Digital Techniques and Their Role in Contemporary Graphic Art

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Abstract

Graphic arts are considered among the arts in which the technical factor is an essential one in terms of both structure and aesthetics. This type of art has an impact on the human creative thought and artistic innovation, since its distinguished artistic printing techniques produce distinctive aesthetic values which are characterized by a high degree of visual excitement that in turn affects intellectual excitement. The magic of the techniques of this art is considered a new factor that distinguishes it from other artistic creative methods.This research aims at studying digital art techniques and their role in contemporary graphic arts, particularly digital printmaking as well as its multiple outcomes. Furthermore, the aesthetics of the indicative structure of digital graphic arts, its extent of association with the traditional printmaking techniques, in addition to the connection of digital techniques with the social environment in terms of the expressive aspects and the paradox of accepting digital techniques by the plastic art society are invested. Digital art originated in the USA in 1957 and the first digital art exhibition was opened in Germany in 1965. Then, it began to spread globally, where numerous techniques were used to represent different creative ideas of contemporary artists. Following the modern technological development at the end of the 20th century and the beginning of the 21st century, digital printmaking continued to develop through the interest of graphic artists, where digital graphic techniques were mixed with traditional graphic techniques to form a homogeneous mixture of distinguished artistic works. The study concentrates on the nature of digital art, its evolution and development and techniques of digital drawing and design.[1]

Keywords: Digital Art , Digital Techniques , Digital Drawing

Research Problem

Doubtlessly, digital techniques have gained a great role in arts, especially in printed graphic designs. This is because digital techniques are distinguished by experimentation and infinite employment in the fields of plastic arts, particularly graphics, noting that digital arts depend on mixing different fields of arts in order to create modern artistic visions. The digital boom contributed to create a new form of artistic work through digital printmaking. An important issue is the paradox of the relationship between art and technology to create a printed artistic work, where the outcome can be digital or traditional printing. Globally, digital printmaking reached a degree of acceptance by the society of plastic artists. Among the most important paradoxes that this research attempts to investigate is to record the artistic cases, particularly in the Egyptian graphics school, through presenting digital artistic works.

So, the research problem can be summarized in attempting to answer the following questions:

1-To what extent did digital techniques contribute to the enrichment of contemporary graphics arts, especially digital artistic print, by contemporary artists?

2-What is the role of local and international assemblies in accepting the products of artistic creation that depends on contemporary digital techniques?

3-Does experimentation philosophy play role in creation new plastic art formulations through digital techniques?

4-Does the usage of digital techniques in arts establish an aesthetic product? And what are the aspects of difference, from the expressive and innovative viewpoints as well as the intellectual indications, between conventional graphic arts and those relying on digital techniques?

Research Importance

The importance of this research lies in the following points:

1-Constructing a knowledge base on the role of digital techniques in contemporary graphic arts.

2-Investigating digital techniques and the extent to which experimentation philosophy impacts the creative process of contemporary graphic arts to enrich the cultural awareness with the introduced techniques in the field of arts.

3-Presenting valuable benefits to researchers and graphic art tasters through additional knowledge values that contribute to aid and support of our artistic culture in using digital techniques in contemporary graphic arts.

4-Supporting the knowledge and artistic domains with a new scientific study that is expected to contribute to display the aesthetics of digital artistic print in contemporary plastic art accomplishments.

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[1] Yassin, Hassan. (1999). New Plastic Possibilities of Artistic Print in Building Printing Surfaces (Colargraph and Silokit). PHD Thesis, Department of Printed Designs, College of Fine Arts, Alexandria, Egypt, (in Arabic)

Research Objectives

This research aims at achieving the following objectives:

1-Investigating the technical attitudes and methods as well as the aesthetic philosophies resulting from using digital techniques in graphic arts.

2-Presenting the digital treatment based on mixing the digital artistic print and the traditional artistic print.

3-Monitoring the digital experience of the most prominent contemporary artists in using digital techniques in graphic arts.

Research Limitations

This research is limited to studying contemporary digital artistic works of a number of the most important contemporary graphic artistic during the period from the sixties of the 20th century up to nowadays.

Term Definitions

Digital Techniques:

Are scientific applications of science and knowledge, associated with computer and its software, input and output tools and instruments, which are used according to a certain system?

