

ISIS FOURTH INTERNATIONAL CONFERENCE
TECHNION I.I.T., HAIFA, ISRAEL, SEPTEMBER 1998

GOLDEN CODE OF NEFERTITI'S IMAGE

(PAPER — POLYAESTHETICS)

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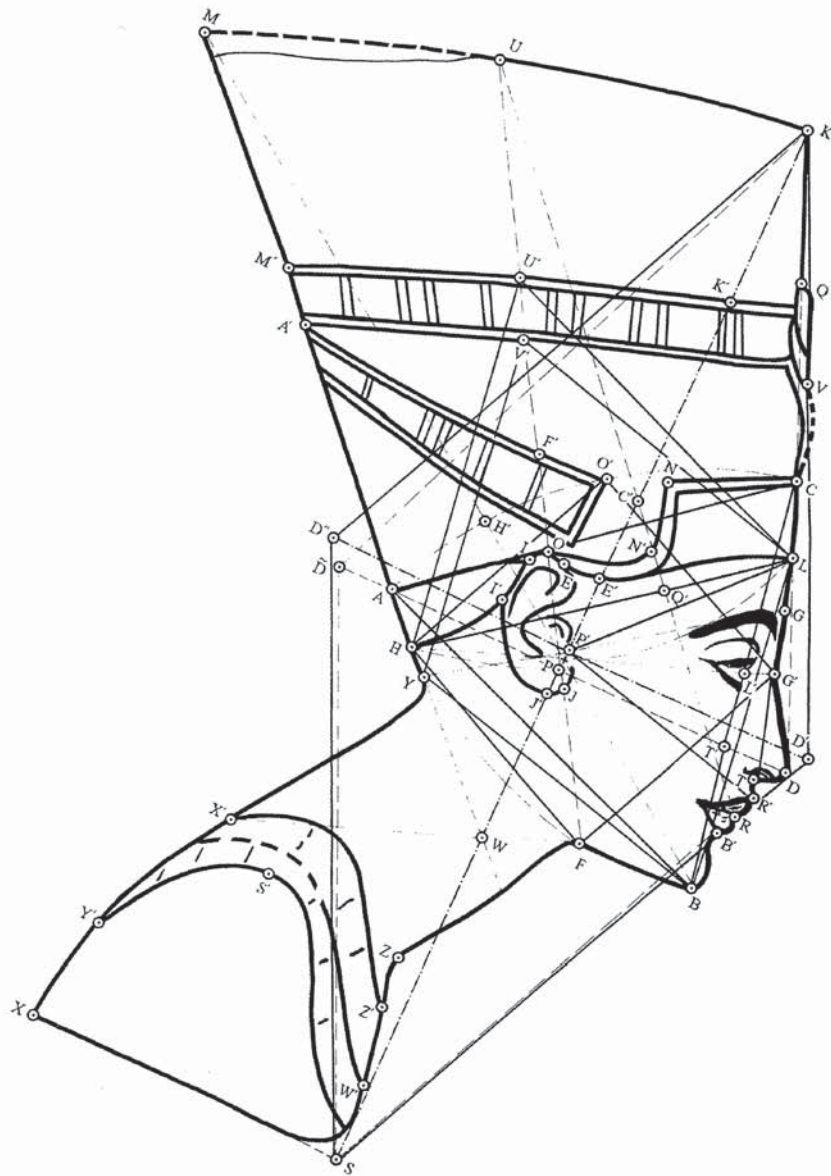
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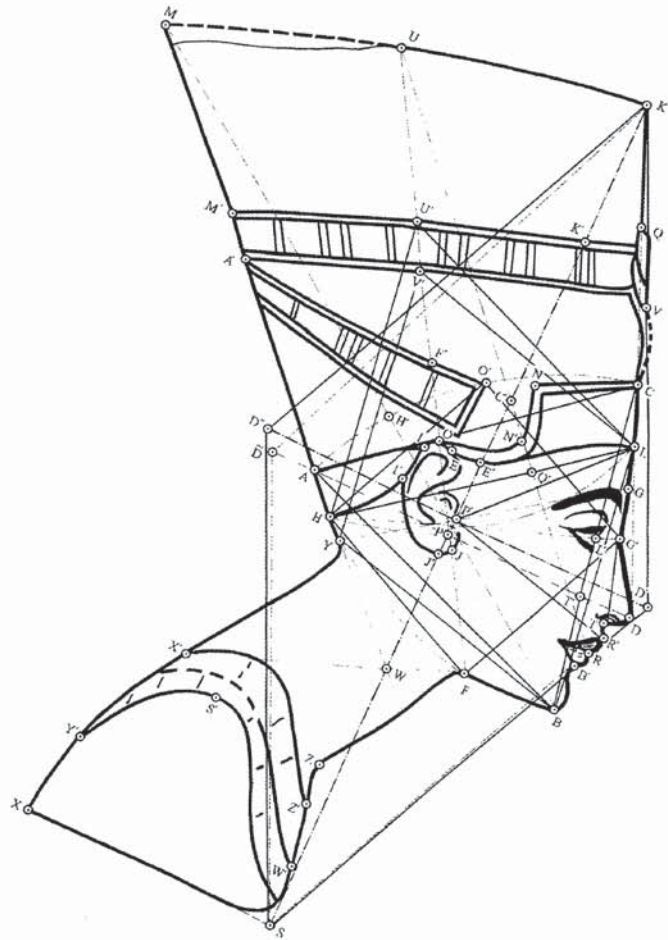
Structural analysis of the profile of the Nefertiti statuette, created by sculptor Tutmes (colored limestone, the museum of Egypt, Berlin) presented in the system of metric relations of *Golden Section* determined by the characteristic details of the contour, its critical points, is conducted.

