Facial Aesthetics
Concepts & Clinical Diagnosis
With the eyes of an artist and the mind of a scientist...
Facial Aesthetics
Concepts & Clinical Diagnosis

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Pioneer of modern craniofacial
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# Contents

<table>
<thead>
<tr>
<th>Preface</th>
<th>xv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedication</td>
<td>xvii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>xviii</td>
</tr>
</tbody>
</table>

## PART I CONCEPTS

### Chapter 1

**Facial Beauty**

- Definition of beauty and aesthetics
- Is beauty 'in the eye of the beholder'?
- The enigma of facial beauty: Why is one face seen as beautiful and another as unattractive? What guides and validates our judgement?
  - 'Ideal' proportions
  - Symmetry
  - Averageness
  - Facial neoteny
  - Sexual dimorphism (secondary sexual characteristics)
  - Heredity
  - Cultural influences on the perception of facial beauty
- Facial beauty: historical and philosophical perspectives
- Facial beauty: scientific perspectives
- Importance of facial beauty
  - Self-image and negative self-perception

### Chapter 2

**Facial Proportions: Classical Canons to Modern Craniofacial Anthropometry**

<table>
<thead>
<tr>
<th>Outsiders' perceptions</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severity of deformity</td>
<td>16</td>
</tr>
<tr>
<td>References</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Introduction</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancient Egypt</td>
<td>18</td>
</tr>
<tr>
<td>Ancient Greece</td>
<td>19</td>
</tr>
<tr>
<td>The Archaic Period</td>
<td>19</td>
</tr>
<tr>
<td>The Classical Period</td>
<td>21</td>
</tr>
<tr>
<td>The Roman conquest of Greece</td>
<td>25</td>
</tr>
<tr>
<td>Ancient Rome</td>
<td>26</td>
</tr>
<tr>
<td>The Renaissance</td>
<td>27</td>
</tr>
<tr>
<td>Leon Battista Alberti</td>
<td>28</td>
</tr>
<tr>
<td>Leonardo da Vinci</td>
<td>29</td>
</tr>
<tr>
<td>Albrecht Dürer</td>
<td>36</td>
</tr>
<tr>
<td>The Enlightenment and neoclassicism</td>
<td>38</td>
</tr>
<tr>
<td>Neoclassical canons of proportion</td>
<td>38</td>
</tr>
<tr>
<td>Craniotherapy</td>
<td>39</td>
</tr>
<tr>
<td>Twentieth century</td>
<td>41</td>
</tr>
<tr>
<td>Modern craniofacial anthropometry</td>
<td>41</td>
</tr>
<tr>
<td>Leslie Farkas – the father of modern craniofacial anthropometry</td>
<td>42</td>
</tr>
<tr>
<td>The golden proportion</td>
<td>43</td>
</tr>
<tr>
<td>The ongoing problem with research into the golden proportion</td>
<td>44</td>
</tr>
<tr>
<td>Conclusion</td>
<td>44</td>
</tr>
<tr>
<td>References</td>
<td>44</td>
</tr>
</tbody>
</table>
Facial Expression: Influence and Significance

Introduction
Importance of facial expressions
History of research into facial expressions
- The work of Duchenne
- The work of Darwin
- The work of Ekman
- The debate: Are facial expressions of emotion universal or culture-specific?

References

Psychological Ramifications of Facial Deformities

Introduction
Health and psychosocial well-being
Self-image
The effect of the response of others on those with facial deformities
- Teasing and bullying
- To treat or not to treat? The controversial debate
Body dysmorphic disorder: the delusion of deformity
- Body dysmorphic disorder
Conclusion
References

PART II CLINICAL DIAGNOSIS

SECTION 1 Patient Interview and Clinical Diagnostic Records

Introduction to Section 1
- Diagnosis
- Terms of direction, position and movement

Chapter 5
Patient Interview and Consultation

Introduction
Presenting complaint

Chapter 3
History of presenting complaint
Psychosocial history
Medical history
Danger signals and the ‘problem’ patient
References

Clinical Diagnostic Records, Natural Head Position and Craniofacial Anthropometry

Chapter 6
Introduction
- Clinical diagnostic records
- Radiographs
- Clinical photographs
- Study models
- Serial height measurement
- Three-dimensional hard and soft tissue imaging
- Natural head position
- The Frankfort Craniometric Agreement and the Frankfort Plane
- The unreliability of anatomical reference planes
- Natural head position: the key to diagnosis
- Choice of horizontal and vertical reference planes
- Orientation of the patient in natural head position
- The self-balance position
- The mirror position
- The aesthetic position (or ‘photographic position’ of the head)
- Clinical photography
- Equipment for digital photography and data storage
- Patient consent forms
- Background and lighting
- Facial views
- Intraoral views
- Craniofacial anthropometry
- Anthropometric craniofacial surface landmarks
References