Digital Art:

Is among the most modern visual arts which flourished in the presence of the interest.

It is called digital since it relies on the digital decimal computer language. It has taken many forms and attitudes; from miniature subscriptions to local and international exhibitions.

Digital Drawing:

Is an art which completely depends on computer drawing programs without resorting to pencil and paper? It is an advanced development of traditional drawing, where manual traditional tools have been substituted by more modern and creative tools such as the mouse and the light pen.

Drawing is among wonderful arts, where the painting is completely produced by the artist without any excerption from other elements such as picture and raw materials.

Historical Aspects of Digital Techniques in Art

The sixties of the 20th century was a very important period in the history of digital technology. Digital art has developed with the development of artistic movements and schools, especially post-modernism arts such as: dada, fluxes, conceptual art, interactive art, performance art and art of happenings and events. The importance of these movements and schools to digital arts lies in that they were influenced by the aspects of information technology, in addition to their focus on the conceptual aspects, the idea of event and the interaction of the recipients with the artistic work[2]

One of the most important pioneers of digital arts in the sixties of the 20th century was the American artist John Whitney (1917-1995), who is considered the spiritual father of digital art.

The start of dealing with digital techniques in digital art production is attributed to a group of scientists who were not actually aware of arts or of the aesthetics criteria in the early production of digital arts, which were debatable. However, their experiences have documented the beginnings of digital art. The American researcher and professor of electrical engineering Michael A. Noll is one the first researchers who used the digital computer to produce artistic shapes and document the idea of using random systems in creating digital artistic works. He was also one of the pioneers in presenting printed digital computer artistic works. He did that in 1965 in New Yourk. The German artists Nake Freider (1938), an artists and professor of computer graphics at Bremen University in Germany, was one of the first artists who presented printed digital computer arts. He did that in 1965 in Wendelin Niedlich hall.

The German Georg Nees (1926), a prominent philosopher and mathematician, obtained the PhD degree in computer graphics in 1969. Since 1964, Nees produced printed creative works by using the computer. He also participated in numerous international exhibitions[3].

Since the beginning of 1985, the remarkable progress in the field of digital arts led to the reinforcement of the interaction between the rapid development of information technology and practicing art. In the past years, this interaction became increasingly obvious, not only through providing new tools to practice digital arts, but also by means of methods of creation in digital arts. In 2011, the Conference on Digital Art History was held,

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[2] Tamer Assem Ali, Digital Print as a Printing Medium and Its Effect on the Original Artistic Print, Unpublished PhD Thesis, Helwan University, 2011, P. 18-19, (in Arabic).

[3] Tamer Assem Ali, Digital Print as a Printing Medium and Its Effect on the Original Artistic Print, Unpublished PhD Thesis, Helwan University, 2011, P. 18-19, (in Arabic).

which created a type of acceptance of this kind of art and benefiting from digital techniques in digital creation[4].

Methods of Digital Artistic Printmaking

Like other plastic arts, digital art relies on various attitudes in terms of subject or idea. For instance, the realistic school includes simulation in its fine details. It is near to the classical school in art. Modern photorealism includes using real photos and merges them in different ways to represent reality or a part of it, as can be seen in Figure (1).The Egyptian artist Mohammad Ta'eb excelled in the field of digital drawing for many children journals.

Among his digital works which are distinguished by the classical nature is "Ibn Battuta" [5]. In this artistic work, he focused on displaying the signs of confidence and wisdom in this character, despite that it represents a historical subject. The artist imagined the dress of "Ibn Battuta" guided by Al-Tawareq tribes who live in the Great Sahara in North Africa.

Figure (1):

Egyptian Artist Mohammad Ta'eb, Ibn Battuta, Digital Illustration, XPOSE 10 Master Award, P. 248-249.

The imaginary or so-called surrealistic school in art is concerned with designing and creating imaginary elements with interferences of pictures and illusionary touches not present in reality. Thereby, it depends on creative thought and innovation. This school is sometimes called the digital school or the digital art school.

Among the most prominent artists of this school is the Russian artist Andrew Ferez [6] who constructed surrealistic scenes, each of which has its own imaginary narration.

