

# ESTHETIC DENTISTRY IN CLINICAL PRACTICE

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## Chapter 1

# Introduction to Concepts in Esthetic Dentistry

*Marc Geissberger DDS, MA, BS, CPT*

### General Principles of Esthetics

**Esthetics** (also spelled aesthetics) is a subdiscipline of value theory or axiology, which is a branch of philosophy that studies sensory values, sometimes called judgments of sentiment or taste. Esthetics is closely associated with the philosophy of High Art. Esthetics includes art as well as the very purpose behind it. Esthetics as a branch of philosophy studies art, the methods of evaluating art, and judgments of art. Art has existed through all recorded human history. Art is unique to human beings because of our innate ability to abstract. Esthetics is important because it examines the reasons why art has always existed and attempts to bring clarity to a vastly complex intellectual human need (Manns 1997).

The term *aesthetics* is derived from the Greek *αἰσθητική* “aisthetike” and was coined by the philosopher Alexander Gottlieb Baumgarten in 1735 to mean “the science of how things are known via the senses.” The term was used in German, shortly after Baumgarten introduced its Latin form (*Aesthetica*), but it did not come into popular use in English until the beginning of the nineteenth century (Kivy 1998). However, much the same study was called studying the “standards of taste” or “judgments of taste” in English, following the vocabulary set by David Hume prior to the introduction of the term *aesthetics* (Hume 1987).

It has been said that “beauty is in the eye of the beholder.” This very concept suggests that there may not be universal agreement on what constitutes art or beauty. Look at the two images that follow (figs.1-1 and 1-2). Both are paintings, one abstract and one realistic. Do both appeal to you as a viewer? If so, why? If not, why not? By nature, all esthetic undertakings will elicit an emotional response from its creator, the recipient of the esthetic work, and the larger viewing audience. Successful art must not only appeal to its creator but to the recipient and larger viewing audience as well. Additionally, what one group or society may deem esthetic, another may dismiss as overtly unappealing. Esthetics

and art do not necessarily cross cultural, political, generational, or societal boundaries. This being said, can there be a set of guidelines that increase the likelihood of art being deemed esthetic?

Although esthetics studies the broader context of art and may be difficult to fully conceptualize, principles do exist within the field of art that can dramatically enhance the aesthetic appeal of any piece of artwork. This textbook will provide dental practitioners with several tools designed to enhance the beauty of the dental restorations they create. Throughout this text, practitioners will be introduced to several guiding principles, techniques, and methods that, when followed, can dramatically increase the esthetic appeal of their efforts. The goal of this text is to organize and define concepts of esthetics into tangible, meaningful tools that can be applied to the practice of esthetic dentistry.

### Esthetic (Cosmetic) Dentistry

For years, the focus of the practice of dentistry was primarily the prevention and treatment of dental disease. This has been loosely described as “need”-based dentistry (Christensen 2000). In the mid to late twentieth century, dentistry evolved as a highly organized profession with advanced treatment methodologies and protocols enabling dentists to successfully treat dental disease. As tooth-colored restorative materials were developed, both dentists and the public began to recognize the esthetic improvements that could be obtained with these advances. During the later part of the twentieth century, practitioners began to see a shift in the type of dentistry the public was seeking. The public was no longer forced to select between metallic restorative materials that restored function but presented esthetic compromises. With the rapid improvements in tooth-colored restorative materials, the discovery of tooth-whitening agents, and the American preoccupation with appearance, patients were suddenly seeking selective procedures that focused on the esthetic improvement of

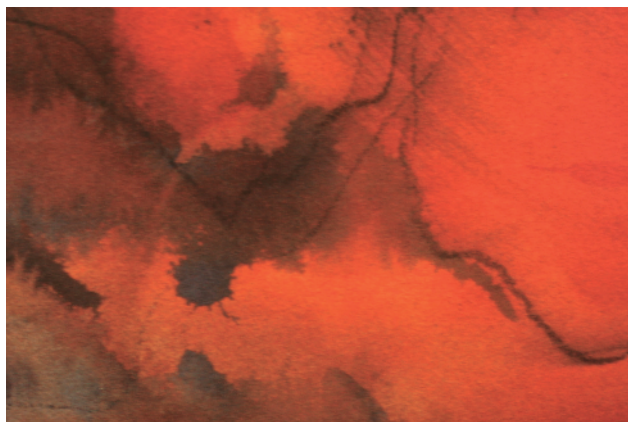


Figure 1-1. Abstract artwork, watercolor on paper, artist unknown.



