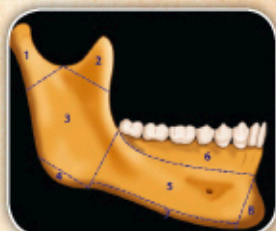
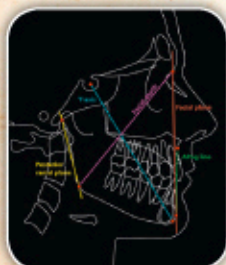
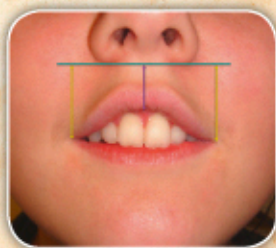
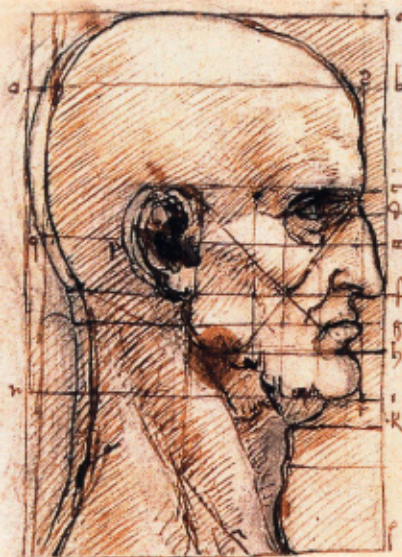
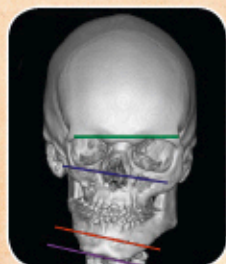


FARHAD B. NAINI

FACIAL AESTHETICS

CONCEPTS & CLINICAL DIAGNOSIS



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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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This edition first published 2011 by Blackwell Publishing Ltd.
© 2011 Farhad B. Naini

Blackwell Publishing was acquired by John Wiley & Sons in February 2007. Blackwell's publishing program has been merged with Wiley's global Scientific, Technical and Medical business to form Wiley-Blackwell.

Registered office: John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex,
PO19 8SQ, UK

Editorial offices: 9600 Garsington Road, Oxford, OX4 2DQ, UK
The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, UK
2121 State Avenue, Ames, Iowa 50014-8300, USA

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Library of Congress Cataloging-in-Publication Data

Naini, Farhad B.

Facial aesthetics : concepts and clinical diagnosis / Farhad B. Naini ; illustrator, Hengameh B. Naini.
p. ; cm.

Includes bibliographical references and index.

ISBN 978-1-4051-8192-1 (hardcover : alk. paper) 1. Face—Surgery.

2. Surgery, Plastic. 3. Surgery—Aesthetic aspects. 4. Dentistry—Aesthetic aspects. I. Title.

[DNLM: 1. Face—surgery. 2. Beauty. 3. Craniofacial Abnormalities—diagnosis.

