The role of apparent motion to achieve space-time in weaving through Sufi whirling

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Research introduction:

Art is the artist's means of visualizing the world, including its abundance of knowledge and culture, as Kandinsky said “art is a birth of its era”. Since modern era has been characterized by logic of science, it has become imperative for the artist to take science as a new starting point in which he/she addresses his artistic elements, their relationships and ways of embodying them in the work of art. And with the emergence of Einstein's theory of relativity and the disclosure of the concept of space-time, the element of time became one of the controversial issues in all literary, philosophical, and scientific forums, and of course the technical situation, so Einstein presented time and space as neither existing nor valuable, they depend on the movement of speed only and at the same time they complete each other, the hour spent by the pedestrian is slower than the hour that passes on the driver of the car, and both of them are slower than the hour spent by the plane passenger, so the concept of time became relative and not absolute, which aroused the artist's imagination towards artistic creativity and an attempt was created to articulate and embody this modern concept in creative and diverse artistic bodies. The apparent motion is closely related to the expression of the temporal and spatial dimensions in artistic works, where time is defined as "the change that occurs in the space surrounding the body at the time the movement occurs in a single image."

For any object that was and must occupy a void, it is a process of substitution between air and form.” (Khalil 2017, 58) Hence it can be said that the apparent motion in design is a movement that only perceives and evokes the feeling of movement as a result of organizing the shapes in intentional ways that suggest its movement during a specific period of time, although they are actually static forms, and based on it, we find that the expression of space-time in works of art has become common through the extending apparent motion in a specific time and in a specific place.

Among the designs in which the space-time element is clearly represented through the apparent motion are the Sufi whirling designs, specifically the rotational movement that the Sufi performs as a metaphor for the movement of the universe and appears in the designs in the form of rapidly fading curved lines indicating the movement of the dervish's loose clothes resulting from a rotation around himself and its movement from one place to another, and the concept of physical time in these designs is translated into mechanical movement, meaning that the external time resulting from different factors may be represented in the movement of clothes and airlines accompanying them to indicate the merging of different scenes that occurred at different times in a single artwork that appears to be having the concept of time.

Through the above, the current research tends to express space-time by studying the apparent motion in the contemporary weaving work by making use of the Sufi whirling designs that the researcher considers an appropriate approach to enrich the manual formation of the weaving

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work. This treatment allows art students to produce contemporary textile artifacts that keep pace with the new and developed systems in art and are linked to scientific concepts and theories.

Research problem:

Through the researcher teaching the textile subject at the Faculty of Specific Education - Tanta University, the researcher noticed that students did not keep pace with modern thought in designing their artistic works and that they were content to simulate heritage and nature and apply the basic rules of art without trying to link art with modern science or theories, and she also noticed that there is a difficulty in expressing any implicit idea or applying of contemporary concepts and trends. The researcher believes that training in expressing non-embodied content is a way to train the mind on creativity in addition to acquiring structural skills in implementation. The study of apparent motion is a basic introduction to clarify the theory of space-time and how to express it in contemporary textile work, in addition to the fact that Sufi dance designs are considered an appropriate embodiment of the idea of space-time.

The research problem is summarized in the following question:

How can space-time be achieved in the textile work through the apparent motion of Sufi whirling?

Research goals:

The current research seeks to:

1. Exposing the role of the apparent motion in the weaving work through Sufi whirling.
2. Realizing the concept of space-time in the textile artifact.
3. Creating textile crafts in which the concept of space-time is realized through the apparent motion.

Research hypotheses:

The researcher assumes that:

1. The study of the apparent motion leads to the enrichment of the textile artifact.
2. Space-time can be achieved in the textile work through apparent motion.
3. There is statistical significance for the work resulting from the research experiment.

Research significance:

The importance of the current research is due to:

1. Research is considered an introduction to the enrichment of the textile artifact through the apparent motion.
2. Shedding light on the concept of space-time in the field of textures.
3. Research is in support of the link between art and science.
4. The research contributes to introducing the features of Sufi whirling.