Cephalometry and Cephalometric Analysis

Chapter 7
Introduction
- Cephalometric landmarks and planes of reference
- Landmarks, lines, planes and volumes
- Hard tissue lateral cephalometric (skeletal) landmarks
- Hard tissue lateral cephalometric (dental) landmarks
- Soft tissue lateral cephalometric landmarks
Contents

Cephalometric planes of reference 92
   Hard tissue lateral cephalometric reference planes
   Soft tissue lateral cephalometric reference planes
   Posteroanterior cephalometric radiography
   Hard tissue posteroanterior cephalometric landmarks
   Hard tissue posteroanterior cephalometric reference planes
   Cephalometric analysis and geometric principles
   Description of dentofacial deformities

   Sagittal skeletal relationships 100
      Sagittal positional relationships
      Size relationships of maxilla and mandible
   Sagittal dentoalveolar relationships 110
      Inclination of the maxillary incisors
      Sagittal position of the maxillary incisors
      Inclination of the mandibular incisors
      Sagittal position of the mandibular incisors
      Inclination of maxillary to mandibular incisors
   Vertical skeletal relationships 115
      Convergence of horizontal facial planes (Sassouni analysis)
      Anterior and posterior face height
      Linear cephalometric measurements and normative values
      Angular cephalometric measurements and normative values
   Vertical dentoalveolar relationships 121
      Inclination of the occlusal plane
      Anterior maxillary dental height
      Posterior maxillary dental height
      Anterior mandibular dental height
      Posterior mandibular dental height
   Transverse skeletal relationships 122
   References 122

SECTION 2 Facial Aesthetic Analysis: Facial Type, Proportions and Symmetry

Introduction to Section 2 123
   ‘Rules’ versus ‘guidelines’ in facial aesthetic evaluation
   Clinical inspection – the ‘process’
   Clinical inspection – the ‘education of the eye’

The diagnostic process – clinical evaluation 124
   Qualitative evaluation
   Quantitative evaluation and analysis

Clinical evaluation – the sequence 126
   References 126

Chapter 8

Facial Type 127
   Introduction 127
   The fictional conception of the ‘normal’ 127
   Proportion indices 127
   Head type 129
   Cephalic index 129
      Ethnic differences 130
      Ethnic differences in white individuals 130
   Head circumference 130
      Ethnic differences 130
   Facial type: frontal view (norma frontalis) 130
   Facial shape 130
      Facial height-to-width ratio/proportion 131
   Facial index 131
   Facial type: profile view (norma lateralis) 132
   Facial divergence 132
   Sagittal facial profile contour 134
   Vertical facial profile form 137
      Vertical facial growth pattern and hyperdivergent facial type 137
      Horizontal facial growth pattern and hypodivergent facial type 138
      Mandibular plane angle (clinical) 138
      Mandibular plane angle (cephalometric) 139
      Gonial angle (Ar-Go-Me) 139
      Convergence of horizontal facial planes (Sassouni analysis) 140
      Facial height to horizontal facial depth ratio (cephalometric) 140
      Facial growth axes (cephalometric) 141
   Facial curves and curvilinear relationships 141
   Curvilinear relationships – frontal and profile views 142
      Angularity of facial contour lines 142
      Facial profile curves and ‘S-shaped’ curvilinear considerations 142
   Contour defects 143
      Sexual variation: the main differences between male and female faces 144
      ‘Ethnic’ variation: considerations in facial aesthetic evaluation 145
      Historical background 145
      Considerations in facial aesthetic evaluation 145
      Facial ageing 146
## Contents

### Chapter 12
**The Orbital Region**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>199</td>
</tr>
<tr>
<td>The eyes</td>
<td>199</td>
</tr>
<tr>
<td>Eyebrows</td>
<td>200</td>
</tr>
<tr>
<td><strong>Terminology</strong></td>
<td>200</td>
</tr>
<tr>
<td><strong>Anatomy</strong></td>
<td>200</td>
</tr>
<tr>
<td>Clinical evaluation</td>
<td>202</td>
</tr>
<tr>
<td>Eyebrow position and contour</td>
<td>202</td>
</tr>
<tr>
<td>Orientation of palpebral fissure</td>
<td>202</td>
</tr>
<tr>
<td>Eyelids (palpebrae)</td>
<td>203</td>
</tr>
<tr>
<td>Eye width and interocular dimensions</td>
<td>205</td>
</tr>
<tr>
<td>Proportional relationships of the orbital region</td>
<td>205</td>
</tr>
<tr>
<td>Relationship of bony orbit and globe</td>
<td>206</td>
</tr>
<tr>
<td>Symmetry</td>
<td>206</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>206</td>
</tr>
</tbody>
</table>

