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Why is facial geometry so important? By changing the frontal teeth form, the smile can be optimally improved only in the background of lips and rest of the face,^{1, 2, 3} although



Fig. 09: teeth are on the face!

many operators do not care about that, since they identify the major “truth” in other aesthetic aspects,^{4, 5, 6, 7, 8, 9, 10, 11, 12} but not in a total facial evaluation, although simplified. It is in the background’s global face entity that you can find the aesthetic meaning of each single facial component.^{13, 14, 15} Because of such global

The “Beauty” of Homo sapiens sapiens: standard canons, ethnical, geometrical and morphological facial biotypes. Publication 3. The geometrical rule of Perseo describes the existing geometrical/proportional human facial biotypes from the en-face view. Second Part

Abstract: this is the continuation of the relative First Part. Here the supermodels (representing the most spread ethnical looks in modern Fashion) are geometrically analysed. Through their faces, I have standardized human facial geometries, that is: transversal facial thirds, on the way to extend to the already clinically useful vertical facial thirds and sagittal facial thirds.
This is the first step in my “Logical Facial Anthropometrics” for a more complete facial analysis - coming in the next publications - since proportionally and morphologically features of single facial components must always be related to the global facial impression

facial implications related to even small modifications, it is now clear that even dentists and orthodontists should be acquainted with global facial Aesthetics, since mouth and jaws are definitely in the face.¹⁶ My research about facial biotypes could also define and describe proportional-geometric relationships between face and teeth, since not enough Research and clinical application have been made in this direction.^{17, 18, 19, 20}

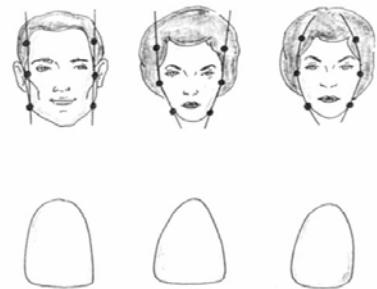


Fig. 10
(Marino and Canton, bibl. 18)

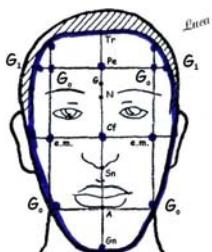
The geometrical rule of Perseo:

the geometrical quantification of existing specific human facial supernormal biotypes from the en-face view

From the en-face view, and referring to the my specific facial geometrical categories, we can identify two geometrical main groups:

1) the first one has been named the curvilinear geometry of

the face (from type 001 to 004) and
2) the second one is represented from the squared geometry
of the face (from type 005 to 015).



002 Forma ovale semplice

Fig. 17 (Perseo)

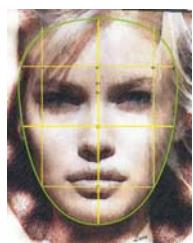


Fig. 18
(Perseo)

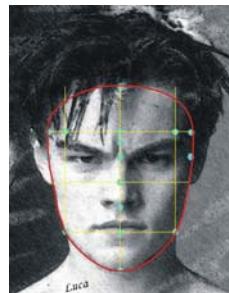


Fig. 19
(Perseo)

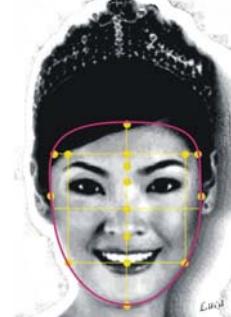


Fig. 20
(Perseo)

North-europide female
i.phys. (134 %)
i.ft-zyg (98 %)
i.mand-zyg (73 %)

Mediterranide male
i.phys. (129 %)
i.ft-zyg (100 %)
i.mand-zyg (77 %)

South-mongolide female
i.phys. (121 %)
i.ft-zyg (95 %)
i.mand-zyg (77 %)

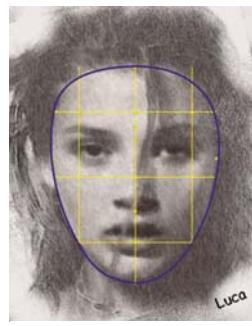


Fig. 21 (Perseo)

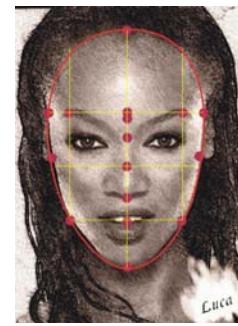


Fig. 22 (Perseo)

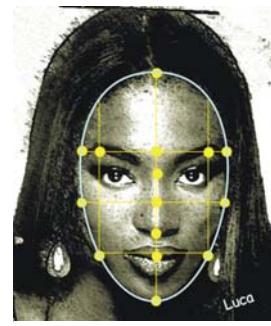


Fig. 23 (Perseo)

