



New Theory on Facial Beauty:
Ideal Dimensions in the Face
And its application to your practice

By

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- Hello my presentation is on studying some further elements of a new theory on facial beauty called the Circles of Prominence.
- Specifically we are going to be studying some key dimensions in the face that I think could possibly help your practice.
- I'm from Bellevue Washington Home of Bill Gates, Microsoft and Starbucks.



Beauty

In my opinion Beauty is the most important trait that we have and it is the one trait that can have the most dramatic impact in our lives.

Obviously finding the answer for Beauty is essential in our industry.

The answers have alluded us: the magic number of Phi, cephalometrics, the neo classical canons by Leonardo Da Vinci, the averageness theory, etc. have all come short in finding what makes a face beautiful.

Circles of Prominence

A New Theory on Facial Aesthetics

Philip A. Young, MD; Uttam Sinha, MD; Dale H. Rice, MD; Fred Stucker, MD

Objective: To elucidate key elements of facial aesthetics through a new hypothesis called the *circles of prominence*.

Design: In this subjective survey, 32 persons in the medical field rated frontal-view photographs of 20 subjects in 5 categories on a 0-to-100 scale, 0 representing the most unaesthetic rating, 100, the most aesthetically pleasing. The study was conducted in an academic setting, and the subject photographs were of 9 women (aged 27-65 years) from a clinical setting and 11 women whose pictures appeared in entertainment magazines. Each subject's eyes, nose, mouth, and chin were subjectively rated for their aesthetic quality. A general rating was also given for the subject's face as a whole. The subject's faces were then analyzed and measured based on the circles of prominence theory. A total of 52 measurements were chosen for the analysis. All raters' numbers for each anatomic unit and the face in general for each subject were averaged. The theoretical measurements were also averaged for each unit. The percentage of the ideal for the face in general was calculated based on weighted averages of the measurements from the individual units of each subject. The Wilcoxon signed-rank test was used to determine whether a significant difference existed between the raters' averages and the averages measured based on the facial analysis. Spearman rank coefficient correlation was used to determine if a significant correlation existed be-

Results: We set statistical significance at $P \leq .05$ and found that the mean ratings of 11 of the 20 raters for the face in general were not significantly different from the measured means based on the circles of prominence theory. There was a significant correlation between the raters' means and the measured percentages of the ideal for all units and the face in general based on the Spearman rank test.

Conclusions: Although the statistical analysis showed that many of the raters' subjective averages were significantly different from the averages calculated on the circles of prominence theory, the trends for those averages showed that the theory has meaningful validity in assessing facial aesthetics. The measured average ratings based on the theoretical calculations were higher than the subjectively rated averages. This was especially true for the photographs of clinical subjects and might be the cumulative result of multiple measured deviations from what is most aesthetically pleasing, thus creating an impact greater than the sum of its parts on the observer's subjective interpretation. The possible synergistic effects of multiple deviations for each anatomic unit or the face in general might have resulted in the much poorer subjective ratings than what the equally weighted, linearly determined measurements could analyze.