### Chapter 13
**The Ears**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>208</td>
</tr>
<tr>
<td><strong>Terminology</strong></td>
<td>208</td>
</tr>
<tr>
<td><strong>Anatomy</strong></td>
<td>208</td>
</tr>
<tr>
<td>Clinical evaluation</td>
<td>209</td>
</tr>
<tr>
<td>Ear position</td>
<td>210</td>
</tr>
<tr>
<td>Ear size and proportions</td>
<td>210</td>
</tr>
<tr>
<td>Ear axis</td>
<td>211</td>
</tr>
<tr>
<td>Ear protrusion (lateral projection)</td>
<td>211</td>
</tr>
<tr>
<td>Ear symmetry</td>
<td>213</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>213</td>
</tr>
</tbody>
</table>

### Chapter 14
**The Nose**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>214</td>
</tr>
<tr>
<td><strong>Terminology</strong></td>
<td>214</td>
</tr>
<tr>
<td><strong>Anatomy</strong></td>
<td>216</td>
</tr>
<tr>
<td>Soft tissue features of the external nose</td>
<td>217</td>
</tr>
<tr>
<td>Skin of the external nose</td>
<td>217</td>
</tr>
<tr>
<td>Bony skeleton of the external nose</td>
<td>217</td>
</tr>
<tr>
<td>Cartilaginous skeleton of the external nose</td>
<td>218</td>
</tr>
<tr>
<td><strong>Nasal type, topography and the subunit principle</strong></td>
<td>219</td>
</tr>
<tr>
<td>Classification of nasal type</td>
<td>219</td>
</tr>
<tr>
<td>Topographic nasal landmarks and nomenclature</td>
<td>220</td>
</tr>
<tr>
<td>Nasal aesthetic subunits</td>
<td>222</td>
</tr>
<tr>
<td><strong>Clinical evaluation</strong></td>
<td>222</td>
</tr>
<tr>
<td>Frontal evaluation</td>
<td>222</td>
</tr>
<tr>
<td>Profile evaluation</td>
<td>224</td>
</tr>
<tr>
<td>Basal evaluation</td>
<td>233</td>
</tr>
<tr>
<td>Relative nasal relationships – evaluation</td>
<td>234</td>
</tr>
<tr>
<td><strong>Normative values for nasal dimensions</strong></td>
<td>235</td>
</tr>
<tr>
<td>Nasal function</td>
<td>235</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>236</td>
</tr>
</tbody>
</table>

### Chapter 15
**The Malar Region**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>238</td>
</tr>
<tr>
<td><strong>Terminology</strong></td>
<td>238</td>
</tr>
<tr>
<td><strong>Anatomy</strong></td>
<td>239</td>
</tr>
<tr>
<td>Clinical evaluation</td>
<td>239</td>
</tr>
<tr>
<td>Bizygomatic width</td>
<td>239</td>
</tr>
<tr>
<td>Malar position</td>
<td>241</td>
</tr>
<tr>
<td>Height of malar contour</td>
<td>242</td>
</tr>
<tr>
<td>Malar projection and sagittal contour</td>
<td>242</td>
</tr>
<tr>
<td>Area of maximal malar projection</td>
<td>242</td>
</tr>
<tr>
<td>Principles in planning the correction of malar deficiency</td>
<td>244</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>244</td>
</tr>
</tbody>
</table>

### Chapter 16
**The Maxilla and Midface**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>245</td>
</tr>
<tr>
<td><strong>Terminology</strong></td>
<td>245</td>
</tr>
<tr>
<td>Terms of jaw position in the sagittal plane</td>
<td>246</td>
</tr>
<tr>
<td>Terms of maxillary position in the vertical plane</td>
<td>246</td>
</tr>
<tr>
<td>Terms of jaw size</td>
<td>246</td>
</tr>
<tr>
<td>Terms of maxillary bodily movement in the three planes of space</td>
<td>246</td>
</tr>
<tr>
<td>Terms of maxillary rotation around the three axes of rotation</td>
<td>246</td>
</tr>
<tr>
<td><strong>Anatomy</strong></td>
<td>247</td>
</tr>
<tr>
<td><strong>Clinical evaluation</strong></td>
<td>248</td>
</tr>
<tr>
<td>Sagittal midfacial-maxillary evaluation</td>
<td>248</td>
</tr>
<tr>
<td>Vertical maxillary evaluation</td>
<td>254</td>
</tr>
<tr>
<td>Transverse maxillary evaluation</td>
<td>255</td>
</tr>
<tr>
<td><strong>Maxillary deficiency</strong></td>
<td>258</td>
</tr>
<tr>
<td>Sagittal maxillary deficiency</td>
<td>258</td>
</tr>
<tr>
<td>Vertical maxillary deficiency</td>
<td>259</td>
</tr>
<tr>
<td>Transverse maxillary deficiency</td>
<td>260</td>
</tr>
<tr>
<td>Principles in planning the correction of maxillary deficiency</td>
<td>261</td>
</tr>
<tr>
<td><strong>Maxillary excess</strong></td>
<td>262</td>
</tr>
<tr>
<td>Sagittal maxillary excess</td>
<td>262</td>
</tr>
<tr>
<td>Vertical maxillary excess</td>
<td>263</td>
</tr>
</tbody>
</table>
### Lower Facial Analysis 268

