Scientific Research Publishing

Modern Plastic Surgery, 2026, 16(3), 87-100
https://www.scirp.org/journal/mps
ISSN Online: 2164-5280
ISSN Print: 2164-5213

# Nefertiti Bust 1340 BC Fulfills Today's Aesthetic Facial Parameters

**Dalia Medhat Habib[1], Mina Gorgy[2], Maria Bassem ElGhalid[3], Iman Emil Habib[4], Abdulrahman Alhammadi[5], Nagwa Emil Habib[6], Gihan Adly Latif[6], Medhat E. Habib[5*]**

[1]Ophthalmology Department, Cairo University, Cairo, Egypt
[2]Neurosurgery Department, Cairo University, Cairo, Egypt
[3]New Giza University, Cairo, Egypt
[4]Kasr El Eini Hospital, Cairo University, Cairo, Egypt
[5]Plastic Surgery Department, Zayed Military Hospital, Abu Dhabi, United Arab Emirates
[6]Kasr El Eini Hospital, Cairo University, Cairo, Egypt
Email: dalia.m.habib@postgrad.kasralainy.edu.eg, Dr.mina.g.selim@gmail.com, maria.bassem.2024@ngu.edu.eg, iman3emil@gmail.com, ay.alghais@gmail.com, milnagwa@gmail.com, gihanadly@hotmail.com, *medhatemil1@hotmail.com

**How to cite this paper:** Habib, D.M., Gorgy, M., ElGhalid, M.B., Habib, I.E., Alhammadi, A., Habib, N.E., Latif, G.A. and Habib, M.E. (2026) Nefertiti Bust 1340 BC Fulfills Today's Aesthetic Facial Parameters. *Modern Plastic Surgery*, **16**, 87-100.
https://doi.org/10.4236/mps.2026.163009

**Received:** March 29, 2026
**Accepted:** June 26, 2026
**Published:** June 29, 2026



## Abstract

**Aim:** The aim of this study is to assess whether the bust of the queen of Egypt Nefertiti discovered 1340 years BC matches today's standards of beauty and why Nefertiti's name is dealt with frequently in cosmetic clinics nowadays. **Material and Methods:** A photogrammetric study of high-resolution original photographs of the bust of Queen Nefertiti was done. The soft tissue proportions of the face were compared to recent anthropological studies of humans from different researches. **Results:** The different measurements of the face in the form of the three thirds made by the horizontal lines, the symmetry of dimensions made by the vertical lines, the relative measurements of the nose, eyes and mouth were all matching with today's aesthetic facial parameters. **Conclusion:** Nefertiti's bust made more than three millennia is matching with today's aesthetic facial parameters. It goes without saying that Nefertiti is a fashion model to the current generation.

## Keywords

Nefertiti Bust, Egypt Queen, Ancient Egypt, Aesthetic Parameters

## 1. Introduction

Nefertiti was the queen of Egypt who lived in the fourteenth century BC and belonged to the 18th Dynasty. Her name translates to "the beautiful woman has come". She was married to the Pharaoh Akhenaten, a monotheist who imposed his religion

on all of Egypt and closed down temples to all the other gods. Together, Akhenaten and Nefertiti built the city of Tel El Amarna, dedicated to their one God. After their rule ended, the city was abandoned, and the old religions reinstated. The two rulers led a revolution in religion and culture that was never forgotten [1].

Nefertiti bust was made by the head court painter Thutmose. The bust was discovered in Tel El Amarna in 1912 by the German archaeologist Ludwig Borchardt who was an active employee for the Egyptian Museum in Cairo while also completing work for the Berlin Museum (**Figure 1**). He wrote in his diary shortly after its discovery, "You cannot describe it with words. You must see it." The bust reached Germany in 1913 and was donated to the Berlin Museum 7 years later.

The bust was finally placed on display in Berlin's Egyptian Museum in 1923. Slowly, the bust began to draw attention and quickly became one of Berlin's most favoured attractions.

The Egyptian Department of Antiquities initiated a series of formal and informal demands to return the bust of Nefertiti to Egypt based on the perception that the bust had left Egypt under false identity, rendering it a stolen artifact [2].