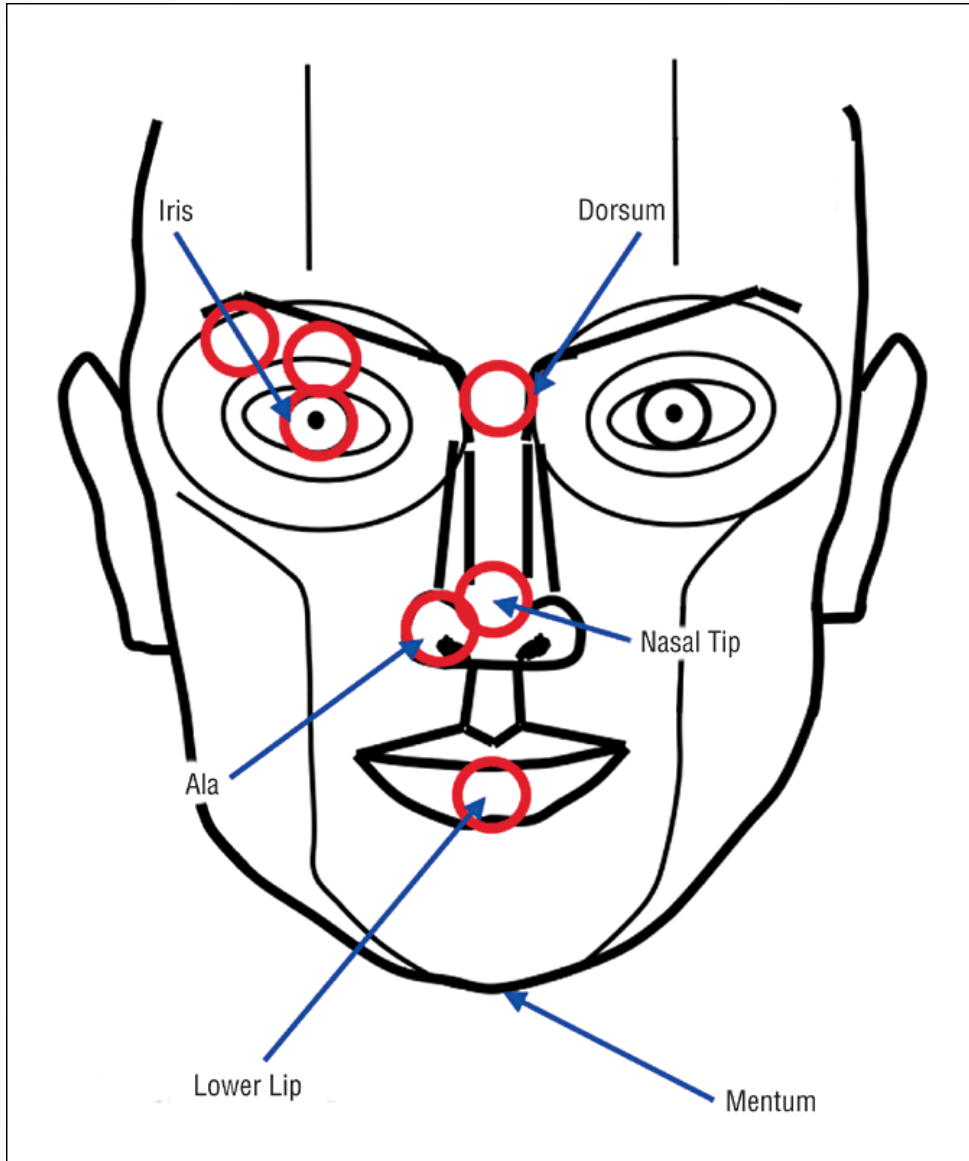
- The Circles of Prominence is a theory that I discovered in 2003-2005 and was published in the Archives of Facial Plastic Surgery in 2006 and Received the Sir Harold Delf Gillies Award from the American Academy of Facial Plastic Surgery.



The Circles of Prominence

- Original published Archives FPS 2006
 - Based on the idea that there is an ideal
 - Everything on the face has an ideal as well
 - Because we spend so much time looking at the iris
 - All dimensions of the face are related to the width of the iris
 - Obviously with a better definition of beauty our results in plastic surgery can be improved
-
-

- The circles of prominence is based on the belief that there is an ideal.
- It also hypothesizes that everything on the face should also have an ideal that is somewhere between zero and infinity.
- A theory should be based on something that we spend most of our time looking at when we encounter a face and not external landmarks that we spend just a fraction of a second looking at which is what the Neoclassical canons and all previous theories are essentially based on.
- In short we spend most of our time looking at the iris.
- Hence everything on the face, every shape and distance should be based or related to the size, width, and height of the iris.



- In a recent paper study we found strong evidence that the iris, nasal tip and center of the lower lip and their positioning can satisfy a basic element of beauty in the face.
- Related to our current study, **Our Hypothesis** is that the distance from eyelid margin to bottom of the eyebrow, the width of the nasal bridge, the size of the nasal tip, the height of the lower lip, the distance that the ear protrudes from the side of the face should all be 1 iris width. The Height of the upper lip should be $\frac{1}{2}$ an iris width (IW). We also are analyzing the ideal distance from iris to iris. Again, it is the hypothesis of the Circles of Prominence that this distance is separated by multiple shapes that can be ideally defined into $\frac{1}{2}$ or 1 iris widths.
- Why is that? The brain needs something to choose from zero and infinity and because we spend so much time looking at the iris it chooses distances that relate to the iris either in $\frac{1}{2}$ to 1 IW.

13 Sections studying different elements in the face were studied including the eyebrows, nose, lips, ears, and the relation between the eyes, nose, lips and face as a whole

Question 1:

Data Based on 190 Surveys

Eyebrow Study Line Drawings:

Distance from bottom of eyebrow to eyelid margin is 1 iris width.

