

## **Bio Forming in Nature to Create Textile Printing Design for Hospitalization House**

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### **Research Summary**

The vast universe around us always pushes us to think, contemplate and learn. Nature is the foundation on which all sciences and arts are built on, and from this point, the inspiration of the structural and forming systems of all the vital forms of living creatures around us will enrich the field of textile printing design, especially if our destination is design for psychological support and resisting the repercussions of disease for the recovered and sick to improve their visual environment in the places of receiving treatment ( hospitalization) by applying the requirements of the healing environment and resisting disease through communicating with nature and its aesthetic values, which are derived and inspired by micro and ultrafine morphological details of cells of living organism with interest in using color that has a positive impact on human health to make a design that psychologically supports whose recovering from illness.

The design aims to meet all human requirements, which vary between functional and psychological requirements, and ignoring one of these requirements is a deficiency in the design process itself. The research problem is summarized in the use of the biological structure of living organisms to find innovative design solutions for textile printing fabrics for hospitalization rooms, which in turn contribute to Psychological support for recovering and sick people. The importance of the research is summarized in the development of a methodology to take advantage of the aesthetic values of biological forms under the microscope as one of the sources of creativity and psychological support for the recovered and sick people. Inspiration from the biosynthesis of nature is an important moral message for the recovered and the sick. It is also an important trend for a textile printing designer. This study enables us to understand the laws and relationships that govern the natural systems around us, so attention must be paid to the designer's role towards his community in its various categories with attention to the psychological aspect of the users and the need to study in depth the modern trends of design and combine them with the design of textile printing.

### **Key words:**

Bio formation - Hospitalization House

The healing environment: Healing environment is a term describing the physical, cultural and organizational situation supporting patients and their families in order to get rid of the physical and psychological pressures of disease and treatment procedures. Therefore, the philosophy of this term stems from the physiological effects of environmental pressures and their effect on helping with healing, paying attention to the healing environment enables the recovering, sick and their families to deal with the disease and overcome its complications and supports the ability to heal. So it can be said that every effort which makes the recovery environment

comfortable, inspiring and positively influencing the patient which is a major supporter of the healing in addition to the medical and therapeutic capabilities.

The spatial environment is one of the most important types of all environments that surround a person, which provides requirements for living and enables to perform the required functions, which include meeting basic human needs. Most of us have a negative image towards the role of hospitalization as a result of its association with disease and suffering on one hand and neglecting the psychological impact of the spatial hospitalization environment. From other hand the system of treatment and care focuses on medical technologies and services only, without paying attention to the effect of the environment of the place on the patient or the recovering people. From here comes the need to pay attention to the psychological impact supporting the recovering patient through the design of the rooms of recovering and patients from the design of the interior space to the design of printing textile for hospital rooms.

Recovered people was specifically targeted because they have multiplied in our society as a result of the large number of various diseases, whether physical or psychological, and they need psychological support every time they visit hospitalization houses in order to continue their resistance to the disease, especially cancerous diseases and other diseases that require repeated visits to houses of hospitalization for long periods of time, in order to achieve complete recovery, so equipping their rooms with designs of printed fabrics makes them distinctive rooms that erase memories of long stay to receive treatment and support. It brings a feeling of familiarity and security on the one hand and is an incentive for patients that their recovery is still possible, regarding the type of disease.

### **Color and healing environment**

Color has an important psychological effect on the person in general and on the psychological dimension of the recovering person in particular because of its effect on improving the functional performance of the healing environment, as it creates a positive or negative reaction of the recovering person towards it in the healing environment, which certainly leads to improvement or worsen the psychological state of the recovered.

Colors play a fundamental role in hospitalization houses, so the process of selecting colors must be subjected to a careful study to achieve the desired effect on the behavior and mood of the recovered person, as color contributes to reducing tension in the patient and recovering person, because it has a vital and important role in improving the healing environment, and its positive effect on the perspective of the recovered vision of what is around him.

### **The basic human needs and the requirements of the healing environment**

Human needs are the entirety of the functional requirements of the human being, which vary between the need for visual organization of the environment, beauty, creativity and diversity in sensory stimuli. Human needs are achieved by defining basic functional, social and environmental requirements, and this is done by inspiring the elements, relationships and organizational rules and combining them with modern requirements while achieving safety and reassurance. The design if taking into account the psychological impact of the recovered through the spatial comfort and intimacy felt by the recovered, we can say that design has completed its aims.

There are feelings that arise through these internal spaces, when well designed, they support a sense of acceptance, intimacy, welcome and respect for privacy. The interest in the internal space of the healing environment and its contents of printed fabrics is not limited to its psychological impact on the recovering user only, but rather this effect extends to the medical staff providing the medical service, to fully improve overall atmosphere of the healing environment. The design of textile printing contributes greatly in that direction. Rather it is possible to understand the nature of the patient's disease in order to choose the appropriate units to achieve psychological support and to implant a positive effect in the soul of the recovered so the appropriate units and colors for the patient can be chosen and lead to a distracting attention of the patient and make him feel at home.

### **Design procedures and requirements to prepare the hospital environment**

**Communication with nature:** Introducing the elements and components of nature into the healing environment, brings psychological benefits to the recovering person, which are reflected in his response to the complementary stages of treatment or completion of his recovery, which is confirmed by many studies that have proven the effectiveness of the merging of patients and nature. For example, exposure to sunlight has a healing effect compared to artificial lighting.

