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

Facial Aesthetics: Concepts & Clinical Diagnosis, First Edition. Farhad B. Naini.

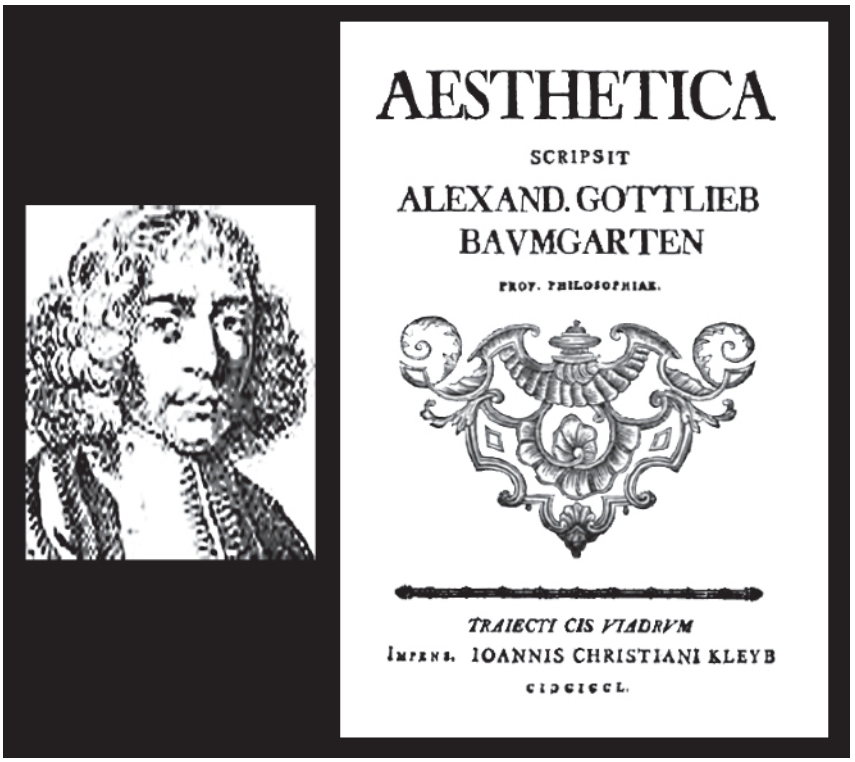

Figure 1.1 Alexander Gottlieb Baumgarten established aesthetics as a distinct field of philosophy with the publication of his treatise *Aesthetica* (*c.* 1750).

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*

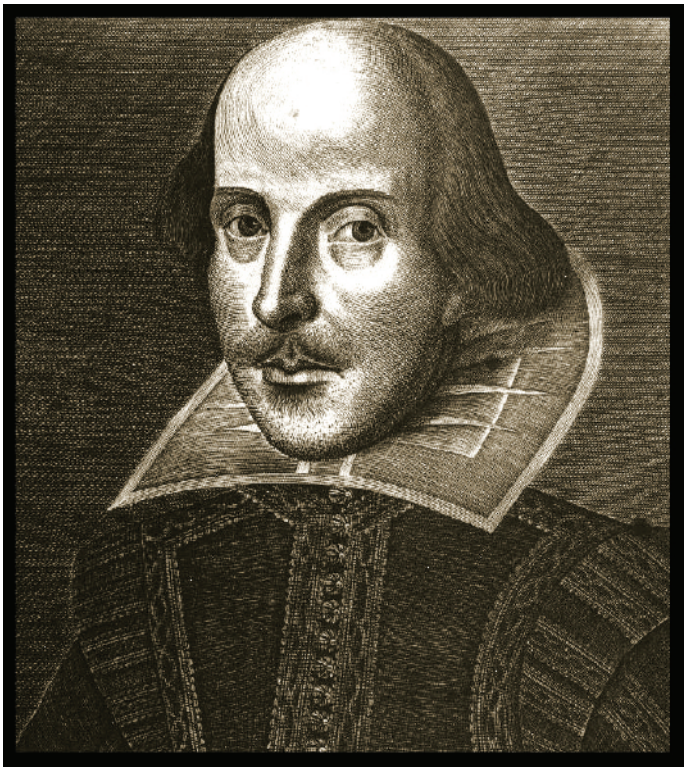

Figure 1.2 William Shakespeare – this copper-engraved image from the title page of the First Folio (1623) was made by the young English engraver Martin Droeshout probably from another drawing or painting now lost; it is the only reasonably authentic portrait of the Great Bard of Avon.

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]