Distance in each picture is varied between $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 IW

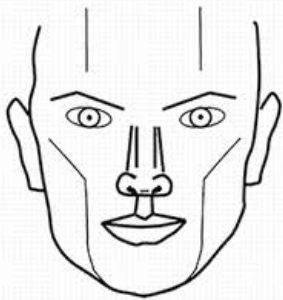
$\frac{1}{2}$ IW

1 IW

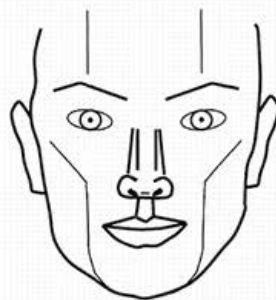
$1\frac{1}{2}$ IW

2 IW

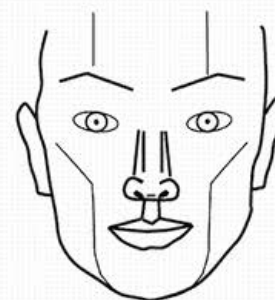
1. Eyebrow Study Section #1



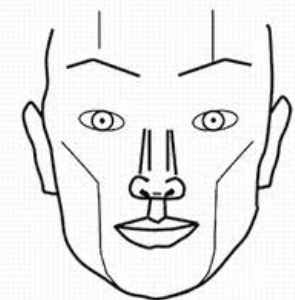
● 1 ● 2 ● 3 ● 4



● 1 ● 2 ● 3 ● 4



● 1 ● 2 ● 3 ● 4



● 1 ● 2 ● 3 ● 4

• 2.65

• 1.73

• 2.01

• 3.52 •

- 13 sections were created each looking at particular areas of the face. Each area was manipulated to create a face while keeping other areas the same.
- This was done with line drawings and also morphed pictures representing those changes in one particular area of the face.
- Our first section studied the Eyebrow and varying the distance between the bottom of the eyebrow and the eyelid margin.
- In this eyebrow section of this study the distances between bottom of the eyebrow and eyelid margin were varied by $\frac{1}{2}$, 1, $1\frac{1}{2}$, and 2 iris widths as shown.
- Again our prediction is that the ideal distance is 1 iris width from the eyelid margin to the bottom of the eyebrow.
- Each participant was asked to rate each picture a 1 through 4 where 1 is the most attractive and 4 is the least attractive using only each value once for each section.
- So the lower the score the more preferred the picture was to these 190 participants
- Based on 190 surveys the 1 iris width distance was found to be most attractive. with a score of 1.73, where the lower score represents the more attractive picture found by these 190 participants.

Question 1:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
1	< .001 (84.95)	.0011 (10.61)	2

Eyebrow Study Morphed Pictures: Question 2:

Distance from bottom of eyebrow to eyelid margin is 1 iris width. Distance in each picture is varied between $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 IW

1 IW

$\frac{1}{2}$ IW

$1\frac{1}{2}$ IW

2 IW

2. Eyebrow Study Section #2



1 2 3 4



1 2 3 4



1 2 3 4



1 2 3 4

1.54

2.91

2.10

3.43

- This section was the morphed picture representation.
- And in this section we found again that the 1 iris width distance was ideal with an even lower score of 1.54.
- The lower brow was more preferred over the excessively elevated brow as show by the 2.91 score and the 3.43 score.
- Based on this if you had to choose you can elevate the eyebrows a little more than ideal up to the 1 ½ IW distance but don't get to the 2 IW distance as it is even less preferred than the lower eyebrow positioning at ½ IW.
- This same phenomenon was found in the line drawings.

Question 2:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
2	< .001 (172.24)	< .001 (26.95)	1

Nose Study Line Drawings:

Question 3:

Width of Nasal Bridge is 1 iris width. Distance in each picture is varied between $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 IW

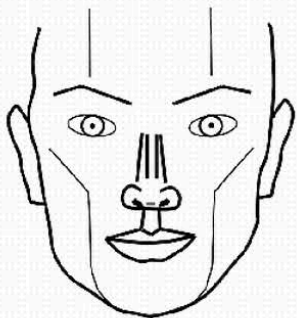
$\frac{1}{2}$ IW

1 IW

$1\frac{1}{2}$ IW

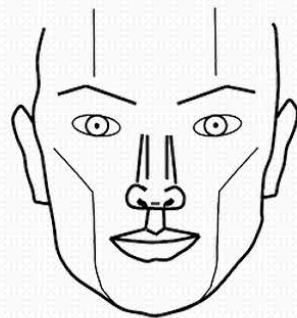
2 IW

3. Nose Study Section #1



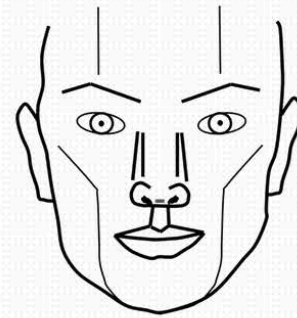
1 2 3 4

1.77



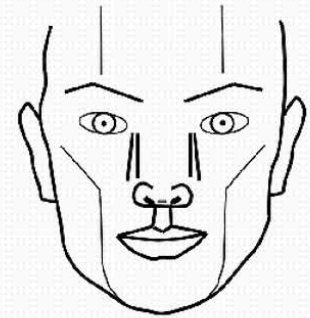
1 2 3 4

1.65



1 2 3 4

2.72



1 2 3 4

3.83

- Next we studied the width of the nasal bridge and varied the width by $\frac{1}{2}$, 1, $1\frac{1}{2}$, and 2 Iris widths.
- The order of these representations in all the sections were mixed so that they were not always proceeding in order from $\frac{1}{2}$ to 2 IW.
- Again we found that the 1 iris width distance was most ideal but the values were very close.
- What we can gather from this is that people prefer smaller versus larger.
- As you can see the larger the width of the nose gets the rating gets much wors.