4. Esthetics, Dental. 5. Reconstructive Surgical Procedures—methods. WE 705]

RD523.N35 2011

617.5'20592—dc22

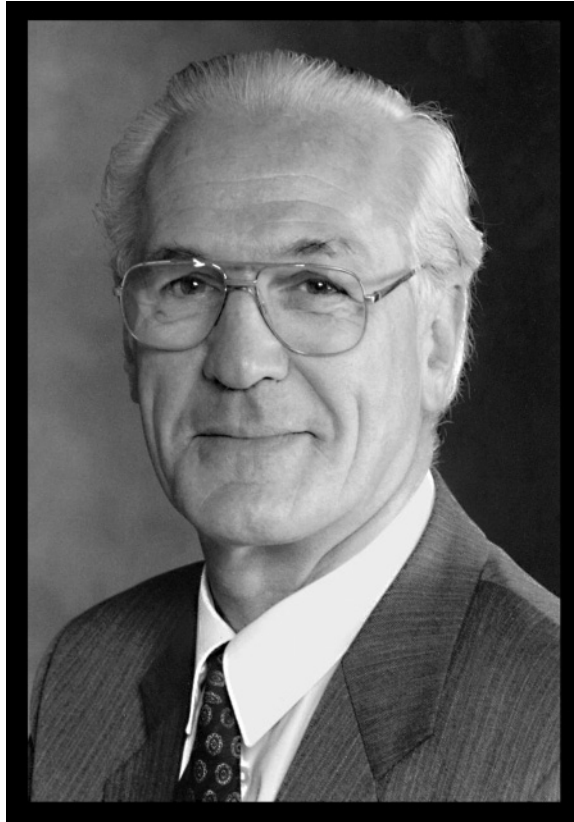
2010042198

A catalogue record for this book is available from the British Library.

This book is published in the following electronic formats: ePDF 9781444391022; ePub: 9781444391039
Set in 10/12.5 pt Times by Aptara® Inc., New Delhi, India



To the memory of
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(1915–2008)
Clinician and physical anthropologist
Pioneer of modern craniofacial
anthropometry



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Craniofacial Society

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Preface

‘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 Scales of Facial Aesthetics

The separation of art and science has been a relatively recent phenomenon in medicine. In fact, at the highest intellectual levels, the humanities and the sciences merge, forming a symbiotic relationship. Science and art are as closely bound together as the heart and the mind; the mind without the heart cannot survive, and the heart without the mind is of no use.

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.

A large, abstract blue graphic in the top right corner of the page, consisting of several overlapping, curved shapes that create a sense of depth and movement.

Dedication

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.

Acknowledgements

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My special thanks are due to the Librarians and staff of the Royal Library for their kindness in allowing me to select the illustrations from the incomparable collection of Leonardo da Vinci's drawings from The Royal Collection at Windsor Castle, by Gracious Permission of Her Majesty Queen Elizabeth II.

I gratefully acknowledge the help of the following museums and libraries: Tate Gallery, London; National Gallery, London; British Museum, London; Natural History Museum, London; Ashmolean Museum, Oxford; British Library, London; Bodleian Library, Oxford; Stanza della Segnatura, Vatican City, Rome; Musei Vaticani, Vatican City, Rome; Pinacoteca Vaticana, Vatican City, Rome; Museo Nazionale Romano, Rome; Museo Archeologico Nazionale, Naples; Museo Nazionali di Capodimonte, Naples; Museo Archeologico Nazionale, Reggio di Calabria; Biblioteca Nazionale Braidense, Milan; Biblioteca Ambrosiana, Milan; Castello Sforzesco, Milan; Galleria degli Uffizi, Florence; Biblioteca Reale, Turin; Gallerie dell'Accademia, Venice; Gallerie dell'Accademia, Florence; Casa Buonarroti, Florence; Musée du Louvre, Paris; Archaeological Museum, Olympia; Archaeological Museum, Delphi; Acropolis Museum, Athens; National Archaeological Museum, Athens; Bayerische Staatsgemäldesammlungen, Munich; Sächsische Landesbibliothek, Dresden; Museum of Modern Art, New York; Succession Picasso/Design and Artists Copyright Society, London; Metropolitan Museum of Art, New York; New York Academy of Medicine, New York; National Gallery of Art, Washington; Egyptian Museum, Cairo; Czartoryski Museum, Kraków; Munch Museum, Munch–Ellingsen Group, Oslo/DACS, London.

My sincere thanks are due to the library staff of the Royal College of Surgeons of England and the Royal Society of Medicine for many acts of courtesy extending over a number of years – the latter institution in particular becoming a veritable home away from home.