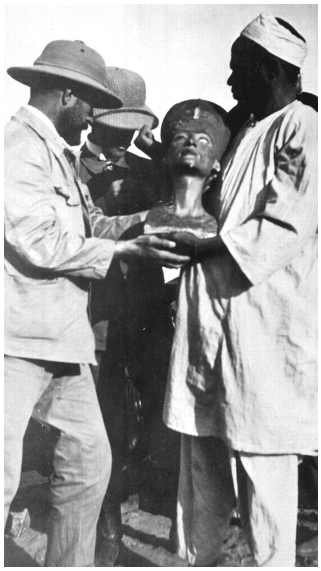

**Figure 1.** Discovery of the bust of Nefertiti in Tel El Amarna in 1912.

## 2. Materials and Methods

This is a single-case descriptive analysis of a sculpted bust of Queen Nefertiti. High-resolution original photographs of the bust were selected which had the name of the photographer, date of photography and the camera details including resolution were clearly mentioned. These were photogrammetrically analyzed in frontal and right lateral profile views to assess the soft tissue proportions of the face.

The anthropological points, angles and the significant lines were drawn with magnification to ensure accuracy. They were used in defining facial structures, analyzing findings and comparing to measurements from other studies.

Linear measurements of the thirds of the face, width of the face, intercanthal,

binocular and eye fissure with nose and mouth measurements were all analyzed.

Definition of some anthropometric facial soft tissue landmarks used for measurement according to their order in the article is shown in Table 1.

Table 1. Definition of some important facial landmarks.

| Landmark | Definition |
|---|---|
| Trichion | The point where the hairline meets the midpoint of the forehead |
| Menton | The most inferior anatomical point of the chin |
| Stomion | The horizontal line between the oral commissures |
| Glabella | The most convex sagittal midline point between the eyebrows |
| Alar Base | The base of the nostrils |
| Intercanthal Distance | The measurement between the medial canthi (inner corners) of the eyes |
| Tip defining points | The two distinct most projected areas of the nasal tip- one on each side |
| Columellar-lobular angle | The angle formed by the intersection of the columella (the tissue between the nostrils) and the infratip lobule (the bottom most part of the nasal tip) |
| Radix | A depression at the root of the nose |
| Tip projection | The distance from the alar-cheek junction to the tip of the nose |
| Vermilion | The red part of the lips |
| Nasolabial angle | The angle between the nostrils and the upper lip |

## 3. Results

The face of Queen Nefertiti is divided into thirds using four horizontal lines tangent to the hairline passing through the supposed trichion point, brow (at the level of the supraorbital notch), nasal base and menton.

As the queen is wearing a crown, the trichion point could not be clearly assessed and it was not used in assessing any proportion. The middle and lower thirds of the face proportions were equal (1:1). The lower third of the queen's face between the nasal base and the menton is properly subdivided into upper one third and lower two thirds by a horizontal line between the oral commissures (stomion) (Figure 2).

Figure 2. The face is divided into three-thirds by four horizontal lines. The lower third is further subdivided into upper 1/3$^{rd}$ and lower 2/3$^{rd}$.

A vertical line drawn from the midglabellar area to the menton bisects the nasal bridge, upper lip, Cupid's bow and lower lip without deviation from the midline. A vertical line drawn at the alar base passes through the medial canthus of each eye, *i.e.* the nasal alar base width is equivalent to the intercanthal distance. It is also equal to the width of one eye (Figure 3 & Figure 4).

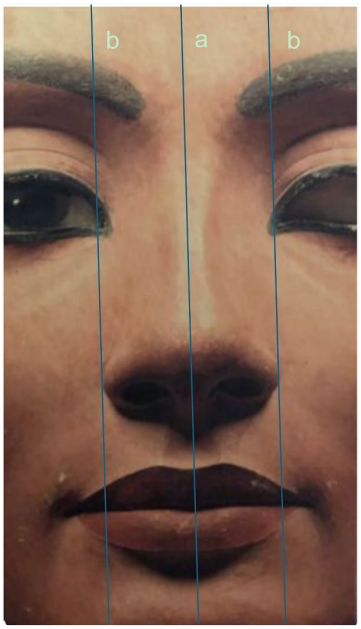


Figure 3. A vertical line (a) drawn from the midglabellar area to the menton bisects the nasal bridge, upper lip, Cupid's bow and lower lip in the midline. A vertical line (b) drawn at the alar base passes through the medial canthus of each eye.