Dinaride-adriatic female
i.phys. (134 %)
i.ft-zyg (96 %)
i.mand-zyg (70 %)

Etiopide female
i.phys. (162 %)
i.ft-zyg (105 %)
i.mand-zyg (76 %)

Zambos negridé female
i.phys. (156 %)
i.ft-zyg (100 %)
i.mand-zyg (75 %)

(003) Oval-reverse or "drop" facial shape:

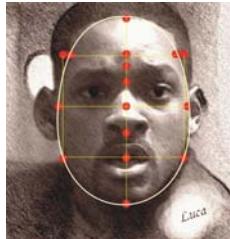


Fig. 24 (Perseo)

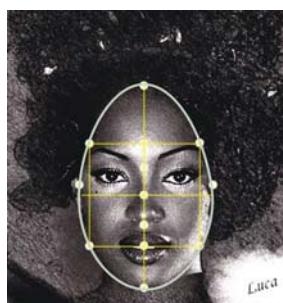


Fig. 25 (Perseo)

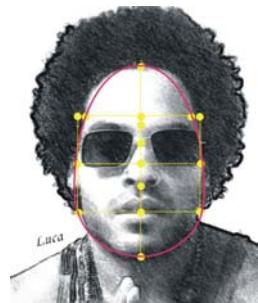
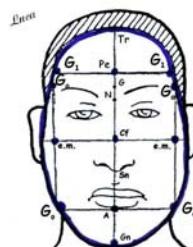


Fig. 26 (Perseo)



003 Forma ovale ribaltata

Fig. 27 (Perseo)

Bantuide male
i.phys. (145 %)
i.ft-zyg (81 %)
i.mand-zyg (94 %)

Etiopide female
i.phys. (161 %)
i.ft-zyg (82 %)
i.mand-zyg (86 %)

Mulato-europide male
i.phys. (154 %)
i.ft-zyg (85 %)
i.mand-zyg (98 %)

You could get this shape when you capsize the oval facial

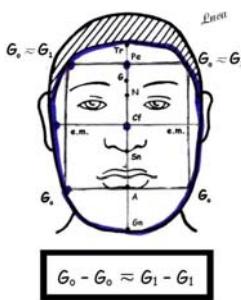
shape. In fact, here is the transversal diameter of the lower

facial third broader than the upper third width. The whole outline is round, so that the zygoma arches are normally not flattened, the gonial points are curvilinear and the chin, often large, is never pointed, so that the whole lower facial 2/3 typically looks massive. This depends either because of abundant muscular mass at that level, or owing to a plenty

of subcutaneous fat (typical beauty of the past, where fat was synonym of richness and prosperity). To its “drop-shape” impression, plays a role also a particularly slender and upwards-pointed forehead, as well as internal facial components, like considerable and rounded cheeks.

(004) Round facial shape:

Like the elliptic shape, it has approximately its forehead width transversally similar to its mandibular 1/3. The zygoma arches are normally round and well expanded at both sides. The gonial points are curvilinear, so like the chin, typically round and wide. Vertically, round shapes are often



004 Forma rotunda

Fig. 28 (Perseo)

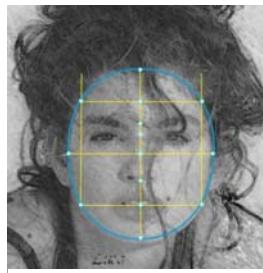


Fig. 29 (Perseo)

Mediterranide female

- i.phys. (116 %)
- i.ft-zyg (83 %)
- i.mand-zyg (83 %)

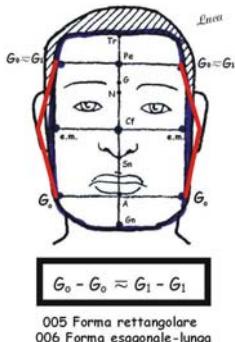
This type, like the elliptic shape, has its upper facial 1/3 width at the forehead level so large/narrow as its lower 1/3 at the mandibular level. The squared outline has this feature mainly for three reasons: the zygoma arches are typically flattened and not laterally round and expanded (like in the elliptic, “drop” and round shapes), so that all three facial thirds are transversally of the same width. Secondly, the well-pointed gonial corners are of about 90 degrees and thirdly chin, like the zygoma arch, is flattened, so that G_0 and G_n tend to lie on the same horizontal.

2. SQUARED GEOMETRY OF THE FACE

(005) Rectangular facial shape and

(006) Hexagonal-long facial shape:

This is the main reason why the gonial area G_0 looks so perpendicular on the en-face view, while at the profile view, being it normally a long face, the mandibular angle is normally typically large ($>136^\circ$, that is dolicocephalic). If points Zy were laterally well projected, the net's side G_0-G_1 would break in two and generate the further segments G_0-Zy and $Zy-G_1$, so that we would obtain a hexagonal-long facial shape. In fact, rectangular shapes are often long faces: short faces with such features are typically squared or hexagonal-short facial shapes.