**Introduction** 268

**Chapter 17**

**The Lips** 269

**Introduction** 269

**Anatomy**
- Embryology 269
- Anatomy 269
- Ageing 270

**Terminology**

**Clinical evaluation**
- Lip lines 271
- Lip activity (function) 272
- Lip morphology (form) 273
- Lip posture 280
- Lip prominence 281

**References** 286

### Chapter 18

**Mentolabial (Labiomental) Fold** 288

**Introduction** 288

**Mentolabial fold (sulcus) depth** 288

**Mentolabial angle** 288

**Vertical position of the mentolabial fold** 291

**Mentolabial fold morphology**
- Advantages of mandibular advancement surgery over isolated genioplasty 291
- Influence of mentolabial fold morphology on management of chin deformities 292
- Influence of vector of bony chin movement on mentolabial fold morphology 292
- Influence of lower anterior face height on mentolabial fold morphology 292

**References** 294

### Chapter 19

**The Mandible** 295

**Terminology** 295

**Anatomy, morphology and size** 295

### Chapter 20

**The Chin** 312

**Introduction** 312

**Anatomy** 312

**Terminology** 313

**Classification of chin deformities** 318

**Clinical evaluation** 321

**Sagittal evaluation and chin projection**
- Sagittal position of soft tissue chin 322
- Sagittal position of hard tissue (skeletal) pogonion 326
- Indirect morphological influences on sagittal chin projection 328
- Soft tissue chin pad 328
- Mentolabial fold and chin pad morphology 329
- Dynamic chin pad evaluation 329
- Mentalis muscle – anatomy, activity and significance 330

**Vertical chin height**
- Proportional relationships 332
- Mandibular anterior dental height 332

**Transverse chin width**

**References** 333

### Chapter 21

**Submental-Cervical Region** 335

**Introduction** 335
### Contents

**Anatomy**  
Terminology  
Aetiology

- Aetiology of poor submental-cervical contour

**Clinical evaluation**  
  - Skeletal pattern (jaw relationship)
  - Morphology of the submental soft tissues
  - Submental-facial angle
  - Submental length
  - Submental-neck (submental-cervical) angle
  - Submental-sternomastoid (SM-SM) angle
  - Submental soft tissue thickness
  - Hyoid bone position and submental-cervical aesthetics

**Relative submental projection and aesthetics**

### References

---

**SECTION 4** Smile and Dentogingival Aesthetic Analysis

**Introduction to Section 4**

---

**Chapter 22** Dental-Occlusal Relationships: Terminology, Description and Classification

**Introduction**

**Terminology**

- Terms of description of tooth form
- Terms of direction in dental nomenclature
- Terms of tooth position in the three planes of space
- Terms of bodily tooth movement in the three planes of space
- Terms of tooth rotation around the three axes of rotation

**Dental occlusion**

- The concept of ‘ideal’ occlusion
- Curves of the occlusion
- Aims of treatment and the ‘six keys’ to ‘ideal’ occlusion

**Classification of dental-occlusal relationships**

- Incisor relationships
- Buccal segment relationships (canine and molar relationships)

**The term ‘Class’ and classification**

**The aetiology of malocclusion**

- Skeletal factors
- Soft tissue factors
- Local factors
- Habits

**Oral health**

- Dental condition
- Oral hygiene and gingival/periodontal condition
- Oral mucosa

**Occlusal function**

- Dynamic occlusal function
- Temporomandibular joint function

**References**

---

**Chapter 23** Smile Aesthetics

**Introduction**

- Importance of the smile in facial aesthetics
- Types of smile

**The generation of a smile**

**Clinical evaluation**

**Lip aesthetics**

**Lip lines**

**Upper lip-maxillary incisor relationship**

**Incisor exposure and phonetic analysis**

**Incisor exposure and anterior occlusal guidance**

**Smile symmetry**

**Dynamic upper lip curvature**

**Orientation of the transverse occlusal plane**

**Orientation of the sagittal occlusal plane**

**Smile curvature (smile arc)**

**Dental midlines**

**Buccal corridors (negative space)**

**Smile aesthetics in profile view**

**References**

---

**Chapter 24** Dentogingival Aesthetics

**Introduction**

**Anatomy**

- The concept of ‘biological width’