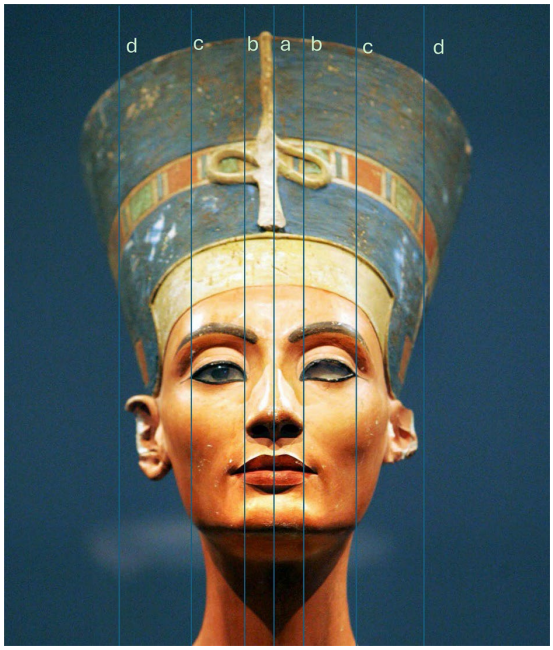


Figure 4. The nasal alar base width is equivalent to the intercanthal distance. It is also equal to the width of one eye. (b-b = b-c).

The bony base of the nose occupies 80% of the alar base width. The curvilinear lines are traced from their origin at the supraorbital ridges towards their convergence at the medial canthal ligaments. From here they flare slightly at the keystone area and track down to the tip defining points, slightly diverging from each other along the dorsum (Figure 5).

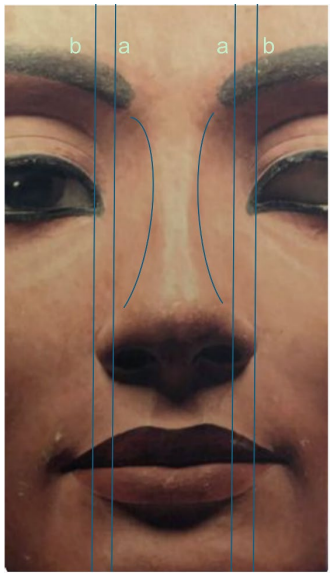


Figure 5. The bony base of the nose occupies 80% of the alar base width. The curvilinear lines are shown.

The alar rims flare slightly outward in an inferolateral direction. The supratip break, tip defining points and the columellar-lobular angle make two equilateral triangles with the bases opposed (Figure 6).

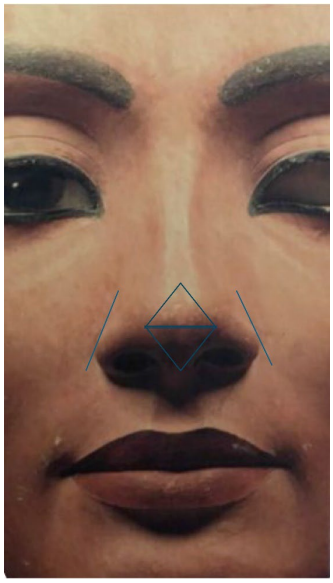

Figure 6. Shows the slight flaring of the alar rims and the opposing triangles formed by the supratip break, tip defining points and the columellar-lobular angle.

The outline of the alar rims and the columella resembles a seagull in gentle flight (Figure 7).

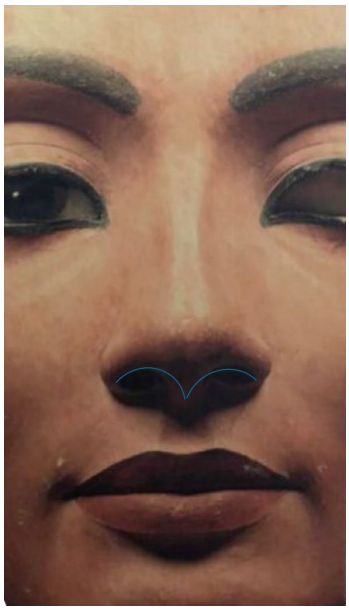

Figure 7. The outline of the alar rims and the columella resembles a seagull in gentle flight.

The nasal base has an equilateral triangle with a lobule-to-nostril ratio of 1:2. The nostril has a tear drop like geometry with the long axis oriented in a slight medial direction from base to apex (Figure 8).