005 Forma rettangolare
006 Forma esagonale-lunga

Fig. 30 (Perseo)

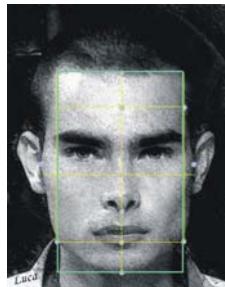


Fig. 31 (Perseo)

Mestizo-mongolide male

- i.phys. (112 %)
- i.ft-zyg (84 %)
- i.mand-zyg (84 %)

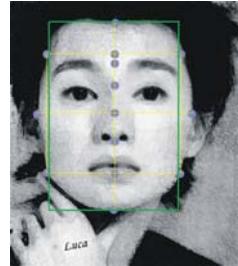


Fig. 32 (Perseo)

Central-mongolide female

- i.phys. (122 %)
- i.ft-zyg (86 %)
- i.mand-zyg (86 %)

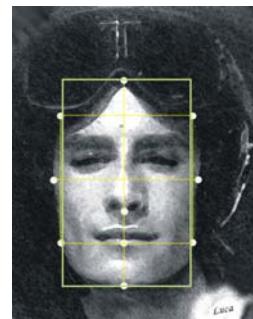


Fig. 33 (Perseo)

Mediterranide male

- i.phys. (142 %)
- i.ft-zyg (91 %)
- i.mand-zyg (91 %)

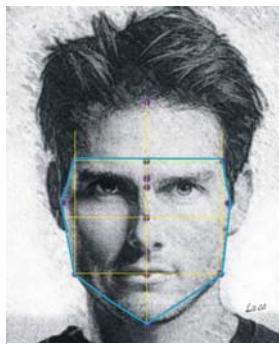


Fig. 42 (Perseo)

North-europíde male

i.phys. (135 %)
i.ft-zyg (88 %)
i.mand-zyg (88 %)

I said above, that if the points Zy of the middle facial third, in a pentagonal basic shape, were very marked with projection, the sides $G_0 - G_1$ (red lines) would break into two more segments: $G_0\text{-Zy}$ and $Zy\text{-}G_1$, so that we would have an octagonal shape.

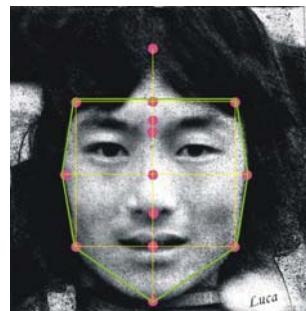


Fig. 43 (Perseo)

Central-mongolíde male

i.phys. (139 %)
i.ft-zyg (87 %)
i.mand-zyg (87 %)

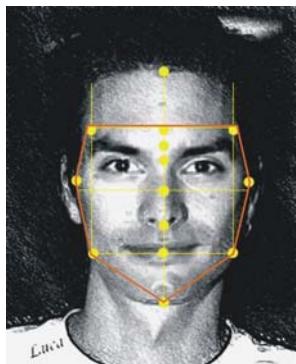


Fig. 44 (Perseo)

Mestizo-europíde male

i.phys. (135 %)
i.ft-zyg (82 %)
i.mand-zyg (82 %)

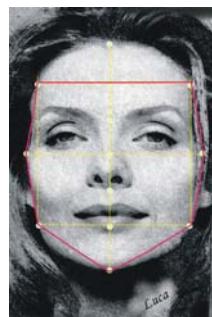


Fig. 45 (Perseo)

North-europíde female

i.phys. (130 %)
i.ft-zyg (86 %)
i.mand-zyg (86 %)

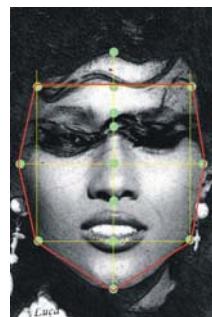


Fig. 46 (Perseo)

Arabo-orientalíde female

i.phys. (131 %)
i.ft-zyg (83 %)
i.mand-zyg (83 %)

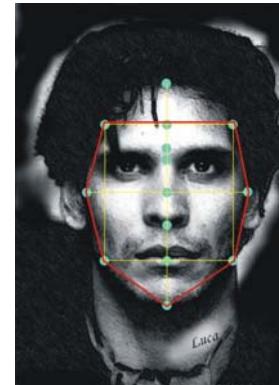


Fig. 47 (Perseo)

