DESIGN OF CONCORDANT FORMS OF MODERN CLOTHES ON THE BASIS OF PROPORTIONAL CORRELATIONS OF SACRED GEOMETRY

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Abstract: *Design of concordant collection of women's clothes by means of interpretation of proportional correlations of sacred geometry using combination options for structural forms and lines when creating texture, colour and prints. In order to analyse the information sources, the literary and analytical, visual and analytical methods have been applied; to investigate the requirements of the customer segment, the sociological survey has been applied; in order to transform typical proportional correlations to rhythms of the designer clothes, the systems and structural, morphological analyses have been applied.*

Keywords: *sacred geometry, Fibonacci sequence, Archimedean spirals, fractals, system and structural analysis, morphological analysis, clothing design, concordance of the forms of clothes, prints.*

1 INTRODUCTION

We live in a geometrically regulated world, where all our actions on physical level are under mathematical laws. The sacred geometry determines the laws of existence and informs a person about them by means of language of numbers, angles, forms and relations, it describes powers of self-organization, shaping the world and it measures concordant fluctuations, sustaining life at all levels. All the environment, as well as a human body, consists of a form, structured by specific geometry, combining mystic spiritual practices and accurate scientific formulas, it provides with harmony, for which a person strives for.

The uniform is closely related to the proportional form of a human body, therefore the transfer of such correlations as proportion of golden ratio and Fibonacci sequence on the process of its design is well grounded [1-7].

The object of the research is design of concordant collection of women's clothes by means of interpretation of proportional correlations of sacred geometry using combination options for structural forms and lines when creating texture, colour and prints.

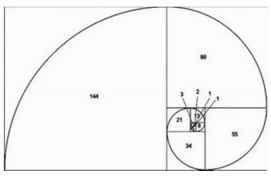
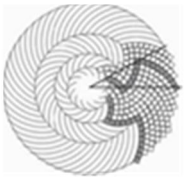
2 EXPERIMENTAL

Sacred geometry (lat. Sacralis – sacramental, celestial) is religious and mythological concept of the world's harmony, its structure of geometric shapes, forming the basis for existence [2]. This unique ideology is a result of scientific work and mystic experience of the world; with all its relations and correlations it is widely used in forming of concordant musical, architectural and artistic compositions.

Every line, every rhythmic element contains certain spiritual principle or pattern, where the deepest meaning is laid. The Fibonacci sequence is the elements of numerical order, where every next number equals to the sum of two previous numbers, it looks as follows 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89 etc. This mathematical correlation has a wide range of occurrences in the world around us (location of seeds in a sunflower, a shape of a pine cone, petals and stems of flowers etc.), (Table 1). The Fibonacci sequence is closely related to the definition of Archimedean spiral, presented in the form of a spiral with proportional increase of pitch and convolution. While investigating the parts of spiral convolutions we can see that they are located in accordance with the above stated sequence of numbers, augmenting proportionally [1, 2, 4].

Sequences and correlations, presented in Archimedean spiral and Fibonacci sequence, may be applied in the process of design of women's clothes collection in order to concord its suit form, since in these particular proportional combinations the laws of organization of the whole world are reflected. The suit form is composed according to the above mentioned proportions – the upper part of the suit is divided in two even parts 1:1 and it equals to its lower part [4].

Table 1 Expressions of mathematical correlation in Archimedean spiral and Fibonacci sequence

Archimedean spiral	Fibonacci sequence
 Archimedean spiral scheme	 Allocation of leaves on a tree in Fibonacci sequence
 A snail shell based on the principle of Archimedean spiral	 Human DNA based on the principle of Fibonacci sequence
 Spider web based on the principle of Archimedean spiral	 Location of seeds in a sunflower
 Fibonacci numbers can be also observed in space, since Milky Way and many other galaxies are based on the principle of Archimedean spiral	

Moreover, in the process of creation of the models forms, the proportions of golden ratio are used by means of bisection of general uniform in such a manner that the relation of the major part to the minor part equals to the relation of the whole dimension to its major part. The most widespread picture of the golden ratio is a "Vitruvian Man" – the work of Leonardo da Vinci, used as a picture in a book about Vitruvius works. It is an encircled figure of a naked man with outspread legs and hands, applied on another figure with outspread hands and closed legs, inscribed in a square. This picture is considered to be an example of canonical proportions of a human body.

