in PVD booths entails the vaporization of metals, which are deposited onto the ceramic piece, giving it a finish the shininess of which will vary, depending on the characteristics of its surface. Different functional and/or aesthetic shiny/matt effects can be created in this way.

- Digital Printing

The digital printing of ceramic tiles using Inkjet technology has provided the consumer, architect or interior designer with a unique and exceptional product.

It is here that the project proposal begins to make sense. In ceramics, digital printing has revolutionized the way we see design, given that the user can decide the final graphics of a product, which can be anything from a photograph to a drawing.



Fig. 4. Digitally printed ceramic panel.

Digital Inkjet ceramic printing has advantages over traditional silk-screen printing methods, as it uses a printing technique based on the injection of ceramic inks with specific characteristics which affect their use and which continue to evolve.

Based on this technique, we can offer users a software application which will enable them not only to upload the unique images which will be transferred to the product, but also to create their own compositions or designs.

3.1. NEW TECHNOLOGIES

The resources which enable us to acquire, produce, store, process, communicate, record and present information in spoken form, or in the form of images and data contained in acoustic and optical signals, particularly computers, software programs and the networks they require, are known collectively as Information and Communication Technologies.

The use of information and communication technologies, hereafter ICT, is on the increase.

ICT are having an enormous impact on our lives. They help us and make our daily lives easier, enabling us to develop new skills, and offering new solutions and resources to companies. Technology has become one of the most important influences on the world in which we live. An example is the application developed as a result of the collaboration between ICEX and ASCER at CERSAIE'12, which provided information to the Spanish exhibitors present at the Fair.



Fig. 5. Tile of Spain App.

3.2. USER INTERFACE

The material result of the idea or concept underlying this project is a software application with which users can personalize their ceramic collections. Using the visual language of Basic Design, they will be able to manipulate the basic elements of design, such as form, structure, texture, colour and material.

The interface of the software application has to be intuitive and simple in order to make product design or creation easy for the user.

The first steps available to the user will be the selection of Format and Material. Then the user would have various options for decorating ceramic pieces, ranging from digital photography or a combination of the different proposals offered by the company to the creation of personal designs in different layers. Once the various phases of decoration have been finalized, the user will be able to see the final result and confirm which option is preferred so the company can manufacture the product.