The logic by which the creator of the Nefertiti statuette was guided is clear and simple. Harmony is the prerogative of the divine order which dominates the Universe, and geometry is a means of its expression. The Queen is given to people by God. Hence, her image, personifying the world's wise tranquillity must be full of geometrical perfection to bear the stamp of high and irreproachable harmony, beauty and clearness. Such is, in fact, the whole philosophy of ancient Egyptian art, which glorified the eternal, the measured, the perfect in the ever changing being.

We perceive an artistic object, with the initially built rigid frame (carcass): a side length of the rhombus $YBLV'$ is arithmetic mean of the side lengths of the square $HFG'O'$ and the equilateral triangle ABC . One side of the rhombus $SD'KD''$ is equal to the sum of the sides of the mentioned square and rhombus. The ratio of the areas of the equilateral triangles $R'LP'$ and $HU'L$ is equal to **0.382**, which is golden section squared, and the ratio of their sides is equal to golden section. The three times squared ratio of the sides of the equilateral triangles $HU'L$ and ABC is also equal to golden section. How is the head-dress of the Queen (tiara with uraeus) divided by the symmetry axis FU ? In its lower part HL it is divided in the ratio of **0.618**; in the middle part (marked by the points V' and U') and in the upper part MK (marked by the point U) it is divided in the ratios which give this number only after their single or triple squaring respectively. The geometrical framework, however, is very delicately concealed, and we perceive only the pink of artistic perfection. Harmonic code permits to reconstruct the true orthogonal projection of the profile (plane $SD'KD''$) from its photoreplica (plane $SD'KD\sim$).

The attractive beauty of this masterpiece is determined by its metric qualities, by no less than six systems of scales, which are one in essence. The harmonious code of this piece of art is expressed by the scale matrix **[d]**; every column of which is obtained from the previous one as a result of multiplication by **0.618...**, the first column containing lengths measured in some base units.





$$\begin{bmatrix} d_{11} & d_{12} & d_{13} & d_{14} & d_{15} & d_{16} \\ d_{21} & d_{22} & d_{23} & d_{24} & d_{25} & d_{26} \\ d_{31} & d_{32} & d_{33} & d_{34} & d_{35} & d_{36} \\ d_{41} & d_{42} & d_{43} & d_{44} & d_{45} & d_{46} \\ d_{51} & d_{52} & d_{53} & d_{54} & d_{55} & d_{56} \\ d_{61} & d_{62} & d_{63} & d_{64} & d_{65} & d_{66} \end{bmatrix} = \begin{bmatrix} 21,8 & 13,5 & 8,3 & 5,1 & 3,2 & 2,0 \\ 20,5 & 12,7 & 7,9 & 4,9 & 3,0 & 1,9 \\ 19,2 & 11,9 & 7,4 & 4,6 & 2,8 & 1,7 \\ 17,3 & 10,7 & 6,6 & 4,1 & 2,5 & 1,5 \\ 15,2 & 9,4 & 5,8 & 3,6 & 2,2 & 1,4 \\ 14,4 & 8,9 & 5,5 & 3,4 & 2,1 & 1,3 \end{bmatrix}$$

Distances, corresponding to the given matrix are the following (See **Fig.**):

- $d_{11} = 21,5$: SM, SK.
 $d_{12} = 13,3$: XO, ZU', KR, MY', M'T, Y'C', BA'.
 $d_{13} = 8,2$: AD, UO', M'Y, M'N, KL, QP', QI', VR, K'J', LW, LK, Z'T, PA'.
 $d_{14} = 5,1$: WR', WT', WA, BP', QC', T'O, A'F', C'H, E'R', YO', FE',
D'N', D'P, D'P', H'A', K'N', KV, E'R'.
 $d_{15} = 3,2$: G'B', D''Y, N'H', D''Y, WJ, OH, H'Y, H'P, PH', Q'T', B'G',
TG, C'T, C'P', C'L, Q'T'.
 $d_{16} = 2,0$: L'T, L'D', Q'N, PE, EQ', OC', IF', N'O, I'J', Q'E, PE, HI'.

