Aerial photography and Satellite imaging of the Earth's surface as a source of inspiration for the textile Hanging design by using computer graphic applications

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Abstract:

Nature is the most important resource that the textile printing designer relies on to invent and inspire new and contemporary ideas by taking advantage of the rapid development in the fields of art and design. The technological development in imaging has contributed to seeing the structures of living cells, including the exquisite formations in which the creations of the Almighty and Exalted are manifested, which helped in carrying out many research and studies in the biological and medical fields, Likewise, the increasing development in aerial photography and remote sensing techniques helped in exploring the Earth's surface and its various geological characteristics. There is no doubt that all of these discoveries in the presence of giant data storage units which its capabilities are increasing day after day have contributed to recording countless numbers of high-quality digital images that record the smallest details that workers in the field of art and design can benefit from in creating many design ideas in various fields. The research aims to study the mechanism of recording high-resolution images of the surface of the globe, including the creations of the Almighty Creator and the changes that occurred in it due to climatic changes and urban encroachment of human beings, and how to benefit from the cosmic and urban systems in inspiring designs suitable for printing textile fabric pendants that contribute to completing the aesthetic vision of the Interior design with furnishing fabrics for modern homes. The research relies on the descriptive analytical approach to study the aesthetics of digital aerial photography of the surface of the globe, as well as the experimental approach to obtain innovative design ideas for printed hanging textile that suit the purpose of modern home furnishing. The researcher has reached many important results, including that digital aerial photography of the Earth's surface can secrete millions of images and design elements that help the designer to invent renewable and diverse design ideas. The researcher also found that digital aerial imagery of the surface of the globe is variable and varied even if it is for the same spot on the surface of the globe due to climate changes as well as continuous urban sprawl. The researcher recommends in-depth study and analysis of digital aerial photos of the surface of the globe and benefit from them in various fields of art and design and in the field of textile printing design in particular.

Keywords:

Aerial photography ،Remote Sensing ,Textile printing design ،Printed hanging textile.

1. Introduction

The design process is a conscious activity that rarely takes a random way to reach distinguished results, which requires a lot of effort by the designer in the search for reliable reference materials in building design ideas, and in the field of designing textile printing in particular, nature is one

DOI:10.21608 /mjaf.2020.22197.1470

of the most important sources that is full of treasures, and every day, a person discovers a large group of elements found in the nature in which the Creator, the Almighty, loved us. With the passage of time, there are many discoveries, and man will not reach anything that God Almighty has created in the universe, and God Almighty believed when he said, "You only come from knowledge a little." In the beginning, man was able to notice only things close to him and with the development of science and knowledge, man was able to invent the camera which can record scenes that fall within the scope of the human eye's vision, but it was not clear that it was able to invent the lenses that enabled it to magnify, which helped to invent the microscope that enabled human being to see objects and nanomaterials, and it was a product of successive human discoveries, various discoveries that were used in all sectors, human invention of the computer, which enabled him to record digitally processed images and thus enable recording images of living cells, fine, trees and plants and various objects, and other natural elements that characterized the organization and the divine beauty. Man has invented satellites that can visualize the heavenly bodies and visualize the surface of the Earth. Because man was able to see landscapes that he was not able to see with his naked eye before (L. DAELS, nl pp 4), he also used aerial photography in the fields of surveying and geological studies of the surface of the globe, and flying cameras were used to photograph different areas of the Earth's surface for the purposes of prediction of climatic and natural phenomena. (T. Strozzi, C. Ambrosi and H. Raetzo 2013, pp 2567), images taken by flying cameras and satellites are natural and are turned into artificial by humans and are considered a rich source of reference materials that a textile print designer needs in order to develop and update his/her design ideas. The following provides theoretical framework for aerial photography and remote sensing, as well as a technical and aesthetic analysis of a selection of models of aerial digital photos and their surface elements and through which a group of designs can be applied in the field of designing printed textile pendants fabrics, which is one of the most important elements complementing the furnishing fabrics used in the interior design of the modern home.

2. Overview and Background

Aerial Photography

Man knew photography and then aerial photography before the emergence of remote sensing and satellite imagery, and it was through aerial photography, and there is an argument in the classification of images and their description as aerial photos. Essential:

• Pictures are taken from an upper position (unfamiliar)

• Infrared waves are usually recorded.