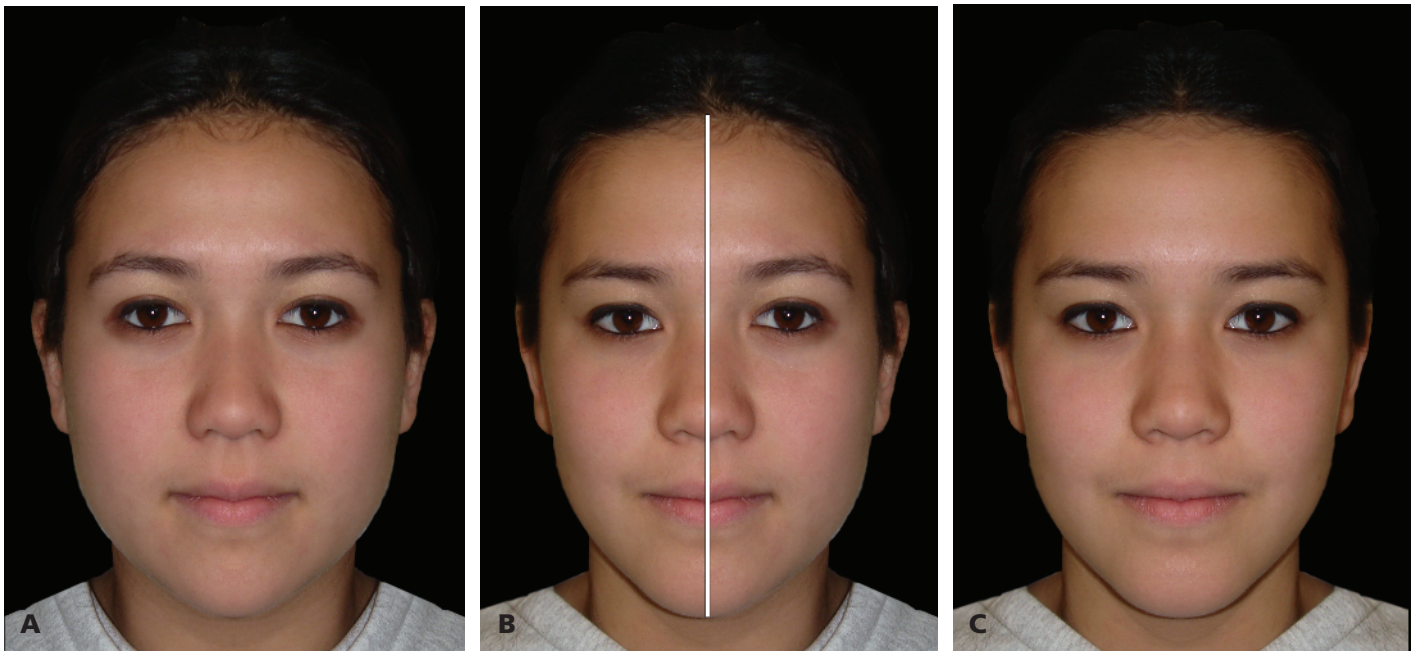

Figure 1.4 (**A**) Constructed composite image, in which the subject's left facial hemisphere has been mirrored on the right to create a symmetrical image. (**B**) Original true image. (**C**) Constructed composite image, in which the subject's right facial hemisphere has been mirrored on the left to 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.

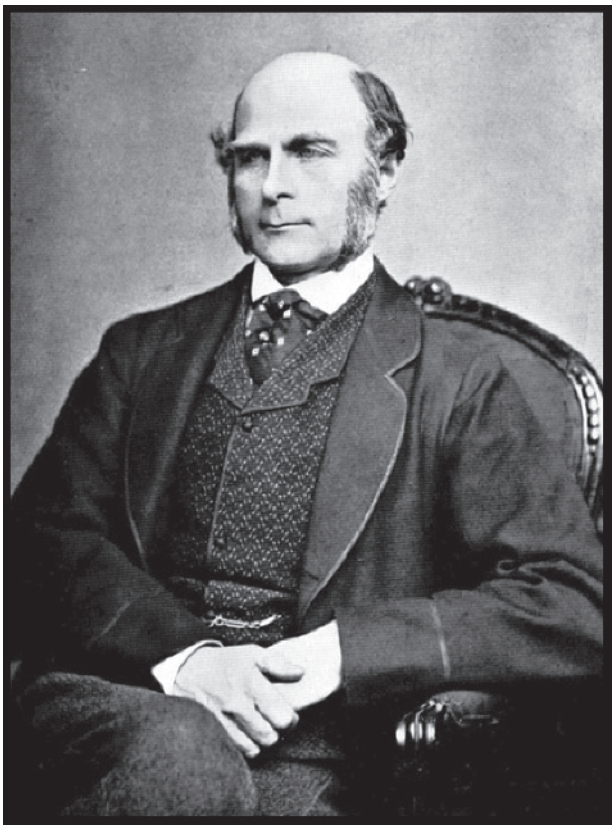

Figure 1.5 Sir Francis Galton.

> **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 **babyfaceness**. 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

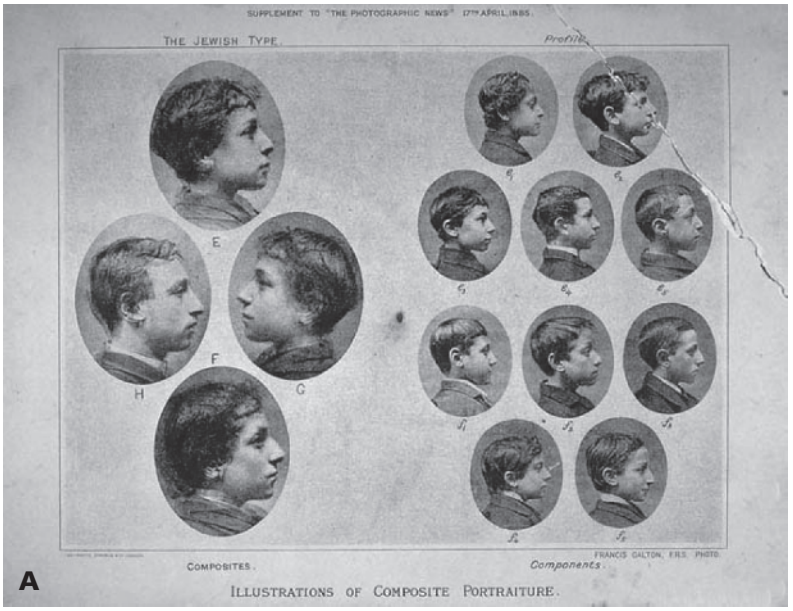

Figure 1.6 (**A** and **B**) Galton created composite faces by overlaying multiple images of groups of individuals onto a photographic plate in the attempt to find 'typical faces'. Not only was Galton's original theory of 'typical faces' incorrect, but he found that the composite faces became more attractive than any of the individual faces.

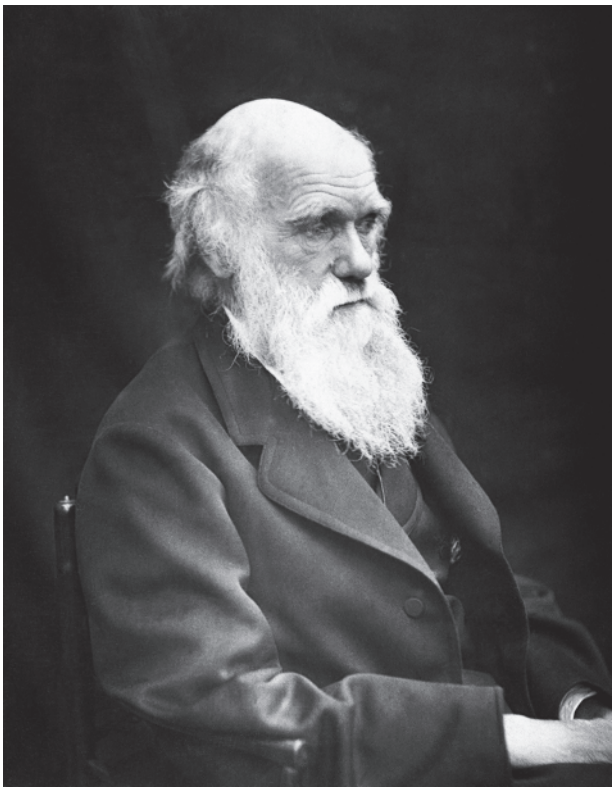

Figure 1.7 Charles Darwin age 65 (*c.* 1874).

beauty, and men found the bare female head 'most beautiful'. Yet, when he describes his beloved Mina, he recounts her 'long, beautiful flowing hair'.[32] In seventeenth-century Europe, particularly France, iodine was removed from the female diet in order for women to develop the 'goitre neck' appearance, then deemed a mark of attractiveness. The Mentawai tribe of Indonesia sharpen their anterior teeth to look like fangs using metal instruments such as chisels; within their culture this is perceived as a sign of beauty. In *The Descent of Man* (1871), the English naturalist **Charles Darwin** (1809–82) (Figure 1.7) observed and described large cultural differences in the beautification practices of peoples around the world.[33] There are many such examples of cultural factors, which undoubtedly have some considerable influence on our perception of beauty.