**Clinical evaluation**

**Tooth shape**

- Theories of ‘ideal’ tooth shape

**Tooth size**

- Width-to-height ratio of maxillary central incisor crown
- Seventh key and dental occlusion
- Tooth size analysis

**Tooth proportions**

**Tooth symmetry**

- The unilaterally peg-shaped or congenitally absent maxillary lateral incisor

**Arch form**

**References**
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxillary incisor axial angulations</td>
<td>395</td>
<td>Arch shade progression</td>
<td>402</td>
</tr>
<tr>
<td>Gradation (front-to-back progression)</td>
<td>396</td>
<td>Tooth shade value contrast with skin colour</td>
<td>402</td>
</tr>
<tr>
<td>Gingival aesthetics</td>
<td>398</td>
<td>Age changes</td>
<td>402</td>
</tr>
<tr>
<td>Gingival colour, texture and biotype</td>
<td>398</td>
<td>Clinical shade selection</td>
<td>402</td>
</tr>
<tr>
<td>Gingival level</td>
<td>398</td>
<td>References</td>
<td>403</td>
</tr>
<tr>
<td>Gingival contour</td>
<td>399</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contacts, connectors and embrasures</td>
<td>400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tooth colour</td>
<td>402</td>
<td>Index</td>
<td>405</td>
</tr>
<tr>
<td>Description of tooth colour</td>
<td>402</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Everything is in the face …

Cicero (106–43 BC), *De Oratore*, Volume III, 55 BC

Nowhere in medicine is the fusion of art and science more important than in the clinical assessment of facial aesthetics. The greatest artists of the past were also the master scientists of their age. Much of modern scientific methodology has grown out of the notably enquiring minds and investigations of such individuals. The fusion of art and science made extensive progress in the Renaissance, with Leonardo da Vinci emerging as the notable example of the harmonic relationship between science and art. Leonardo did not consider art and science as separate entities, but felt that they were inextricably linked. It was his conviction that the artist had to employ scientific methodology and the scientist the tools and observational ability of the artist.

"The human features and countenance, although composed of but some ten parts or little more, are so fashioned that among so many thousands of men there are no two in existence who cannot be distinguished from one another."

Pliny the Elder (AD 23–79), *Natural History*, Volume VII

Recognition of the range of normal morphological features of the craniofacial complex is important. A mild or even moderate deviation of any facial parameter from the ‘norm’ is simply part of individual biological variability – it is what makes each face unique. However, severe deviations from the norm may warrant treatment, due to both a patient’s aesthetic concern, their want to look ‘normal’ and the often-associated functional problems.

"Neither natural ability without instruction nor instruction without natural ability can make the perfect artist."

Vitruvius (first century BC), *De Architectura* (‘On Architecture’), Chapter 1: The Education of the Architect
Throughout medicine, clinical diagnosis remains the most important step in the management of patients. Technical skill without diagnostic ability is fruitless. The modern fixation on techniques and technical modalities cannot afford to be at the cost of reduced emphasis on diagnostic ability. Just as a physician equipped with more and more drugs cannot treat a patient unless the original diagnosis is correct, a clinician involved in the management of facial deformities cannot provide the correct treatment unless the diagnostic process is logical and the diagnosis accurate.

The purpose of this book is to present and provide practical order to the encyclopaedic information available from the arts and the sciences in order to set the foundations of clinical diagnosis in facial aesthetics and the management of facial deformities. As such, the book is divided into two parts:

- **Part I – Concepts**: The background knowledge required for a well-informed clinician is covered in Chapters 1–4.
- **Part II – Clinical Diagnosis**: The ability and discipline to conduct a systematic (methodical), accurate and thorough clinical evaluation constitutes the most difficult step in the management of patients with facial deformities. Patient evaluation required for clinical diagnosis is covered in four sections, divided into Chapters 5–24.

The clinician should develop the ability to detect details that are not readily apparent to the untrained eye. The only way to master clinical evaluation is by judicious and continuous practice; analysing normal faces, beautiful faces, patients with dentofacial and craniofacial deformities, comparison of patients before and after treatment. If treatment results are good, why are they good? If the results are not as good as expected, why?