Research limits:

The limits of the current research are limited to the following:

1. An experimental practice applied to one experimental group (1st year students (2018) - Faculty of Specific Education - Tanta University).

2. The textile materials used in experimentation for research are limited to woolen threads, cotton threads (No. 20/1), and Cotton Parle threads.
3. The experiment is limited to the tapestry method.
4. The designs of the textile works are limited to designs inspired by the Sufi whirling of Mawlawi and Tanura.
5. Implementation is limited to the loom of the frame.
6. The realization of space-time is limited by the apparent motion of the weft.

Research Methodology:

The research is based on the descriptive approach in its theoretical framework, and the experimental curriculum in its practical framework by conducting the research experiment on one sample of students (20 students) through a number of teaching meetings and workshops inside the textile halls of the Faculty of Specific Education - Tanta University, and then evaluating the textile works as a result. Experiment after applying the research variable.

Research terminology:

Apparent motion: "This term is originally attributed to visual art, and is used to describe the masked appearance of movement in a painting that is actually static" (Wade 2000, 206)

Space-time: It is a physical term expressing the union of space with its three dimensions (length, width, and height) and time as a fourth dimension and the formation of a flexible fabric called space-time that the universe is made of. It was considered that space and time are relative and not absolute "(Schrödinger and Dinger 1985, 2). This term was associated with Albert Einstein in his theory of relativity, but the first to formulate it was the mathematician Hermann Minkowski, three years after the emergence of relativity.

Sufi whirling: It is a type of zikr between the followers of the Sufi group, in which the Sufi wears wide clothes and turns around himself in an attempt to reach asceticism and perfection. It grew up in Turkey at the hands of Jalal al-Din al-Rumi and was called the Mevlevi or Dervish whirling, and it moved to Egypt and then the folkloric Tanoura dance was derived from it.

Experimental Framework:

The research experiment was applied to a sample of students of the first group, Department of Art Education, Faculty of Specific Education - Tanta University, by teaching the textile course in the second semester.

Objective of the experiment:

Creating textile artwork in which the concept of space-time is realized through the apparent motion.

Experimental controls and limitations:

The researcher identified a set of limits to be the determinants from which the research experiment is based, as follows:

1. The design of the weaving design should belong to the designs of the Sufi whirling (Tanoura and Mawlawi).
2. That the materials and techniques suit the chosen design.

3. Technical and structural values must be available in the design.
4. The concept of space-time is explained to students and how to implement it from the apparent motion and through wefts.
5. A frame loom with dimensions of 35 * 50 shall be made and filled with fishermen's yarn, five threads per centimeter.
6. The apparent motion of the design elements is explained, and an emphasis is placed on using the capabilities of the wefts to achieve them.
7. Make the necessary finishes and final touches and install the frame.

The following table illustrates the search experiment application specifications:

The designs	**Weaving style**	**yarns type**	**No of yarns**	**Yarn count in cm**	**tool**
Sufi whirling	tapestry	Wool Cotton Cotton palret	 1/20 8	5 yarns	Frame loom

Table (1) specifications of the application of the experiment

The researcher divided the textile artifacts outcome of the research experiment into three axes, which are the axis of apparent motion in abstract Sufi dance designs, the axis of apparent motion in Tanura designs, and the axis of apparent motion in Mevlevi designs.

Evaluation of experimental work:

Research experimental works are evaluated through a tool for measuring artistic works, represented in an arbitration card of five responses indicating the degree of approval so that the lowest number is one and the highest number is five. The five arbitrators, began their opinion on the artworks through this card.

Evaluation axes / **The opinion of the arbitrators**	**5**	**4**	**3**	**2**	**1**
The first axis**: achieving the discretionary movement component**					
The second axis**: the design link with Sufi dance**					
The third axis**: the availability of the space-time component in the business**					
The fourth axis**: the construction foundations**					
The fifth axis**: Expressive foundations**					

Table (2) evaluation card for the results of the research experiment

The applied vision implemented through students' work

(1) Picture

(2) Picture

(3) Picture

(4) Picture

(5) Picture

(6) picture

(7) Picture

(8) Picture

(9) Picture

(10) Picture

(11) Picture

(12) Picture

(13) Picture

(14) Picture

(15) Picture

(16 Picture

(17) Picture

(18) Picture

(19) Picture

(20) Picture

Statistical analysis of the winner of the arbitration:

In the following, the researcher presents the average scores and the standard deviation, in addition to the arrangement of the textile artifacts according to the results of the arbitration.