Martin[34] found that both white and black American males preferred black female faces with Caucasian features, whereas black African men showed a preference for black female faces with Negroid features. This lends evidence to support environmental/cultural reasons for the human perception of facial beauty. However, Perrett et al.[35] found that both Caucasian and Japanese men and women ranked female faces as most attractive when youthful facial features, such as large eyes, high cheekbones and a narrow jaw were evident. Aesthetic judgements therefore seemed to be similar across different cultural backgrounds. A meta-analysis undertaken by Langlois et al.[36] seems to confirm that there is cross-cultural agreement regarding facial attractiveness. However, the influence of an international media cannot be discounted.

Note

The significance of cultural influences and the pressures of conforming to societal 'standards' cannot be underestimated. Individuals have worn prescription spectacles in order to improve eyesight for many years. Initial public opinion was rather unflattering, which led the US critic and humorist Dorothy Parker to write (in 1926), albeit in jest, 'Men seldom make passes, at girls who wear glasses.' However, the era of modern 'designer' glasses has changed the image of the spectacle wearer. Conversely, hearing aids are still predominantly anathema to most individuals. The difference between the acceptance of glasses to improve vision and hearing aids to improve hearing is a prime example of cultural and societal influences on public perception.

It is likely that there is simply no one answer to why a face is perceived as beautiful or unattractive. Beauty cannot be explained by any single principle. The human perception of what constitutes facial beauty seems to be **multifactorial**, with genetic and environmental/cultural foundations. In *An Essay on Criticism* (1711)[37] Alexander Pope provides an explanation:

'In wit, as Nature, what affects our hearts
Is not th' exactness of peculiar parts;
Tis not a lip, or eye, we beauty call,
But the joint force and full result of all.
Thus when we view some well-proportion'd dome
… No single parts unequally surprise,
All comes united to th' admiring eyes.'

Alexander Pope (1688–1744)

It is the **joint force** so eloquently described by the English poet Pope that is not fully understood – thus remains the enigma of facial beauty.

Facial beauty: historical and philosophical perspectives

Throughout history, each age seems to have provided somewhat different explanations for the concept of human beauty and its proposed merits. The opinions of some individuals have echoed one another, whereas others have vehemently disagreed.

Plato (429–347 BC) (Figure 1.8) described beauty as goodness, but felt that physical beauty was inferior to spiritual beauty, i.e. he described physical and metaphysical beauty (*Symposium*).[8] In *Phaedo*, Plato informs us that **Socrates** (469–399 BC) (Figure 1.9) felt that the human body and physical beauty was an 'impediment … distracting us from getting a glimpse of the truth', and that the beauty of the soul was far superior.[38] Socrates advises: 'let us seek the *true* beauty, not asking whether a face is beautiful … for such things are always in flux'; he continues: 'grant that I may become beautiful *within*'.[38] The ideas of Socrates proved unpopular, to say the least, with the Greek masses' love of physical beauty.

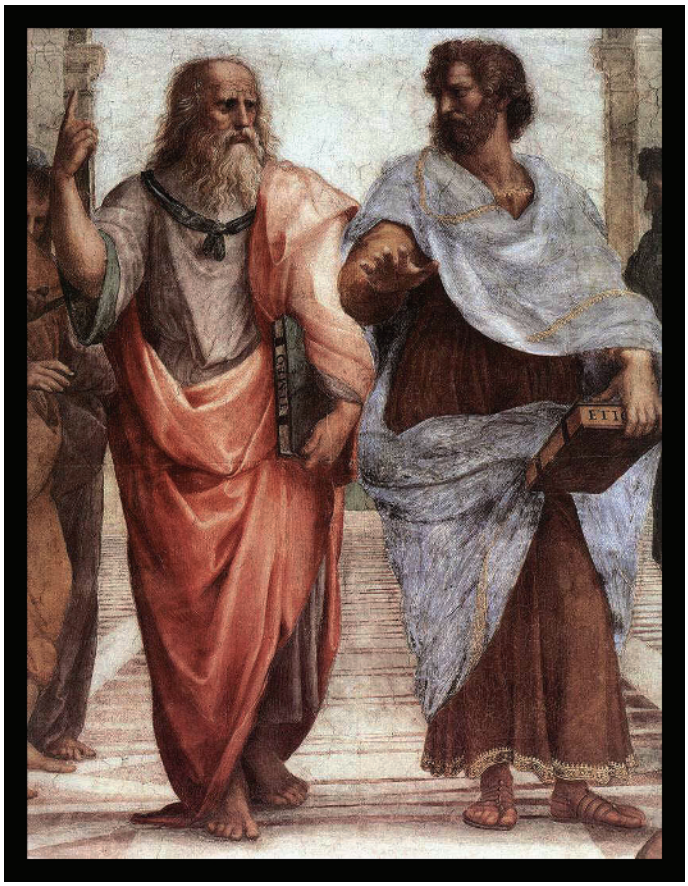

Figure 1.8 Plato and Aristotle. (Detail, The School of Athens *c.* 1509, Raphael; Stanza della Segnatura, Rome.)

Aristotle (384–322 BC) did not develop Plato's theory of 'beauty as goodness'. In fact, he distinguished between them, for 'goodness implied conduct as its subject, whereas beauty is found in motionless objects'. In his *Metaphysics*, Aristotle gave the following definition of beauty: 'The chief forms of beauty are order and symmetry and definiteness'; this is the idea of *beauty as proportion*.[39] Aristotle felt that beauty was a purely physical phenomenon and emphasized proportionality as the basis of human beauty, i.e. he denied the existence of metaphysical beauty. In his *Poetics*, Aristotle defined beauty as 'that which is desirable for its own sake and also worthy of praise'.[40] For the Greeks the concept of physical beauty was linked to their Gods, i.e. 'ideal' proportions and symmetry provided physical beauty to man, but this 'beauty' brought man closer to resembling the Gods.

Saint Thomas Aquinas (1225–74) separated physical and metaphysical beauty, but believed that both existed (*Summa Theologiae*):[41]

> 'Beauty of body consists in shapely limbs and features … beauty of spirit consists in conversations and actions that are well-formed and suffused with intelligence.'

Aquinas believed spiritual beauty to be of a far 'higher order' than physical beauty. Despite Aquinas clearly separating spiritual and physical beauty, to the unenlightened medieval minds physical beauty and morality were inextricably linked, i.e. physical beauty was thought to be linked to goodness and physical ugliness to moral degradation.