Indíde male

i.phys. (138 %)
i.ft-zyg (79 %)
i.mand-zyg (79 %)

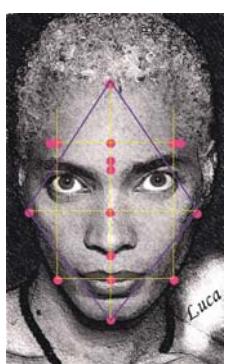


Fig. 48 (Perseo)

Sudaníde male

i.phys. (141 %)
i.ft-zyg (76 %)
i.mand-zyg (74 %)

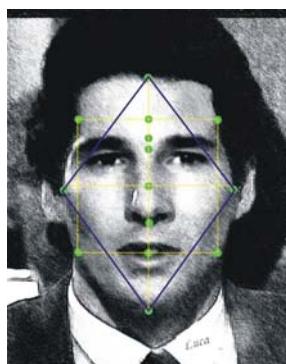


Fig. 49 (Perseo)

Mestizo-europíde male

i.phys. (138 %)
i.ft-zyg (83 %)
i.mand-zyg (83 %)

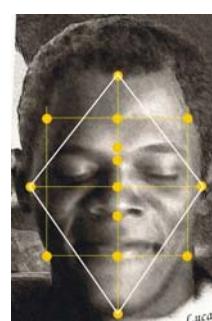
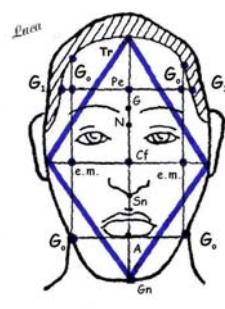


Fig. 50 (Perseo)

Sudaníde male

i.phys. (140 %)
i.ft-zyg (82 %)
i.mand-zyg (82 %)



011 Forma romboidale

Fig. 51 (Perseo)

The rhomboidal facial shape has typically the upper 1/3 transversally very similar to lower facial third. Features are zygoma arches laterally well marked, so that the facial outline is squared and, consequently, different from the oval shape. Besides, a very sharp chin and the absence of laterally

sharp gonial areas is a further typical feature. The rhomboidal shape, in fact, differs in this way from the pentagonal shape TrR. Note that a not very large mandibular width with any projected gonial areas increase the sensation of marked zygoma arches.

(012) Squared facial shape and (013) Hexagonal-short facial shape

This type, like the round shape, has its upper facial 1/3 width at the forehead level so large/narrow as its lower 1/3 at the mandibular level. The squared outline has laterally no projections, since the zygoma arches are flattened. The well-pointed gonial corners are of about 90 degrees from the en-face view and such perpendicular impression is increased by concomitant flattened chin, so that G_0 and G_n tend to lie on the same horizontal. We do not have, practically, any mandibular triangle $G_0-G_0-G_n$ (like in pentagonal and ectagonal shapes).

Normally, as it should be a short face, from the profile we have a small mandibular angle ($<116^\circ$, that is brachifacial). Just to bring some examples, a flat chin is to be typically found in rectangular squared, trapezoidal and trapezoidal-reverse facial shapes.

If the points Zy are laterally well projected, the side G_0-G_1 would break into two and generate the further segments G_0-Zy and $Zy-G_1$, so that we obtain an hexagonal-short facial shape. In fact, squared shapes are often short faces: long faces with such features are typically rectangular or hexagonal-long facial shapes.

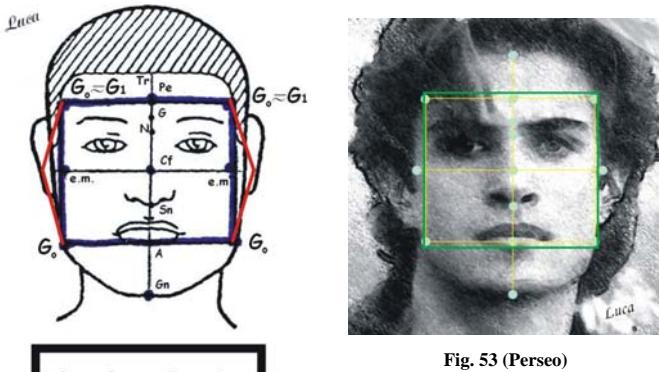


Fig. 52 (Perseo)

North-europide male
i.phys. (129 %)
i.ft-zyg (90 %)
i.mand-zyg (90 %)

Fig. 53 (Perseo)

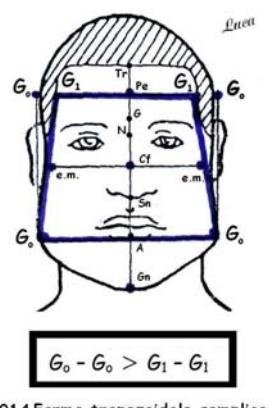


Fig. 54 (Perseo)

(014) Trapezoidal facial shape:

For this squared geometry, you have to imagine an isosceles trapezium, with G_0-G_0 and G_1-G_1 as the parallel sides, where G_0-G_0 (lower facial 1/3) is the larger side, i.e. wider than G_1-G_1 (upper facial 1/3). We have flattened points Zy (they may not look sharp also because of the concomitant large mandibular width with very marked gonial corners). It has no vertical projection of the chin downwards (lack of the mandibular triangle $G_0-G_0-G_n$). As already said above, a downwards projection would determine a pentagonal form Tr. G_n tends to lie on the same horizontal of G_0 .