My sincere thanks to the editors and staff of the following medical journals for permission to redraw a number of figures used in this book: Plastic and Reconstructive Surgery (Wolters Kluwer Health); Annals of Surgery ((Wolters Kluwer Health); Angle Orthodontist (E H Angle Education & Research Foundation., Inc.); American Journal of Physical Anthropology (John Wiley & Sons Ltd); American Journal of Orthodontics and Dentofacial Orthopedics (Elsevier); International Journal of Oral and Maxillofacial Surgery (Elsevier); Aesthetic Plastic Surgery (Springer Science+Business Media); Acta Odontologica Scandinavica (Informa Healthcare, Taylor and Francis Group); Journal of the American Dental Association (American Dental Association); Archives of Facial Plastic Surgery (American Medical Association).

My earlier education was shaped by a number of remarkable teachers, notably Mr Christopher Town, Mr Terence Robinson and Dr Mark Innes. I owe the foundation of my undergraduate training to Professor Tim F. Watson at Guy's Hospital – the superlative may be applied to him as a clinician, researcher and educator.

My interest in craniofacial anatomy and the developmental biology of the head and neck developed as an undergraduate student at Guy's Hospital, under the tutelage and guidance of Professors Martin Berry and Susan Standring – both truly inspirational teachers. I must also acknowledge Professor Chummy Sinnatamby and his team at the Royal College of Surgeons of England, whose teaching of surgical anatomy is unique and memorable.

Warm thanks are due to the staff of those institutions in which I have pursued my clinical and academic training over a number of years. In chronological order, the United Medical and Dental Schools of Guy's and St Thomas' Hospitals, Manchester Dental Hospital, the Norman Rowe Maxillofacial Unit (Queen Mary's University Hospital, Roehampton), West Middlesex University Hospital, the Royal London Hospital and the Central Middlesex Hospital, Kingston Hospital and the Eastman Dental Hospital (University College London) and King's College London.

I must express my deep gratitude to my teachers during higher training, particularly the late Professor 'Jim' Moss, and many others. I must make special mention of Mr Raymond Edler, consultant orthodontist, whose unsurpassed clinical ability, pursuit of academic and educational excellence and care for patients with dentofacial and craniofacial deformities is second to none – a true gentleman whose example taught me the value of a great teacher.

The reputation of a clinical department depends on the devotion of many people, too numerous to mention individually. I would like to take this opportunity of thanking my orthodontic consultant colleagues Allan Jones and Stephen Powell, and consultant maxillofacial surgeons Peter Blenkinsopp (Head of the former Norman Rowe Maxillofacial Unit, and a constant source of advice), Andrew Stewart, Helen Witherow and Memo Manisali, with whom it is a pleasure to work. Warm thanks also to our nurses for their tireless effort, orthodontic and maxillofacial technologists and all other members of the team. Collective thanks to successive generations of my senior registrars, registrars, house surgeons, clinical and academic postgraduate students and clinical fellows, of whose achievements I am immensely proud. Special thanks are due to all my patients for permission to use their photographs in this book.

My sincere thanks to Professor Martin Kemp, Emeritus Professor in the History of Art at the University of Oxford and the internationally recognized authority on Leonardo da Vinci, for his valuable advice; to Professor Paul Ekman, a pioneer in the study of emotions and their relation to facial expressions, for providing a number of the figures for Chapter 3; to Dr Jacques Treil, radiologist, Laboratoire d'Anthropobiologie, Département d'Imagerie Médicale in Toulouse, for providing figure 10.37; and to Drs Joseph Daniel, Alistair Cobb, Mladen Otasevic, Sue Ghoorbin, Sharan Sidhu and Peta Smith. My sincere thanks extend to the late Professor Leslie Farkas and, in particular, to Mrs Susanna Farkas for her help and kindness.

Special thanks are due to my friend and colleague Dr Daljit S. Gill (Consultant Orthodontist/Honorary Senior Lecturer, Eastman Dental Hospital/University College London and Honorary Consultant Orthodontist, Great Ormond Street Hospital, London) – for his contribution to Chapters 23 and 24 and the many helpful suggestions throughout the writing of this book.

