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FACE SHAPE CORRECTION WITH MAKEUP: A SCIENTIFIC APPROACH

Summary. *The article is devoted to scientific methods of correcting the shape of the face using makeup, viewed through the prism of anatomy, optics, and human face perception. It analyzes the main morphological types of faces, such as oval, round, square, triangular, and rectangular, as well as their features in visual perception. Special attention is paid to the principles of chiaroscuro as the main tool for volume modeling, which allows for visually changing face proportions without surgery. The article reveals patterns of light and shadow distribution based on human vision properties and cognitive image processing. In addition, the article discusses modern cosmetics and techniques such as contouring, highlighting, and corrective blush application. Color theories and the interaction of shades with skin tone are taken into account. In conclusion, the role of individual characteristics is emphasized, including bone structure, age-related changes, and lighting type, which affect the result. This material contains practical advice based on scientific evidence from dermatology, perception psychology, and visual arts. This allows us to consider makeup not only as an aesthetic tool but also as an effective way to visually correct imperfections.*

Key words: *face correction, makeup, contouring, chiaroscuro, visual perception, face shape, morphology, highlighting, color theory, facial aesthetics.*

Relevance of the study. *Relevance of the study. Nowadays, when so much attention is paid to appearance aesthetics and cosmetics have become more*

accessible, makeup is not just a way to express oneself but also an effective tool for visual transformation. The scientific approach to face shape correction, based on knowledge of anatomy, optics, and perceptual psychology, is especially important.

Although many practical makeup techniques exist, many are applied intuitively, without considering individual face characteristics. This reduces their effectiveness. Moreover, the development of digital technologies, social networks, and visual culture increases demands on the quality and accuracy of created images. That is why it is so important to systematize knowledge about makeup as a scientific approach to optical correction that takes into account the principles of chiaroscuro, proportion, and color interaction.

The purpose of the study. The study aims to systematize makeup techniques for face shape correction, grounded in scientific understanding of facial structure, visual perception, and light/shadow principles. The research will establish the link between facial morphology and corrective techniques, identifying effective methods for visually altering facial proportions while considering individual appearance traits.

Materials and research methods. The study draws on theoretical and practical materials from dermatology, anatomy, visual arts, and cosmetology. It includes a comparative analysis of face types and corresponding makeup techniques, alongside a summary of modern professional contouring and highlighting practices.

The methodological foundation comprises chiaroscuro modeling principles, color theory, and data on visual image perception. Empirical observations of corrective makeup results under varying lighting, skin textures, and age-related changes were also considered, enabling an integrated approach to evaluating technique effectiveness.

The results of the study. Face shape correction through makeup boasts a long tradition, evolving with cultural beauty ideals and scientific advancements

in studying human appearance. Ancient Egyptians used simple visual modeling techniques with charcoal, ocher, and mineral pigments to alter facial feature perception by darkening and brightening specific areas. Ancient Greece and Rome emphasized harmonious proportions akin to the "golden ratio." However, correction methods then were more artistic than scientifically rigorous.

During the Renaissance, beauty began to be viewed from the point of view of anatomy and geometry, which influenced approaches to makeup. Artists studying chiaroscuro and volume actually laid the foundations of modern contouring techniques. However, up until the 19th century, makeup remained limited and was often associated with the theatrical environment, where makeup techniques were actively used to change the shape of the face under stage lighting.

The 20th century became a key stage in the development of the scientific approach to makeup, especially in the context of cinema and television. The advent of professional makeup necessitated a precise understanding of how light and shadow affect the camera's perception of a face. During this period, basic contouring and highlighting techniques were developed based on darkening the areas that need to be visually reduced and highlighting the protruding areas. Hollywood makeup artists made significant contributions to this field by creating correction schemes for various types of faces.

In the second half of the 20th – early 21st century, the development of dermatology, coloristics, and cognitive psychology allowed us to look at makeup as a system of optical illusions based on the laws of visual perception.