The different contradictory elements in these scenes merge together through constructing fascinating surrealistic illustrations by using Wacom Pad, as shown in Figure (2).

In the expressive school, artists depend on elements from the nature, where the colours, shapes and sizes of these elements are altered. Among the most important artists who adopted this school is the Colombian artist Marcela Bolivar [7]. She is a digital drawer and artist who focused on photo processing in producing works depend on the usage of photographic images of persons and their treatment to reach a status which is near to the

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[4] Digital Art History: A subject in Transition, Computers and the History of Art, Volume 1, Anna Bentkowska – Kafel, Trish Cashen and Hael Gardiner, UK, 2005.

[5] http://www.maxforums.net/showthread.php?t=155911.

[6] http://www.mymodernmet.com/andrew-ferez-surreal-digital-illustrations/.

[7] http://www.cuded.com/2012/07/digital-art-by-marcela-bolivar/

photographic image expression, as depicted in Figure (3)

Figure (2)
The Typing Machine, the Russian
Artist Andrew Ferez

Figure (3)
The Colombian Artist
Marcella Bolivar

In terms of the digital artistic work construction, the artist uses several technical tools, such as the computer mouse, the Wacom tablet, the light pen and the screen, utilizing one of the following methods:

Zero Method, in which a new file is opened where the elements are created without copying or cutting them from elsewhere. Geometric and organic shapes, colors, brushes and filters, among other artistic creation tools, are used in design program. Among the most important contemporary artists who adopted this method is the Egyptian Illustrator Mohammed Orabi in one of his artistic work in his personal exhibition "Electronic Illustration and Coloring" in 1990. He was among the first Arab Artists, along with the artists Hamdi Abdullah, Assem Abd Al-Fattah and Awadallah El-Shimy, who were interested in creating artistic works by using digital techniques and took serious steps towards post-modernism arts in the field of digital arts.

Figure (4):
The Egyptian Illustrator Mohammad Orabi, Digital Construction, 1999.

Orabi, in the context of talking about his digital experience, mentions that he relied on Photoshop program tools and adapted them to suit the artistic work and the method of free expression that takes the feature of painting and is characterized by basic features in construction as well as by shape treatment.

He adds that dealing with computer will lead to a new art. This has been achieved later through recognizing digital arts as supporting contemporary arts (see Figure (4)).

On the other hand, the assembly method relies on assembling a group of images and creating relationships among them to form one construction.This techniques was innovated by the international company Adobe Stock. It offers millions of images which can assist artists in reproducing classical illustration works or creating digital works using the classical illustration method.

The Indian Artist Ankur Patar [8] was charged with the task of using digital techniques to re-illustrate one of the artistic works of the famous Dutch artist Rembrandt, which was stolen from the Gardner Museum in Boston, Massachusetts in 1990. The Indian artist utilized about 248 images from the Adobe bank and by using the Photoshop program, he reproduced Rembrandt's masterpiece "Storm on Al-Jalil Sea", See Figure (5)

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[8] http://froot.Nl/posttype/froot/een-van-de-twee-is-een-echte-rembrandt-de-ander-is-gemaakt-van-stockfotos/

Figure (5):

Ankur Patar, Storm on Al-Jalil Sea (Original Work and Re-illustrated Digital Work)

zero-assembly method:

Means gathering, coordinating and modifying images according to personal nature. The British artist Dan Mountford [9] is one of those artists who adopted the zero-assembly method. He relied on a girl's photo, a photo of a group of trees and a photo of a mosque of Indian style and merged those photos with an addition represented in altering the form of the girl's photo and depending on engineering lines to determine the face shape, See Figure (6).

In the field of artistic print, digital techniques provided many possibilities, especially photographic ones, like films used in silk screen printing that depend on color separation or digital film design through light or digital photography as one of the modern techniques. Among the most important artists who depended in their artistic works on lithograph and silk screen techniques is the American artist Robert Rauschenberg [10]. He adopted mixing light photography of the spacecraft Apollo 11 with lithograph and silk screen printing, as shown in Figure (7).He depended on light photography as a modern technique and not on digital techniques.