Question 3:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
3	< .001 (106.52)	.932 (.01)	1 and 2

Nose Study Morphed Pictures:

Question 4:

Width of Nasal Bridge is 1 iris width. Distance in each picture is varied between $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 IW

1 IW

$1\frac{1}{2}$ IW

$\frac{1}{2}$ IW

2 IW

4. Nose Study Section #2



1 2 3 4



1 2 3 4



1 2 3 4



1 2 3 4

1.42

2.72

1.92

3.85

- The morphed pictures studying the variations in nasal bridge width again showed that the 1 iris width version was highly preferred over the others and was more distinctly separated from the other pictures in contrast to the line drawing representations.
- What we begin to see is possibly how shading and how 3 dimensions plays a much bigger role in how one interprets beauty in the face. Something that can't be represented in a simple line drawing of a face with these variations.
- The difference was 1.42 and 1.92 versus the line drawing that was closer at 1.65 and 1.77.

Question 4:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
4	< .001 (160.52)	< .001 (13.74)	1



Next we studied the Lips

Question 5:

Height of the Upper Lip is $\frac{1}{2}$ iris width

Height of the Lower Lip is 1 iris width

Height of Lower Lip is 1 iris width. Distance in each picture is varied between $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 IW

Lower Lip Study Line Drawings:

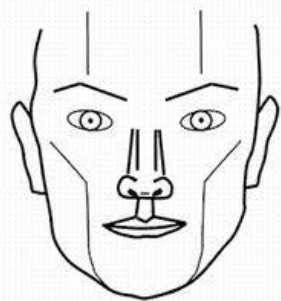
$\frac{1}{2}$ IW

1 IW

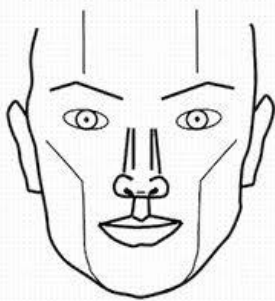
$1\frac{1}{2}$ IW

2 IW

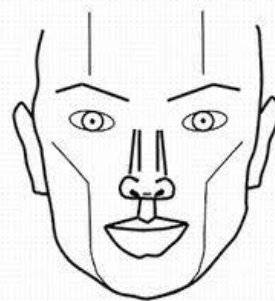
5. Lip Study Section #1



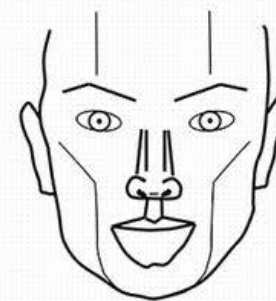
● 1 ● 2 ● 3 ● 4



● 1 ● 2 ● 3 ● 4



● 1 ● 2 ● 3 ● 4



● 1 ● 2 ● 3 ● 4

• 1.96

• 1.34

• 2.78

• 3.90 •

- The next four sections looked at the lower lip and upper lip respectively.
- The lower lip was varied from $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 iris widths.
- The height of the upper lip was varied from $\frac{1}{4}$, $\frac{1}{2}$, 1, $1\frac{1}{2}$ iris width.
- In the normal population, the upper lip is usually smaller than the lower lip. Hence we thought that testing this area starting with a $\frac{1}{4}$ iris width as a variable suited the upper lip.
- In this first line drawing section studying the variations in the height of the lower lip, we predict 1 iris width as being the most ideal.
- Again based on 190 surveys, the 1 iris width representation was found to be the most ideal at 1.34 with the smaller lower lip being more preferred than larger versions as shown with the 1.96 versus 2.78 and 3.90.