Arrangement	Standard deviation	Average	
Third	١,١٦	٢٤,٢	Design 1
Eighth	٠,٨	٢٢,٦	Design 2
First	٠	٢٥	Design 3
Sixth	٠,٧٤	٢٣,٢	Design 4
Fifth	٠,٤٨	٢٣,٦	Design 5
Thirteenth	١,١٦	١٩,٢	Design 6
Eleventh	١,٢	٢١,٦	Design 7
Third	٠,٧٤	٢٤,٢	Design 8
Second	٠,٤٨	٢٤,٤	Design 9
Sixth	١,٣٢	٢٣,٢	Design 10
Tenth	١,٤٦	٢٢,٢	Design 11
Twelfth	٠,٤٨	٢٠,٦	Design 12
Ninth	١,٣٥	٢٢,٤	Design 13
Third	٠,٧٤	٢٤,٢	Design 14
Seventh	١,٦	٢٢,٨	Design 15
Fourth	٠,٦٣	٢٤	Design 16
Fourth	٠,٨٩	٢٤	Design 17
Eighth	١,٨٥	٢٢,٦	Design 18
Sixth	٠,٤	٢٣,٢	Design 19
Tenth	٠,٤٤	٢٢,٢	Design 20

Table (3) Arrangement of artifacts according to the average

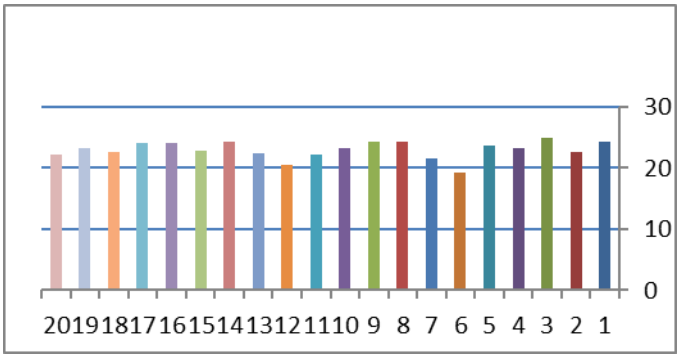

Diagram (1) showing the arrangement of the textile artifacts according to the average

The results of the statistical description of the average mean in the previous table indicate the arrangement of the artworks in terms of preference as follows:

1. The occupied woman No. 3 came in the first place, while the woman No. 6 won came in the last place.
2. the woven No. 19,4,5,17,16,14,8,1,9 won the first ten positions in succession.
3. The woven that got the highest average have achieved the objectives of the research.

Research results:

Through the researcher's treatment of the research topic, both theoretical and experimental, the study resulted on following results:

1. Through the theoretical framework of the research, the importance of the apparent motion in the textile artifacts was revealed.
2. The experiment succeeded in expressing the concept of space-time in the textile art.
3. Sufi designs are a powerful source of inspiration and creativity through revealing the realities of the universe.
4. The experiment succeeded in extracting an innovative aesthetic treatment and using it in the field of education as an innovative approach to teaching textiles.
5. There is statistical significance for the work resulting from the research experiment.
6. The experiment succeeded in linking the implicit concepts with their artistic expression.

Research Recommendations:

In light of the theoretical and applied study presented by the researcher, she concluded the following:

1. The researcher recommends applying the concept of the fourth dimension in the aesthetic arts in general and in textile in particular.
2. Making use of Sufi art in the production of innovative textile crafts.
3. Expanding the scope of scientific research that builds on the integrative relationship between the mystical sciences and the aesthetic arts.
4. To delve into the study of the apparent motion and to make use of it in creating artworks.
5. Linking modern scientific theories and aesthetic arts.

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