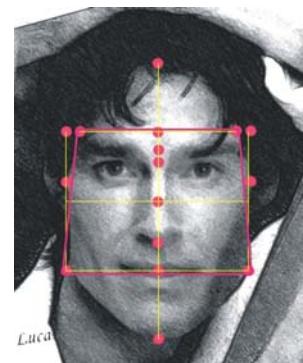


Fig. 55 (Perseo)

Mestizo-europide male
i.phys. (150 %)
i.ft-zyg (84 %)
i.mand-zyg (99 %)

In case of very slender forehead very upward projected, the trapezoidal shape would degenerate in a triangle shape (which base is on the lower 1/3). Such type of triangular geometry does not have the biological characteristics to result attractive in a human contest, since it would look

with not enough forehead (forehead: non verbal message for "brain, intelligence") and with a relatively too much lower jaw (lower jaw: non verbal message for "instinct, animal aggressively, masculinity"). With a "normally" large forehead, the "aggressive" lower jaw remains aesthetical.

(015) Trapezoidal-reverse facial shape:

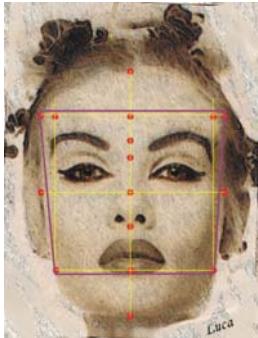


Fig. 56 (Perseo)

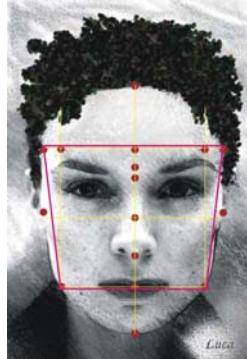


Fig. 57 (Perseo)

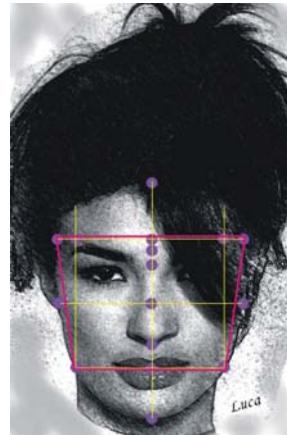


Fig. 58 (Perseo)

East-europide female

i.phys. (134 %)
i.ft-zyg (101 %)
i.mand-zyg (87 %)

North-europide female

i.phys. (139 %)
i.ft-zyg (101 %)
i.mand-zyg (80 %)

Arabo.orientalide female

i.phys. (131 %)
i.ft-zyg (103 %)
i.mand-zyg (83 %)

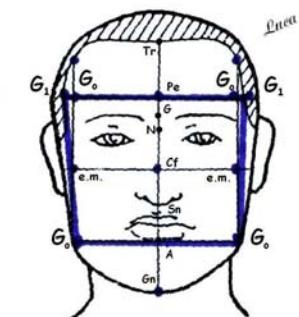
You get this shape if you capsize the trapezoidal facial shape. The larger side is now the forehead and the lower jaw results slender than the upper 1/3. Such a slender mandible is not sharp downwards, so that the Gn tends to lie on the same horizontal of G₀ (absence of the mandibular triangle G₀-G₀-Gn). With such a triangle, we would have had the TrR variant of the pentagonal shape. The zygoma arches tend to be flattened, but often less than in the trapezoidal shape, where massive laterally projected gonial corners gave a bigger impression of Zygoma depression. If the lower jaw

were projected downwards because of a vertically prominent chin and, at the same time, the transversal discrepancy between G₁-G₁ and G₀-G₀ were too big, the trapezoidal-reverse shape would degenerate in a triangle-reverse shape, which does not look aesthetical (like the friendly alien face), since it is necessary that the stomatognathic system is properly represented in humans.