The separation of the concept of beauty into a secular, non-spiritual, 'earthly' concept began with the **Renaissance** in the fourteenth to sixteenth centuries. The highly significant

Figure 1.9 The Death of Socrates. (1787, Jacques-Louis David, Metropolitan Museum of Art, New York.)

Figure 1.10 Michel de Montaigne (portrait *c.* 1590, artist unknown).

contributions of **Leon Battista Alberti, Leonardo da Vinci** and **Albrecht Dürer** to the understanding of beauty in art is discussed in detail in Chapter 2.

The writer **Michel de Montaigne** (1533–92) (Figure 1.10) and one of the most significant figures of the European intellectual movement of the seventeenth and eighteenth centuries known as the **Enlightenment**, the philosopher **Voltaire** (1694–1778) (Figure 1.11), described human beauty as *culturally determined*, with no objective existence, i.e. beauty is in the 'culture' of the beholder. Montaigne wrote of beauty:

> 'We imagine its form to suit our fancy. … In Peru, the biggest ears are the fairest, and they stretch them artificially. … Elsewhere there are nations that blacken their teeth with great care, and scorn to see white teeth.'[42]

David Hume (1711–76) (Figure 1.12) felt that beauty was not only culturally determined but also *individually subjective*, i.e. the idea that 'beauty is in the eye of the beholder'. In his essay *Of the Standard of Taste* (1757), Hume wrote:[43]

> 'Beauty is no quality in things themselves: It exists merely in the mind which contemplates them; and each mind perceives a different beauty. One person may even perceive deformity, where another is sensible of beauty; and every individual ought to acquiesce in his own sentiment, without pretending to regulate those of others.'

Hume felt that beauty was a *socially constructed phenomenon*. In *The Sceptic* he wrote:[44]

> 'Beauty is not a quality of the circle … it is only the effect, which that figure produces upon a mind, whose particular fabric or structure renders it susceptible of such sentiments.'

In *A Treatise on Human Nature* (1738) Hume wrote:[45]

Figure 1.11 Voltaire.

> 'Beauty is such an order and construction of parts, as … to give a pleasure and satisfaction to the soul. This is the distinguishing character of beauty, and forms all the difference betwixt it and deformity, whose natural tendency is to produce uneasiness. Pleasure and pain, therefore, are not only necessary attendants of beauty and deformity, but constitute their very essence.'

Immanuel Kant (1724–1804) (Figure 1.13), in his *Critique of Judgement* (1790), rejected Hume and returned to Plato: 'The beautiful is the symbol of the morally good.'[46] Tolstoy, in *The Kreutzer Sonata* (1890), opposed Kant, writing: 'It is amazing how complete is the delusion that beauty is goodness.'[47] Another view expressed by Kant was that 'the beautiful is that which pleases universally without a concept.'[46] **Friedrich Schiller** (1759–1805) (Figure 1.14) was a follower of Kant; he felt that beauty provided 'pleasure without practical advantage.'[48] Philosopher's and their opinions continued to wax and wane.

In *The Descent of Man* (1871) **Charles Darwin** described the cultural deviations in the standards of human beauty, writing:[33]

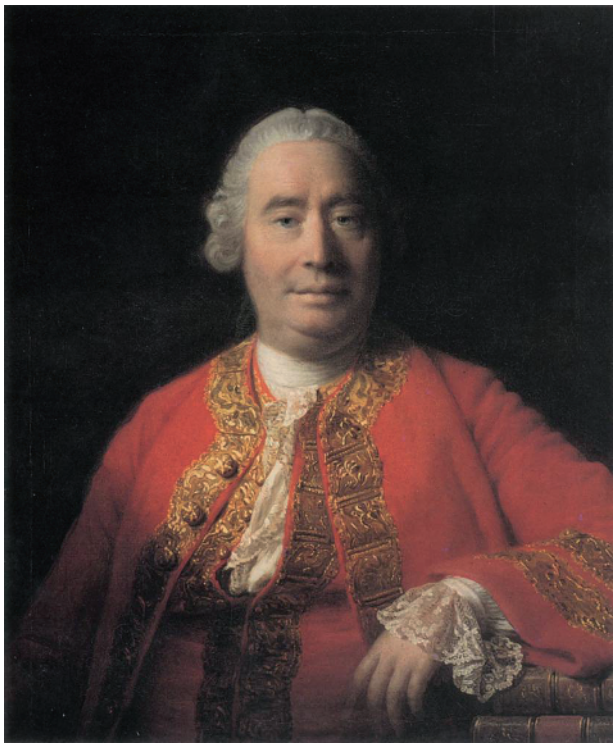

Figure 1.12 David Hume.

Figure 1.13 Immanuel Kant.

Figure 1.14 Friedrich Schiller.

> 'It is certainly not true that there is in the mind of man any universal standard of beauty with respect to the human body'.

Darwin believed that the perception of beauty is a feeling natural to man and to animals, and consequently to the ancestors of man. He also felt that beauty had an array of diverse conceptions and could not be easily explained. The evolutionary basis is that facial beauty makes a particularly significant contribution to sexual selection, leading to improved opportunity for reproduction.

In the nineteenth century, the American writer and thinker **Ralph Waldo Emerson** (1803–82) (Figure 1.15) wrote two essays entitled 'Beauty', in *Nature* (1836)[49] and in *The Conduct of Life* (1860).[50] In the former essay, Emerson explains that true beauty is inherent in Nature and the 'simple perception of natural forms is a delight'. Yet he feels that the appreciation of such beauty requires 'virtue' and 'intellect' on the part of the observer. He writes: 'No reason can be asked or given why the soul seeks beauty. Beauty, in its largest and profoundest sense, is one expression of the universe'.[49] In the latter essay, Emerson writes: 'Beauty is the form under which the intellect prefers to study the world. All privilege is that of beauty; for there are many beauties; as, of general nature, of the human face and form, of manners, of brain, or method, moral beauty, or beauty of the soul'. In terms of physical beauty, he writes: 'Any fixedness, heaping, or concentration on one feature – a long nose, a sharp chin, a hump-back – is the reverse of the flowing, and therefore deformed'.[50]

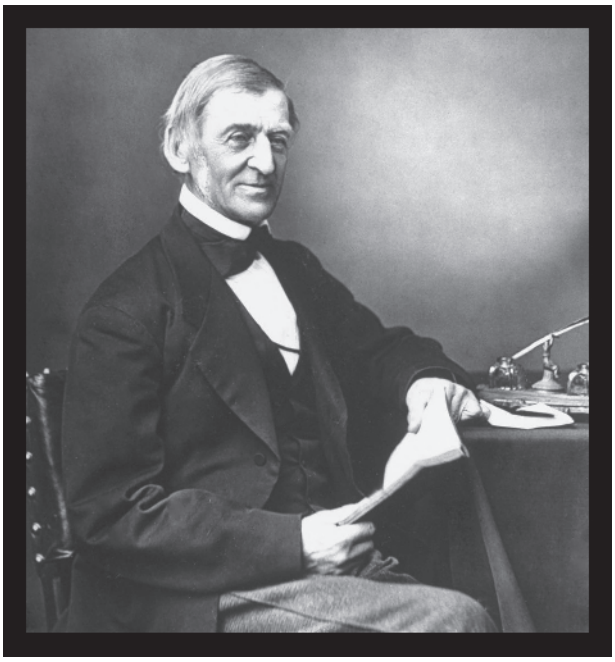

Figure 1.15 Ralph Waldo Emerson.