With the development of digital technologies and social networks, correction techniques have become more standardized and accessible to a wide range of people. At the present stage, we are witnessing the integration of scientific knowledge about the structure of the face, the properties of light, skin texture, and individual features of appearance. This allows us to consider makeup as a scientifically proven method of visual correction of the face shape.

It is important to note that modern face shape correction using makeup is based on the principles of optics, anatomy, and perception of light and shadow. The main idea is to control the visual volume of the face by distributing light and dark shades, which creates the illusion of changing its structure without physical intervention. The scientific approach takes into account the structure of bones, the distribution of adipose tissue, and the features of lighting that affect the perception of the face (Fig. 1).

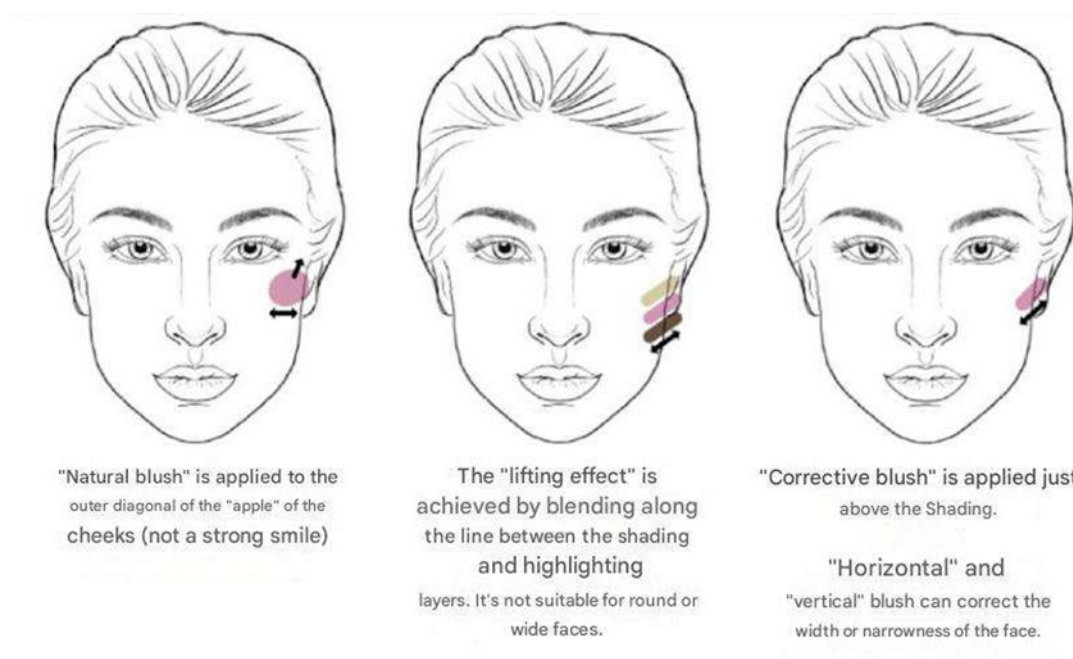


Fig. 1. Blush application schemes for different face shapes

The classic contouring technique is to darken the areas that need to be visually reduced and highlight those that need to be emphasized. For example, if you have a round face, darken the sides of your cheeks and temples, and lighten the center of your face, which will create the effect of its elongated shape [3]. If the face is square, darken the corners of the lower jaw and frontal areas to soften the geometry. These techniques are based on the laws of chiaroscuro, which are used in painting and 3D modeling.

Highlighting, or brightening, works due to the reflective ability of the skin and cosmetics. Light and radiant textures enhance the prominent parts of the face – cheekbones, the back of the nose and the center of the forehead – by increasing the reflection of light, which makes them more noticeable. This is due to the peculiarities of visual perception, which makes more illuminated areas closer.

Modern techniques also include cream and dry contouring. The choice between them depends on the skin type and lighting conditions. Cream products create a more natural effect because they had better mimic natural shadows. At the same time, dry products provide a clearer correction (see Table 1). The principle of color correction, based on the theory of the color wheel, is actively used in the professional environment. The opposite shades neutralize each other, for example, green and red [1]. Practice shows that for the proper use of color correctors, it is necessary to observe the measure and accuracy when applying them. An excessive amount of product or an incorrect choice of shade can lead to an undesirable effect and make makeup look unnatural. An equally important step is the subsequent overlap of the corrector with a tonal base. It helps to even out the overall skin tone and combine all the elements of makeup into a holistic look.