Figure 8. The outline of the nasal base has an equilateral triangle with a lobule-to-nostril ratio of 1:2.

The nasal length (radix to tip or R-T) is equivalent to the stomion to menton distance (S-M). The tip projection measured from the alar-cheek junction to the tip of the nose is two-thirds the nasal length (0.67 × R-T) (Figure 9).

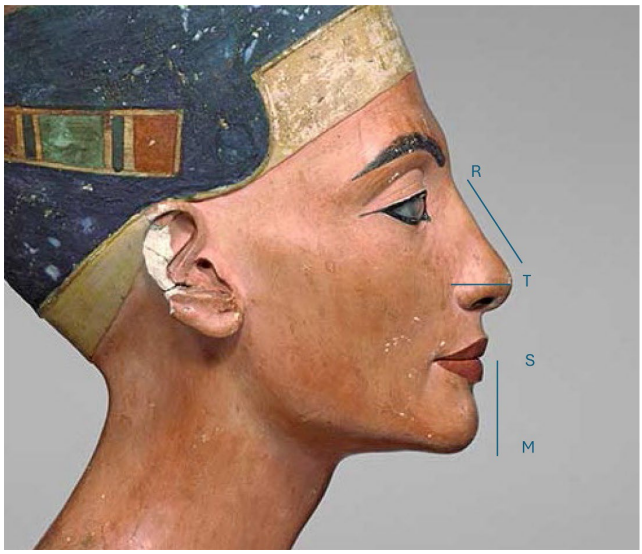


Figure 9. The nasal length from radix to tip (R-T) = distance from stomion to menton (S-M). The tip projection = 2/3rd the nasal length (0.67 × R-T).

A vertical line dropped from the nose tangent to the vermilion of the upper lip shows that the lower lip lies behind this line and the chin slightly further posterior to the lower lip (Figure 10).

Figure 10. The relation of the upper lip, lower lip and chin to each other on the lateral view.

The nasolabial angle between the nostrils and the upper lip is 100 degrees. The columellar-labial angle formed by the junction of the columella with the infratip lobule is 40 degrees (Figure 11).

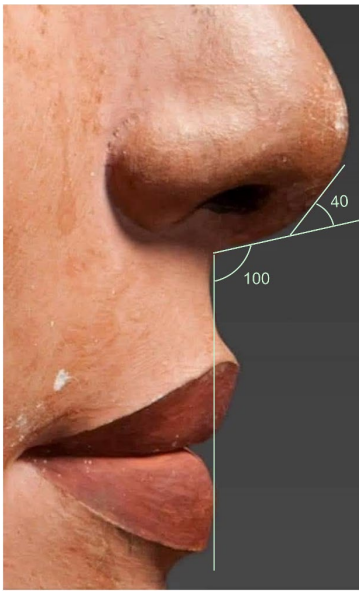


**Figure 11.** The nasolabial angle = 100 degrees. The columellar-labial angle = 40 degrees.

Drawing a line through the long axis of the nostril and a second perpendicular line to it from the alar rim to the columellar rim shows that the alar-columellar relationship is normal. The distance from the alar rim (a) to the long axis line (b) is equal to the distance from the long axis line (b) to the columellar rim (c) (**Figure 12**).

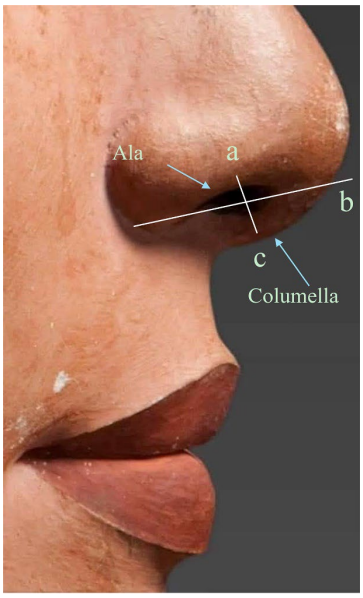


**Figure 12.** The alar-Columellar Relationship. Distance from the ala (a) to long axis of (b) = Distance from columella (c) to long axis of (b).

Examining the eye of the bust of Nefertiti shows the details of the medial and lateral canthi, the upper and lower eyelids, the tarsal plate and the eyelid crease. The upper eyelid covers the upper 1/6$^{th}$ of the cornea. The lower eyelid touches

the lower part of the cornea. The lateral canthus is slightly higher than the medial canthus resulting in lateral inclination of the eye (Figure 13).