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[9] http://www.grainedit.com/2011/03/03/dan-mountford/

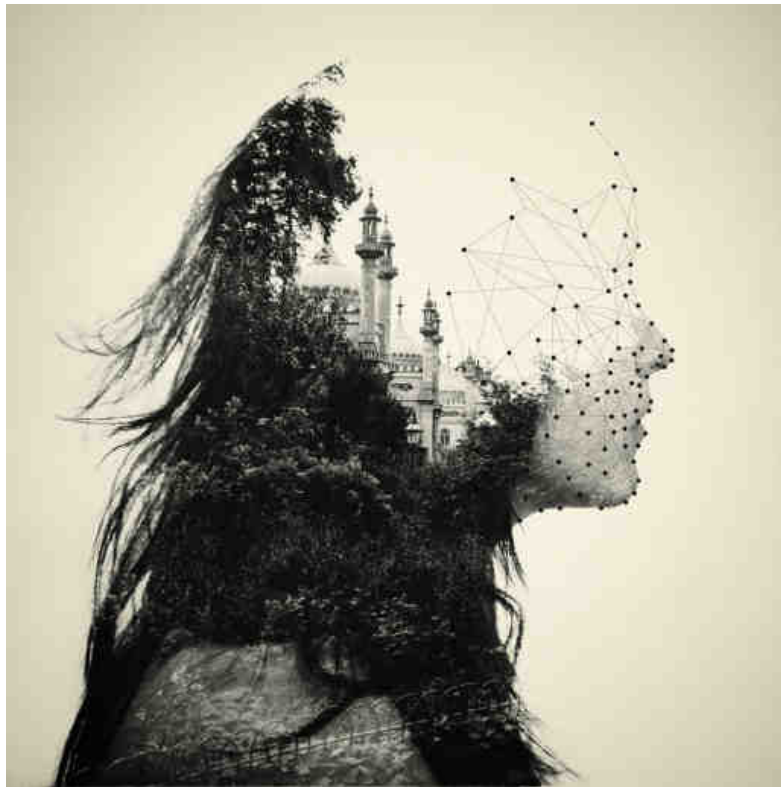[10] http://www.artsy.net/artwork/robert-rauschenberg-core.
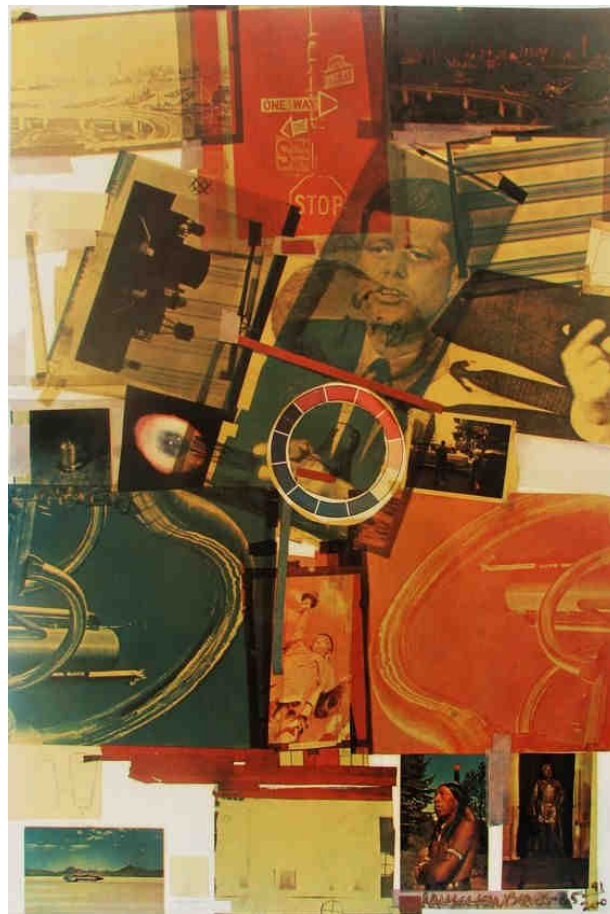
Figure (6)

British Artist Dan Mountford

Figure (7):

Robert Rauschenberg, Silk Screen Printing, Core 24×36 Inches (1965)