Color correction serves as an auxiliary tool that minimizes visible imperfections and makes the face look smoother and fresher without creating excessive coverage density. This is especially important in natural light and for everyday makeup.

Table 1

Makeup selection for different skin types

№	Skin type	A type of makeup
1	Dry skin	Base. Moisturizing foundations or preparatory primers. Creamy textures will work well. Foundation cream. Moisturizing foundation with a radiant finish. Powder. It is better to use soft, crumbly powders that do not emphasize dryness. Blush. Creamy blush will add freshness to the skin.

2	Oily skin	Base. Matting primers and foundations that control gloss. Foundation cream. Light, mattifying foundation products or fluids. Powder. Compact mattifying powder will help to control the shine during the day. Blush. It is better to give preference to powder blush.
3	Combination skin	Base. Universal primers that help control the shine on the T-zone and moisturize dry areas. Foundation cream. The best options are semi-matte or mattifying tonal foundations. Powder. A light loose or compact powder for final makeup fixation. Blush. Both cream and powder blush can be suitable, choose depending on the application area.
4	Sensitive skin	Base. Hypoallergenic and non-alcoholic primers. Foundation cream. It is better to choose foundation products with a minimum number of ingredients. Powder. Choosing a mineral powder to avoid irritation. Blush. Cream formulas can be gentler.

A separate area is personalized correction, which takes into account not only the shape of the face, but also facial expressions, age-related changes, and even the behavior of light in specific environments, such as natural daylight or studio lighting. In the digital age, facial analysis technologies have been enhanced through the use of applications and neural networks, which help determine the optimal areas for correction.

In addition, the algorithms can adapt to different skin types and shooting conditions, which is especially important in the photo and video content industry. This makes the makeup creation process more precise and individual, reducing dependence on subjective perception and the level of professional experience. However, despite the development of technology, the final decision remains with the specialist or the user. After all, even the most modern neural networks cannot completely replace visual perception, artistic taste and the context of an image [2].

It is important to note that, despite the development of techniques and scientific base, face shape correction with makeup faces a number of significant problems. These problems are related both to human physiology and to the peculiarities of visual perception.

One of the main difficulties lies in the individual anatomical variation. The structure of the skull bones, the thickness of the soft tissues, the asymmetry of the face and facial activity make universal contouring schemes of limited use. Even if you follow the classical rules of chiaroscuro, the result may differ from what is expected, since the face is not a static geometric shape.

One of the key problems associated with makeup is its dependence on lighting. It has been scientifically proven that our perception of volume directly depends on the direction and intensity of light. Contouring performed under one type of lighting, such as in a studio, may seem too intense or, conversely, imperceptible in daylight. This is due to the fact that the shadows created by cosmetics compete with natural shadows, and their interaction is not always predictable.

Another problem is the discrepancy between the skin texture and the products used. Creamy and dry products interact with the skin in different ways, especially in the presence of pores, wrinkles, or greasy shine. From a scientific point of view, this is due to the microrelief of the skin and the reflective properties of the surface. Incorrectly, selected textures can enhance irregularities, destroying the illusion of shape correction.

One of the significant limitations is the cognitive perception of the face. Our brains perceive faces as complete structures, not as a collection of individual parts. Because of this, too much makeup may seem unnatural, even if it is technically perfect. This effect is explained by the principles of Gestalt psychology, which emphasizes the importance of harmony of all elements rather than their detailed elaboration.

In addition, there is the problem of the influence of trends and media. Many modern makeup techniques focus on cameras and filters rather than real life. As a result, makeup that looks great in photos and videos may look overdone in a normal setting. This is due to the differences between digital and real perception of depth and contrast.