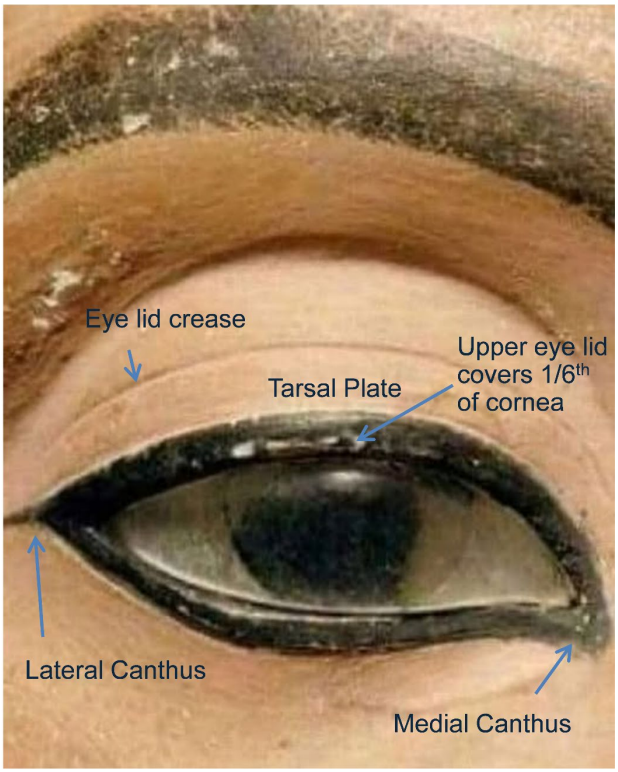


**Figure 13.** Showing the anatomical details of the right eye.

The mouth of Nefertiti bust shows the proper anatomical details of upper and lower vermilions, philtral columns, cupid's bow and oral commissures. The height of the upper vermilion is smaller than that of the lower vermilion (Figure 14).

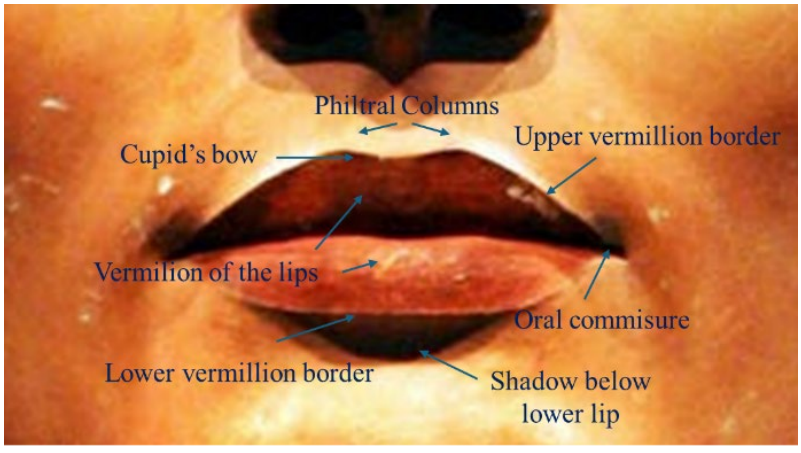


**Figure 14.** Anatomical details of the lips as shown on Nefertiti bust.

The three tubercles of the upper lip (one central and two lateral) and the two tubercles of the lower lip are clearly shown on the bust (Figure 15).