Figure 1-2. Scrub jay, guache on paper. Artist: Marc Geissberger.

their dentitions. The age of “want”-based dentistry was born (Christensen 2000).

Esthetic (cosmetic) dentistry is a discipline within dentistry in which the primary focus is the modification or alteration of appearance of a patient’s oral structures, in conjunction with the treatment and prevention of structural, functional, or organic oral disease. Through cosmetic dentistry, the appearance of the mouth is altered to more closely match the patient’s subjective concept of what is visually pleasing. Under this definition, successful cosmetic dentistry adheres to the principal that “beauty is in the eye of the beholder.” Furthermore, it requires the practitioner, as the artist, to recognize the subjective nature of all esthetic undertakings.

Under this principle, the dentist is the artist and the patient is the recipient of the artwork. Both individuals have an emotional investment in the process and results.

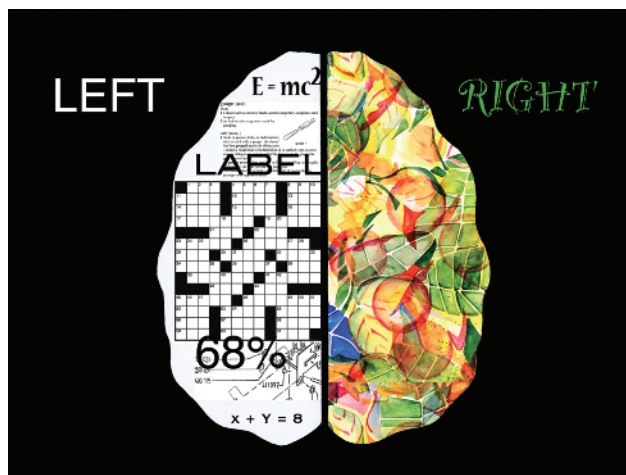


Figure 1-3. Schematic representation of the left and right hemispheres of the brain.

To be successful, the practitioner must be able to put aside personal bias and allow the patient to guide esthetic decisions. Once this occurs, the likelihood of esthetic success dramatically increases. If the dentist is too controlling of the process, superimposing his or her esthetic preconceptions over those of the patient, chances of success will decrease.

### Why Is Esthetic Dentistry Stimulating?

Roger W. Sperry PhD, a professor of psychobiology, won a Nobel Peace Prize for Physiology or Medicine in 1981 for his discoveries concerning the functional specialization of the cerebral hemispheres, namely, defining the different function of the left and right hemispheres of the brain. His work led to the belief that the left brain is associated with verbal, logical, and analytical thinking. It excels in naming and categorizing things, symbolic abstraction, speech, reading, writing, and arithmetic. The right brain, on the other hand, functions in a nonverbal manner and excels in visual, spatial, perceptual, and intuitive information (Sperry 1973; fig. 1-3). Dentistry, as a profession, is a relatively left-brain activity where facts rule, strategies are formed, and detail-oriented behavior is commonplace. A well-constructed, logical plan and implementation of any surgical procedure or treatment is essential for clinical success. Esthetics and art are largely right-brain functions, where imagination is prevalent, spatial perception abounds, and possibilities are explored. Success in this area requires imagination, vision, and flexibility.

The successful practice of esthetic dentistry capitalizes on a combination of left-and right-brain behavior. The

left-brain behavior allows practitioners to develop sound, logical, and predictable treatment plans. Additionally, they can accomplish the detail work that is required for successful clinical outcomes. The artistic mindset required for esthetic dentistry allows practitioners to engage the right brain in visual, spatial, and intuitive behavior. This total brain engagement may help explain why esthetic dentistry is so appealing and professionally rewarding for dental professionals. Esthetic dentistry can provide a highly stimulating body of work, requiring the practitioner to balance logic, facts, and the known with feeling, perception, and the unknown.

## A Brief History of Esthetic Dentistry

### Ancient Esthetics

Examples of prehistoric art exist, but they are rare, and the context of their production and use is not very clear, so we can little more than guess at the esthetic culture that guided their production and interpretation. Ancient art was largely, but not entirely, based on the six great ancient civilizations: Egypt, Mesopotamia, Greece, Rome, India, and China. Each of these centers of early civilization developed a unique and characteristic style in its art. Greece had the most influence on the development of esthetics in the West. The period dominated by Greek art saw a veneration of the human physical form and the development of corresponding skills to show musculature, poise, beauty, and anatomically correct proportions.