Only having mastered clinical diagnosis will the clinician be able to apply and develop the technical expertise and surgical finesse required to provide patients with the highest possible level of care.
For my family:

My mother Nasrin, my father Bahram and my brother Jamshid – for your unconditional love, unwavering support and wisdom – words cannot express how much I love you.

My darling wife and soulmate Hengameh – you are quite simply the love of my life.
I would like to thank the museums, libraries, archives and medical journals for permission to reproduce and redraw some of the figures in this book. Individual credits are provided in the respective figure legends throughout the book.

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PART I
CONCEPTS
Chapter 1  Facial Beauty

‘Beauty itself doth of itself persuade
The eyes of men without an orator.’

William Shakespeare (1564–1616), *The Rape of Lucrece* (1594)

**Definition of beauty and aesthetics**

‘Beauty as we feel it is something indescribable:
what it is or what it means can never be said.’

George Santayana (1863–1952), *The Sense of Beauty* (1896)

It is almost impossible to clearly and accurately define beauty. Definitions often do not and cannot elucidate the full significance of the concept of beauty. Beauty may be defined as ‘a combination of qualities that give pleasure to the senses or to the mind.’ The *Oxford English Dictionary* defines beauty as:

‘A combination of qualities, such as shape, colour, or form, which pleases the aesthetic senses, especially the sight.’

The Renaissance artist and thinker Leon Battista Alberti (1404–72) defined beauty as:

‘The summation of the parts working together in such a way that nothing needs to be added, taken away or altered.’

The various definitions of beauty and facial beauty all essentially describe the assemblage of graceful features that please the eye and mind of an observer, yet the definitions are philosophical, debatable and non-specific. Three variables exist in the definitions of beauty:

- **The graceful features**: The human face is comprised of a number of ‘features’, e.g. the eyes, nose, lips, etc., with a wide array of shapes, sizes, relative positions and colours.
- **Their assemblage**: Which components of which features and in which combinations result in a beautiful face?
- **The observer**: Does each observer see and sense the same beauty?

The number of variables makes it clear that the concept of beauty is difficult to explain with complete clarity. In *Dreams of a Final Theory: The Search for the Fundamental Laws of Nature* (1993), the Nobel prize-winning theoretical physicist Steven Weinberg eloquently writes:

‘I will not try to define beauty, any more than I would try to define love or fear. You do not define these things; you know them when you feel them.’

**Aesthetics** is the study of beauty and, to a lesser extent, its opposite, the ugly. The eighteenth-century German philosopher Alexander Baumgarten (1714–62) established aesthetics as a distinct field of philosophy with the publication of his treatise *Aesthetica* (c. 1750) (Figure 1.1). Baumgarten re-coined the term ‘aesthetics’ to mean ‘taste’ or ‘sense’ of beauty, thereby inventing its modern usage; the term ‘aesthetics’ is derived from the Greek word for *sensory perception* (aisthētikos). Baumgarten defined aesthetics as ‘the science of sensual cognition.’ In effect, Baumgarten separated the concept of beauty from its ancient link related to ‘goodness’. Baumgarten defined ‘taste’ as the ability
to judge according to the senses, instead of according to the intellect; such a judgement of taste is based on feelings of pleasure or displeasure.

**Is beauty ‘in the eye of the beholder’?**

‘Look in mine eye-balls, there thy beauty lies.’

William Shakespeare (1564–1616), *Venus and Adonis* (1593)

A longstanding debate revolves round the question of the subjectivity-objectivity of beauty. Beauty may be considered a mystifying quality that some faces have, or may be ‘in the eye of the beholder’. Does a face, which one person finds ‘beautiful’, appeal to another person in the same way? Is the ‘beauty’ of a face due to some objective quality inherent in the face or is it subjectively determined by each individual with their sensory enjoyment depending on their own ideas, feelings and judgements, which themselves have a direct relation to sensory enjoyment?

The idea that one individual’s aesthetic sensibilities may differ from another’s has a long tradition. Plato (428–348 BC) alluded to this concept in his *Symposium*, where he described ‘Beholding beauty with the eye of the mind.’ In the third century BC, the Greek poet Theocritus wrote: ‘Beauty is not judged objectively, but according to the beholder’s estimation’ (*The Idylls*). Shakespeare (Figure 1.2) reiterated this view in *Love’s Labour’s
Chapter 1  Facial Beauty

Therefore, if a beautiful face ‘pleases universally’ then some part of our ‘sense’ perception must be common to all men and women. After all, when we describe a face as beautiful, we do not merely mean that it pleases us. We are describing the face, not our judgement. We will often point to features of the face to back up our statement. A paradox therefore emerges. Obviously one cannot make a judgement regarding the beauty of a face one has never encountered. Therefore, facial beauty is related to some quality of the observed face, which may be ‘universally’ accepted. However, each individual’s own ideas and feelings, like a conditioned response, also have a direct relationship to their judgement, hence the difference in the extent of rating a face as beautiful depending on the ‘eye of the beholder’.