I am grateful to the team at Wiley-Blackwell for their dedication, professionalism and enthusiasm for this book, particularly Lucy Nash, Sophia Joyce, Katrina Hulme-Cross, James Sowden, Lotika Singha and Alison Nick.

My last and most important expressions of gratitude must go to my parents for instilling in me the unbiased search for truth as the basis for education – their example, sacrifices and encouragement remain my greatest source of inspiration; and to my wife Hengameh – for invaluable advice that comes from a keen artistic intellect and aesthetic insight – and for the illustrations, which form so essential a feature of this work. I cannot thank her sufficiently for her unremitting attention to detail and find it difficult to convey fully the meticulous care she has taken to portray visually what I wished to express, thereby giving life to my drawings and sketches.

PART I CONCEPTS

The bottom half of the page features a series of overlapping, semi-transparent blue geometric shapes, primarily triangles and quadrilaterals, creating a modern, abstract design.

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)¹

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)²

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.’³ 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.’⁴

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.’⁵

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).⁶ 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.’⁶ In effect, Baumgarten separated the concept of beauty from its ancient link related to ‘goodness’. Baumgarten defined ‘taste’ as the ability

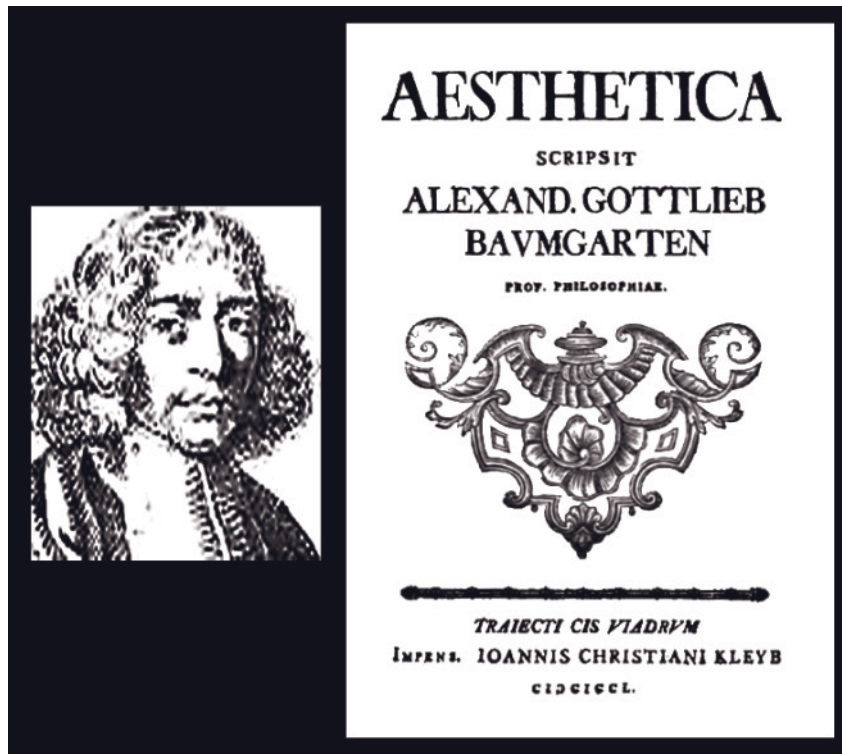


Figure 1.1 Alexander Gottlieb Baumgarten established aesthetics as a distinct field of philosophy with the publication of his treatise *Aesthetica* (c. 1750).