Some Remarks about the facial shape and the hair

Hair variety has been didactically described by anthropologist as an ethnical feature: today, we still have the unconscious perception of evolution in it, so that changing the colour, type and shape of hair has to be traced back to fashion styles looking for new exotic and geometrical compositions. It follows an example about the relationships between internal facial components and geometrical outline. A very transversally slender mouth would fit, today, better in an oval shape than in an elliptic one, since in the elliptic would show more cheek space between mouth and contour. Why too much? Because it looks like, if the person were fat, with much representation of the cheeks' soft tissues. A fat visage with a very small mouth, in the past, would have been very interesting, as non-verbal symbol lack of aggressively and of prosperity and, that is money to buy the food. Today we search to get athletic appearance, where muscles are very

important. Even oval shapes can be very muscular, so that you have to analyse the 3D of a face, if you want to get all non-verbal messages of its surface. Partially, such messages are to be recognised from the en-face view, but proportions are not a sufficient parameter to objectively describe such impressions. Geometrical considerations are the basics to develop a deep confidence with facial and body Aesthetics in its global dimension, so that all facial type: 1) have a reference supernormal ideal to be analysed 2) can be observed with clear ideas about the relationships between internal and external facial features.



$$G_0 - G_0 < G_1 - G_1$$

015 Forma trapezoidale ribaltata

Fig. 59 (Perseo)



Fig. 60
(Milady, bibl. 21)

If you take the same individual pictures in standard head position, in the course of his/her life, you will probably notice that some environmental factors like the age, the state of nutrition, the tonicity of the musculature, the growth and degenerative developments of soft and hard tissues, influence the geometry of his/her face. In addition, the kind and volume of hair change the non-verbal messages of the facial geometry, since the hair is a decoration, which apparently modify the real shape of the face, similarly to make-up and cosmetics. This is the reason a certain cut or type of hair fit us better than another one.²¹

Note: we have seen some elements for a complete description of a face. As we will see together in future publications, each brain is genetically predetermined according to the genetic information of each single observer; it is influenced by circumstances during the life of the observer; each observer develops its subjective aesthetic taste. But there are many objectively describable elements, which we perceive in common with all other human animals, but these parameters are a lot and very complicated to be described. In my future publications about facial aesthetics, my aim is to identify them (most are non-verbal messages), so that a research protocol is listed in the next pages. I want to bring an example of the complexity of such Aesthetics aspects. The brain is able to get the impression of beauty by recognising balance (harmonic adjustment of directional lines). If you trace lines to identify the single anatomical facial component, you can see that the vertical



Fig. 61: Joan Miró's *Swallow/Love* is a work that can provoke impressions to the observers. We get impressions when we also look at a facial composition (Work at the Museum of Modern Arts, New York, NY, USA)

line through the nose can be inclined to the vertical facial line, the teeth lines can partially or totally harmonise with these and other facial lines. All together, lines can have similar directions (harmony type 1), different directions (disharmony or line tension) or lines that contrary to other lines (harmony type 2). The Joan Miró's *Swallow/Love* is a very suggesting example for line concepts in Arts, a factor that may not be forgotten by looking at a face.

RESULTS AND CONCLUSIONS: the static beauty of the human face: a new global definition

Analysing facial beauty through pictures is the interpretation of static anatomical parameters. There are also dynamical parameters, as a face is obviously more complete to be evaluated with its mimic and physiological movements like the verbal language. However, since it is not necessary to appraise such dynamical aspects to conclude that an artistic work, like a statue or a portrait, is beautiful in the opinion of the general observer, aesthetical analyses of 2-D and 3-D

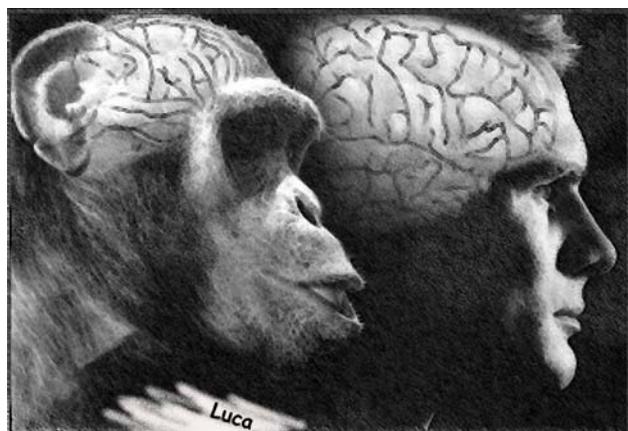


Fig. 62 (Perseo); in the middle the real face; right and left, one half facial side together with its mirror image. Even in very beautiful people, the left half facial side is not 100% specular to the right half facial side! Symmetry is never perfect.

pictures is useful for clinical application. **Facial static beauty** is a definition invented by the humanity to express



Fig. 63 (Perseo); in the middle the real face; right and left, one half facial side together with its mirror image. Even in very beautiful people, the left half facial side is not 100% specular to the right half facial side! Symmetry is never perfect.

as it follows. A face possesses some anatomical factors which, in "harmony" to each other, could potentially determine, in a wide percentage of observers and however on a genetically based "basic instinct" (variably influenced by culture), a positive or even a negative intellectual response, eventually concomitant to a certain degree of physical attraction/rejection.