It is important to bear in mind that any theory that cannot be directly and physically tested remains a philosophy, not a science. Therefore, the answer to the objectivity-subjectivity debate of facial beauty remains unanswered. Perhaps beauty as a concept can be perceived but not fully explained. This debate will no doubt continue.

Lost (1595), saying, ‘Beauty is bought by judgement of the eye’.¹⁰ In his Essays, Literary, Moral and Political (1742) the Scottish philosopher David Hume wrote: ‘Beauty, properly speaking, lies … in the sentiment or taste of the reader.’¹¹ In Jane Eyre (1847) Charlotte Brontë wrote: ‘Most true is it that ‘beauty is in the eye of the gazer.’¹² Yet the idea that beauty is according to the observer’s estimation became an adage when the writer Margaret Wolfe Hungerford in Molly Bawn (1878) famously coined the expression: ‘Beauty is in the eye of the beholder.’¹³ In The Prince of India (1893), the novelist Lew Wallace repeated the adage as: ‘Beauty is altogether in the eye of the beholder.’¹⁴

The question to consider is one that remains difficult to answer: Is the origin of the human perception of facial beauty dependent on each individual’s own sense perception, or is this ‘sense’ common to all men and women? The above quotations, and their respective philosophical ideology, assume that the ‘sense’ is subjective to each individual. However, the eighteenth-century philosopher Francis Hutcheson (1694–1746) (Figure 1.3) said:

‘Aesthetic judgements are perceptual and take their authority from a sense that is common to all who make them,’¹⁵

and he went on to say that

‘The origin of our perceptions of beauty and harmony is justly called a “sense” because it involves no intellectual element, no reflection on principles and causes.’¹⁶

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There is a plethora of evidence in the psychology literature which negates the statement that ‘beauty is in the eye of the beholder’ and supports the view that judgements of attractiveness are universal.¹⁶ Yet, most individuals will still admit that judgements of attractiveness differ. There is perhaps an explanation that may have been overlooked: different individuals will find different types of face ‘very attractive’, e.g. one individual may find a certain actor to be extremely beautiful whereas another may find them rather ‘average’. The point is that neither will find the actor ‘deformed’. It is only with faces within normal limits that arguments occur as to the level of attractiveness, and such judgements may often also be affected by factors other than beauty, e.g. the actor’s talent or charisma. In other words, for faces with features that are ‘within normal limits’, beauty may be, to some extent, ‘in the eye of the beholder’. Yet, if a patient with a facial deformity is observed, almost all individuals will agree that the face is deformed and not physically beautiful, i.e. where deformity is concerned, beauty is no longer in the eye of the beholder.

Note

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The enigma of facial beauty

Why is one face seen as beautiful and another as unattractive?

What guides and validates our judgement?

‘Some day, I doubt not, we shall arrive at an understanding of the evolution of the aesthetic faculty; but all the understanding in the world will neither increase nor diminish the force of the intuition that this is beautiful and that is ugly.’ [emphasis added]

Thomas Henry Huxley (1825–95) Evolution and Ethics (1893)¹⁷

Figure 1.3  Francis Hutcheson.
The ‘intuition’ to which the British biologist Huxley is referring is the human ability to understand something *instinctively*, a thing that one knows from instinctive feeling, without the need for conscious reasoning. It is therefore possible that the human perception of beauty and the preference for one face over another is intuitive, for which there is no one clear explanation.

There are a variety of qualities and characteristics of a human face, which may be responsible for it being perceived as beautiful. These include ‘ideal’ proportions, bilateral symmetry, averageness, youthfulness and sexual dimorphism. Hereditary factors and cultural influences also play an important part. Any or all may have an effect on the human conception of the beautiful, but none fully explains why one face is seen as beautiful and another as unattractive. The true answer seems destined to remain an enigma.

Nevertheless, a number of explanations and hypotheses have been used in the attempt to explain why a face may be perceived as beautiful and another as unattractive:

**‘Ideal’ proportions**

The concept that ‘ideal’ proportions are the secret of beauty is perhaps the oldest idea regarding the nature of beauty. This subject will be discussed in detail in Chapter 2.