 $d_{21} = 20,4$: XQ, XU, KY', MW'.
 $d_{22} = 12,5$: MQ, A'D, A'B', A'R, Y'T', S'C, X'C, S'C, SG', F'W'.
 $d_{23} = 7,8$: AT, AB', YU', WL, KC', K'P, VJ, F'R', S'I, BN, AT, F'D', KC'.
 $d_{24} = 4,8$: HX', U'C', LP, FT', P'D, PB, WT', ZF, HF, FG', G'O', HO'.
 $d_{25} = 3,0$: HP', H'J, FJ, FR, Q'J', I'N', L'N', H'C', H'P', H'D'', SZ,
S'Z, KQ, QK, YI, WJ'.
 $d_{26} = 1,8$: DG', I'E', O'O, AY, PE', Q'C', IP'.

 $d_{31} = 19,0$: XV, XK', MX, MZ, SQ.
 $d_{32} = 11,7$: D''K, D'K, KA, KM, KJ', KT', BQ, X'L, U'X', MI, MO, XJ, UG,
UY, ZC, E'Y'.
 $d_{33} = 7,3$: DV, LH, LU', HU', H'R, F'F, F'T, M'O, ZR', ZT', C'B, A'E',
AG', QI, K'P', QG', VJ, D''F.
 $d_{34} = 4,5$: X'Z', X'Y, P'R', P'L, R'L, G'E, O'L', AO', GP, FD', FL', WI',
UM', F'K', F'H, F'J, BJ, Q'R.
 $d_{35} = 2,8$: N'G, N'P, RG', RL', HH', Q'J', HI, HJ', GT', BT', BD, WZ.
 $d_{36} = 1,7$: H'E, SW', AY, CV, EN', Q'C', IP, H'E, RD', DB', T'G', H'F'.

 $d_{41} = 17,1$: M'S, UZ, KX', MF, Y'M, Y'K', Y'V.
 $d_{42} = 10,6$: XA, SR', X'N, X'M', X'D, ZL, ZC', P'S, P'K, Z'G, MH', A'G,
A'L', K'F, M'C, U'D, FU, FK', W'L', W'O, Y'H', WU', V'B.
 $d_{43} = 6,5$: Z'Y, BY, BL, BI', B'C', B'Z, S'D'', S'J, X'F, LV', FC', RN,
RY, UQ', CK, CU', CR, TY, T'F', A'H, QQ'.

- $d_{44} = 4,0$: JO`, JG`, PG`, JR, JB`, JT, J`C`, ZF, WB, PN, UU`, OV`, LD.
 $d_{45} = 2,5$: JI, AI, PY, ON, OJ, W`Z, J`I, HD``, EF`, Q`I, Q`J, Q`G`, Q`L.
 $d_{46} = 1,5$: LC, HT`, W`Z`, W`S, L`G, AD``, T`D`.
- $d_{51} = 15,0$: X`Q, UR, UF, QZ, K`Z`, LY`, Y`U`, MX`, ML, XL`, XD, XM`.
 $d_{52} = 9,3$: S`R, S`T, WV`, R`W`, TV`, TD``, KO, KE`, UO, DQ, M`P, Q`X`, YV, YS, K`Y, Z`O.
 $d_{53} = 5,7$: ZB, ZJ`, S`F, TO, TC`, TC, CP, CV`, RE, HN, VI, K`Q`, MU, MA`, H`L, F`L, FG, FN`, WQ`, UV, U`N, BQ`.
 $d_{54} = 3,6$: FT, FR`, P`N, P`F, F`Q, T`J, R`G, GC`, AJ, AP, CO`, K`N, KK`, KC, V`H, PL, PW, PC`, H`N.
 $d_{55} = 2,3$: P`Q, BR`, JE`, YI, AI, AH, G`L, L`Q, NE, N`I, V`F, B`D`.
 $d_{56} = 1,4$: RT, I`O, W`Z, K`Q, NN, H`O, S`X, P`E.
- $d_{61} = 14,4$: SL, SN, FK, UD, Z`V, Z`U, Z`M, Y`G, W`V, TU.
 $d_{62} = 8,9$: Z`D, ZG, W`P, BX, BF, T`Q, S`R, G`U, K`D, K`H, AV, JQ, UG, U`L, UH, UC, M`N, WC, V`T.
 $d_{63} = 5,5$: B`L, B`E, GF, G`B, LI, VE, VG, FO, ET, CP, V`Q, V`U, AV, AA, WE, FO.
 $d_{64} = 3,4$: YO, YX, N`J, N`G, L`J, L`P, FP, P`O, BD, HE, NV, J`N.
 $d_{65} = 2,1$: TL, TG, JI, VQ, Q`N, Q`P, BR, PE, YI, F`C, F`V, F`I.
 $d_{66} = 1,3$: B`T, A`M, GG, I`O, NO, E`Q, B`T, T`D, R`D.

Summary: The metric structure of the Nefertiti statuette shows that the sculptors of Ancient Egypt who lived at the time of Pharaoh Amenhotep IV (Akhenaton) used the principle of **Golden Section** ("Aurea Sectio") in their creative work consciously.

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