Greek philosophers initially felt that esthetically appealing objects were beautiful in and of themselves. Plato felt that beautiful objects incorporated proportion, harmony, and unity among their parts. Similarly, in the *Metaphysics*, Aristotle found that the universal elements of beauty were order, symmetry, and definiteness (Ahmad 2005). These “mathematical” theories of esthetics have been used to establish many of today’s concepts in esthetic dentistry. It must be noted that although several mathematical principles can be applied to beauty and esthetics, they are merely tools and do not constitute absolutes; they will be discussed in greater detail in later chapters.

In twenty-first century United States, dental esthetics may be simplified to include a full dentition consisting of straight, white teeth. The so-called “Hollywood” smile, popularized by American cinema and television, can be recognized worldwide. History shows us that throughout the world, this may not have always been the case. There are several examples of tooth modification for esthetic reasons that do not adhere to the stan-

dard of the “Hollywood” smile. Recognizing that there have been and still remain many different concepts of esthetic dentistry helps illustrate that dental beauty is truly in the eye of the beholder. Furthermore, what is appealing to one group may be unappealing to another.

### So Much for White Teeth: The Japanese Tradition of Tooth Blackening

An examination of skeletal remains and art from the Asuka to the Edo period (from the seventh to the nineteenth century) reveals a tradition of intentional tooth blackening as a practice among both women and men. The custom, an esthetic symbol from ancient times in Japan called *ohaguro*, became popular among married women as a way of distinguishing themselves from unmarried women and providing contrast to their white painted faces. The artwork pictured here depicts women from this era with intentionally blackened teeth (fig. 1-4). The black dye was an oxidized mixture of iron shavings melted in vinegar and powdered gallnuts. The tradition of *ohaguro* became popular among males, especially court nobles and commanders. Among samurais, the custom of *ohaguro* was a symbol of loyalty to one master within a lifetime. In the case of men, the custom is said to have ended around the Muromachi Era (1558–1572) and was far less popular and short-lived compared with the female tradition (Hara 2001). With its origin in Japan, this tradition spread throughout Asia.



**Figure 1-4.** Japanese art depicting a woman with blackened teeth, circa sixteenth century.



**Figure 1-5.** Modern version of *ohaguro* depicting Asian female with ceremonially blackened teeth.

The tradition of blackening of teeth can still be seen in small pockets of Asian culture today (fig. 1-5).

### African Tooth Modification

The Bantu people of Africa have a myth that holds that death enters the human body through the teeth. Due to this longstanding belief, the Bantu file teeth into points in an attempt to create a portal trough which death may exit the body (Favazza 1996). Figure 1-6 is a photograph of cast reproduction of a Bantu tribesman depicting typical tooth modification associated with these people. Although this tooth modification process has its roots in ancient tribal mythology, over time, this custom became the esthetic norm for many Bantu adults. This created a cultural shift in what constituted a beautiful smile for the Bantu people. Although some may find these tooth modifications to be utterly unaesthetic, the Bantu accept them as beautiful.

### Esthetics during the Roman Empire

Roman citizens were acutely aware of tooth-related esthetics. Some practices of the Romans may provide the first real evidence of a cultural bias for whiter teeth. First-century Roman physicians advocated brushing teeth with Portuguese urine to achieve a whiter appearance.



**Figure 1-6.** Cast reproduction of a Bantu tribesman depicting typical tooth modification. Courtesy Dr. Scott Swank, curator, the Dr. Samuel D. Harris National Museum of Dentistry.



**Figure 1-7.** First- to second-century attempt at a fixed partial denture involving the lower anterior teeth of a female Roman citizen.

The appearance of missing teeth had a significant social impact in Roman culture. Teeth were crudely replaced for both functional and esthetic purposes. One of the earliest known dental prostheses can be traced to the early Roman Empire. The prosthetic device utilized multi-karat gold wire to string together “artificial teeth.” The teeth, pictured here, date from the first to the second century AD. They were found in the mouth of an unidentified woman who was buried in an elaborate mausoleum within a Roman necropolis (fig. 1-7).



**Figure 1-8.** Mayan jadeite inlays. Courtesy Dr. Scott Swank, curator, the Dr. Samuel D. Harris National Museum of Dentistry.

### Central American Esthetic Dentistry

Little is known about the Mayan empire because early settlers from Europe destroyed most of its written history. Despite the lack of recorded history, a fair amount has been discovered from Mayan archeological findings. Human remains discovered in Mayan burial sites display two types of esthetic tooth modification. The first is tooth filing, which created a step appearance in the incisors. The second is a sophisticated technique of inlaying various semiprecious stones on the facial aspect of anterior teeth and some first premolars (Ring 1985). This technique utilized round inlay preparations placed in the enamel with corresponding round inlays of jadeite, turquoise, hematite, or other locally available minerals (fig. 1-8).