**Privacy:** The recovered person needs a degree of privacy to reduce his feeling of fatigue and depression accompanying his treatment trip. Privacy can be provided through curtains dividing rooms or through isolation and providing places for relatives. Creating printed designs in harmony with the internal space as a whole causes the healing environment to get a degree of joy and entertainment which is generally lacking in hospitalization as a result of interest only in treatment phases and medical procedures.

The use of hanging curtains separating the beds with printed designs will improve the psychological state of the recovered person and make him feels a degree of familiarity and reassurance, because these curtains differ from the usual curtains in hospitalization because they are closed to the home atmosphere with their vibrant designs and colors. The use of hanging curtains comes to emphasize the privacy of the recovered person by creating internal spaces from printed fabrics (such as dividing and hanging barriers to separate the beds and providing changing places in the examination rooms) with an aesthetic design that supports the psychological state of the recovered.

**Visual and aesthetic organization and psychological comfort:** The balance between function and beauty is inevitable in design, and the psychological dimension must be added as well. In the healing environment, beauty supports the function and purpose when the purpose is comfort and psychological support for the user or the recovered, rather every aesthetic gives an independent psychological effect. Psychological beauty raises happiness and joy for us, while spiritual beauty provides hope and contentment, while spatial beauty helps in that good and appropriate state. Psychological comfort helps to increase healing and recovery, as many studies indicate, because color and various aesthetic design elements have a role in improving the psychological state of the recovered, visitors and even workers.

The process of simulating nature is the study of the ability of organisms to adapt to the environment, which always forces them to find a solution to the changing conditions around

them, and by studying those objects, models and systems of simulation or inspiration, new design solutions can be reached.

Inspiration means simulating the aesthetics of shapes, construction, mechanics and colors to reach design solutions. The natural environment is rich in many sources of inspiration, which enrich the designer's outcome with ideas. Living organisms have a structural behavior related to their functional behavior, bodies, shapes and growth evolution in living organisms is linked to morphological formal and functional changes and variables, morphological and functional, so each type of organism is characterized by a distinctive external appearance.

### **Methodology for Inspiring Bio Modulation in Nature to Create Textile Printing Design for Hospitalization:**

The researcher extracted several steps to achieve the goal of the research, which are defined as follows:

- 1- Determine the essential main uses and design requirements to achieve the goal of psychological support for the recovered, through a questionnaire to determine the importance of the hospital environment requirements for the recovered and the sick, and a very satisfactory rate was achieved in this regard. The questionnaire form was designed (to fit the goal and topic of the research) and to reach the opinions of specialists and others to get the most important points that will be relied upon by the design, the sample included (40) individuals.
- 2- Determining the design units appropriate for the psychological comfort of the recovered: By creating manual initial configurations inspired by biological formations mostly of plants, then drawing them by the computer and processing them to create the basic design ideas and multi-effect color treatments achieved by the computer.
- 3-Determining the color groups that have a positive psychological impact on the recovered: By showing the role of color in the healing environment, as previously indicated by the research, the researcher identified a color group that supports the psychological effect.
- 4-Coordinate with the opinions of specialists and actively participating in the design.

### **Standards that must be met in textile printing design to support the psychologically recovered in a hospitalization role:**

Functional standards: Achieving the design for a purpose or function, which is psychological support and positive impact, and it is achieved through: A- The fit of the design units with the condition and category of the recovered or patient.

B - Reliance on the principle of simplicity and clarity in the selected configurations, their repetition and overlap.

C- The prevalence of some specific elements over the rest of the design elements to attract attention.

D- The design achieves a sense of familiarity, reassurance, and a sense of security.

Aesthetic standards: A- Colors and degrees of compatibility with a focus on colors that have a positive psychological impact on the recovering person.

B - Achieving aesthetic balance and aesthetic values of the design, and the choice is made according to the psychological impact of the recovering person.

C - The diversity of shapes and design units in a simple way.

**Innovative design ideas:**

Through a set of digital images and models of biological formations under a microscope, as well as some different forms of plant surfaces, it was possible to extract some formations manually and then draw them using the computer with the addition of colors and design color effects that emphasized the importance, objectives and assumptions of the research. The researcher has innovated 8 basic design ideas in addition to 2 Color processing for each design idea using the computer (Photoshop program), with a total of 24 ideas with a proposed employment application. The innovative designs were distinguished by their reliance on various plastic structures through simulation and extracting all kind of biological composition in nature of all kinds.

The researcher was inspired by the previous biological formations models, previously presented a group of units manually. The researcher also resorted to rearranging some elements into units of a distinctive character by merging and repeating elements with adding some movement through the bends of natural shapes, and also relied on the capabilities of the computer in color effects for items and modules and in creating color treatment ideas that are different from the basic design ideas.

Research results: 1- Selection of the bio modulation of living organisms in nature that can be inspired by designing textile printing that can achieve aesthetic proposal and a new applied plastic organization that enriches this field.

2- Choosing these elements as design units is considered a new design entry in the applied and plastic field in terms of innovation and it enriches the visual system of textile printing designer.

3- The structural and color systems of the biological formations inspired by nature support the moral stability and psychological comfort of the recovered in the hospital.

4- The design aims to achieve all the functional, aesthetic, psychological and social human requirements, and paying attention to one demand only is considered a deficiency in the design process.

Research recommendations: 1- Study the theory of simulation of nature with a new perspective of research and scrutiny to understand the aesthetic and functional values of living organisms and their application in the field of textile printing design.

2- The necessity of linking modern concepts and technological scientific techniques with the design process to keep up with scientific development and make use of it.

3- The necessity to take into account the psychological dimensions of the user of textile printing design by studying modern design trends.

4- The psychological needs of the recovered should take priority beside the functional and aesthetic aspect of textile printing design.