Through modern digital techniques and by using Computer Numerical Control (CNC) in many types of artistic works, being sculpturing, drawing or engraving on metallic, and wooden surfaces, the American artist Mike Lyon is one of the prominent graphics artists who developed ways of engraving on wood using digital techniques, particularly the CNC machine, See Figure (8). By constructing and writing a computer program with the aim of converting image files into AutoCAD files and then into vector image files on the illustrator, the artist can try several line thicknesses films with the required a transparencies to make design films through a precise vision to view the artistic work digitally before implementing the design in the form of printing blocks using the CNC machine. Lyon used large wooden printing blocks that he printed using a modified printing machine to suit the process of color printing in a harmonious manner. The techniques used by Lyon are presented in a book entitled: "Post-Digital Printmaking CNC, Traditional and Hybrid Techniques"[11] Figure (9) depicts an artistic work, which represents a landscape from the Aspen Grove Forest [12], in which Mike Lyon relied on utilizing the CNC machine in engraving the woodblock print in the different work stages of the block. The last color was printed depending on printing the artistic work using color degrees from the lightest to the darkest degree in the artistic work. Furthermore, Lyon is known to rely on the Japanese printed method.
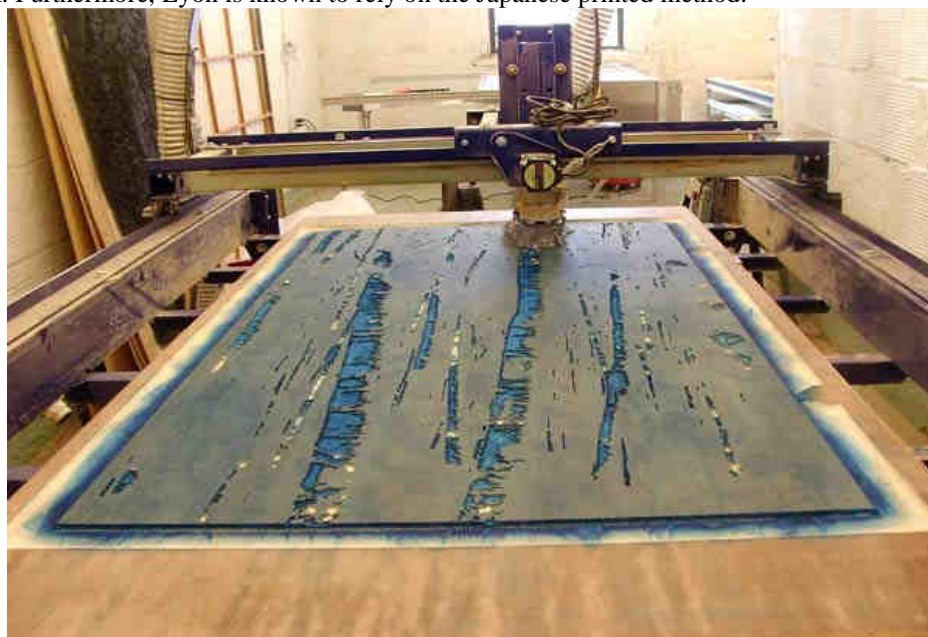

Figure (8-a):
Mike Lyon during the Engravement of the Wooden Printing Block Using the CNC Machine

Figure (8-b)

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[11] Post-Digital Printmaking CNC, Traditional and Hybrid Techniques, A & C Black Visual Arts, 2012.
[12] http://www.llmlyon.com/2006/movie-aspen-grove-pigment-application/

Mike Lyon during Printing the Wooden Block

Figure (9)
Mike Lyon, Aspen Grove Forest, Digital Engraving and Printing Using One Wooden Block, 42×77 Inches (2007)

This research also present the experience of the researchers which depends on digital programming techniques and digital printing in producing their creative works. The digital works of Awadallah El-Shmiy are an extension of his experience and artistic style in creating traditional artistic prints. Among his artistic works are: "The ancient fighter glorification collection", "The Slave Girl" and "Oriental Dreams" [13]. His main source of inspiration was the heritage of Islamic art. His contemporary experience "Oriental Dreams" was built on "The Ancient Fighter Glorification Collection", where he mixed traditional techniques with digital techniques; See Figures (10) and (11). These two collections represent the essence of his contact with visual software.