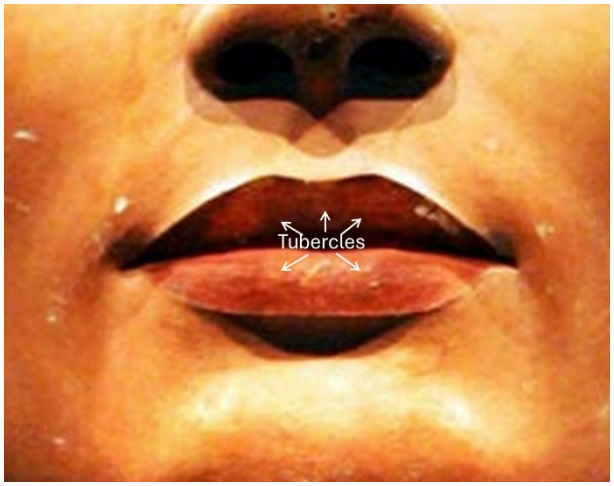


**Figure 15.** The three tubercles of the upper lip and the two tubercles of the lower lip.

## 4. Discussion

Plastic Surgery was practised in the ancient Egyptian era thousands of years BC [3]. Ancient Egyptians were concerned about beauty and considered it part of cleanliness and worship. Cosmetics were an integral part of early Egyptian life, dating back to as early as 5000 BC. Ahead of their time, the Egyptians were sophisticated cosmetic chemist formulators [4]. They used cosmetic powders, chemicals [5], henna, ear piercing and tattoo [6]. Cosmetics were widespread in all classes of society and along all historical stages of ancient Egypt and were reflected on their art in the form of painting, carvings and statues. Nefertiti's bust was an example of this art, showing the beauty of that queen of Egypt who lived during the 18$^{th}$ dynasty (1370-1330 BC). Since her bust was discovered in 1912 in Tel El Amarna and first exhibited in 1923 in Germany, it turned into an icon of universal beauty that was globally recognized [7] in spite of being different from the statues of other queens whose beauty was shown as having thick necks, fleshy faces, rounded cheeks and large eyes [8]. This was not the situation in the case of Nefertiti bust who had long slender neck, well-defined cheekbones with well-defined nose and jawline, arched eyebrows and full lips [9]. Nefertiti became an example of beauty since her bust was discovered and she had worldwide resonance. In a study published in 2019 by Kashmar M. *et al*., performed by 17 experienced dermatologists and plastic surgeons in the middle east area including the Gulf, Iran, Lebanon, and Egypt they concluded that beauty is generally recognized by an oval or round face, pronounced elevated arched eyebrows, large almond-shaped eyes, well-defined, laterally full cheeks, a small straight nose, full lips, a well-defined jawline and a prominent pointed chin [10]. These beauty criteria of the modern middle east women are well seen in Nefertiti bust.

To further assess the beauty of the bust of Nefertiti many studies were made on it anthropologically by analyzing it using photogrammetry [9] or even using advanced technology as 2D and 3D CT scans [11]. In our study we used photogrammetry which is a reliable method of facial analysis [12].

The face of Nefertiti is divided into 3 thirds. Since the upper part is covered with a crown and the trichion could not be measured, only the lower two-thirds could be assessed and are found equal to each other. Anthropometric study done on 189 young white adults by Leslie G. Farkas *et al*., showed that the upper lip occupied one-third of the lower face, while the lower lip occupied more than one-third of the lower third of the face and the chin occupied the remainder. This is matching with the measurements on the Nefertiti bust [13].

Our photogrammetry study of Nefertiti bust showed that a vertical line drawn at the alar base passes through the medial canthus of each eye. The width of the alar base is almost equal to the width of each eye and the length of the nose from radix to the tip is equal to the distance from the stomion to menton. This is matching with the prospective study done by El Minawi *et al.* on 300 Egyptian volunteer women between the age of 18 and 50 years [14].

The curvilinear lines of the nose, the tip defining points, the flaring of the alar rims, the alar-Columellar Relationship and the seagull in slight flying of the outline of the alae are all shown on Nefertiti bust and all well prescribed on anthropological examination of women in the current textbooks of Plastic Surgery [15].

When Chandra H J *et al*., measured the nasolabial angle on 100 subjects in their Indian population and compared it to the North American Caucasians they found that the angle was 102.6 and 99.1 degrees respectively. The measurement on Nefertiti bust was found to be 100 degrees matching with these results [16].

A vertical line dropped on Nefertiti's bust from the nose tangent to the vermilion of the upper lip shows that the lower lip lies behind this line and the chin slightly further posterior to the lower lip. This relationship between the lips and chin is also demonstrated in Werner J. Heppt and Julia Vent article about the facial profile in facial aesthetics [17]. Our study found also that the height of the upper vermilion was smaller than that of the lower vermilion as also found by Kar *et al*., in their article trying to define the ideal lips in different ethnics [18]. Steven Harris *et al*., made a classification for lip tubercles. They defined the lip tubercles as embryological remnants of development which appear as dermal projections in both the upper and lower lips. Lip development begins at gestational week 4 with the appearance of the frontonasal prominence and the maxillary and mandibular prominences. A series of steps involving extension and fusion of the prominences leads to formation of the external face, including the lips [19]. Fusion of the frontonasal prominence and the two maxillary prominences makes a central tubercle and 2 lateral tubercles on the upper lip. Fusion of the two mandibular prominences makes only two tubercles on the lower lip. This is well evident on Nefertiti's bust.