Finally, it is worth mentioning the temporary nature of makeup. It does not change the structure of the face, but only creates an optical effect that can disappear during the day due to sebum, friction, or changes in lighting. From a scientific point of view, this means that the makeup correction process is dynamic and requires constant adjustments.

The main difficulties associated with face shape correction are caused by a variety of factors: biological individuality, environmental conditions, perceptual peculiarities and limitations imposed by cosmetics. Therefore, although a scientific approach is necessary, it cannot guarantee that the result will be perfect for everyone.

We believe that in order to effectively solve the problems of face shape correction, it is necessary to abandon general schemes and switch to an individual approach. In practice, this means evaluating the bone structure of the face, the distribution of soft tissues, and the degree of asymmetry before applying makeup. The application of the principles of morphometry and visual diagnostics makes it possible to adapt chiaroscuro correction to the specific anatomical features of each person, rather than relying on average patterns.

The lighting problem is solved by photometry and makeup testing in different light conditions. The most effective solution is to use soft, translucent shadows instead of sharp lines, as they adjust better to changes in lighting. In addition, the principle of "adaptive contouring" is applied, in which the intensity of darkening is reduced in order to avoid conflicts with natural facial shadows.

To achieve harmony between skin texture and cosmetics, a scientific approach based on dermatological features is applied. When choosing products,

the level of sebum, porosity, and age-related skin changes are taken into account. For example, if you have a pronounced microrelief, it is better to choose light, creamy textures with diffuse light reflection that visually smooth the surface, as opposed to dense, matte products that can highlight imperfections.

To overcome cognitive limitations of perception, it is important to observe the principle of image integrity. Instead of aggressive contouring, a soft tone gradation is used, and all makeup elements are combined into a single system. This approach corresponds to the principles of Gestalt, where harmony and smooth transitions are important. This approach reduces the risk that makeup will appear artificial.

To resist the influence of media and distorted standards, we must focus on real perception, not on how we are seen on camera. In practice, this means that makeup should be less contrasting, less graphic, and take into account the distance to the observer. He must adjust the shape of his face, taking into account how he is seen in everyday life, and not just in a digital environment.

The problem of makeup instability can be solved by combining cosmetic chemistry and application techniques. Using primers, setting products, and layering techniques can increase the longevity of makeup. It's also important to consider the dynamic nature of the skin throughout the day and select formulas that can adjust to changes, such as controlling oil production or maintaining the elasticity of the finish.

Conclusions. The analysis showed that the most effective way to correct the shape of the face using makeup is not to use universal schemes, but an individual approach that takes into account the anatomical features of the face and skin properties. Practice shows that soft chiaroscuro correction, made taking into account natural lighting, and looks more harmonious and natural than strict contouring, which is often used for photos and videos.

It is also obvious that the quality of the result directly depends on the correct selection of textures and formulas of cosmetics. Taking into account the

skin type, its relief, and condition allows you to avoid highlighting flaws and create a more natural visual effect. In addition, it is important to understand how makeup is perceived: a holistic image created with smooth transitions and balance is perceived as more attractive than individual pronounced elements.

In addition to the products used, the durability of makeup also depends on the application technique. This includes layering and adapting to environmental conditions. Competent face shape correction requires knowledge of light, skin, and visual perception. This knowledge allows one to create a natural and aesthetic result that is functional for everyday life.

A scientific approach to face correction emphasizes individualization. It takes into account the physics of light, dermatological features, and the psychology of perception. This approach leads to a more natural, long-lasting, and predictable result.

References

1. Bermano A. H. et al. Makeup lamps: Live augmentation of human faces via projection // *Computer Graphics Forum*. – 2017. – Vol. 36. – No. 2. – pp. 311-323.
2. Chen C. S. et al. A novel approach for virtual facial shape cloning and makeup reproducing // *2015 International Conference on Informative and Cybernetics for Computational Social Systems (ICCSS)*. – IEEE, 2015. – pp. 20-25.
3. Yang X. et al. Makeup prior models for 3D facial makeup estimation and applications // *Proceedings of the IEEE/CVF conference on computer vision and pattern recognition*. – 2024. – pp. 2165-2176.