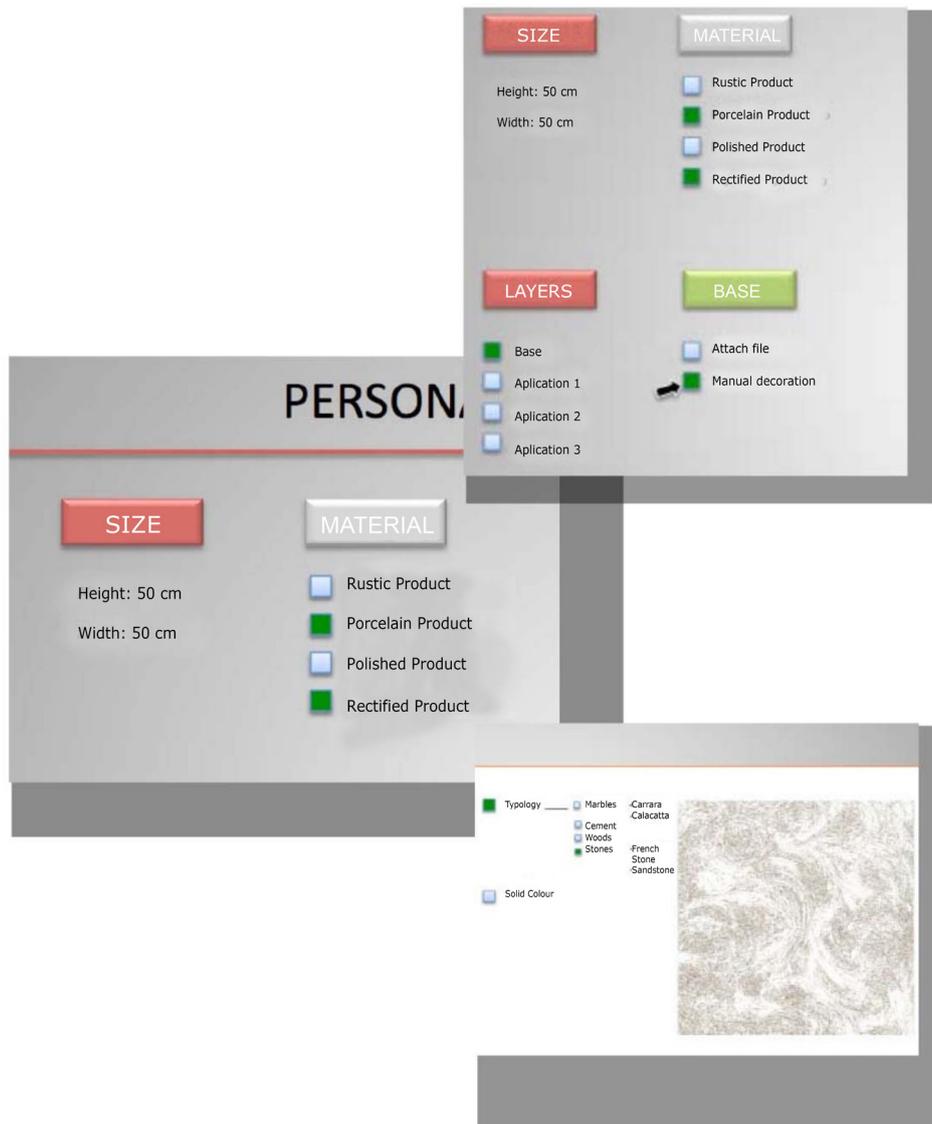


Fig. 6. Depiction of the proposed user interface.

4. VALIDATION OF THE PROPOSAL

To validate the proposal the scientific sampling method will be employed for selecting different users, who will be asked to perform a simulation test using the proposed tool and assess its utility by completing a questionnaire.

4.1. QUESTIONNAIRE DESIGN

The questionnaire will be designed to collect data, which will subsequently be analysed. Applying the central theme of the project, product personalization, the various users will be asked to prepare a ceramic collection for one of the rooms in a house, in this particular case the bathroom.

There will be three groups of design solutions:

- Group 1: unique decorations, designed by the user using the creative processes offered by the application.
 - Figurative design using recognizable design elements.
 - Abstract design using elements which cannot be recognized.
- Group 2: Decorations produced photographically.
 - Figurative images.
 - Abstract Images. Although photography depicts real images, they may show us unrecognizable aspects of reality.
- Group 3: decorations created by reproducing proposals offered by the application.
 - Design proposals using materials such as stones, different types of wood, metals, paper, cloth, etc.

The questionnaire will enable us to collate the perceptions of users as to whether the application is intuitive and effective and the results are satisfactory. If the users agree that the application is intuitive and simple and that, by means of a series of possibilities offered a priori, they can prepare their own collections entirely by themselves, which would be a highly satisfactory outcome, we can invite them to consume the product.

5. CONCLUSIONS

The distinction between production and the satisfaction of the desires and needs of the user are key aspects which determine the competitiveness of companies. To maintain product quality and offer the added value of personalization is a smart marketing strategy.

Basic Design enables users with no specific knowledge of design to create their own decorations easily and intuitively; it is therefore the ideal creative tool for the proposal.

The digital printing technique enables us to obtain an optimal finish for ceramic tiles and transfer the proposals of the user effectively to the ceramic product. It is therefore the ideal technique for the proposal.

ICT will enable the development of an application which is accessible to consumers and companies.

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WEBPAGE SOURCES

ASCER

<<http://www.spaintiles.info/esp/index.asp>>

CEVISAMA

<<http://cevisama.feriavalencia.com/>>

COTEC

<<http://www.cotec.es/>>

SECV

<<http://boletines.secv.es/es/index.php>>

TEMES DE DISSENY

<<http://www.raco.cat/index.php/Temes>>