The upper eyelid covers 1/6th of the cornea. The lower eyelid just touches the cornea. In his anatomical description of the eye, Bhupendra Patel mentioned that the lateral canthus should be 2 - 3 mm higher than the medial canthus [20]. This lateral inclination of both eye axis and eyebrows correlates with attractiveness [21]. The eyelid creases among attractive eyes exhibit a smooth and gentle lateral

slope [22]. These data are all found in the bust of Nefertiti.

Nefertiti neck is an icon of beauty. Many medications as Botox injection and other materials are used to try to simulate the shape of her neck [23].

Researchers continue to find treatments to make the dreams of ladies who want to have a mandibular contour like Nefertiti, the icon of beauty, come true [24].

## 5. Limitations of the Study

There are some points which directly affect accurate measurements and interpretation of Nefertiti's bust which include the covering crown obstruction of the upper third of the face and the trichion area, the absent/altered left eye, and the loss of parts of the ears. Still the data collected from the bust were enough to make this study possible.

## 6. Conclusion

Photogrammetric analysis of Nefertiti's bust shows the beauty of that Queen who lived more than 3300 years ago. Cosmetic clinics and beauty centers from all over the world nowadays try to help ladies have a beautiful face and neck like hers.

## Funding

The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.

## Acknowledgements

We thank Mr. Domadious George Farouk, Mrs. Lydia Habib and Ms. Mary Michael Wassef for their great contribution for this paper to see the light.

## Conflicts of Interest

The authors have no relevant financial or non-financial interests to disclose.

## References

[1] Kelley, R. (2014) Hathor's Mirror: Reflections on Female Identity in Ancient Egypt. Cabrillo College. https://kipdf.com/hathor-s-mirror-reflections-on-female-identity-in-ancient-egypt_5aae2d8f1723ddd1af42f13b.html

[2] Bearden, L. (2012) Repatriating the Bust of Nefertiti: A Critical Perspective on Cultural Ownership. *Kennesaw Journal of Undergraduate Research*, **2**, Article 2. https://doi.org/10.32727/25.2019.7

[3] Wallace, A.B. (2013) The History and Evolution of Plastic Surgery. *Res Medica*, **4**, 7-10. https://doi.org/10.2218/resmedica.v4i4.435

[4] McMullen, R.L. and Dell'Acqua, G. (2023) History of Natural Ingredients in Cosmetics. *Cosmetics*, **10**, Article 71. https://doi.org/10.3390/cosmetics10030071

[5] Walter, P., Martinetto, P., Tsoucaris, G., Brniaux, R., Lefebvre, M.A., Richard, G., *et al.* (1999) Making Make-Up in Ancient Egypt. *Nature*, **397**, 483-484. https://doi.org/10.1038/17240

[6] Farouk, M. (2023) Body Art in Ancient Egypt. *International Journal of Tourism, Archaeology and Hospitality*, **3**, 93-114. https://doi.org/10.21608/ijtah.2023.168112.1010

[7] Conrad, S. (2024) The Making of a Global Icon: Nefertiti's Twentieth-Century Career. *Global Intellectual History*, **11**, 51-82. https://doi.org/10.1080/23801883.2024.2303074

[8] Tawfik, T.S. (2024) Nefertiti Not Beautiful? *Journal of the Faculty of Archeology*, **27**, 3-16.

[9] Chauhan, N. (2022) The Science behind Nefertiti's Beauty: A Plastic Surgeon's Analysis. *Indian Journal of Plastic Surgery*, **55**, 357-363. https://doi.org/10.1055/s-0042-1759496

[10] Kashmar, M., Alsufyani, M.A., Ghalamkarpour, F., Chalouhi, M., Alomer, G., Ghannam, S., *et al.* (2019) Consensus Opinions on Facial Beauty and Implications for Aesthetic Treatment in Middle Eastern Women. *Plastic and Reconstructive Surgery - Global Open*, **7**, e2220. https://doi.org/10.1097/gox.0000000000002220