Another picture, containing demonstration of harmony is the so called "Flower of Life" (Figure 1), which, according to ancient legends of the East, contains all famous laws and all famous formulas. On the basis of its symbols "Flower of Life" equals the proportions of the golden ratio and symbolizes an absolute order [1-3]. It provides a clear idea of components, located in accurate hierarchy and give the possibility to suppose that each its joint can also be the "Flower of Life". The demonstrated fatality generates amazing symmetry and harmony, since the fractal is indefinitely self-similar geometric figure, each fragment of which is repeated as the dimension reduces. The scale invariant, observed in fractals, can be either accurate, or approximate.

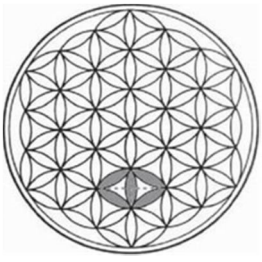


Figure 1 Structure of "Flower of Life"

In order to decorate the collection with ornaments the mathematical correlation of "Flower of Life", its structure, involving a concordant order, was used. Therefore, the researches are based right on the "Flower of Life", which resulted in creation of fractal ornaments for ornamental arrangement

of the suit form, using its structural bonds with its further transformation in prints.

In order to allocate the consumer segment and specify more precisely the design and ornamental decisions of the suit form, the opinion poll was hold, which resulted in formation of an image of a potential consumer and requirements for the suit, the outline form and its design solution, modern types of ornaments and its locations were identified. The consumer image is a young woman of 23-27, experiencing beauty and harmony in everything: she is attracted by everything secret and mystic of this world, she is a creative person from show business, engaged in mediation and drawing.

The results of sociological research of the consumer segment requirements and the carried out morphological analysis became the basis for combining of consumer requirements with modern trends for creating harmonious suit forms.

In order to carry out the morphological analysis, the following design components were chosen: location of a waist-line, style of a sleeve, concentration of ornament, shaping of a neckline [5, 6]. The combination was applied by means of combination of trend outline forms with the above stated morphological components.

As a result of carried out analysis we can confirm that the most concordant combinations are trapezoidal outline with high waist-line; combination of straight outline with a concealed sleeve; combination of the outline 'sandglass' with ornament, concentrated on the waist-line; trapezoidal outline with a high round neck (Figure 2).

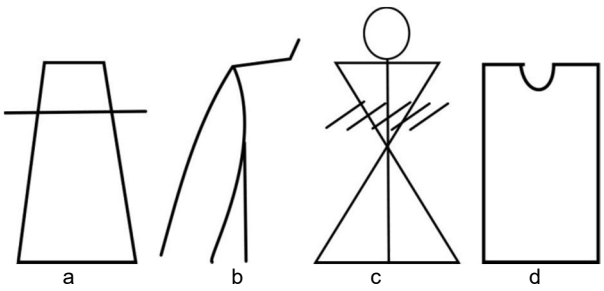


Figure 2 Making structural units on the basis of results of morphological analysis: a - location of a waist-line; b - style of a sleeve; c - concentration of ornament; d - shaping of a neckline

Taking into account the peculiarities of proportions of "golden ratio" and its use in a designed women's clothing collection, the following correlations are used in formation of relations between a general form and its components:

- principle of "golden ratio" (3:5, 5:8, 8:13), which evokes the most concordant perception, is recommended to be used in formation of business collection;
- contrast proportions (1:4, 1:5), which draw attention to itself more actively, should be better used for a set of evening dress;
- similar proportions (1:1), evoking the feeling of statics, calm and tranquillity, are recommended to be used in design of a set of casual and home clothing.

As mentioned above, the ornament and textures were created on the basis of transformation of the "Flower of Life" representation in combination with colour range corresponding to modern tendencies (Figures 3 and 4).

Figure 3 Creation of ornament on the basis of "Flower of Life"

Figure 4 Combination of a designed uniform with developed ornament

On the basis of conducted researches the collection of women's clothing [7] is created with improved aesthetic properties, taking into account the consumer requirements by means of concordance of its form, structural and morphological bonds.