Figure 1.16 William Hogarth's Painter and his Pug; Hogarth has drawn his own image on an oval canvas, which appears propped up on volumes by Shakespeare, Swift and Milton. Careful examination of this self-portrait reveals that he has drawn his 'S' shaped 'serpentine line' on his palette, on which reads 'The LINE of BEAUTY And GRACE – W.H.' (1745, Tate Gallery, London). (With kind permission of the Tate Gallery, © Tate, London 2010.)

In the twentieth century, in a published lecture entitled *Truth and Beauty* (1987), the distinguished Indian-born American astrophysicist and Nobel laureate **Subrahmanyan Chandrasekhar** (1910–95) explained that the quest of the arts and sciences is after 'the same elusive quality: beauty'.[51] He went on to define beauty as 'that to which the human mind responds at its deepest and most profound'.[51]

Facial beauty: scientific perspectives

The scientific studies of the possible proposed explanations for facial beauty in terms of 'ideal' proportions, bilateral symmetry, averageness, babyfaceness and sexual dimorphism have been described above. The other area of scientific research in the understanding of facial beauty is termed **facial attractiveness research**, i.e. the scientific study of facial beauty and physical attractiveness. The purpose of such research is to find quantifiable evidence for the attractiveness of various facial parameters using contemporary layperson and patient population survey preferences rather than subjective interpretations or observations made by artists or clinicians. The results of such studies are, where available, presented throughout Part 2 of this book.

It is, however, important to know that the first scientific study of attractiveness was undertaken in England by the artist **William Hogarth** (1697–1764) (Figure 1.16), published in a work entitled *The Analysis of Beauty* (1753) (Figure 1.17).[52] Hogarth drew the image of a woman's corset, and then proceeded to create variations of the same image while altering a certain aspect of the corset in each image (Figure 1.18). He subsequently invited members of the public to choose their favourite image. The

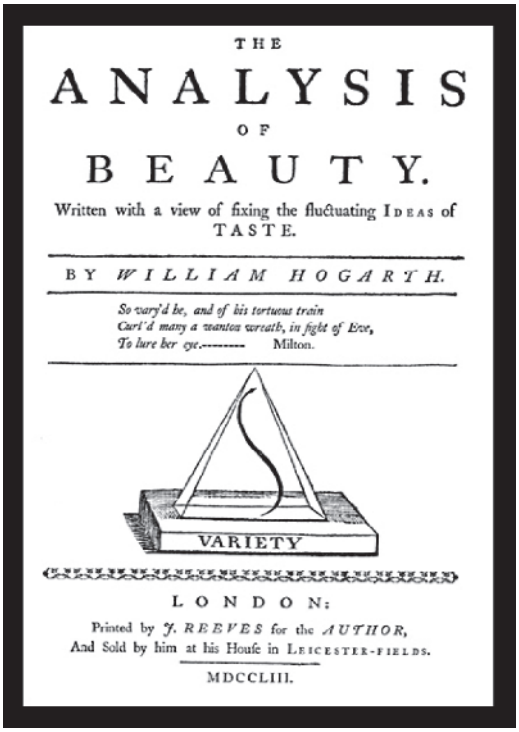

Figure 1.17 Hogarth's *The Analysis of Beauty* (1753) (book cover).

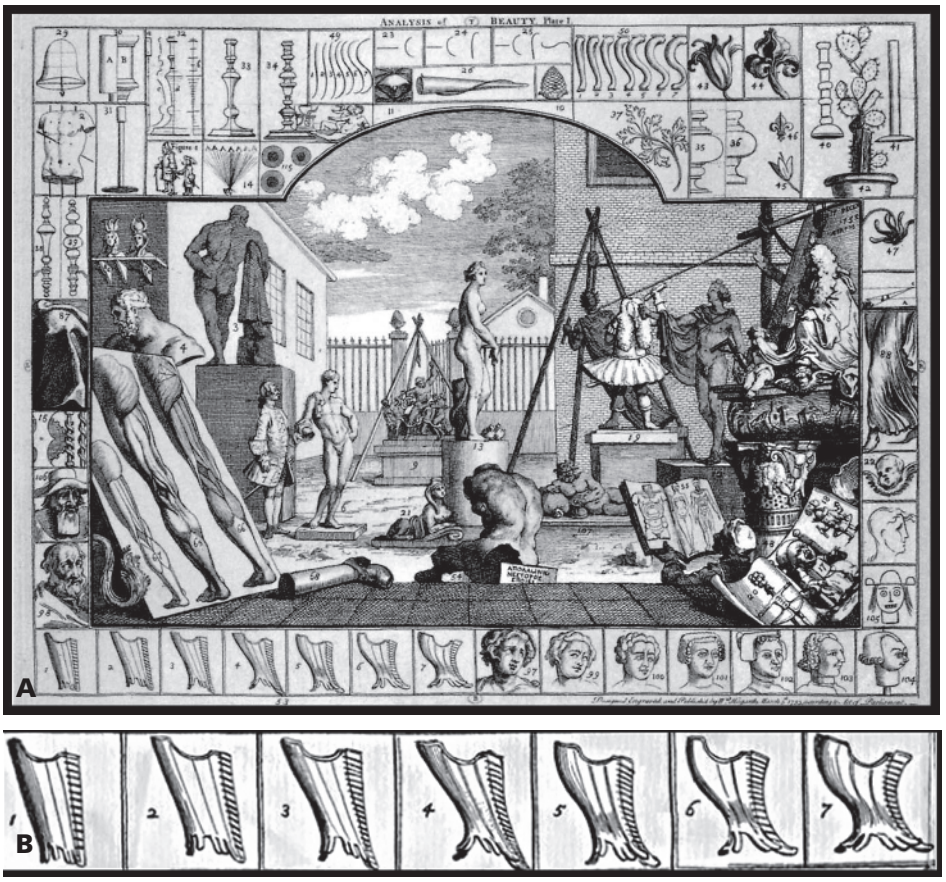

Figure 1.18 (**A**) Plate I from Hogarth's *The Analysis of Beauty* (1753). (**B**) Hogarth drew the image of a woman's corset, and then proceeded to create variations of the same image while altering a certain aspect of the corset in each image.

experiment was repeated using images of various objects (Figure 1.19). The originality of the experiment was that each set of images varied only in one respect and the variation was graded. Hogarth felt that this would allow him to know *why* one image was preferred to another. Hogarth's conclusion was that the most beautiful images were composed of *gently curving lines*. This led to Hogarth's concept of the **Line of Beauty**, a term used to describe an **S-shaped curved line**, or **serpentine line**, appearing within an object, as the boundary line of an object, or as a virtual boundary line formed by the composition of several objects (Figure 1.20). According to this theory, S-shaped curved lines signify liveliness and activity and excite the attention of the observer as contrasted with straight lines, parallel lines or right-angled intersecting lines, which signify inanimate, unattractive objects.