[11] Huppertz, A., Wildung, D., Kemp, B.J., Nentwig, T., Asbach, P., Rasche, F.M., *et al.* (2009) Nondestructive Insights into Composition of the Sculpture of Egyptian Queen Nefertiti with Ct. *Radiology*, **251**, 233-240. https://doi.org/10.1148/radiol.2511081175

[12] Farkas, L.G., Bryson, W. and Klotz, J. (1980) Is Photogrammetry of the Face Reliable? *Plastic and Reconstructive Surgery*, **66**, 346-355. https://doi.org/10.1097/00006534-198066030-00004

[13] Farkas, L.G., Katic, M.J., Hreczko, T.A., Deutsch, C. and Munro, I.R. (1984) Anthropometric Proportions in the Upper Lip-Lower Lip-Chin Area of the Lower Face in Young White Adults. *American Journal of Orthodontics*, **86**, 52-60. https://doi.org/10.1016/0002-9416(84)90276-8

[14] El Minawi, H., El Saloussy, Y., Sabry, M., Wahdan, W. and El Sharkawy, O. (2022) Facial Anthropometry and Analysis in Egyptian Women. *Plastic and Reconstructive Surgery-Global Open*, **10**, e4333. https://doi.org/10.1097/gox.0000000000004333

[15] Janis, J.E. and Rohrich, R.J. (2007) Rhinoplasty. In: Thorne, C.H., Beasley, R.W., Aston, S.J., Bartlett, S.P., Gurtner, G.C. and Spear, S.L., Eds., *Grabb & Smith's Plastic Surgery*, 6th Edition, Lippincott Williams & Wilkins, 517-532.

[16] Jagadish Chandra, H., Ravi, M.S., Sharma, S.M. and Rajendra Prasad, B. (2012) Standards of Facial Esthetics: An Anthropometric Study. *Journal of Maxillofacial and Oral Surgery*, **11**, 384-389. https://doi.org/10.1007/s12663-012-0355-9

[17] Heppt, W.J. and Vent, J. (2015) The Facial Profile in the Context of Facial Aesthetics. *Facial Plastic Surgery*, **31**, 421-430. https://doi.org/10.1055/s-0035-1567815

[18] Kar, M., Muluk, N.B., Bafaqeeh, S.A. and Cingi, C. (2018) Is It Possible to Define the Ideal Lips? *Acta Otorhinolaryngologica Italica*, **38**, 67-72. https://doi.org/10.14639/0392-100x-1511

[19] Harris, S., Alfertshofer, M., Allen, R., Castellari, F., Othoro, D., Bran, G., *et al.* (2023) Introduction of the Lip Classification of Tubercles: A Novel Approach to Minimally Invasive Aesthetic Lip Treatments. *Aesthetic Surgery Journal Open Forum*, **5**, 1-5. https://doi.org/10.1093/asjof/ojad007

[20] Patel, B.C.K. (1996) Surgical Eyelid and Periorbital Anatomy. *Seminars in Ophthalmology*, **11**, 118-137. https://doi.org/10.3109/08820539609063806

[21] Prantl, L., Heidekrueger, P.I., Broer, P.N., Knoll, S., Thiha, A. and Gründl, M. (2019) Female Eye Attractiveness—Where Beauty Meets Science. *Journal of Cranio-Maxil-*

*Iofacial Surgery*, **47**, 73-79. https://doi.org/10.1016/j.jcms.2018.05.034

[22] Vaca, E.E., Bricker, J.T., Helenowski, I., Park, E.D. and Alghoul, M.S. (2019) Identifying Aesthetically Appealing Upper Eyelid Topographic Proportions. *Aesthetic Surgery Journal*, **39**, 824-834. https://doi.org/10.1093/asj/sjz014

[23] Jabbour, S.F., Kechichian, E.G., Awaida, C.J., Tomb, R.R. and Nasr, M.W. (2017) Botulinum Toxin for Neck Rejuvenation: Assessing Efficacy and Redefining Patient Selection. *Plastic & Reconstructive Surgery*, **140**, 9e-17e. https://doi.org/10.1097/prs.0000000000003429

[24] Fernandes, R.L. (2024) BTXA/Prosigne and Redefinition of the Mandibular Contour—"Nefertiti Lift": Academic Review. *Mathews Journal of Dermatology*, **8**, 24-24. https://doi.org/10.30654/mjde.10024