Question 5:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
5	< .001 (215.92)	< .001 (44.83)	2

Upper Lip Study Line Drawings:

Question 6:

Predicted Height of Upper Lip is ideally $\frac{1}{2}$ iris width.
Distance in each picture is varied between $\frac{1}{4}$, $\frac{1}{2}$, 1, $1\frac{1}{2}$, IW

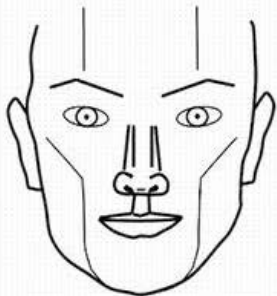
$\frac{1}{4}$ IW

$1\frac{1}{2}$ IW

$\frac{1}{2}$ IW

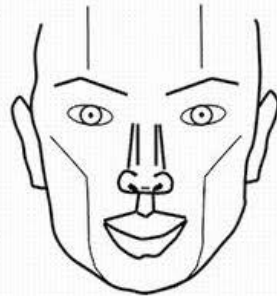
1 IW

6. Lip Study Section #2



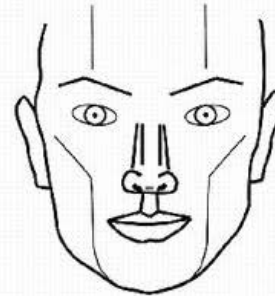
1 2 3 4

2.44



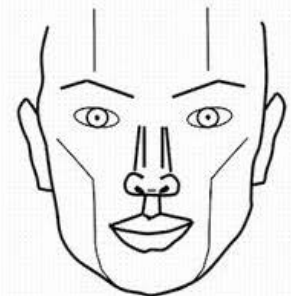
1 2 3 4

3.1



1 2 3 4

1.51



1 2 3 4

2.94

- With the upper lip line drawings.
- As predicted The 190 surveys found the $\frac{1}{2}$ Iris Width upper lip height was much more preferred and considered ideal versus the $\frac{1}{4}$, 1 and $1\frac{1}{2}$ iris width heights of the upper lip with the $\frac{1}{2}$ IW having an average of 1.51.
- This was not even close.
- The same phenomenon of smaller being more preferred than bigger dominated here as well.

Question 6:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
6	< .001 (131.99)	< .001 (34.27)	3

Lower Lip Study Morphed Pictures:

Question 7:

Height of Lower Lip is 1 iris width. Distance in each picture is varied between $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 IW

$\frac{1}{2}$ IW

$1\frac{1}{2}$ IW

1 IW

2 IW

7. Lip Study Section #3



1 2 3 4

2.01



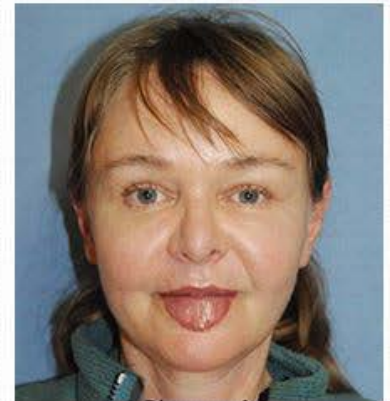
1 2 3 4

2.94



1 2 3 4

1.18



1 2 3 4

3.88

- The results of the morphed representations of these variations showed that the hypothesized ideal height of the Lower Lip of 1 iris width was again highly preferred.
- With the same phenomenon of smaller being preferred over larger versions.
- This wasn't close either with the 1.18 being even more highly preferred than the line drawings where the 1 IW scored 1.34.

Question 7:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
7	< .001 (341.61)	< .001 (101.44)	3

Upper Lip Study Morphed Pictures:

Question 8:

Height of Upper Lip is $\frac{1}{2}$ iris width. Distance in each picture is varied between $\frac{1}{4}$, $\frac{1}{2}$, 1, $1\frac{1}{2}$, IW

$\frac{1}{4}$ IW

$\frac{1}{2}$ IW

1 IW

$1\frac{1}{2}$ IW

8. Lip Study Section #4



1 2 3 4

2.17



1 2 3 4

1.22



1 2 3 4

2.66



1 2 3 4

3.92

- For the morphed versions of the Upper lip variants the $\frac{1}{2}$ iris width was again preferred over $\frac{1}{4}$, 1 and $1\frac{1}{2}$ iris widths variants.
- The 1.22 score was also an obvious indication that this was the height and size preferred.
- Again the morphed pictures showed that the ideal $\frac{1}{2}$ IW was even more preferred at 1.22 than when tested with the line drawing representation of these variations where the line drawings received a 1.51 score.

Question 8:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
8	< .001 (273.76)	< .001 (94.08)	2

Next we studied the Ears:

Question 9:

The Ideal Distance that the ear extends from the face is one iris width. This distance was varied for each picture by $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 IW.

