

Using the RED Proportion Template to Create a Beautiful Smile

Daniel H. Ward, DDS

It has been said that people have to see it to believe it. Cable television shows now feature young couples searching for run-down homes they can purchase for a bargain and then transform into the house of their dreams. The properties may appear hopeless, but the realtors can often envision the potential in their own minds. They rely on cad-cam computer image programs to demonstrate to the potential buyer, the final remodeled appearance of the home. The buyers are often surprised and proceed with the project once they can visualize the potential outcome of their investments.

This is true for aesthetic dentistry as well. The dentist can often see the potential for an attractive smile but must demonstrate to the patient the potential final results. Important treatment planning decisions can be better made when the consequences of these decisions can be viewed. Only after effective visual com-

munication with the patient, can informed choices be made that will ultimately satisfy the patient once the treatment is complete.

Before the era of digital photography and image manipulation, dentists had to rely on photographs of other patients either they or other dentists had treated. The patient was asked just to imagine what this smile would look like in their mouths. We all have had patients bring in smiles of models or stars they have seen in a magazine and been asked to recreate their look. Unfortunately the “look” they are seeking may be much more than just the teeth and they are frustrated when their overall appearance does not mimic the celebrity.

In the early days of smile design the author used to take smile photographs of patients and trace out the outlines of the lips and of the teeth (Fig. 1). The new smile design was traced on a piece of

clear plastic and the patient was asked to imagine in their own minds what the smile would look like with the tracings (Fig. 2). Obviously, this is an ineffective way to adequately communicate the final results to the patient. Figure 3 shows the completed case.

Following the advent of computer imaging programs, simulations of smiles could be created. There are several types of programs that are available. Dental companies developed programs that allowed the user to outline the silhouette of the lips and to insert the teeth and gums of other patients from a smile library (Figs. 4 & 5). Though quick and easy, this technique can result in inappropriate and unrealistic expectations of the final results and dissatisfied patients (Fig. 6). A better way to simulate the potential final appearance of a smile makeover is to insert the teeth themselves under the lips and

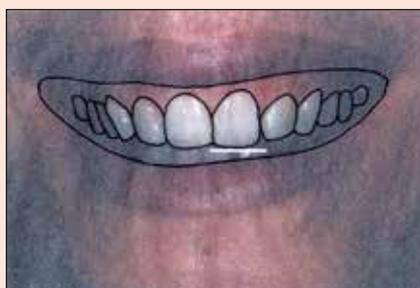


FIGURE 1—Tracing of teeth on tissue paper



FIGURE 2—Pre-op photo overlaid with desired tooth tracing



FIGURE 3—Completed case



FIGURE 4—Smile to be imaged



FIGURE 5—Smile image with area within lips removed



FIGURE 6—Smile image with area within lips replaced with teeth & gums from smile library

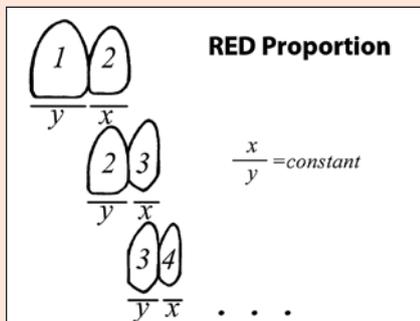


FIGURE 7—RED Proportion

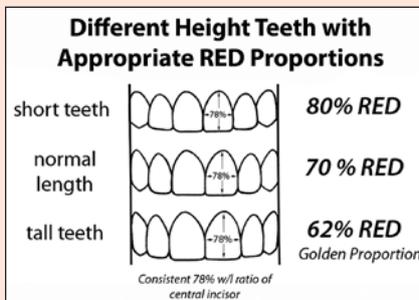


FIGURE 8—Different RED Proportions for different tooth lengths

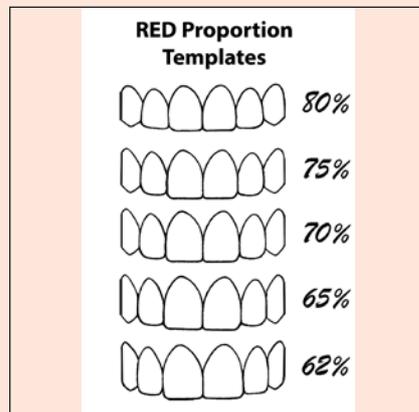


FIGURE 9—RED Template Overlay

over the gingiva of the patient’s photographed smile. Clinical experience and expertise should guide the dentist to determine the final potential tooth and gingival appearance.

It has been advocated that the proportions of the teeth are important to achieve smile unity.¹⁻² Dentists should design smiles that are consistent with the size of the face and the body. Tall people generally look better with

tall teeth and short people are better matched with shorter teeth.³ Given a fixed intercommisural width, there are an infinite number of ways that the space can be allocated.⁴ Research has shown that dentists prefer smiles in which the width/length ratio of the maxillary central incisors are 75 to 78 percent.⁵ A tall person would be better suited with a correspondingly wide central incisor. Less space is left for the remaining anterior teeth and therefore

they will be narrower.