The idea that gently curving lines are important in beauty was not new; the concept runs through much of the poetry of the fourteenth century Persian poet-scholar **Hafez of Shiraz**. It is also clear that the serpentine line cannot be the only explanation of beauty, as was quickly pointed out by Hogarth's critic, the actor and playright David Garrick (1717–79). Garrick explained that a shape that is attractive in one object may be rather unattractive in another, e.g. a gentle curve on the side of a vase is not so attractive in a protruding belly! There is simply no one factor that creates beauty. Yet the experimental method chosen by Hogarth seems to be original, perhaps making him the 'father' of the modern attractiveness research design.

Importance of facial beauty

> 'The gift of beauty not lightly to be thrown away,
> that glorious gift which none can bestow save the
> gods alone.'
>
> Homer (eighth century BC), *Iliad*[53]

The significance of facial beauty is immense, with psychological, sociological, philosophical, moral and scientific conceptions, often intertwined. Beauty is a *multidimensional concept* that undoubtedly has a strong influence on human life. In Western literature beauty has been described as everything from a 'social necessity' to a 'gift from God' (Aristotle).[54] The poet John Milton refers to the 'strange power' of beauty, describing beauty as 'Nature's brag'.[55] The French philosopher Blaise Pascal commented, 'Cleopatra's nose, had it been shorter, the whole face of the world would have been changed!'[56] From Homer's Helen of Troy, who the poet Christopher Marlowe described as having the

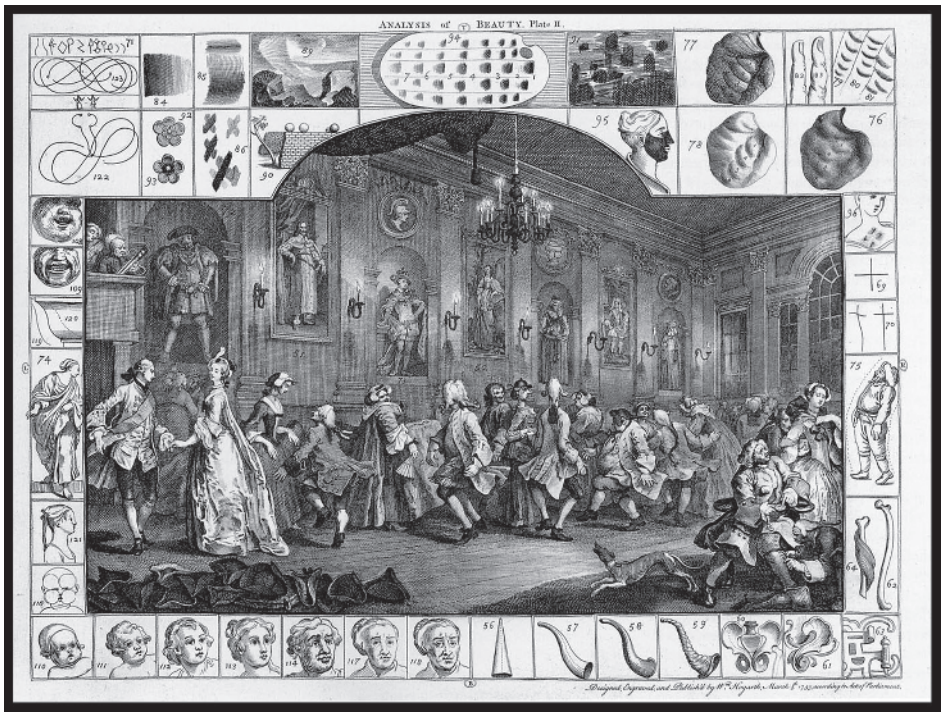

Figure 1.19 Plate II from Hogarth's *The Analysis of Beauty* (1753).

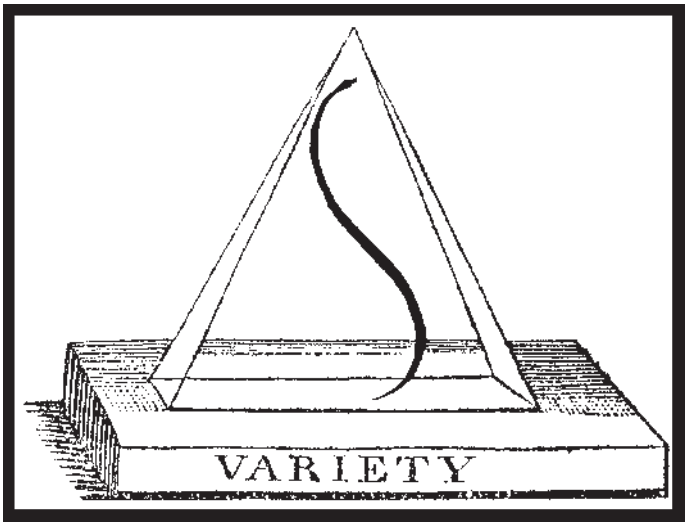

Figure 1.20 Hogarth's serpentine line.

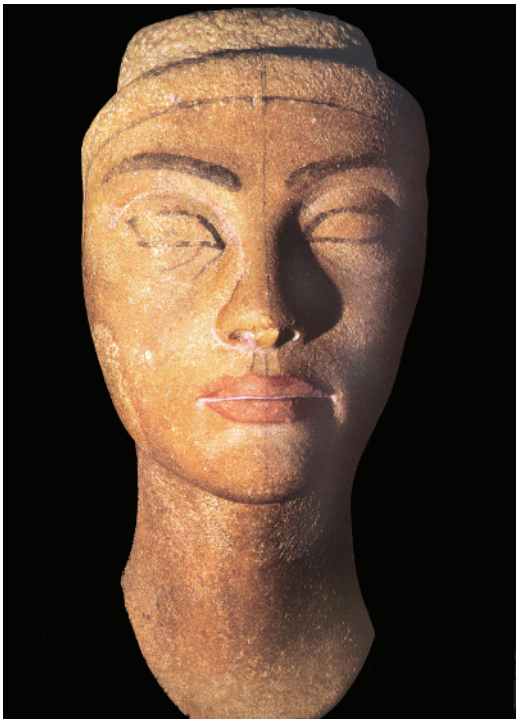

Figure 1.21 Queen Nefertiti – unfinished head. (Egyptian Museum, Cairo.)