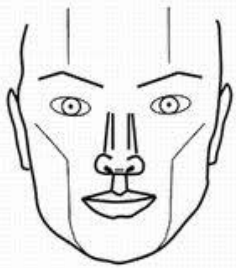
$\frac{1}{2}$ IW

1 IW

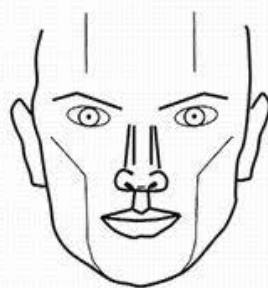
$1\frac{1}{2}$ IW

2 IW

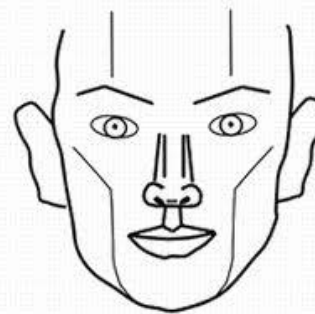
9. Ear Study Section #1



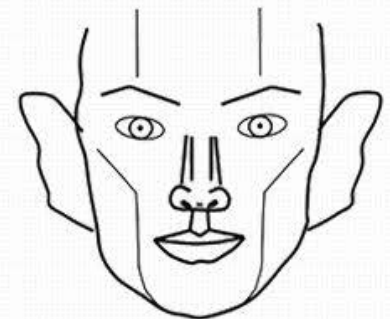
1 2 3 4



1 2 3 4



1 2 3 4



1 2 3 4

1.52

1.58

2.99

3.89

- The next 2 sections, section 9 and 10 looked at the ideal distance that the ear extends from the side of the head.
- Our hypothesis states that this ideal is 1 iris width.
- We varied this distance from $\frac{1}{2}$, 1, $1\frac{1}{2}$, to 2 iris widths.
- Interestingly, the 190 surveys showed no clear preference between $\frac{1}{2}$ and 1 iris width. In this area a smaller ear was preferred where the $\frac{1}{2}$ iris width distance that the ear extended from the side of the head was preferred slightly more than the 1 IW representation. We had predicted that 1 iris width would be more ideal. In a clinical setting, a dominant percentage of patients based on anecdotal experience agreed with the hypothesized ideal of 1 iris width. So this was surprising.
- What it showed was a preference for a smaller ear or ears that would take on less dominance when a face is presented to a viewer or interpreted by a viewer assessing beauty.
- So pinning the ears more is likely better than allowing more protrusion.

Question 9:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
9	< .001 (135.86)	.324 (0.97)	1 and 2

Ear Position Study Morphed Pictures:

Question 10:

The Ideal Distance that the ear extends from the face is one iris width. This distance was varied for each picture by $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 IW.

1 IW

$\frac{1}{2}$ IW

$1\frac{1}{2}$ IW

2 IW

10. Ear Study Section #2



1.47



1.72



2.88



3.87

- We again we did a morphed section analogous to the line drawing to create a real life representation of these faces to test as well.
- In this setting the one iris width distance that the ear extended from the side of the head was more preferred as predicted with a score of 1.47.
- What could be the reasoning for the different results between the line drawings and the morphed representations?
- The thought could be that the ear's position is more posterior in the Anterior Posterior dimension and 3 dimensionally which we alluded to earlier could be extremely impactful when one assesses beauty within the face.
- A more posterior position usually reflects less light analogous to the nasal tip versus nasal root or the plane of the nose at the pyriform aperture.
- Because less light is cast on the ear based on the AP dimension, it shows up less to the brain so to speak and is interpreted as being smaller and | or less dominant.
- Ultimately interpreting beauty in the face 3 dimensionally is much more important than a line drawing of the face.

Question 10:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
10	< .001 (145.06)	.0025 (9.14)	1

Primary Circles of Prominence Morphed Pictures:

Question 11:

Next we studied the relationship between the eyes and nose by varying the distance from the irises between 5 and 6 iris widths and from the iris to the nasal tip distance from 3 and 4 iris widths

The Ideal Distance would be 6 and 3 respectively. The pictures were varied in the following manner: 6/3, 5/4, 5/3, 6/4

6/3

5/4

5/3

6/4

11. Primary Circles Section #1



● 1 ● 2 ● 3 ● 4

• 2.11



● 1 ● 2 ● 3 ● 4

• 2.87



● 1 ● 2 ● 3 ● 4

• 1.22



● 1 ● 2 ● 3 ● 4

• 3.87

- Finally we wanted to test a basic premise that the ideal distance from iris to iris and horizontal level of iris to nasal tip is 6 and 3 iris widths respectively.
- In a recent paper just accepted for publication we kept the inter iris distance at 6 iris width to cut down on the variables being presented to participants.
- So in this study we wanted to test what we kept constant in previous studies to see if we were right in assuming that iris to iris is 6 iris widths.
- Hence in this section we varied the distance from iris to iris from 5 to 6 iris widths and the distance from the horizontal level of the iris to the nasal tip from 3 to 4 iris widths.
- We found support in previous studies that humans may prefer a longer face. This was in a paper that just recently got accepted for publication. Hence we choose to test a longer face as opposed to a shorter face by varying the horizontal level of the iris to nasal tip at either 3 or 4 iris widths.
- To our surprise the 5 IW inter iris distance coupled with the 3 IW horizontal level of the iris to nasal tip distance was found to be the most preferred and this seemed very clear based on the numbers.

