A full polychromatic effect. Vanini (1996) studied this effect and defined and applied the term “chromatic banding” to the polychromatic effects (Figure 19). Traditionally, chromatic banding has been described at the gross level as consisting of three broad areas:

- The cervical third
- The middle third
- The incisal third

The chroma is most saturated in the cervical area, gradually decreasing through the middle third into the incisal third which exhibits the lowest chroma. Vanini demonstrated that even within the three broad bands there are areas of dense opacity and saturated chroma mixed with areas of less saturation, giving rise to a truly polychromatic appearance. These areas can be organized in a definite pattern relating to the characteristics of the enamel.

The opaque dentine, exhibiting the attributes of hue and chroma, has the tendency to decrease the value of enamel, thus moving the overall color towards the gray of the tooth. The enamel is very thin and the dentine very saturated (such as the cervical area) then the hue of the dentine dominates the overall perception. Vanini summarizes that as the enamel thins, the dentine decreases in density, leading to a whiter appearance. Careful observation of the tooth will show that the polychromatic nature of dentine will over the dentine contours and the presence of organic pigments allows light to be reflected, refraction and transmission. The translucent and opalescent characteristics of enamel impart value to understanding and application of this categorisation will present the clinician with a valuable roadmap for color matching. Vanini has further simplified the procedure by studying the distribution of the actual color involving the various effects. Thus by memorising three categories with a total of fourteen subdivisions, the clinician will have a definite route to chart the color matching process without the need for a spare guide and, more importantly, without the need to possess exceptional artistic ability. The procedure is simple, even further by the availability of a purchasable “chromatic chart” and the whole process of color matching can be recorded.

The young enamel shows marked opalescent effects and in the incisal area the halo effects are obvious. With aged teeth, the dentine blood supply diminishes and the tubules become sclerotic. Although sclerotic dentine is slightly more translucent, the overall chroma increases and the dentine becomes darker. The enamel wears and thins with resulting reduced value as well as allowing more of the opaque dentine to show through. The thinning enamel shows reduced opalescent effects, particularly at the incisal edge, the loss of enamel due to functional wear, Accumulated stains also darken the tooth.

Acknowledgements

The author wishes to acknowledge and thank the following outstanding clinicians for the many hours of swimming pool, coffee table and beachfront conversations that have gradually led to a more systematic and predictable approach to color matching.

David Klaffka is past president and founding member of the British Academy of Aesthetic Dentistry (BAAD). He currently runs a private practice in restorative and prosthodontic dentistry in London, and has lectured extensively on adhesives and indirect composite in Europe, Asia, the Middle East & Africa Edition, and the U.S.A. and the United Kingdom.

A complete list of references is available from the Publisher.