The successive tooth appearance widths of the maxillary teeth as you proceed distally have been studied. A lateral incisor, which is 66 to 70 percent of the central incisor, has been observed in nature or has been preferred by dentists when evaluating smiles with normal length teeth.⁶⁻⁷ Tall teeth with corresponding wider central incisors result in less remaining space making a smaller



FIGURE 10—Smile image with RED Proportion template inserted in area within lips



FIGURE 11—Smile image complete using RED Proportion template



FIGURE 12—Pre-treatment photo



FIGURE 13—Pre-treatment photo with RED Template overlay



FIGURE 14—Imaged photo for eight recommended restorations



FIGURE 15—Re-imaged photo for six restorations

tooth width proportion necessary for the lateral incisor. The “Golden Proportion” or 62 percent RED Proportion has been demonstrated to be preferred by dentists surveyed for very tall teeth.⁸ The RED Proportion

stand for “Recurring Esthetic Dental” Proportion which evaluates the successive tooth widths of the maxillary anterior teeth as you move distally and suggests that this proportion remain constant⁹ (Fig. 7). In other words,

the appearance width of each tooth diminishes by the same proportion as you progress distally. This concept may be useful as a guide in designing smiles. Using this concept, short teeth result in maxillary anterior teeth



FIGURE 16—Completed treatment with six teeth restored

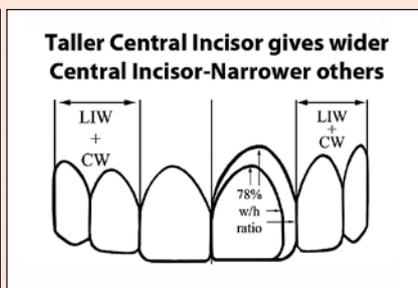


FIGURE 17—Taller tooth gives wider Central Incisor-narrower others

more similar in size and a larger RED Proportion (Fig. 8). The RED Proportion seeks to design smiles in harmony with the face. Alterations to the gingival levels of the teeth will affect the recommended proportions of the teeth and may allow tooth length to better coincide with body length.

A template has been created with outlines of the teeth at the preferred 78 percent width/length ratio and different RED Proportions (Fig. 9). The dentist can overlay the template on the smile photo to evaluate the different proportions. Once the appropriate proportion has been determined, the teeth can be “rubber stamped” within the outlines of the template to create the desired appearance or teeth from a proportioned smile library can be inserted (Figs. 10 & 11). This is a more realistic outcome than the earlier displayed simulation from a smile library.

This technique can be very useful in showing patients the effect of how many teeth are treated. This patient presented with a chief complaint that he did not like the gray areas in the proximal areas of the maxillary left lateral incisor (#22), which was a pontic for a Maryland Bridge. Photographs were taken and the canted incisal plane was revealed

(Fig. 12). It was recommended due to decay that the Maryland Bridge be replaced with an all-ceramic bridge (#21-23) and laminates be placed on the remaining maxillary anterior eight teeth (#11, 12, 13, 14, 24). The RED Proportion template was placed over the photograph (Fig. 13) and an image created showing 8 treated teeth (Fig. 14). For economic reasons the patients asked that we re-image the photo and show what six teeth would look like (Fig. 15). Based on this information the patient decided to only have six treated at this time. The final results are shown (Fig. 16).

Patients can also see the effect of cosmetic gum surgery on the final tooth proportions. According to the principles of the RED Proportion, when maxillary anterior teeth are lengthened, the central incisor should be widened to maintain the ideal 78 percent w/l ratio. The remaining anterior teeth become narrower. Figure 17 shows the effect of longer central incisors on the remaining anterior teeth width proportions. The patient presented unhappy with her smile. Photographs were taken and analyzed (Fig. 18). The appropriate RED Proportion was selected and the template placed over the photo (Fig. 19). The final recommended image was produced and approved by



FIGURE 18—Pre-op smile



FIGURE 19—Pre-op smile with RED Smile Template



FIGURE 20—Imaged smile using RED Proportion Template



FIGURE 21—Full smile post perio surgery



FIGURE 22—Completed treatment

the patient (Fig. 20). The patient was referred to the periodontist with the preferred tooth dimensions and surgery performed. The patient returned and asked that temporaries be placed over the two central incisors during healing due to the unaesthetic appear-

ance (Fig. 21). The gingiva was allowed to heal, the teeth prepared and 10 crowns placed (Fig. 22). The imaged photographs are useful in communicating with the patient and specialists. In today's world of "try in before you buy it" and "show me first" a visual simulation of the final smile appearance can be a useful for making "informed consent" deter-

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International College of Dentists and a Fellow in the Academy of General Dentistry. Dr. Ward lectures and writes Internationally on Smile Design, Digital Dental Photography and Restorative Dentistry. He can be contacted at dward@columbus.rr.com.

Callout

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The RED Proportion is a valuable tool in creating smiles proportioned to the face and smile. The use of the RED Proportion template makes it easier to create imaged smiles that are re-pro-

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minations with patients prior to beginning any active restorative treatment. **OH**

Dr. Ward is in private practice in Columbus, Ohio. He is a Diplomate of the American Board of Aesthetic Dentistry, a Fellow of the American Society for Dental Aesthetics, a Fellow in the

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