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)⁷

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'.⁸ In the third century BC, the Greek poet **Theocritus** wrote: 'Beauty is not judged objectively, but according to the beholder's estimation' (*The Idylls*).⁹ **Shakespeare** (Figure 1.2) reiterated this view in *Love's Labour's*

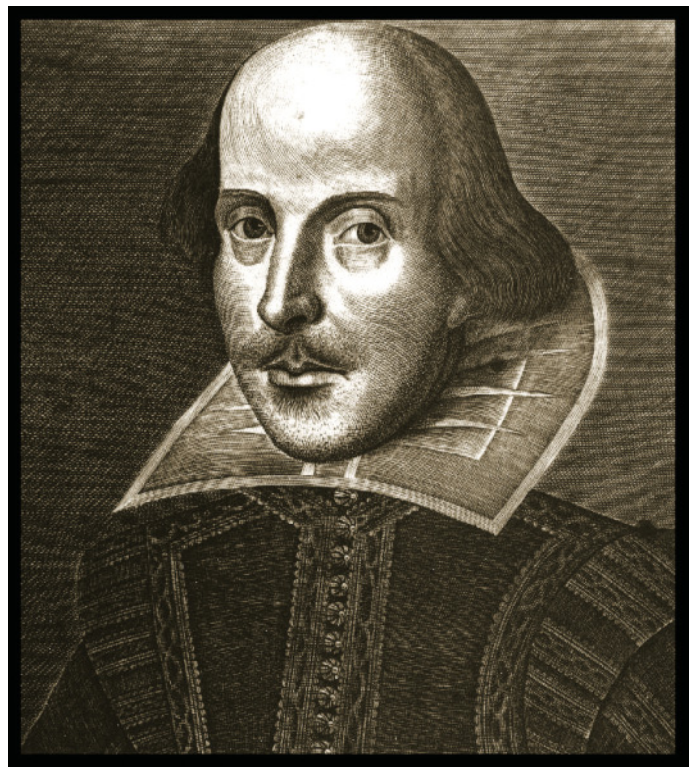


Figure 1.2 William Shakespeare – this copper-engraved image from the title page of the First Folio (1623) was made by the young English engraver Martin Droeshout probably from another drawing or painting now lost; it is the only reasonably authentic portrait of the Great Bard of Avon.



Figure 1.3 Francis Hutcheson.

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.’¹⁵

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.’³

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.