Question 11:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
11	< .001 (356.42)	< .001 (102.40)	3

Primary Circles of Prominence Line Drawings:

Question 12:

The Ideal Distance would be 6 and 3 respectively. The pictures were varied in the following manner: 6/3, 5/4, 5/3, 6/4

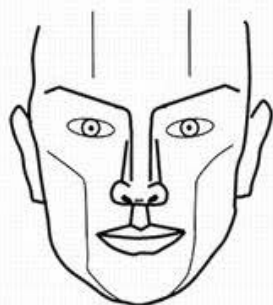
5/3

6/3

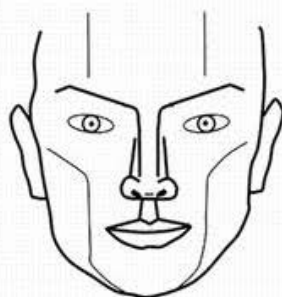
5/4

6/4

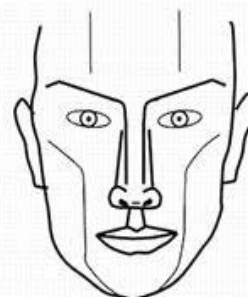
12. Primary Circles Section #2



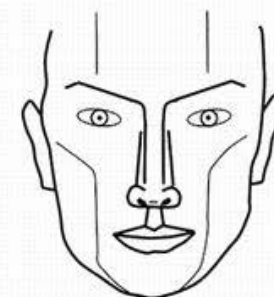
● 1 ● 2 ● 3 ● 4



● 1 ● 2 ● 3 ● 4



● 1 ● 2 ● 3 ● 4



● 1 ● 2 ● 3 ● 4

1.78

2.40

3.24

2.56

- This was also supported with the line drawings of this representation.
- So It seemed pretty clear that 5 iris widths was better than 6 iris widths for the distance from iris to iris.
- It also seemed clear that the 3 IW distance from horizontal level of the iris to nasal tip was more preferred than 4 IW when you compare 1.78 and 3.24 to 2.40 and 2.56.

Question 12:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
12	< .001 (41.12)	.012 (6.38)	1

Primary Circles of Prominence Line Drawings:

Question 13:

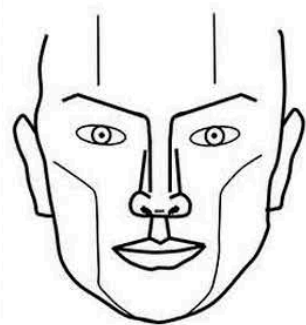
Because of the equivocal results between 5 and 6 iris widths inter iris widths that had the distance from horizontal level of the iris to nasal tip set at 3 iris widths. We wanted to study this same relationship but varying the distance between irises from 5, 5 1/2, 6 iris widths (55 surveys):