'face that launched a thousand ships',[57] to Queen Nefertiti, whose name literally means the 'Beautiful One' (Figure 1.21), to modern-day models and actors, facial beauty has perhaps always been the most valued aspect of human beauty.

Facial beauty is an important factor in an individual's self-image and in relation to outsiders' perceptions.

Self-image and negative self-perception

A person's own perception of their facial appearance and any associated deformity is of great importance.[58] Of course, there is considerable individual variation in people's abilities to adapt to their facial deformity, whatever the severity. Some individuals remain comparatively unaffected, while others may have significant difficulties, which affect their quality of life.

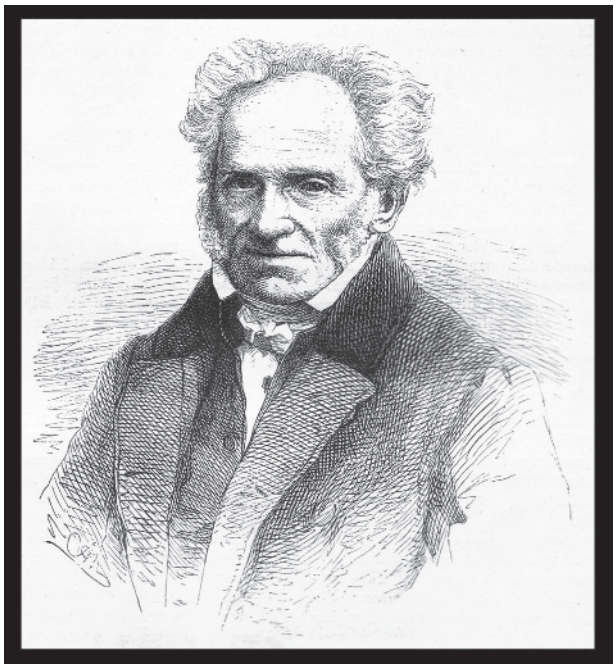

Figure 1.22 Arthur Schopenhauer.

Outsiders' perceptions

In *The Wisdom of Life*, the philosopher **Arthur Schopenhauer** (1788–1860) (Figure 1.22) writes:

> 'Beauty is partly an affair of health. It may be reckoned as a personal advantage; though it does not, properly speaking, contribute directly to happiness. It does so indirectly, by impressing other people; and it is no unimportant advantage, even in man. *Beauty is an open letter of recommendation*, predisposing the heart to favour the person who presents it'.[59] [emphasis added]

The effects of outsiders' perceptions may be categorized as follows:

'Social disability'

It has been argued that facial deformity may be a 'social disability', as it impacts not only on the individual affected, but is also noticed by and reacted to by others.[60] Attractive children tend to be perceived more positively by their parents,[61] by teachers who perceive more attractive children as being more intelligent,[62] and in professional life where less attractive adults are perceived as having fewer qualifications and less potential for employment success.[63] Although an individual's facial appearance contributes to the opinions other people form of them, obviously these opinions may well change as interpersonal relationships form. Nevertheless, an individual's first impression on others may well affect their own self-esteem and quality of life.[60]

Stereotyping

It is suggested that people tend to stereotype others based on their facial appearance.[64] For example, individuals with significant Class II malocclusions and mandibular retrognathia/retrogenia may be seen as weak and possibly idle, whereas individuals with significant Class III malocclusions and mandibular prognathism may be seen as aggressive personality types.

Teasing

Children in the school environment can be unsympathetic and hostile to those with visible differences, with teasing and bullying being everyday occurrences. The frequency of teasing directed at those with visible dentofacial differences is significant.[65]

Severity of deformity

The psychological distress caused by a facial deformity is not proportional to its severity. Research seems to indicate that facial deformities of a mild to moderate nature actually cause patients greater psychological distress than severe facial deformities.[66] This is thought to be because other people's reactions towards milder deformities are more unpredictable whereas more severe deformities tend to evoke more consistent reactions, albeit negative, allowing the patient to develop better *coping strategies*. The variability in people's reactions to milder facial deformities also results in considerable patient distress. It is important to note that the majority of patients seeking orthodontic treatment or orthognathic surgery fit into the mild/moderate category in terms of facial deformity, as opposed to craniofacial malformation syndromes or severe facial trauma/disease.[3]

References

1. Shakespeare W. The Rape of Lucrece (1594). London: New Penguin Shakespeare, 1971.
2. Santayana G. The Sense of Beauty (1896). Indiana, IN: Indiana University Press, 1955.
3. Naini FB, Moss JP, Gill DS. The enigma of facial beauty: esthetics, proportions, deformity and controversy. Am J Orthod Dentofacial Orthop 2006;130(3):277–82.
4. Alberti LB. De Re Aedificatoria (On Architecture). Trans Rykwert J, Leach N, Tavernor R. Cambridge, MA: MIT Press, 1988.
5. Weinberg S. Dreams of a Final Theory: The Search for the Fundamental Laws of Nature. New York: Vintage Books, 1993.
6. Baumgarten AG. *Aesthetica (c. 1750)*. Paris: L'herne, 1989.
7. Shakespeare W. Venus and Adonis (1593). London: Dial Press, 1930.
8. Plato. Symposium. London: Penguin Classics, 2003.
9. Theocritus. The Idylls of Theocritus and the Eclogues of Virgil. London: George Bell, 1908.
10. Shakespeare W. Love's Labour's Lost (1595). London: Arden Shakespeare, 1998.
11. Hume D. Of Tragedy. In: Essays, Literary, Moral and Political (1742). Oxford: Oxford University Press, 1963.
12. Brontë C. Jane Eyre (1847). London: Wordsworth Editions Ltd, 1992.
13. Hungerford MW. Molly Bawn. London: Smith, Elder & Co., 1890.
14. Wallace L. The Prince of India (1893). New York: Polyglot Press, 2005.
15. Hutcheson F. An Inquiry into the Original of Our Ideas of Beauty and Virtue (1725). Indianapolis: Liberty Fund, 2004.