**Symmetry**

Facial symmetry also seems to be an important aspect of facial beauty, although mild asymmetry is essentially normal. In fact, image manipulation techniques used to create perfectly symmetrical facial images of the same individual have found the original to be more attractive than the created perfectly symmetrical image (Figure 1.4), i.e. ‘normal’ asymmetry is preferred to perfect bilateral facial symmetry. Rhodes et al. found that symmetry was an important factor in facial attractiveness, but ‘averageness’ appears to be more important. Rubenstein et al. concurred that no matter how symmetrical a face, ‘averageness is the only characteristic discovered to date which is both necessary and sufficient to ensure facial attractiveness … without a facial configuration close to the average of the population, a face will not be attractive.’

**Averageness**

Studies in the late 1800s by Sir Francis Galton (1822–1911) (Figure 1.5), cousin of Charles Darwin, accidentally found evidence to support what came to be known as the *averageness hypothesis* of facial beauty. Galton was in fact trying to find *typical faces*, e.g. the typical ‘criminal face’. He created composite faces by overlaying multiple images of prisoners and criminals or a variety of other subjects onto a photographic plate. Not only was Galton’s original theory of ‘typical faces’ incorrect, but he found that the composite faces became more attractive than any of the individual faces (Figure 1.6). Further research has verified that composite facial photographs gain higher attractiveness ratings than their individual facial photographs. However, Perrett et al. have shown that attractive composite faces were made more attractive by exaggerating the shape differences from the sample mean. Therefore, an average face shape is attractive but may not be optimally attractive.
Facial beauty

The term koinophilia (‘love of the average’), derived from the Greek koinos, (‘common’ or ‘average’), and philos (‘love’), means when seeking a mate, sexual creatures prefer that mate to have a preponderance of average or common physical features, i.e. not to exhibit any unusual or peculiar features. The argument is that natural selection leads to beneficial physical features becoming increasingly more common with each generation, while the disadvantageous features become increasingly rare. Thus, sexual creatures wishing to mate with a ‘fit’ partner (in evolutionary terms, ‘fit’ means ‘best able to adapt to the environment’, and thereby have a better chance of bearing healthy offspring), would be expected to avoid individuals with unusual features, while being attracted to those displaying ‘average’ features. This mating strategy was first referred to as koinophilia by the biologist Johan Koeslag. In humans, this concept may be linked to the ‘averageness hypothesis’. The term ‘averageness’ implies proximity to the population mean, i.e. the use of normative data from population samples are often used by orthodontists and facial aesthetic surgeons, in the form of cephalometric and anthropometric data, for diagnosis and treatment planning.

Facial neoteny

The term neoteny refers to the retention of juvenile features in the adult, alternatively termed paedomorphosis. The retention of neotenous facial features in adult humans is also termed baby-faceness. Child-like facial features, such as relatively larger eyes, small nose, full lips and a round face have been found to correlate with attractiveness, particularly for women. This may be due to the natural human tendency to nurture a baby. Nevertheless, there is also evidence that women find a combination of masculine and babyface (more feminine) features in men attractive, and that their preference for more masculine features increases during the menstruation phase most likely to result in successful conception.

Sexual dimorphism (secondary sexual characteristics)

Male and female faces diverge at puberty. In males, testosterone stimulates the growth of the jaws, cheekbones, brow ridges and facial hair. In females, growth of these regions is inhibited by oestrogen, which may also increase lip size. As sexual dimorphism increases at puberty, sexually dimorphic traits signal sexual maturity and reproductive potential. Gillian Rhodes, one of the leading researchers in the field of psychology in relation to facial attractiveness, explains that current evidence suggests that femininity is attractive in female faces and is preferred to averageness; masculinity is also attractive in male faces, although the effect is smaller than for female faces. She concludes that the ‘evolutionary psychology of facial attractiveness is just beginning!’

Heredity

The human perception of facial beauty may have its foundation in our heredity, environment or perhaps both. Langlois et al. found that infants as young as 3 months of age have the ability to distinguish between attractive and unattractive faces, showing signs of preference for the former. It is unlikely that by 3 months of age an infant will have been subjected to or responded to any cultural or environmental influences, therefore this is evidence to support a genetic theory. The evolutionary basis is that facial beauty, including facial symmetry and secondary sexual characteristics, is a requirement for sexual selection, leading to improved chances for successful reproduction.

Cultural influences on the perception of facial beauty

‘Ask a toad what is beauty? … he will answer that it is a female with two great round eyes coming out of her little head, a large flat mouth, a yellow belly and a brown back.’

Voltaire (1694–1778), ‘Beauty’ (1764)

The physician Sinuhe (c. twentieth century BC) informs us that in ancient Egypt women shaved their heads as a sign of...
Figure 1.6 (A and B) Galton created composite faces by overlaying multiple images of groups of individuals onto a photographic plate in the attempt to find ‘typical faces’. Not only was Galton’s original theory of ‘typical faces’ incorrect, but he found that the composite faces became more attractive than any of the individual faces.