### Victorian Era Esthetics

The Victorian age saw many advances in technological breakthroughs and science. With the advent of marketing and direct sales, the public was inundated with new products touting many great benefits in the marketplace. Many examples of esthetic treatment offerings emerged in the form of trade cards. These advertising trade cards often made several exaggerated claims regarding the benefits of the products or services being sold, although the public largely accepted their claims with little hesitation or skepticism (Croll and Swanson 2006).

### Current State of Esthetic Dentistry in the United States

The previous sections have illustrated many different types of nontherapeutic tooth modifications centered on esthetic enhancement of the dentition and smile. In 2000

at its annual convention, the American Dental Association asked its member dentists which services were most requested by their forty- to sixty-year-old patients. More than 66% of the dentists surveyed reported that tooth whitening was the first request among that age group. Furthermore, 65% of dentists reported other cosmetic procedures such as crowns and bonding as the second most sought after treatment (McCann 2001). In a 2005 survey of 9,000 American dentists, the American Academy of Cosmetic Dentistry (AACD) found that dentists experienced a 12.5% increase in the number of esthetic procedures done in their offices over a five-year period. The dentists reported that tooth whitening was the number-one requested esthetic procedure (29%; Levin 2005).

Since its creation, the AACD has surveyed American patients regarding esthetic dentistry and their personal preferences. The findings have remained quite consistent over the last two decades. Ninety-two percent of Americans report that an attractive smile is an important social asset. Only 50% of Americans report being happy with their smile. In 2004, the AACD asked Americans, "What is the first thing you notice in a person's smile?" The most common responses were

1. Straightness
2. Whiteness and color of teeth
3. Cleanliness of teeth
4. Sincerity of smile
5. Any missing teeth?
6. Sparkle of smile

When the same group of Americans was asked, "What types of things do you consider make a smile unattractive?" the most common responses were

1. Discolored, yellow, or stained teeth
2. Missing teeth
3. Crooked teeth
4. Decaying teeth and cavities
5. Gaps and spaces in teeth
6. Dirty teeth

And finally, when respondents were asked, "What would you most like to improve about your smile?" the most common response was they wished they had whiter and brighter teeth (AACD 2004).

### A Broader View of Esthetics

Although the overwhelming American concept of what constitutes a beautiful smile and teeth may be somewhat uniform, it must be noted that there still remains some variation on just what constitutes a beautiful smile. The concept that big, straight, white teeth with full lips and

**Table 1-1.** Organizations dedicated to esthetic dentistry.

Academy Name	Year Established	Web Address
American Academy of Esthetic Dentistry	1975	www.estheticacademy.org
American Academy of Cosmetic Dentistry	1984	www.aacd.com
European Academy of Esthetic Dentistry	1986	www.eaed.org
Japanese Academy of Esthetic Dentistry	1990	www.jdshinbi.net
Indian Academy of Aesthetic & Cosmetic Dentistry	1991	www.iaacd.org
Brazilian Society of Aesthetic Dentistry	1994	www.sboe.com.br
British Academy of Aesthetic Dentistry	1995	www.baad.org.uk
Scandinavian Academy of Esthetic Dentistry	1996	www.saed.nu
European Society of Esthetic Dentistry	2003	www.esed-online.com
Canadian Academy for Esthetic Dentistry	2004	www.caed.ca
Australian Academy of Cosmetic Dentistry	2005	www.aacd.com.au

minimal gingival display represent a beautiful smile is a relatively narrow perspective. If one accepts the notion advanced by the early Greek philosophers that beauty and esthetics is a harmonious blend of symmetry and proportion, one could argue that unaesthetic or unattractive things may, by default, lack symmetry and have poor proportion. When this concept is applied to the smile, we could hypothesize that a beautiful smile would be harmonious, symmetrical, and well proportioned. The human eye may be predisposed to identify objects as symmetrical and well proportioned. The further an object is from this predisposition, the less likely that object would be perceived as beautiful.

### Professional Organizations that Promote Esthetic Dentistry

With the increased awareness of esthetic dentistry throughout the world, it became increasingly important for dental professionals to have focused resources where they could grow their knowledge base, share information with colleagues, and meet formally at annual sessions. This led to the formation of numerous professional organizations with esthetic dentistry as their main focus. Above is a table containing several leading organizations in chronological order from their founding year (table 1-1).

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