16. Rubenstein AJ, Langlois JH, Roggman LA. What makes a face attractive and why: The role of averageness in defining facial beauty. In: Rhodes G, Zebrowitz LA (eds). Facial Attractiveness: Evolutionary, Cognitive, and Social Perspectives. Advances in Visual Cognition, Vol 1. London: Ablex, 2002.
17. Huxley TH. Evolution and Ethics (1893). In: Collected Essays (1894), Vol 9. Montana, USA: Kessinger Publishing, 2004.
18. Grammer K, Thornhill R. Human facial attractiveness and sexual selection: The role of symmetry and averageness. J Comparative Psychol 1994;108:233–42.
19. Langlois JH, Roggman LA, Musselman L. What is average and what is not average about attractive faces. Psychol Sci 1994;5: 214–20.
20. Rhodes G, Roberts J, Simmons L. Reflections on symmetry and attractiveness. Psychol Evol Gender 1999;1:279–95.
21. Galton F. Composite portraits, made by combining those of many different persons in a single resultant figure. J Anthropol Inst Great Br Ireland 1879;8:132–44.
22. Langlois JH, Roggman LA. Attractive faces are only average. Psychol Sci 1990;1(2):115–21.
23. Perrett DI, May KA, Yoshikawa S. Face shape and judgements of female attractiveness. Nature 1994;368:239–42.
24. Koeslag JH. Koinophilia groups sexual creatures into species, promotes stasis, and stabilizes social behaviour. J Theor Biol 1990;144: 15–35.
25. Zebrowitz LA. Stability of babyfaceness and attractiveness across the life span. J Personality Soc Psychol 1993;64:453–66.
26. Little AC, Penton-Voak IS, Burt DM, Perrett DI. Evolution and individual differences in the perception of attractiveness: How cyclic hormonal changes and self-perceived attractiveness influence female preferences for male faces. In: Rhodes G, Zebrowitz LA (eds). Facial Attractiveness: Evolutionary, Cognitive and Social Perspectives. Advances in Visual Cognition, Vol 1. London: Ablex, 2002.
27. Rhodes G. The evolutionary psychology of facial beauty. Annu Rev Psychol 2006;57:199–226.
28. Thornhill R, Møller AP. Developmental stability, disease and medicine. Biol Rev Camb Philos Soc 1997;72(4):497–548.
29. Langlois JH, Roggman LA, Casey RJ, Ritter JM, Rieser-Danner LA, Jenkins VY. Infant preferences for attractive faces: rudiments of a stereotype? Dev Psychol 1987;23(3):363–9.
30. Jones S. Almost like a Whale: The Origin of Species Updated. London: Doubleday, 1999.
31. Voltaire. Beauty (1764). In: Philosophical Dictionary. London: Penguin Classics, 2004.
32. Waltari M. Sinuhe the Egyptian. London: Putnam & Co., 1949.
33. Darwin CR. The Descent of Man (1871). London: Gibson Square Books, 2003.
34. Martin JG. Racial ethnocentrism and judgment of beauty. J Soc Psychol 1964;63:59–63.
35. Perrett DI, May KA, Yoshikawa S. Face shape and judgements of female attractiveness. Nature 1994;368:239–42.
36. Langlois JH, Kalanakis LE, Rubenstein AJ, Larson AD, Hallam MJ, Smoot MT. Maxims or myths of beauty: A meta-analytic and theoretical overview. Psychol Bull 2000;126:390–423.
37. Pope A. An Essay on Criticism (1711). Oxford: Clarendon Press, 1909.
38. Plato. Phaedo. Oxford World's Classics. Oxford: Oxford University Press, 1999.
39. Aristotle. The Metaphysics. London: Penguin Classics, 2004.
40. Aristotle. Poetics. London: Penguin Classics, 2003.
41. Aquinas T. Summa Theologiae. Cambridge: Cambridge University Press, 2006.
42. Montaigne. The Complete Essays of Montaigne. Trans. Frame DL. Stanford, CA: Stanford University Press, 1958.
43. Hume D. Of the Standard of Taste (1757). In: Four Dissertations. London: Thoemmes Continuum, 1995.
44. Hume D. The Sceptic. In: Essays, Literary, Moral and Political (1742). Oxford: Oxford University Press, 1963.
45. Hume D. A Treatise on Human Nature (1738). London: JM Dent & Sons, 1961.
46. Kant I. The Critique of Judgement. Oxford: Oxford University Press, 1973.
47. Tolstoy L. The Kreutzer Sonata (1890). New York: Oxford University Press, 1924.
48. Schiller JF. On the Aesthetic Education of Man. Oxford: Oxford University Press, 1982.
49. Emerson RW. Beauty. In: Nature (1836). The Collected Works of Ralph Waldo Emerson. Cambridge, MA: Harvard University Press, 1971.
50. Emerson RW. Beauty. In: The Conduct of Life (1860). The Collected Works of Ralph Waldo Emerson. Cambridge, MA: Harvard University Press, 1971.
51. Chandrasekhar S. Truth and Beauty: Aesthetics and Motivations in Science. Chicago: University of Chicago Press, 1987.
52. Hogarth W. The Analysis of Beauty (1753). New Haven: Yale University Press, 1997.
53. Homer. The Iliad. London: Penguin Classics, 1992.
54. Aristotle. Lloyd GER (ed.). Aristotle: The Growth and Structure of his Thought. Cambridge: Cambridge University Press, 1968.
55. Milton J. Comus (1634). In: Comus and Some Shorter Poems of Milton. London: Harrap, 1942.
56. Pascal B. Pensées (1670). London: Penguin Classics, 1966.
57. Marlowe C. Doctor Faustus (1592). New York: Dover Publications, 1995.
58. Cash TF, Pruzinsky T. Body Images: Development, Deviance, and Change. New York: Guilford Press, 1990.
59. Schopenhauer A. The Wisdom of Life. In: Parerga and Paralipomena (1851). Oxford: Oxford University Press, 2001.
60. Macgregor F. After Plastic Surgery: Adaptation and Adjustment. New York: Praeger, 1979.
61. Langlois JH, Ritter JM, Casey RJ, Sawin DB. Infant attractiveness predicts maternal behaviours and attitudes. Dev Psychol 1995;31: 466–72.
62. Clifford M, Walster E. The effects of physical attractiveness on teacher expectation. Sociol Educ 1973;46:248.
63. Hosoda M, Stone-Romero EF, Coats G. The effects of physical attractiveness on job-related outcomes: A meta-analysis of experimental studies. Personnel Psychol 2003;56:431–62.
64. Langlois JH, Kalanakis LE, Rubenstein AJ, Larson AD, Hallam MJ, Smoot MT. Maxims or myths of beauty: A meta-analytic and theoretical overview. Psychol Bull 2000;126:390–423.
65. Shaw WC, Meek SC, Jones DS. Nicknames, teasing, harassment and the salience of dental features among schoolchildren. Br J Orthod 1980;7:75–80.
66. Macgregor F. Social and psychological implications of dentofacial disfigurement. Angle Orthod 1970;40:231–3.