"The Slave Girl", executed starting from 1983 using cavernous engraving, along with "The Ancient Fighter Glorification Collection", executed in 1991 by the same means, represent two ideal cases of comparative excavation with the collections "Oriental Dreams", executed in 2000, and "Shahrazad", executed between 2003 and 2004 by using the Photoshop program.

The way in which he executed "Shahrazad" reflects the extent of his longing to call for his preferred Slave Girl to discuss with her the extent of her different presence when she is subject to modern digital make-up and electronic powders. El-Shimy achieved a remarkable development in his treatment of "Shahrazad" that reflects his understanding of the specialty of the digital medium against the means of cavernous engraving used to execute the "Slave Girl" collection. Irrespective of the textual associations of the name "Shahrazad", it is found that the general nature of the collection carries a distinguished digital feeling that prohibits any attempt of female egotism and prevents any potential opportunity for female temptation, in contract to the available and possible flesh of the Slave Girl.

The same remark can be mentioned for El-Shimy's collection "Oriental Dreams"; See Figure (12). Despite that he this time relied on the capabilities of colour, selecting the maximum extent of saturation for the strong color degrees of the Photoshop program giving them thereby a decorative sense, this color glare did not succeed in hiding the extent of subjugation felt by the Mamluki hero as he was imprisoned by digital technique, resulting in that his heroism became pure inaccessible oriental dreams, unlike his counterpart "The Ancient Fighter" who was cowing about his assaults on the surface of the printing block. Thereby, El-Shimy proves his awareness of the fluctations of ages and circumstances and proves as well that his artistic code is an indicative pattern of the age of spoliation.

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[13] http://www.art-criticism.team-forum.net/t2-topic.

Figure (10):
Awadallah El-Shimy; Ancient Fighter Glorification; Etching (1988)

Figure (11):
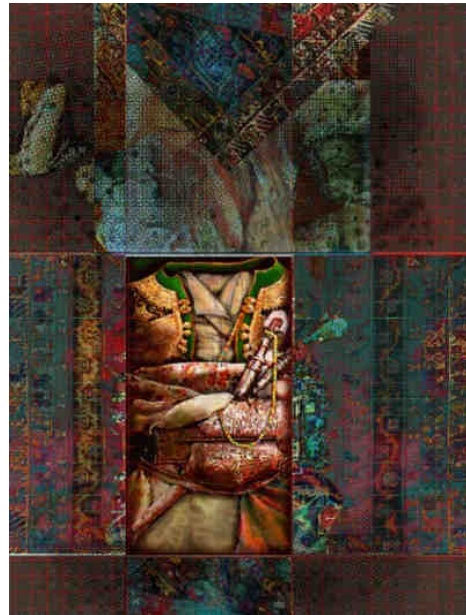Awadallah El-Shimy; Slave Girle Collection: Etching (1991)

Figure (12)
Awadallah El-Shimy; Oreintal Dreams; Digital Art; 40×68 cm (2000)

Figure (13)
Awadallah El-Shimy; Shahrazad; 40×40 cm (2003)

The artistic works of the researcher Omran Hassan come through the mating between traditional methods of artistic printing and contemporary digital techniques as well as benefiting from modern technology in creating digital printing artistic works. Through utilizing the lithograph printing technique, Hassan conducted a number of artistic experiments using the Photoshop program to design an artistic work that contains the shadow grades and the cavernous engraving techniques. The block was printed using a laser printer with drawing some lines by hand on the polyester printing block. Then, the polyester block was printed by using the lithographic printing method. Here, the objective was to mate between traditional and digital techniques to approach a result which is near to cavernous engraving on zinc, as depicted in Figure (14), which shows an artistic work named "Alphabetical remains", which the researcher utilized some of the Arabic Alphabet to achieve a variety in the design through shaping by using some design brushes that belong to the researcher in the photoshop program. In the work shown in Figure (15), Omran Hassan prepared the artistic designs using the Adobe Illustrator CS6 through the movement and frequency of lines and choosing the appropriate designs to convert them into films