The collection is designed in accurate, logical sequence and has a unit structure, containing the development of the form and colour range that is the ideological line of concordance is observed from the first unit to the last. Each successive unit of the collection is the logical continuation of the previous one. Speaking about the principles for creation of the collection, it is worth mentioning that its development can be described with several aspects, which together create a unified multilayer integral collection and artistic image.

The collection consists of four units: casual clothing (Figure 5), unit of evening clothing (Figure 6), unit of work clothing, unit of women's lingerie. Proceeding from the units purpose the colour range and materials were used, which would be fit for the purpose of clothing and its emotional charge. From the same considerations the decoration was chosen (its location, number of elements and its form).

Moving from one model to another within each unit, the outline form gradually changes the proportions, creating the variety of forms, though it does not outstep the unified outline form of the unit. The designed form of outlines involves free movement without hindering movements. The division of every outline form of the collection is made on the waist-line. However some models of clothing involve the division of form above the waist-line and below the breast.

The coloristic decision of the collection is made due to peculiarities of the source and fashion trends, from which, at most, cool colours were used. Cool pastel and bright colours of cloths are offered for the models of units of casual, work and evening clothing, in order to provide the collection with expressiveness and extravagance.

Figure 5 Unit of sketches of casual clothing

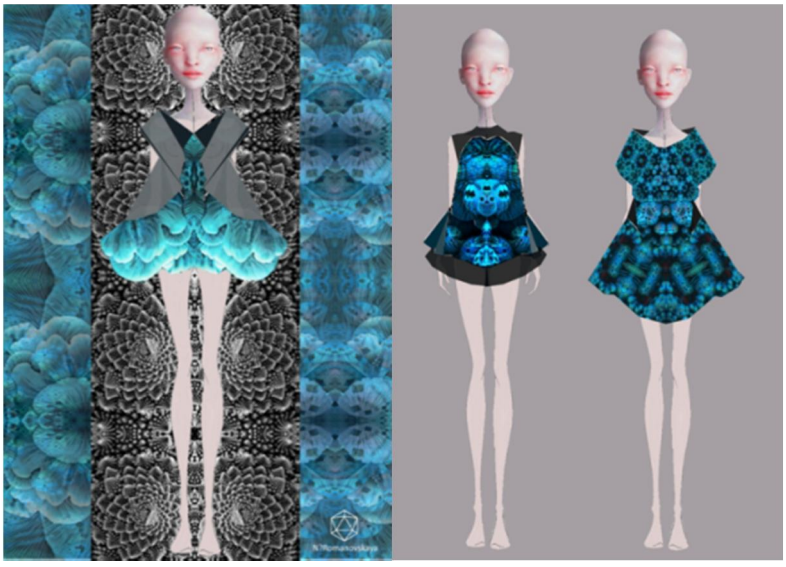


Figure 6 Sketches from unit of evening clothing

3 RESULTS AND DISCUSSION

Determined proportional correlations have been applied in the process of design of women's clothes assortment as signs-symbols, which became the basis for the creation of an artistic form meeting the consumer requirements.

It involves the systemization of the analysed dimensional proportions of mathematical relations of sacred geometry and their further application in the process of design of women's clothes collection for its concordance.

The obtained results have been applied in design of concordant women's clothes on the basis of correlations, being the part of the sacred geometry contains. The women's clothes collection has been designed using ornamental compositions on the basis of fractals principle, used in trimming of the clothes.

4 CONCLUSION

During the research the primary focus was on studying the principles of dimensional and proportional correlation, which are the basis of sacred geometry. The basis and essence of sacred geometry was researched, the main idea of which is the proportional concordance of existing proportions.

It has been established that components of the form, contained in sacred geometry, have structural bonds and they are constructed under the principle of fractal repetition.

The consumers survey let us confirm that the proposed outline forms and their design and ornamental arrangement completely correspond to main ideas of sacred geometry and are modern from the point of view of fashion trend of nowadays. It is also worth mentioning that location of ornament on articles create a visual impression of a "section" of a form, therefore ornamental elements should be located in places that are approximate to the principle of "golden ratio".

The most successful combinations of morphological components of the form are determined by means of their combination. The components for morphological analysis were selected from the results of the consumers' questionnaire survey and confirmed by fashion solutions, as presented by trendsetter agencies.

Based on the conducted researches and studying of esoteric symbols the collection of women's clothing of concordant forms was designed.

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