My geometrical standardisation is the base to fulfil the limits of current international universal canons and I am aware

that my effort is a progress, that tends to complete the description of static facial Beauty. This last is based on the interaction between two extremes: the general observer, who sees that face and the anatomical features of the face itself, which is observed.

The first extreme concerns all subjective observer's esthetical opinions (**Facial beauty subjective factors**).

The second extreme concerns the always describable objective facial anatomical features (**my 8 facial beauty objective factor**), that is not just the classical collection of harmonic facial ratios and symmetry,²² but a gathering of:

- 1) Facial human traits (slight prominent orbital ridges, possible light biprotrusion, receding chin is very rarely, etc.), as demarcation between the humans and the "other" similar animals (Apes)^{23, 24, 25, 26, 27}
- 2) The ethnic-look, as differentiation feature between human "animals" in the evolution;
- 3) A sufficient degree of facial symmetry,^{28, 29, 30, 31, 32} that is implied in the first point;

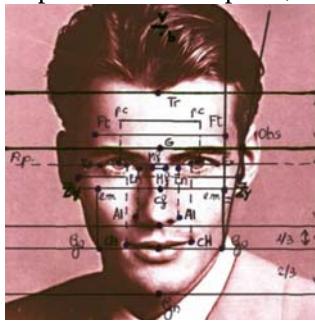


Fig. 64 (Perseo):
multiple facial ratios.

in particular the proportional "geometrical frontal facial biotypes" due to the possible different kinds of harmony between internal facial components and the anatomical areas that delimit the facial outline; and the geometrical angular/proportional profile features of the face ("geometrical profile facial biotypes"). In each case, non-verbal messages related to the geometry can be recognized.^{35, 36}



Fig. 65 (Perseo): a perfect example of a north-europide look octagonal facial biotype. Anatomical components involved in the outline reveal special non-verbal messages typical for such typology.

ears, nose and paranasal zones, zygoma bones and cheeks, mouth with lips and teeth, jaws, chin). Even anatomical components external to the face, like neck, hair and the rest

4) Numerous classical combinations of facial harmony^{33, 34}, linked to the multiple ratios and angles arrangements in the facial composition;

5) Geometrical proportional frontal features of the face according to Dottor Perseo (implied are some factors for the Radiant/Charismatic beaming facial beauty), in

particular the proportional "geometrical frontal facial biotypes" due to the possible different kinds of harmony between internal facial components and the anatomical areas that delimit the facial outline; and the geometrical angular/proportional profile features of the face ("geometrical profile facial biotypes"). In each case, non-verbal messages related to the geometry can be recognized.^{35, 36}

6) Anatomically confined static non-verbal messages³⁷ according to Desmond Morris, related to each single morphological facial components' mutual dimension (dominance in the face), position, morphological features and lines (components of the facial composition are: forehead, eyes,

of the body, positively/negatively integrate anatomically confined non-verbal facial messages. Besides, each sagittal facial modification, even if not quantifiably by frontal measures, can be non-verbally identified and therefore useful for clinical application.

7) "Comics" static non-verbal messages related to the whole facial composition, that is to say the by us defined "Comics" facial expression. As mainly well-known in comics, caricatures, design Art and psychotherapy,^{38, 39, 40, 41, 42} the

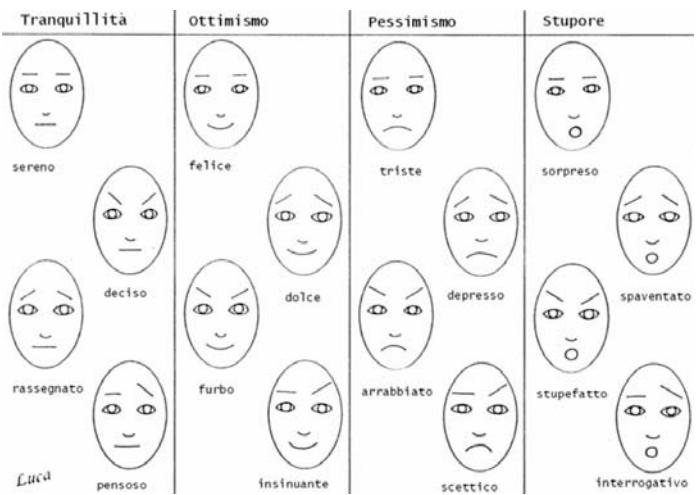


Fig. 66 (modified from Timelli and Verucchi, bibl. 40)

combination of anatomical features provokes variously interpretable (un)pleasant feelings in the observers and can be illustrated with different stylised facial non-verbal expressions. Our therapies can profoundly influence such morphological arrangements.