Pictures are taken on scales that people are not used to seeing with the naked eye.
(http://www.colorado.edu/)

Types of aerial photos:

Types of aerial imagery can be divided into three types, depending on the location of the camera, with respect to the target to be photographed to the following:

Vertical pictures:

Vertical photography is the most important of all aerial photographs, as it is less distorting and can be used to obtain some exact measurements of objects.

• Oblique pictures:
It is captured from an oblique source with a sharp angle in relation to the target to be photographed, i.e. vertically and therefore it covers areas larger than those that can be photographed by portrait photography. Familiar forms are given to the human eye as if the viewer was looking at the view from a hill or high mountain. (Al-Saleh, Muhammad Abdullah. 1996 - p. 7).

Digital aerial photo processing:
In spite of the enormous capabilities of a person to interpret the image data visually and its ability to distinguish among millions of colors, there is a need to expand the processing of images digitally, there are limits to distinguishing the human eye to the nearby tones and the ability of the human to distinguish among colors in case of their mixing with shades of gray, if 256 colors mixed with gray are shown to a person, at best he can distinguish between 10 shades of color and the rest of the shades are lost. The human eye also has a high ability to distinguish depths up to 400 meters only.
However, computers do not have any problem in distinguishing those 256 colors, and computer's ability will not stop at this point, but it can classify those colors, extract some of them, display them with false colors, merge them and compare them, not to mention the super speed in accomplishing all these tasks with very high accuracy. (http://www.colorado.edu/)
The computer’s great importance also appears in its ability to store millions of digital images, which helps in improving the accuracy of the results of analyzing aerial photo data, which contributes to obtaining a higher-resolution image than the inputs itself. Research is indicated in this. The field is known as ultra-precision research. (F. R. Stolle, 2006, pp 20) While we were able to record aerial and spatial images, some initial treatments should be applied to the stored images in order to correct any distortions or defects in those images.

3. Problem Statment
- The need for novel design ideas based on natural elements as a reference material.
- How can digital aerial imagery be used in introducing the design of printing fabrics for textiles with disabilities, based on the rapid technological development in the field of photography and digital design. and its applicability in the field of interior design.

4. Aims and Objectives
The importance of the research lies in its focus on the study of digital aerial photography and remote sensing of the Earth's globe and the extent of its use in creating designs for printing textile fabric pendants using computer applications specialized in image processing and digital graphics.
- Emphasizing on highlighting the role of technology in accessing many discoveries that contribute to setting a methodology for designing textile printing using digital aerial photographs of the surface of the globe and processing them with computer programs "Photoshop, Illustrator" in order to reach ideas for designing textile pendants that are appropriate to furnish the interior spaces of the modern home .
- Highlighting the role of the textile printing designer in meeting the consumer needs of contemporary printed textile pendants that fit modern trends in the interior design of the contemporary home.

5. Hypothesis and Methodologies

The research relies on the descriptive analytical method in describing and analyzing the digital aerial photos of the surface of the globe, as well as innovative design ideas for printing textile pendants, as well as the experimental approach in devising a set of innovative solutions to fit these designs with furnishing fabrics for the interior spaces of the modern home.

6. Conclusions

1. God Is creative in creating all what is around us in nature, which is the most important source of inspiration for innovative design ideas.
2. Science has reached many discoveries in various areas of life, and one of the greatest discoveries is cameras that enabled human being to photograph scenes and record them, which have evolved with the development of technology and have become incredible capabilities that can visualize things that a person would not have seen without those discoveries.
3. Using digital aerial and spatial imagery, an infinite set of images and data enriched with decorative elements (reference material) can be obtained, which can be used for general textile printing design and textile pendants printing design.
4. Using the applications provided by satellite sites, different color ideas can be obtained for the same elements in the images captured on the surface of the globe, and it is possible to make some graphic treatments on those images, which contribute to obtaining more accurate and clear images than what we were using as traditional photography techniques of aerial photos.
5. Satellite websites always provide large collections of images that can serve as a digital library of natural and architectural decorative elements that aid in the design of textile printing.
6. It is indispensable to use computer applications in addition to the applications provided by satellite sites on the internet to process digital images of the surface of the globe from one side, as well as to invent design ideas for printed textile pendants.
7. The researcher was able to invent several design ideas that are suitable for contemporary printed fabrics by using internet applications as well as computer applications in digital and aerial space image processing and using them in creating a set of designs that are suitable for printing textile pendants as well as developing proposals for employment proposals.

Figure (5): design ideas

Figure (9): a proposal to employ the design idea

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