which are then printed using the silk screen printing technique. In this work, he was guided by the movement and frequency of the bird's wings through color and line frequencies. Through the printing process, he realized the interference of lines in a color harmony using therein the degrees of yellow, orange, red and dark blue in a harmonious form[14].
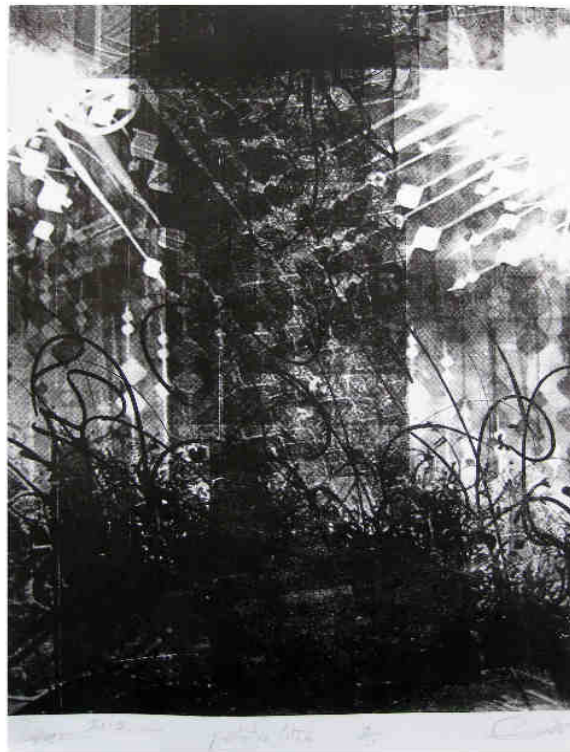

Figure (14)
Researcher Omran Hassan; Name of Work; "Alphabetical Remains"; Flat Printing Using a Polyester Block; 29.7×21 cm (2013)
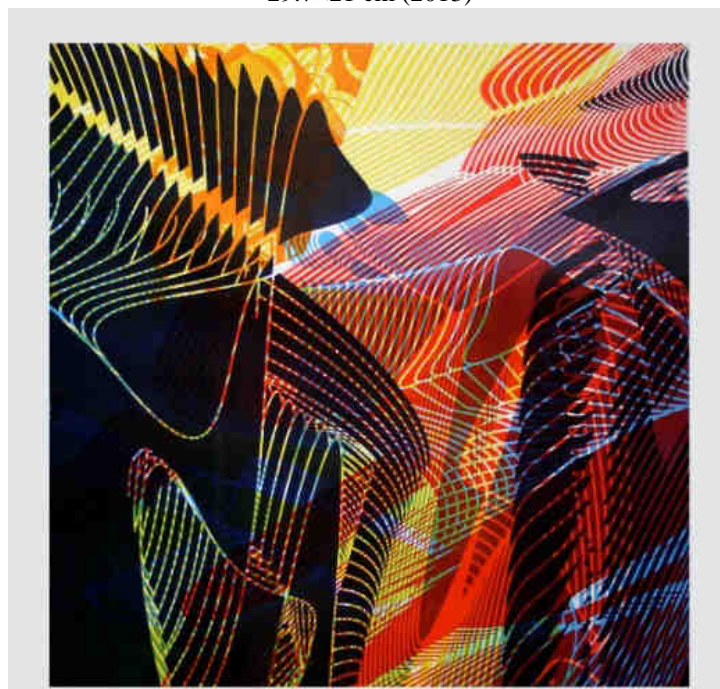

Figure (15)
Researcher Omran Hassan; Name of Work; "Dialogue of Colours and Lines 1"; Silk Screen Printing; 44×44 cm

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[14] http://www.omranalkatiay. Wixsite.com/omah/screean-print.

(2014)

Results

1-Relying on digital techniques in plastic arts, particularly graphic arts, has become a reality that led to the creation of a different, modern visual vision in art, where the imagination of the artist remains the main drive in the creation process.

2-Combining traditional and digital techniques is the main endeavor of this research, since it links between accuracy in performance and feeling in execution.

3-Experimentation and creating new techniques in the field of graphic arts enriches the construction of artistic work.

Recommendations

In light of the results of this research, the following recommendations are proposed:

1-Showing interest by artists and art students in the experimentation process through utilizing digital techniques in creating plastic art works in contemporary graphic arts.

2-Training art students on using digital techniques, such as programming or illustrating techniques, as well as digital engraving and printing machines, to support the creation process in the fields of design and art.

3-Conducting further research studies on using digital techniques in the field of design in general and in graphic arts in particular.

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