5 1/2

5

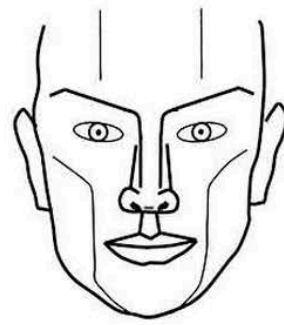
6

13. Primary Circles Section #3



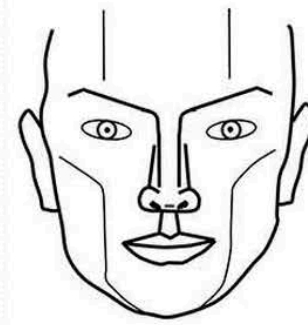
● 1 ● 2 ● 3

1.55



● 1 ● 2 ● 3

2.00



● 1 ● 2 ● 3

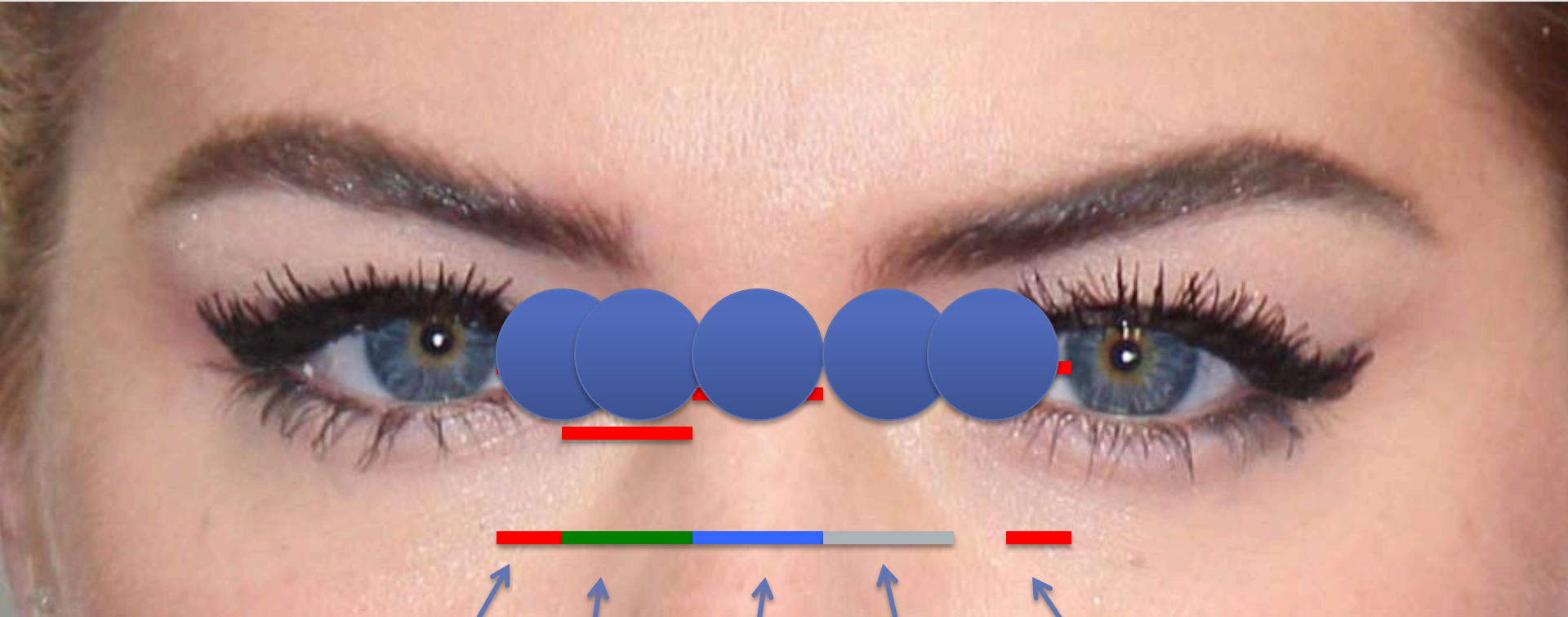
2.50

- Because of the equivocal results between 5 and 6 iris widths for the distance between the iris. We wanted to study this same relationship but varying the distance between irises from 5, 5 ½, 6 iris widths. The 5 ½ iris width distance between the irises seemed to dominate based on 55 surveys.
- This is unusual as we thought fairly strongly from previous research that 6 iris widths would be ideal.

Question 13:

Area	P-Value		Best Picture(s)
	H0 : All Equal	H0 : Top 2 Equal	
13	< .001 (15.13)	.0934 (2.81)	1 and 2

Primary Circles of Prominence



$\frac{1}{2}$ IW

1 IW

1 IW

1 IW

$\frac{1}{2}$ IW

- How Do I explain that?
- In this picture originally I believed that the distance that people wanted to be defined by an iris width or multiples of an iris width were:
 - 1. The distance from the medial limbus to the medial canthus, and
 - 2. The distance from the medial canthus to the edge of the dorsum
 - 3. Width of the dorsum
- All these add up to 5 IW
- 4. center of pupil to medial limbus makes up the rest of the 6 iris widths
- AS you can see there is a lot of overlap and we just found that the ideal distance is likely $5 \frac{1}{2}$ iris widths.
- How do we explain that
- Well I think the dominant structures to be defined are the
 - 1. width of the bridge which should be 1 IW
 - 2. the distance from to medial canthus to the edge of the dorsum which should be 1 IW
 - 3. white sclera from medial limbus to the lacrimal lake which should be $\frac{1}{2}$ IW
 - 4. because the lacrimal lake is not a dominant structure and because is it dark I believe that a $\frac{1}{4}$ iris width is all that it demands but still needs to be present
- The next drawings show how they add up to 4 IW, with pupil to medial limbus being another 1 IW, we are left with a $\frac{1}{2}$ IW, here
- This distance I believe is from the lacrimal lake and as I said it can be $\frac{1}{4}$ because it is not dominant
- Hence the distance can be ideally $5 \frac{1}{2}$ iris widths

Conclusion:

- The Circles of Prominence states that everything in the face has an ideal between zero and infinity.
- Because humans spend so much time looking at the iris, the size and shape of the iris dictates this ideal.
- This study looks specifically at parts of the eye, nose, mouth and ears and has found proof that this theory has some validity.
- The information in this study can markedly improve the way we help our patients with Plastic Surgery.