Note

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.*

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

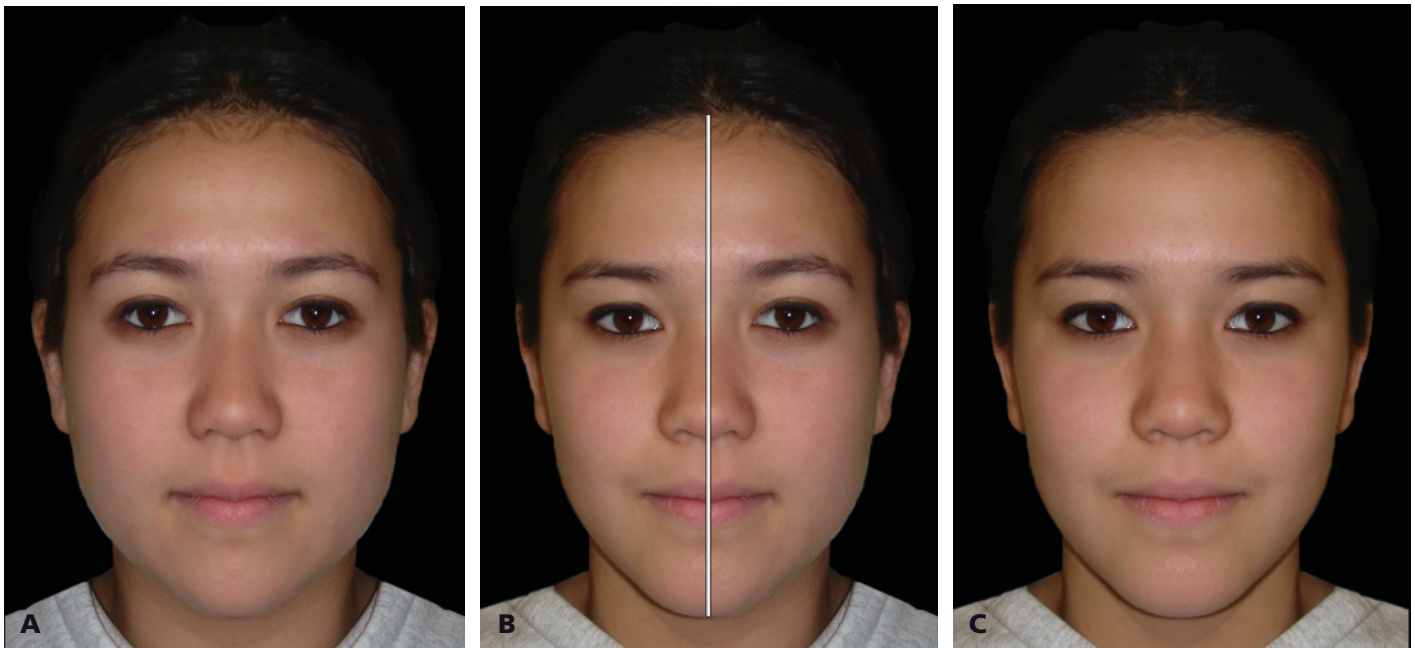


Figure 1.4 (A) Constructed composite image, in which the subject's left facial hemisphere has been mirrored on the right to create a symmetrical image. (B) Original true image. (C) Constructed composite image, in which the subject's right facial hemisphere has been mirrored on the left to create a symmetrical image. This technique illustrates the difference in the two sides of the face and that mild facial asymmetry is essentially normal.

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.¹⁸ 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.¹⁹ Rhodes et al.²⁰ found that symmetry was an important factor in facial attractiveness, but 'averageness' appears to be more important. Rubenstein et al.¹⁶ 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.²¹ 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.²² However, Perrett et al.²³ 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.

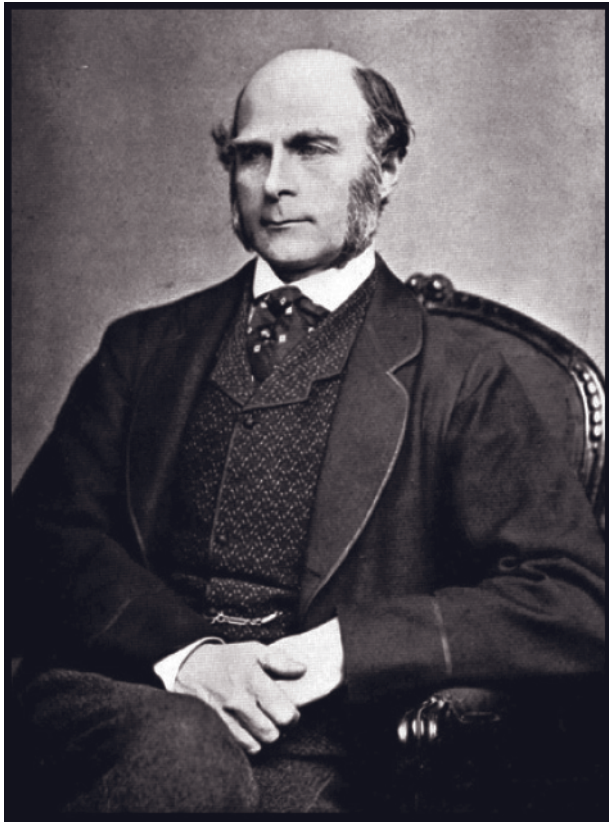


Figure 1.5 Sir Francis Galton.

Note

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.²⁴ In humans, this concept may be linked to the 'averageness hypothesis'.^{19,22}

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.²⁵ 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.²⁶

Sexual dimorphism (secondary sexual characteristics)

Male and female faces diverge at puberty.²⁷ 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.²⁸ As sexual dimorphism increases at puberty, sexually dimorphic traits signal sexual maturity and reproductive potential.²⁷ 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!'²⁷

Heredity

The human perception of facial beauty may have its foundation in our heredity, environment or perhaps both. Langlois et al.²⁹ 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.³⁰

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)³¹

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.