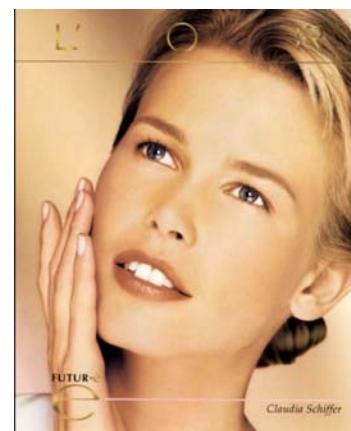


Fig. 67 (L'Oreal)

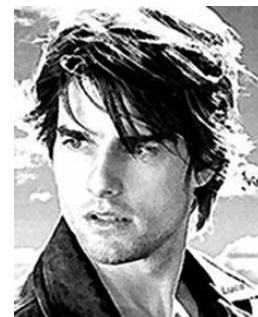
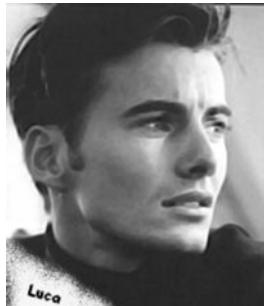
8) Soft tissues traits like: skin's type-colour-light and contrasts; fold and lines due to bony-muscle relieves;^{43, 44} but also to subcutaneous consistency and muscles tonicity.

Please give attention to my seventh facial beauty objective factor: "comics" facial expression, since it communicates a variously interpretable (un)pleasant feeling to the general observer. Expression features

are well known in comics and caricatures, so that this simple basic scheme can successfully represent some possible stylised "comics" non-verbal expressions of our human face (and apparently of our mood and even of our personality, like Physiognomics "scientifically" describes). I varied just two anatomical parameters: the inclination of the eyebrows and that of the mouth. We can immediately notice, that the flat mouth expresses, somehow, calm and tranquillity. With the mouth angles symmetrically upward: happiness, optimism. If downward: sadness, pessimism. If the mouth is wide open: amazement, astonishment. The states of mind represented in this

way, becomes more complex, if we add possible combinations through the eyebrows factor. The same face can be differently expressive, just according to simple positional and dimensional retouches of its components.

And such morphological arrangements become infinite in number, if you consider the global facial components' interplay. Until now researchers has considered just this or that parameter. By concentrating on a special one, most of them believe to have found the truth in Aesthetics. But Aesthetics is all parameters together at the same time.



Facial components' interplay in different facial compositions of various biotypological kinds: Fig. 68 (Perseo), Fig. 69 (Perseo), Fig. 70 (Perseo), Fig. 71 (Perseo), Fig. 72 (Perseo), Fig. 73 (Perseo), Fig. 74 (Perseo), Fig. 75 (Perseo), Fig. 76 (Perseo)

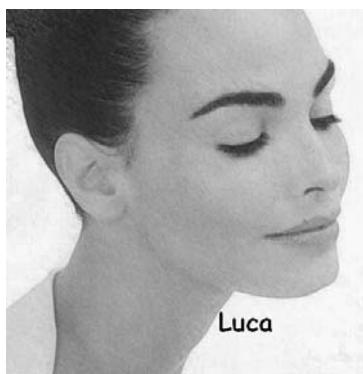


Fig. 77 (Perseo): The above-listed anatomical 8 facial objective factors coexist together.

The above-listed anatomical 8 facial beauty objective factors have to be considered relatively to each other and very dynamically, since they must be analysed by considering the changing of historical-social backgrounds and therefore, the different general observers type. In Aesthetics, after all, facial non-verbal signals are the facial global

connotation, the idea that the same face expresses. It is not necessary that a non-verbal impression really corresponds to the actual personality of the observed person (main error of Physiognomics). Fiction is routine in our appearance,^{45, 46} since we very often need to play an imaginary role to be socially accepted by the modern consume and image society.

And facial Beauty is like a Vip-card, while our appearance is our visit ticket. If we look "beautiful" like people perceive "beautiful" today, it is more probable that our general observers make the life easier to us, since judging the nature of the observed person just by his/her appearance is, unfortunately, a natural human instinctual attitude. Facial and body appearance is possibly one of the quickest ways to come to such conclusions and a dominant desire is being "beautiful", to all the costs. Therefore, supermodels to be analysed are not only scientifically useful for my project, but become an important testimony of an epoch and a culture.



Figura 78 (Perseo): supermodels also as an important testimony of an epoch and a culture.

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